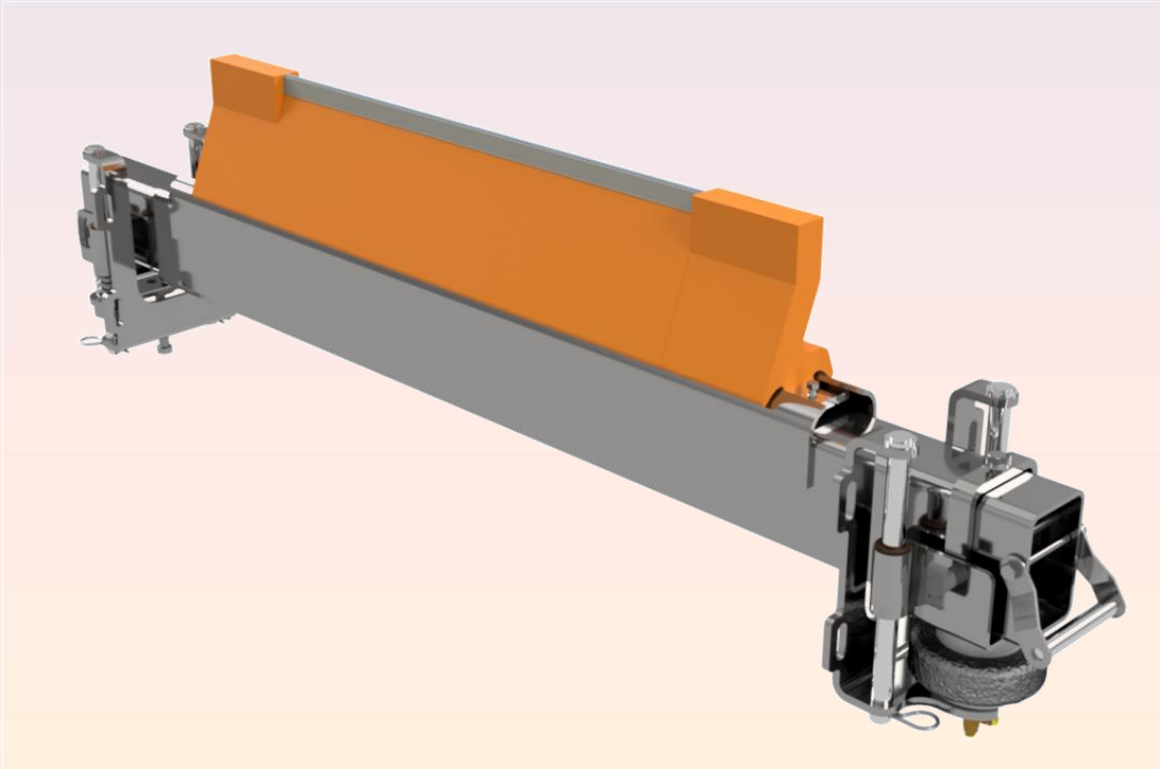
ENGINEERING SERVICES & SUPPLIES PTY LTD
Ph: 1800 074 446 www.esseng.com.au

Inline XHD Secondary Belt Cleaner

Installation, Operation & Maintenance Manual



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WARRANTY

ESS warrants the **Inline XHD Secondary Cleaner** to be free of defects both in materials and workmanship for a period of 12 months from the date of despatch of the product from the *ESS* factory. The warranty given by *ESS* in this regard will extend only to replacing or repairing product shown to be defective.

The warranty is also subject to the following restrictions:

a) Installation of the product contrary to the instructions contained in the supplied manual will void such warranty absolutely;

b) The warranty will not extend to any liability for injuries incurred and which result from the use of the product contrary to the instructions in the manual;

c) Save as prescribed by law, *ESS* will not be liable for any damage sustained by a purchaser or a third party by way of consequential loss arising out of defects in the product.

You are asked to note that *ESS* offers purchasers a service whereby either:

It will install the product and certify the correctness of such installation, or

Certify the correctness or otherwise of the installation of the product by third parties.

This certification service is designed to ensure that you obtain the full benefit of the *ESS* warranty hereby provided. If you would like to take advantage of the installation certification service provided, please contact *ESS* regarding the service.

