TUFF-LINE Secondary Cleaner

Spring and Air Tensioned

TSGlobal

Conveyor & Polyurethane Specialists

Installation, Operation and Maintenance Manual

Revision History

Rev	Date	Description	Document Owner
01	24/11/2021	TUFF-LINE Secondary Cleaner 2021	Ray Macarthur
02	21/02/2022	TUFF-LINE Secondary Cleaner Spring and Air Tensioned	Alexandra McBeath

Contents

Section 1 – Important Information

General Information

TS Global is pleased that you have selected one of our products for your conveyor system.

This manual will assist in the understanding and operation of the product and allow it to perform at its maximum efficiency.

For safe and efficient operation, it is essential that the information and guidelines presented be properly understood and implemented. This manual will provide safety precautions, storage advice, installation instructions, maintenance procedures, recommended spares and troubleshooting tips.

If, however, you have any questions or problems that are not covered in this manual, please contact the nearest authorised distributor, or visit our website. www.tsglobal.net.au

All persons directly responsible for the installation, operation and maintenance of this product should read this manual thoroughly. Whilst we have attempted to make the installation and service tasks as simple as possible, optimum performance from the product will require correct installation, regular inspections, adjustments, and maintenance to maintain maximum efficiency.

User Benefits

Ensuring the correct installation and regular maintenance tasks are performed, our product will provide the following benefits to your operation:

- Increase conveyor availability and reliability.
- Reduced man-hour labour requirements.
- Lower maintenance costs.
- Increased service life for the cleaner and other conveyor components.
- Reduction in Safety Hazards around conveyor.
- Reduction in Environmental Impact.

Service Option

This product is designed to be easily installed and serviced by your on-site personnel, however, if you would prefer a complete turn-key service, please contact TS Global for a list of your nearest distributors.

Warranty

The warranty provided by TS Global Pty Limited ("TS Global") is set out in the TS Global Terms and Conditions of Sale at clauses 6.1 to 6.5 inclusive. Those clauses are set out below: -

6.1 Subject to these conditions of sale, TS GLOBAL warrants that the Goods are free of defects both in material and workmanship and are of merchantable quality. The liability of TS GLOBAL pursuant to this warranty or any other warranty implied by operation of any statute including the Competition and Consumer Act 2010 (Cth) (as amended) shall be limited to the cost of replacing defective Goods, the cost of obtaining equivalent Goods, or the cost of repairing the Goods at TS GLOBAL's discretion provided that in all such cases any costs of dismantling and reassembly shall be borne by the Customer.

6.2 The warranty set out at clause 6.1 is subject to the following:

a) the warranty applies for a period of 12 months commencing on the date of invoice of the Goods;
b) the warranty does not apply to consumable components that are subject to normal wear and tear;
c) the Customer must provide TS GLOBAL with either an invoice number or purchase order number referencing the defective Goods;

d) the defects to the Goods must have arisen solely from faulty materials or workmanship; and
e) the damage to the Goods must not arise from:
    i. incorrect installation of the Goods contrary to the instructions contained within TS Global's Installation and Operation Manuals.
    ii. improper adjustment, calibration, or operation by the Customer.
    iii. the use of accessories including consumables, hardware, or software which were not manufactured by or approved in writing by TS GLOBAL
    iv. any contamination or leakages caused or induced by the Customer
    v. any modifications of the Goods which was not authorised in writing by TS GLOBAL.
    vi. any misuse of the Goods by the Customer.
    vii. any use or operation of the Goods outside of the physical, electrical, or environmental specifications of the Goods.
    viii. inadequate or incorrect site preparation.
    ix. inadequate or improper maintenance of the Goods; or
    x. incorrect handling of the Goods.

6.3 If the Goods are not manufactured by TS GLOBAL the guarantee of the manufacturer of those Goods is accepted by the Customer and is the only guarantee given to the Customer in respect of the Goods. TS GLOBAL agrees to assign to the Customer on request made by the Customer the benefit of any warranty or entitlement to the Goods that the manufacturer has granted to TS GLOBAL under any contract or by implication or operation of law to the extent that the benefit of any warranty or entitlement is assignable.

6.4 Except as provided in these conditions, all express and implied warranties, guarantees and conditions under statute or general law as to merchantability, description, quality, suitability, or fitness of the Goods for any purpose or as to design, assembly, installation, materials or workmanship or otherwise are expressly excluded. TS GLOBAL is not liable for physical or financial injury, loss, or damage or for consequential loss or damage of any kind arising out of the supply, layout, assembly, installation or operation of the Goods or arising out of TS GLOBAL's negligence or in any way.

6.5 Nothing in these conditions shall be read or applied so as to exclude, restrict or modify or have the effect of excluding, restricting or modifying any condition, warranty, guarantee, right or remedy implied by law (including the Competition and Consumer Act 2010) and which by law cannot be excluded, restricted or modified.

This Warranty Statement must be read in conjunction with TS Global's Terms and Conditions of Sale which can be located on our website www.tsglobal.net.au

Section 2 – Safety Considerations, Precautions and Correct Storage

Before installing, operating, inspecting, or maintaining this product, it is important to follow and understand all relevant site and statutory regulations. Please review the following safety information.

All statutory and site regulations must be followed before undertaking the following activities. Failure to follow site safety procedures exposes workers to uncontrolled hazards which can result in serious injury or in extreme cases, fatality.

Personal Protective Equipment (PPE) must be worn to control the foreseeable hazards associated with conveyor belts. Confined space, tensioning devices and heavy components create a worksite that may expose a worker to harm. Mechanical devices such as cranes or chain blocks can reduce expose to harm.

Once hazards have been identified, the installer should undertake written Job Hazard Analysis according to site requirements. The installer must identify all hazards and apply appropriate controls before proceeding with the installation or servicing of this equipment.

There are installation, maintenance and operational activities involving both isolated and operating conveyors. Each has a safety protocol, and it is your responsibility to be familiar with the sites requirements.

Operating Conveyors

There are two routine tasks that should be performed while the conveyor is running:

- Inspecting the performance and operation of the product.
- Dynamic troubleshooting.

Isolated Conveyors

The following activities are performed on isolated conveyors:

- Installation
- Parts replacement
- Repair
- Cleaning

Correct Storage

Provided goods remain stored within boxes or on pallets wrapped with plastic, TS Global products can be stored outside in all weather conditions. If packaging is damaged or removed, TS Global recommends that the products be stored under cover and out of direct sunlight to minimise deterioration of any componentry.

Section 3 – Installation Instructions

Checklist

- Check that the product size is correct for the conveyor to be installed on.
- Check the product and make sure all the parts have been supplied.
- Review the “Tools Needed” listed on page 8 of the Installation instructions.
- Check the installation location: will the cleaner fit inside chute.

Before you begin:

- Familiarise yourself with the main components of this product (Fig. 1a).
- Determine the install location and check for clearances (Fig. 1b).
- Follow all safety precautions and site hot work procedures (as required).
- Protect all fastener threads and the belt from weld spatter.

Note: TS Global belt cleaners have been designed to be flexible in installation. In the event that conveyor head chute or structure needs to be modified, seek engineering approval from your site contact, prior to undertaking modification.

This manual will assist in the understanding and operation of the product and allowing it to perform at its maximum efficiency over its lifetime of service.

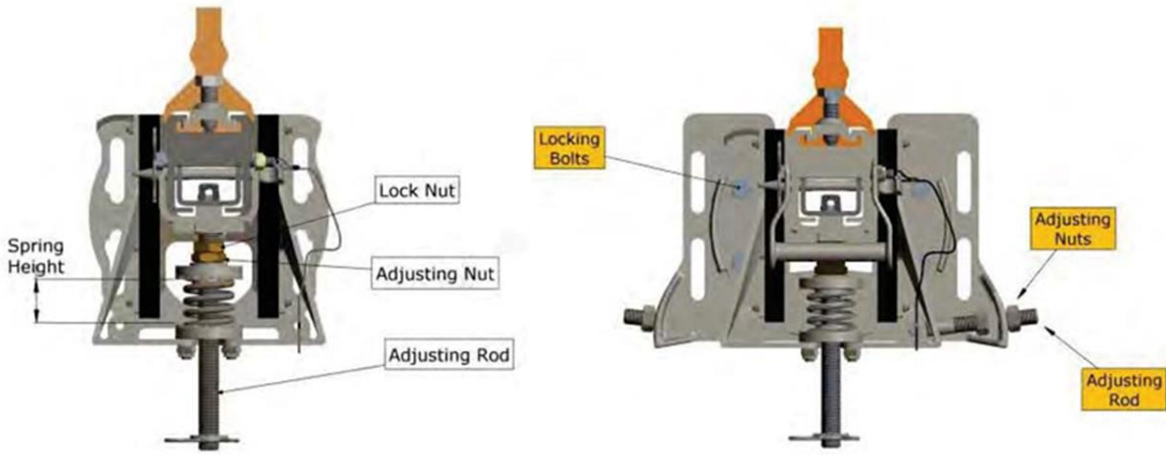
The Tuff Line Belt Cleaner is a conveyor belt secondary cleaner, and is used in conjunction with a primary cleaner such as the TUFF XHD or TUFF H. It can also be used on reversing belts.

The TUFF Line Cleaner is mounted so that the cleaning blades contact the belt as it leaves the head pulley or other accessible position on the return belt. The blades when tensioned and adjusted correctly lay perpendicular to the belt presenting no snag or danger to the belt or splices.

The TUFF Line Cleaner can be supplied or retrofitted with a variety of options including:

- Single - One cleaner
- Swivel - Adjusters allow the blade attack angle to be adjusted precisely with ease
- Dual - Two cleaners on the same mounting assembly
- Dual Swivel - Two cleaners on the same mounting assembly with swivel adjusters
- Tool Steel Blades - For general purpose and mechanical fasteners
- Tungsten Blades - For High abrasion
- Tuffathane Blades - For Damaged Belts
- Air Tensioners
- Spring Tensioners
- Water Tensioners

For safe and efficient operation, it is essential that the information and guidelines presented be properly understood and implemented. This manual will provide safety precautions, storage advice, installation instructions, maintenance procedures, recommended spares and troubleshooting tips.



The illustration above shows the Tuff Line cleaner with spring tension only. The one on the left has no swivel backing plate. The one on the right shows the Swivel Backing plate fitted to adjust attack angle. There are also dual mount brackets with and without swivel plates that incorporate 2 cleaners in the one mounting.