Refer to the Final Checklist at the back of this manual.

Visit the *ESS* website www.esseng.com.au to register your product warranty.

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1.0 SAFETY

All equipment installed on or around a conveyor belt must comply with AS 1755 – 2000 Conveyors – Safety requirements.

Ensure that only suitably qualified and trained personnel install and service this product, and that all site and statutory safety procedures are followed.

The **XHD Secondary Cleaner** is designed to be quickly and easily serviced by appropriate personnel, however under no circumstances should any personnel attempt installation or service of this equipment whilst the conveyor belt is running.

The conveyor belt drive and any associated equipment must be shut down and locked out according to plant safety procedures before attempting work requiring access to or opening of the chute or conveyor enclosure. **Contact with a moving conveyor belt and its drive components can result in serious injury or death.**

The mainframe and blade assembly can be heavy and can require installation in awkward positions. Ensure that adequate personnel are available to safely lift the cleaner during installation, or use appropriate lifting gear.

The cleaner may be inspected or the tension adjusted with the belt running as long as suitable visual access is available, but the service person should never reach into or enter the conveyor enclosure. No other service work is able to be carried out with the conveyor running. Shut down and lock out the conveyor for any work requiring any part of the body to enter the conveyor enclosure, or be exposed to moving components.

The following are some of the hazards that may be present when installing this equipment:

Table 1 - Hazard Checklist

	Hazard		Hazard
X	Moving Conveyor - ISOLATE		Other:
	Hot Work		Other:
	Working at Heights		Other:
	Heavy Lift		Other:
	Persons Working Overhead		Other:
	Persons Working Below		Other:
	Electrical & Cabling		Other:
	Pinch Points		Other:
	Trip Hazards		Other:

Once hazards have been identified, the installer should undertake and document a comprehensive Job Hazard Analysis (JHA) according to site requirements and good safe-working practice. The installer must identify all hazards and apply appropriate controls before proceeding with the installation or servicing of this equipment.

1.1. SAFETY LABELS

Pictograph labels are used to show graphically where potential safety hazards exist around this product. These labels do not represent every possible hazard. They are not intended to be a substitute for safe work practices and good judgment. These labels and *ESS* technical manuals use specific words to identify the severity of the hazard. They are described below. Take time to read and understand the meaning of these words and symbols.

Danger labels call attention to imminently hazardous situations that will result in serious personal injury or death if not avoided. Injury from these hazards is immediate in nature and has a high probability of resulting in a serious or fatal accident if proper precautions are not followed.

Warning labels call attention to potentially hazardous situations that could result in serious personal injury or death if not avoided. Injury from these hazards is usually serious in nature, and a severe or fatal accident can occur if proper precautions are not followed.

Caution labels call attention to potentially hazardous situations that may result in minor or moderate personal injury if not avoided. Injury from these hazards is normally less serious than those from Danger or Warning hazards. However, there is still the potential for an accident resulting in serious injury if proper precautions are not followed.

2.0 INTRODUCTION

The *ESS* InLine XHD Belt Cleaner is a conveyor belt secondary cleaner, and is usually used in conjunction with a head pulley primary cleaner such as the *ESS* XHD, DT or TM DOCTOR BLADE Primary Cleaners.

The *ESS* InLine XHD is normally mounted such that the cleaning blades contact the belt as it leaves the head pulley or other accessible position on the return belt. The blades of the *ESS* XHD Belt Cleaner, when tensioned, lay in the direction of belt travel, contacting at a negative angle and presenting no snag or danger to the belt or splices.