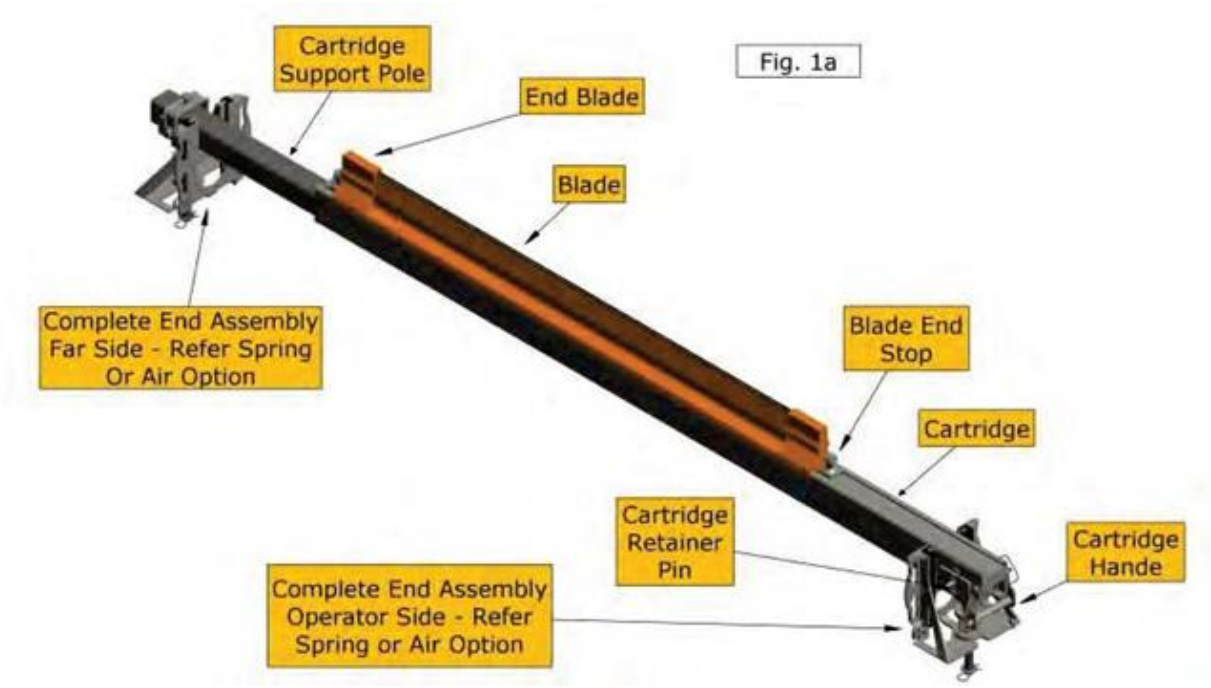
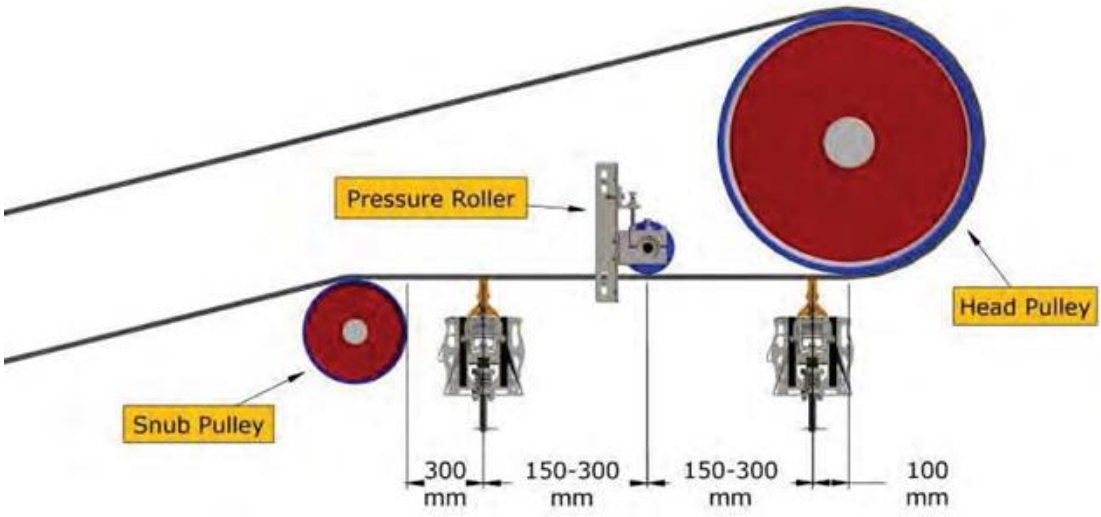


Fig. 1b Install Positions



Suggested Tools Required for Installation

- Tape measure
- Marking Pen
- Level
- 2 x 150mm G Clamps
- 2 x 13mm Spanners
- 2 x 17mm Spanners
- 2 x 19mm Spanners
- 2 x 24mm Spanners
- 2 x 30mm Spanners
- Cutting Torch and or Welder
- Angle Grinder
- Drill and/or Rotor broach machine
- Various drill bit set up to 13mm

Install Mounting Assemblies

1. Locating Cleaner Centre line

On the return side of the belt locate the tangent point at which the belt leaves the head pulley. Measure a distance 100 mm and draw a line perpendicular to the belt at this point. This is referred to as the Installation Reference Line (Refer figure 2)

Note: For installation below pressure rollers mark the vertical line 100 mm from the centerline of the roller. (Refer figure 2).

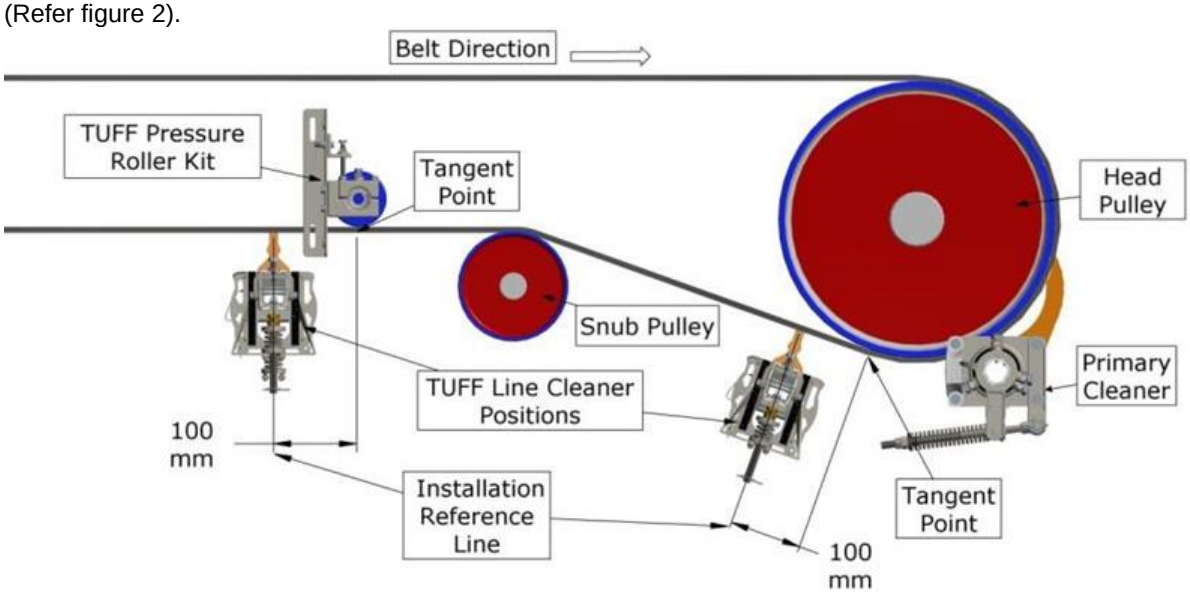


Fig. 2

This line represents the center line of the TUFF Line Cleaner and the cleaner mount brackets represented in red (Refer figure 3)

2. Mark-Out Chute Cut outs

Using the previously marked line as the center line, mark the chute cut outs and mounting hole locations as shown in Fig. 1c&d below. Repeat on both sides of chute, ensuring that the cut-outs are accurately aligned with each other.