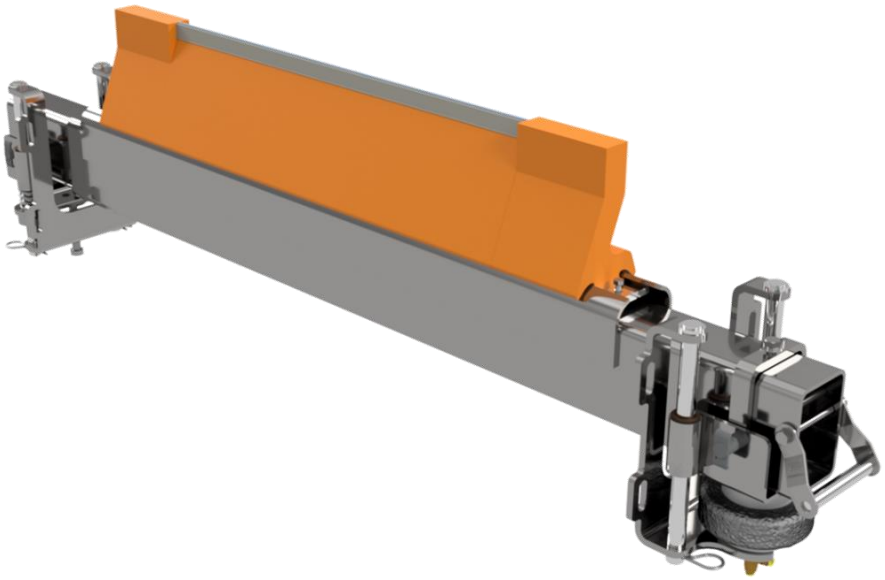


Figure 1 - XHD Cleaner Assembly

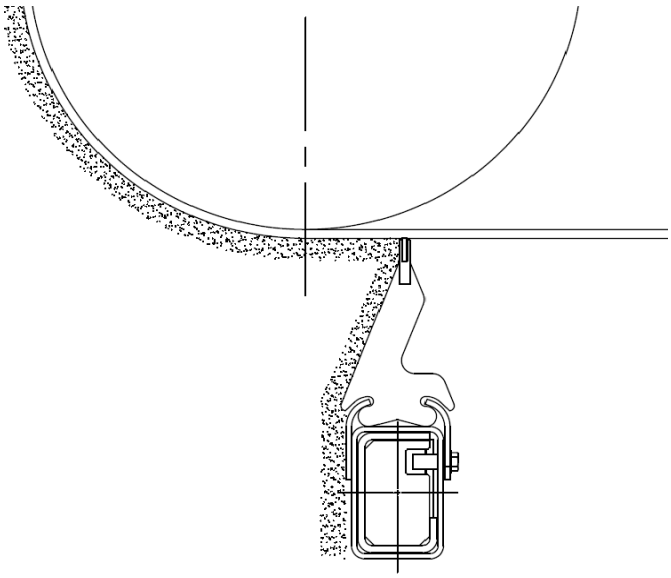


Figure 2 - Cleaner Orientation

The *ESS* XHD InLine cleaner is a heavy-duty version of the ESS InLine Premium cleaner, which has set the industry standard for cleaning performance combined with safety and ease of servicing.

Features of the XHD InLine cleaner that the user should be aware of include:

- Improved slide design and materials to resist wear and prevent jamming under heavy loading.
- Tensioner support landing reduced in size to eliminate material accumulation on mount bracket.
- Removable bolt-on track on one side of cartridge to allow quicker and safer blade removal/installation.

The *ESS* InLine XHD Secondary Cleaner can be supplied or retrofitted with a variety of cleaning blades. These include:

- **Tungsten Carbide Blades** – For very abrasive materials and high-speed belts. Also suitable for mechanically spliced belts.
- **Urethane Blades** – For damaged belts and special applications.
- **Reversing Blades** – Above options in reversing form for belts that drive in both directions.

Note

When mounted slightly away from the head pulley or pressure roller, the XHD InLine blade will handle small amounts of belt reversal or roll-back with no adverse effects. When fitted with Reversing Blades, the In-Line becomes a fully operational reversing belt cleaner.

3.0 PREPARATION FOR INSTALLATION

1. **Check installation drawings**
   Ensure that you have the correct drawings and equipment for your conveyor(s).

2. **Pre-assemble the cleaner(s) and mounts**
   Do this in your workshop or similar free area, rather than at the conveyor. This will enable you to:

   - ✓ Verify all required equipment is present.
   - ✓ Familiarise yourself with the cleaner assembly.
   - ✓ Plan the installation and reduce installation time.

3. **Assemble the necessary tools & safety equipment required For the installation**

4. **Observe the conveyor while running and conveying material**

   - ✓ Observe the material trajectory.
   - ✓ Observe the belt direction - does it reverse or roll back?
   - ✓ Observe the belt splice condition.
   - ✓ Does the belt run true, or track off to one side?
   - ✓ Is the head pulley out-of-round?