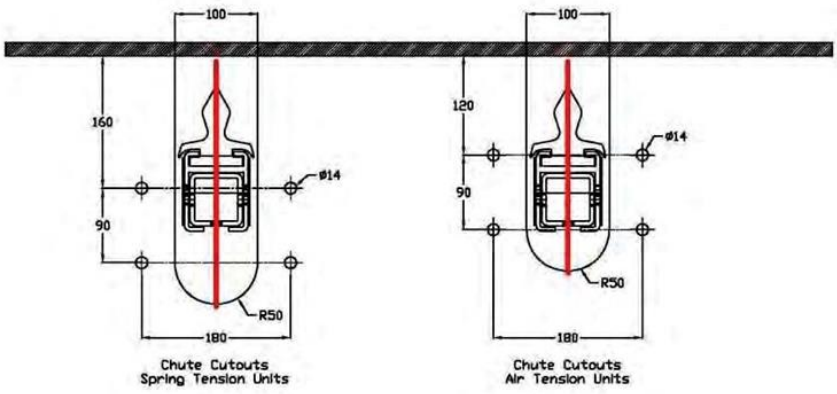
Note: The mounting holes dimensions below and the following page, the belt differs for Air or Spring Tensioned units. Check you are using the correct dimensions for the cleaner being installed

Below are the mounting templates with dimensions for cut outs and holes for-

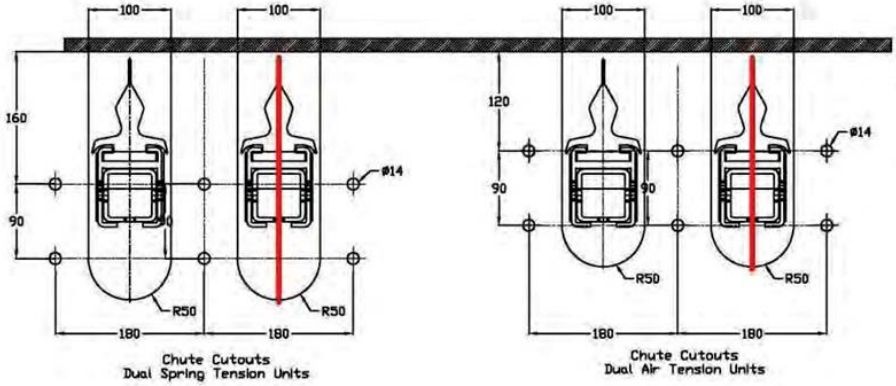
- Single cleaner spring tensioned
- Single cleaner air tensioned
- Duel cleaner spring tensioned
- Duel cleaner air tensioned
- Swivel Plate Duel cleaner spring tensioned
- Swivel Plate Duel cleaner air tensioned
- Swivel Plate Single cleaner spring tensioned
- Swivel Plate Single cleaner air tensioned

Note- Spring and air tensioned cleaner brackets are mounted different distance from the beltline. Ensure the correct template is chosen for the cleaner and tension type.

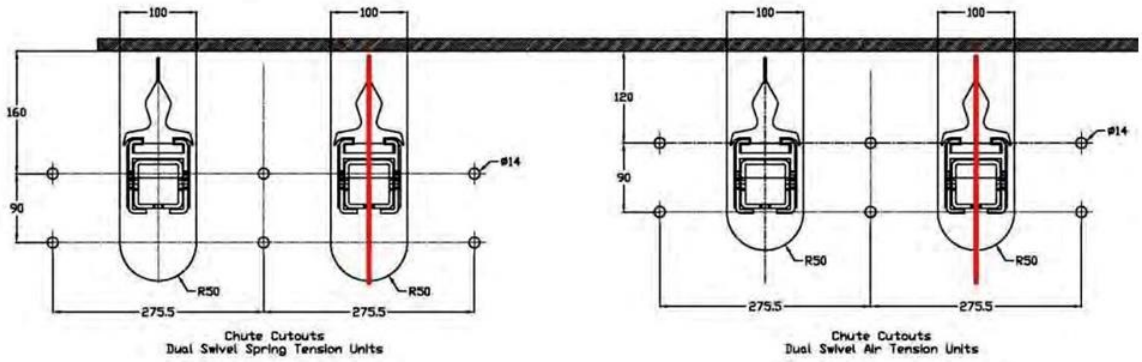
Fig.3

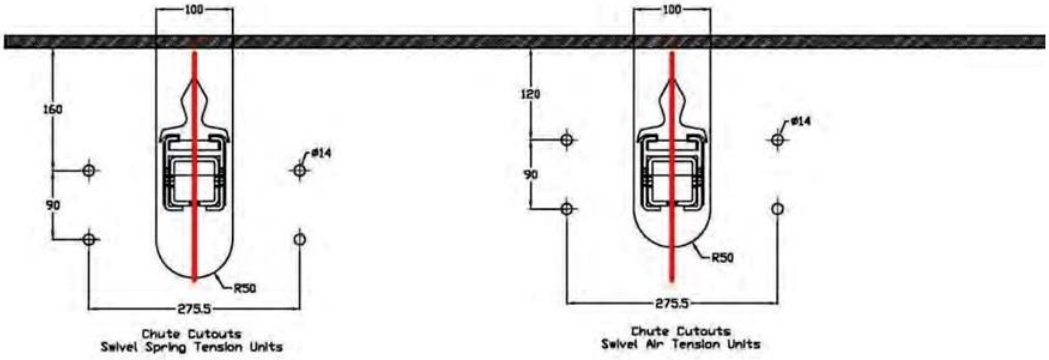


Belt Direction



Above is the standard bracket mounting- **Below** is the swivel plate mounting.





TSGlobal
Conveyor & Polyurethane Specialists

Bracket (Air Tensioner models only). The operator side will now be free. The far side mount is released by simply loosening the retaining lock screw and removing the mainframe.

Position the mounting assembly over the marked hole centers, ensuring that the hole centers are located approximately in the middle of the slots in the mount bracket. Verify that the mounts fit, and that adequate room is available to tension the cleaner.

Once mounting position is confirmed, proceed.

3. At the selected mounting positions, cut the cleaner access slots, and drill the mount holes in each side of the chute.

Remove all burrs.

4. Fit the Operator Side mount bracket to the chute wall. Position the mount so that the drilled holes in the chute wall are approximately centered in the slots of the mount. Bolt the mount to the chute wall using 4 x M12 bolts.

Repeat for the Far Side mount bracket.

5. Fit the cleaner cartridge support frame to the mounts. This is done by sliding the support into one of the mount cast brackets, through the cut out in the chute wall and through the cut out and mount on the opposite side.

Note: The mainframe has holes at one end. This is the end that fits to the operator side mount. The single hole close to the end of the mainframe must point downward toward the mount cast bracket.

Align this end of the mainframe with the outer edge of the Operator Side mount cast bracket, and refit the M12 locking screw, taking care to fit the Airline Bracket under the screw (Air Tensioner models only). At the Far Side mount, tighten the lock screw onto the mainframe.

Note: The mainframe may have excess length. If required, this excess can be trimmed from the Far Side end.

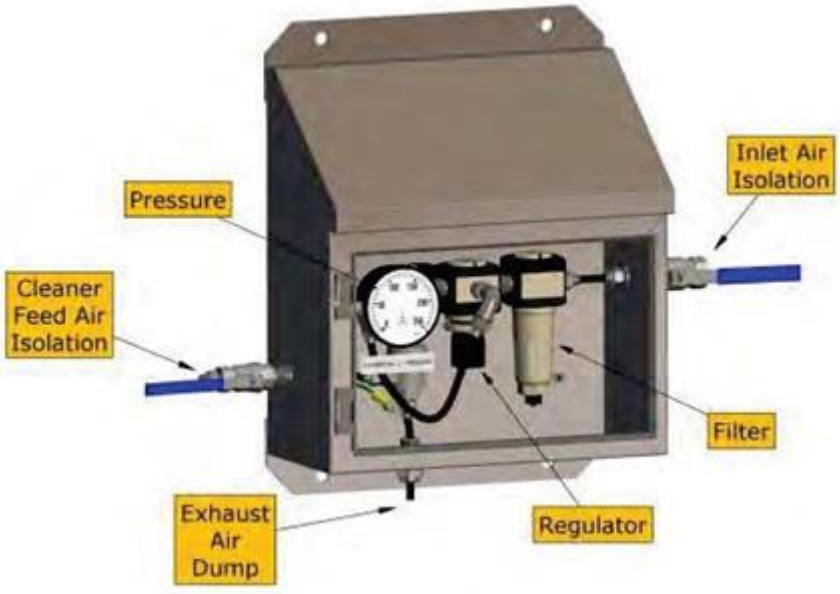
6. Slide the Blade Cartridge onto the mainframe from the Operator Side. If the cartridge is too long, excess can be trimmed from the Far Side end. If not already done, fit the cleaning blades to the cartridge. Centre the blades to the belt, by loosening and re-positioning the blade locks. Fit the blade cartridge retaining pin.

7. With the cleaner tensioner in the fully retracted position, the cleaning blades should be approximately 15- 20mm clear of the underside of the belt, and this distance should be equal across the width of the belt. If necessary, loosen and adjust the mounts up or down to achieve this clearance. Once all clearances are correct, thoroughly check all mounting and locking screws to ensure they are tight, and the cleaner is secured.

8. For the Air Tensioned model only, connect the air tube to the fittings in the Far Side airbag, on the underside of the mounting bracket.

Pass the tube through the pole support ensuring it passes through the Airline Bracket at the Operator End of the cleaner. Connect the air tube to the tee fitting supplied. Connect air tube from the operator's side air bag to the tee fitting, adjusting the tube length to suit by cutting.

Connect the other side of the tee fitting to the incoming regulated compressed air supply, or to the outlet of the TUFF Air Control Unit which is highly recommended. Connect the plant air supply to the inlet side of the Control Unit.

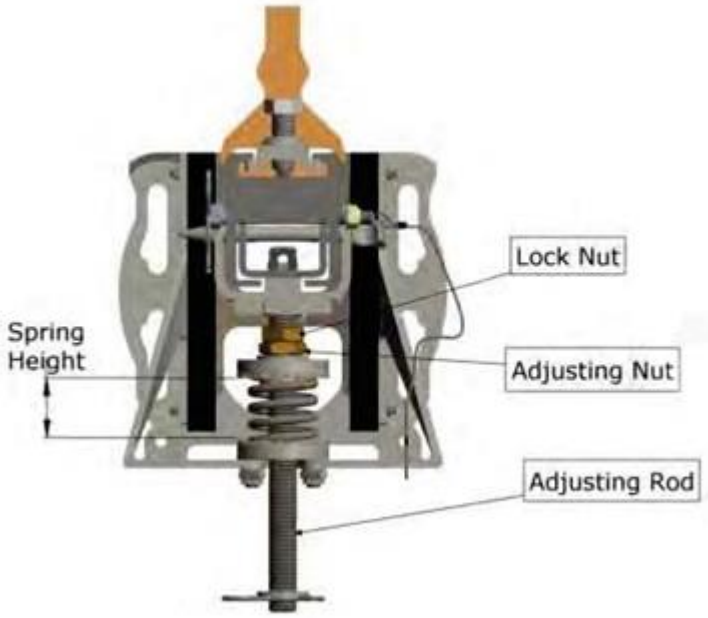


Installation is now complete, and the cleaner is ready to be adjusted against the belt.