Consult *ESS* if any UNUSUAL conditions are observed in the above. These conditions may result in recommendation of a different installation position or even a different cleaner.

4.0 INSTALLATION

CONVEYORS MUST BE SHUT DOWN AND LOCKED OUT BEFORE ANY INSTALLATION OR SERVICE WORK IS PERFORMED.

IF INSTALLATION IS TO BE DONE IN AN ENCLOSED AREA, TEST ATMOSPHERE FOR GAS LEVEL OR DUST CONTENT. FOLLOW ALL WELDING AND SAFETY GUIDELINES.

For original equipment installation, where cleaner cutouts and brackets have been fabricated into the chute during construction, ignore Steps 1, 2 and 3.

Solid backing of the blades is essential to ensure proper operation and efficient cleaning. Install the cleaner adjacent to the head pulley or a flat pressure roller to obtain best cleaning results.

For installation on enclosed head pulley chutework, draw all dimension lines on chute wall. In applications where head pulley is not enclosed, use the best available field resources and/or methods to ensure that these critical dimensions are followed for a proper installation.

Step 1 **Locating mainframe's centreline**

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 scribe a line perpendicular to the belt at this point.

Note

For installation below pressure rollers mark the vertical line 100 mm from the centreline of the roller.

This line represents the centre line of the XHD In-Line Cleaner and the cleaner mount brackets.