Adjustment and Tensioning for Spring Tension Assemblies

The Spring Tensioner consists of a central threaded adjuster rod and a compression spring. A nut on the adjuster rod above the spring is used to adjust the cleaner frame and blade assembly against the belt to the required force. The spring allows storage of force to take up blade wear, and to absorb belt irregularities or loading from belt reversal.
The amount of force required to be applied is dependent on the belt width and is gauged by the compressed length of the spring. (Refer Table A)

Below-The standard spring mounting assembly. (Without swivel plate)



Adjustment Procedure

- Loosen the locking nut above the spring. Repeat for both sides.
- Turn the adjusting nut (equally on both sides) until the cleaner blades are just touching the belt.
- Ensure that the blade position is equal across the belt – that is, the blades are just touching across the belt width.
- Continue turning the adjusting nut equally on both sides until the spring compressed length is the same as indicated in Table A below.
- Start the conveyor and observe the cleaning action of the blades. Ensure that the blades ride smoothly on the belt with no vibration.
- Tighten the locknuts against the adjusting nuts

If swivel assemblies are utilized, the blade attack angle can also be easily adjusted.

1. Loosen the four Locking Bolts.
2. Adjust the blade attack angle using the Adjusting Nuts.
3. Retighten Locking Bolts and Adjuster Nuts.

Note: Ensure the slides are adjusted parallel so the carriage moves freely in the slide after adjustment.

The Diagram below shows end mount on a swivel plate with spring tension.

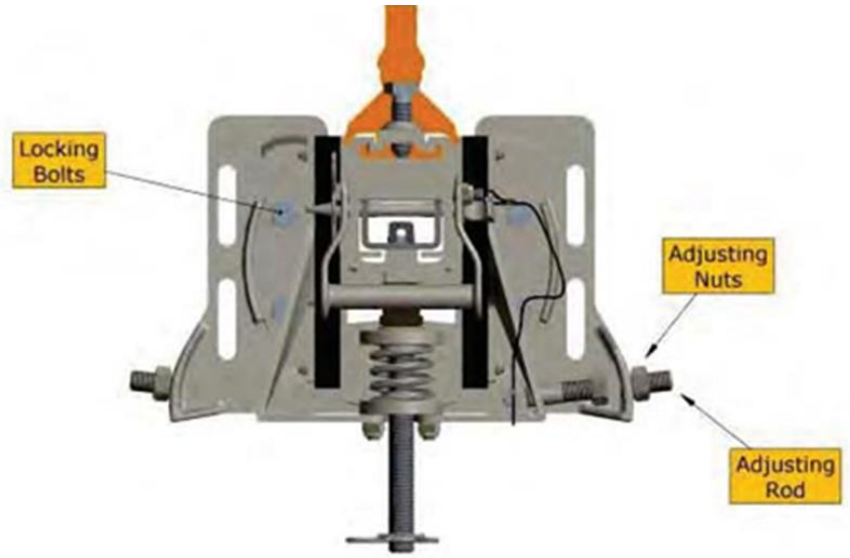
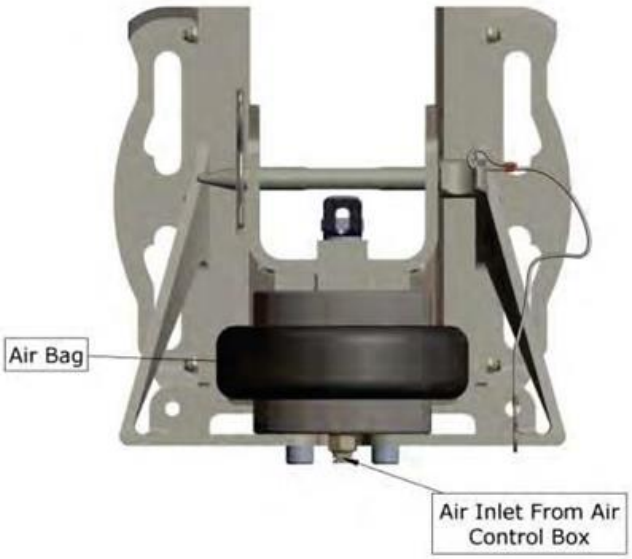


Table A. Recommended Spring Tension

Belt Width	Compressed Spring Length	Number of Full Turns
450 - 600	38	3
600 - 1200	35	4
1200 - 1800	32	5
1800 - 2200	29	6
2200 - 2400	25	8

Adjustment and Tensioning for Air Tension Assemblies



The Air Tensioner utilizes an inflatable air bag on each cleaner mount to provide the force to adjust the blades against the belt. Cleaner adjustments and correct forces are automatically applied by simple air pressure control.

Adjustment Procedure

- To adjust the Air Tensioned In-Line cleaner is simply a matter of supplying air at the appropriate pressure to the tensioner air bags. Refer to Table B for recommended air pressures.
- If using the TS Global Air Tensioner Control Unit, connect the plant airline to the Lockable Ball Valve on the outside of the enclosure. Turn on the air supply and the ball valve to pressurize the tensioner. The cleaner will automatically raise, and the blades will contact the belt.
- Adjust the pressure to the required level by loosening the locknut on the regulator unit inside the Control Unit and turning the adjusting screw. The regulator is self- relieving, so the pressure will stabilize, but it is advisable to wait a short while after each adjustment to allow excess pressure to bleed
- Once the correct pressure has been achieved, tighten the locknut on the regulator, and close the door on the enclosure.

If swivel assemblies are utilized, the blade attack angle can also be easily adjusted.

1. Loosen the four Locking Bolts.
2. Adjust the blade attack angle using the Adjusting Nuts.
3. Retighten Locking Bolts and Adjuster Nuts.

Note: Ensure the slides are adjusted parallel so the carriage moves freely in the slide after adjustment.

The Diagram below shows end mount on a swivel plate with spring tension.

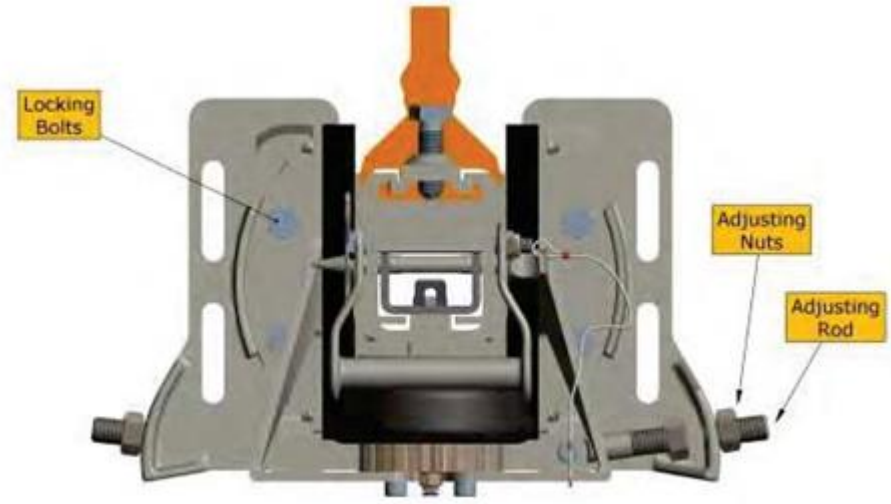


Table B. Recommended Air Pressure

Belt Width (mm)	Required Pressure kPa (psi)
450	28 (4)
600 – 750	42 (6)
900 – 1050	56 (8)
1200 – 1400	70 (10)
1500 – 1600	84 (12)
1800 – 2000	105 (15)
2200 - 2400	126 (18)

Section 4 – Pre-Operation Checklist and Testing

Pre-Operation Checklist

- Recheck that all fasteners are tightened properly.
- Check tips are in full contact area on the belt.
- Check positioning of cleaner pole.
- Be sure that all installation materials and tools have been removed from the belt and the conveyor area.

Test Run the Conveyor

- Remove isolation.
- Run the conveyor for at least 15 minutes and inspect the product performance.
- Check all components for proper positioning and tensioning.
- Check cleaner pole for excessive vibration or material passing tips.
- Adjust as necessary. In some case this may require isolation of the conveyor.

NOTE: Observing the product when it is running and performing properly will help to detect problems. If vibration occurs or material passing tips refer to section 6.

Section 5 – Maintenance

TS Global products are designed to operate with a minimum maintenance, however, to maintain superior performance some service is required. When the product is installed, a regular maintenance program should be established. This program will ensure that the product operates at optimal efficiency and problems can be identified and rectified before reduction in performance occurs.

Routine Visual Inspection (Recommended every 4 weeks)

A visual inspection of the cleaner and belt can determine:

- If cleaner is set for optimal tensioning
- If the belt looks clean or if there are areas that are dirty
- If the blades are worn out and need to be replaced
- If slides are worn
- If there is damage to the tips or other cleaner components
- If fugitive material is built up on the cleaner or in the transfer area
- If there is cover damage to the belt
- If there is vibration or bouncing of the cleaner on the belt
- If a snub pulley is used, a check should be made for material build up on the pulley
- Significant signs of carry back.

If any of the above conditions exist, a determination should be made on when the conveyor can be stopped for maintenance.

Routine Physical Inspection (Recommended every 3 months)

When the conveyor is not in operation and isolated, undertake a physical inspection of the product to perform the following tasks:

- Clean material build-up off the cleaner tips and pole.
- Closely inspect the tips for wear and any damage and replace if needed
- Ensure full tip to belt contact
- Inspect the cleaner pole for damage
- Inspect all fasteners for tightness and wear. Tighten or replace as needed
- Replace any worn or damaged components
- Check the tension of the cleaner tips to the belt. Adjust the tension if necessary, using the steps in Section 4
- When maintenance tasks are completed, test run the conveyor to ensure the cleaner is performing correctly.

Blade Service Instructions

Before You Begin: Ensure conveyor isolations are in place and effective.

1. Shut down and isolate the conveyor if deemed necessary by site safety officer, or site regulations. The TUFF Line Cleaner is designed to allow servicing with the belt running, but this may contradict site rules.
2. De-tension the cleaner.
   For Spring Tensioned Assemblies
   - Loosen the locking nut above the spring. Repeat for both sides.
   - Turn the adjusting nut (equally on both sides) until the cleaner is fully retracted

For Air Tensioned Assemblies

- Shut off the air supply at the lockable ball valve on the Air tensioner Control Unit.
- The cleaner will automatically retract from the belt. When fully retracted, insert a padlock or other safety tagging device through the tab on the Lockable Ball Valve. This will prevent re-pressurizing of the air tensioners during maintenance.
- If blades are clean, and not excessively worn, re-tension the cleaner.
- If material build-up is still present or blades are excessively worn, proceed.

3. When fully retracted, simply remove the retaining pin securing the blade cartridge to the operator end of the mainframe. Grasp the handle and pull the blade cartridge off the mainframe and away from the mount bracket. Completely remove the blade cartridge from the mainframe and place it in a suitable position for maintenance work to be carried out

4. When replacing the blades, ensure that the urethane end blades are also changed out. These prevent belt damage by supporting the belt at the edge of the cleaning blades. If removing both Blade Locks, first mark their position in the cartridge to ensure correct positioning of blades on re-assembly.

5. When Re-install blade cartridge onto the cleaner mainframe and re-fit the securing pin at the operator side.
6. Retention the cleaner and adjust the swivel plater as required.

Test Run Cleaner

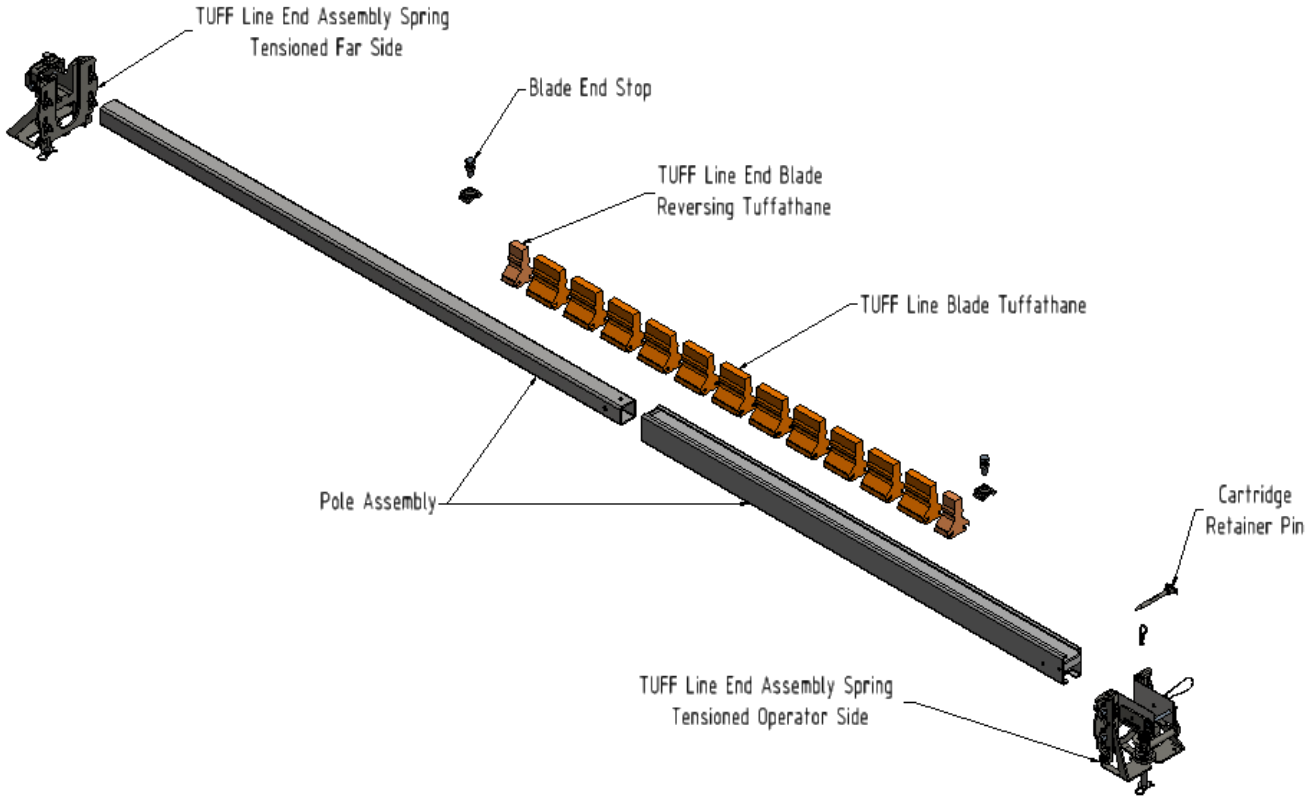
- Recheck that all fasteners are tightened properly
- Check the tip contact area and angle on the belt
- Be sure that all materials and tools have been removed from the belt and the conveyor area.
- Remove Isolation
- Run the conveyor for at least 15 minutes and inspect the cleaner performance
- Check all components for proper positioning and tensioning
- Adjust as necessary. In some cases, this may require isolation of the conveyor.

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

Section 6 – Troubleshooting

Vibration	Incorrect Tip Attack Angle	Adjust Attack Angle - Install Swivel Mounts
	Cleaner not set up correctly	Ensure cleaner set up properly
	Belt tension too high	Ensure cleaner can conform to belt, or consider an alternate blades or TUFF secondary cleaner
	Belt flap or deflection	Install a TUFF Pressure or TUFF Stabilising Roller Kit
	Cleaner over tensioned	Ensure cleaner is correctly tensioned
	Cleaner under-tensioned	Ensure cleaner is correctly tensioned
Material build-up on cleaner	Cleaner not set up correctly	Ensure cleaner set up properly
	Build-up in chute	Ensure cleaner is not being overburdened by chute build ups
	Cleaner being overburdened	Install TUFF primary or additional TUFF secondary cleaner
	Excessive sticky material	Frequently clean unit of build-up. Introduce TUFF Spray Bar and TUFF Water Control Manifold
Damaged belt cover	Cleaner over-tensioned	Check cleaner is correctly tensioned
	Cleaner blade damaged	Check blades / tips for wear, damage, and any chips, replace where necessary
	Attack angle is not correct	Ensure cleaner set up properly (check tip attack angle)
	Material build-up in chute	Frequently clean unit of build up
Cleaner not conforming to belt	Cleaner not set up correctly	Ensure cleaner set up properly (check tip attack angle)
	Belt tension too high	Ensure cleaner can conform to belt, or replace with alternate TUFF secondary cleaner
	Belt flap	Install TUFF Pressure or TUFF Stabilising Roller Kit
	Cleaner cannot conform	Ensure cleaner can conform to belt, utilise alternative blades or replace with alternative TUFF secondary cleaner
	Wear profile in belt cover	Utilise alternative blades
Material passing cleaner	Cleaner not set up correctly	Ensure cleaner set up properly (check tip attack angle)
	Cleaner tension too low	Ensure cleaner is correctly tensioned
	Cleaner blades / tips worn or damaged	Check blades /tips for wear, damage, and chips, replace where necessary
	Cleaner being overburdened	Install Tuff primary or additional TUFF secondary cleaner
	Belt Flap	Install TUFF Pressure or TUFF Stabilising Roller Kit
	Belt worn or grooved	Install TUFF Spray Bar and TUFF Water Control Manifold
	Cleaner cannot conform	Ensure cleaner can conform to belt, or replace with alternate TUFF secondary cleaner
	Wear profile in belt cover	Adjust tips to suit belt profile
Damage to mechanical fastener	Incorrect cleaner blade selection	Change tip type to accommodate fastener style
	Belt not skived correctly	Spot and redo fastener correctly, lowering the profile flush or below belt surface
	Tip attack angle incorrect	Check tip attack angle
Missing material in belt center only	Capped Belt	Install TUFF Pressure or TUFF Stabilising Roller Kit and reset blade attack angle with gauge
	Cleaner tips worn/damaged	Check tips for wear, damage, and chips, replace where necessary
Missing material on outer edges only	Capped Belt	Install TUFF Pressure or TUFF Stabilising Roller Kit and reset blade attack angle with gauge
	Cleaner tips worn or damaged	Check tips for wear, damage, and chips, replace where necessary

Section 7 – Replacement Parts



TSGlobal
Conveyor & Polyurethane Specialists

TSGlobal
Conveyor & Polyurethane Specialists

DISTRIBUTED BY

PHONE 1300 418 298 • EMAIL sales@tsglobal.net.au • WEB www.tsglobal.net.au
WELSHPOOL WA • TOMAGO NSW • EMERALD QLD
ABN 30 603 644 748

TSGlobal
Conveyor & Polyurethane Specialists