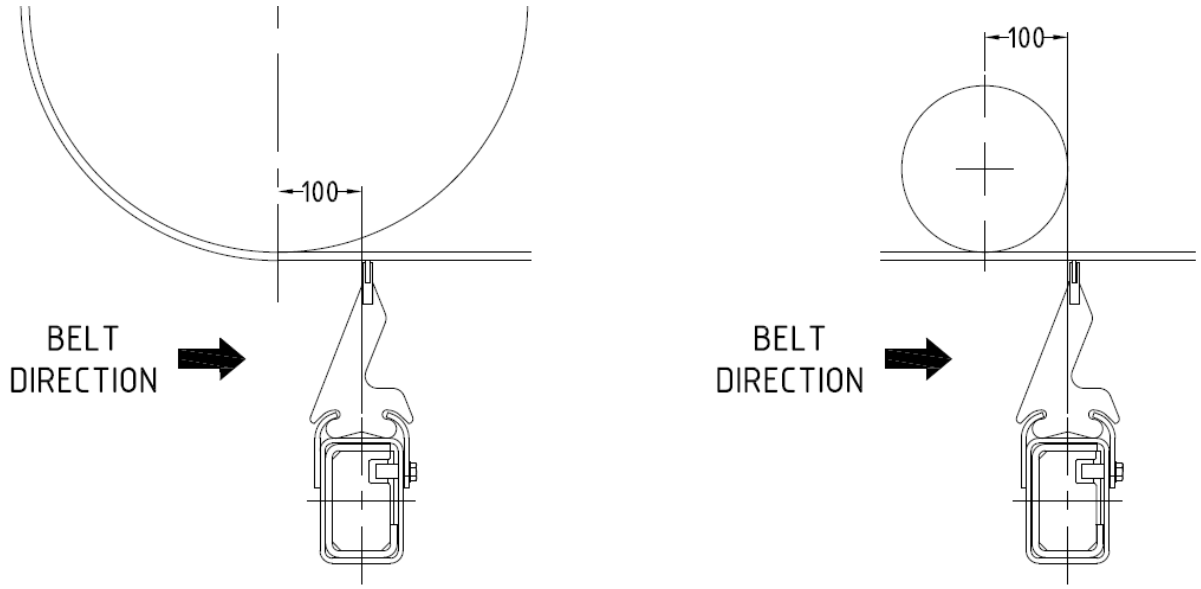


Figure 3 - Installation of Horizontal Belts

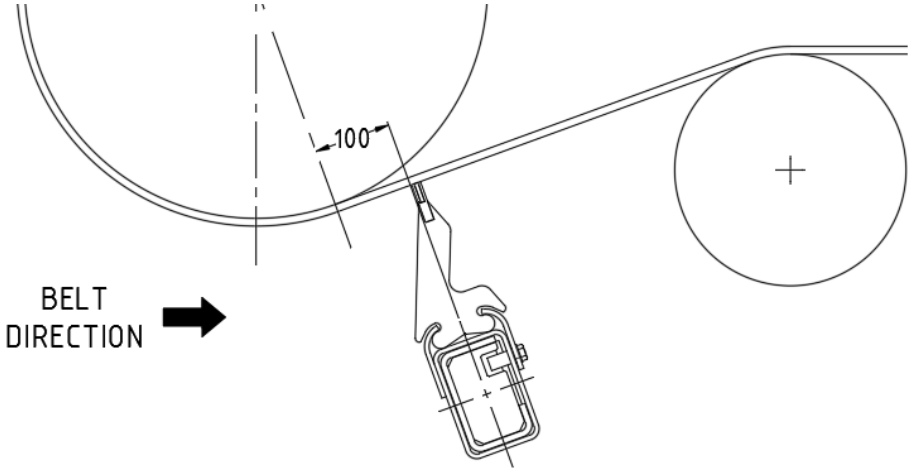


Figure 4 - Installation on Angled Belts

Step 2 **Marking/cutting the mounting holes**

Using the previously marked line as the centre line, mark the chute cut-out and bolt hole locations as shown in below. Repeat on both sides of chute, ensuring that the cut-outs are accurately aligned with each other.

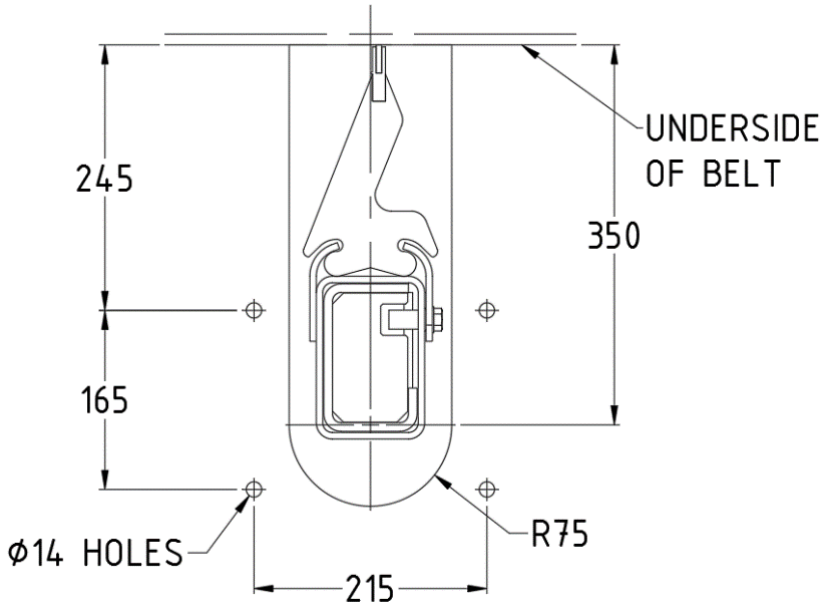


Figure 5 - Chute Cut-out for all Models

Step 3 **Verify Clearner position before proceeding**

Position the mount / tensioner assembly over the marked hole centres, ensuring that the hole centres 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.

Step 4 **Cut access slots/mount holes**

At the selected mounting positions, cut the cleaner access slots, and drill the mount holes in each side of the chute. Dress and de-burr the holes and cut-outs. Repair the paintwork to prevent corrosion.

Step 5 **Fit mount brackets**

Fit the Operator Side mount bracket to the chute wall. Position the mount so that the drilled holes in the chute wall are approximately centred 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.

Step 6 **Fit the cleaner Mainframe to the mounts**

⚠ CAUTION

APPLY APPROPRIATE CONTROLS AND UTILISE LIFTING POINTS PROVIDED ON MAINFRAME AS WEIGHT MAY EXCEED OHS PERSONNEL LIFTING LIMITS.

Secure the mainframe on the far side using the retaining pin and R clip, which fits through the last hole set. The mainframe should also be positioned within the support cradle to minimise lateral movement.

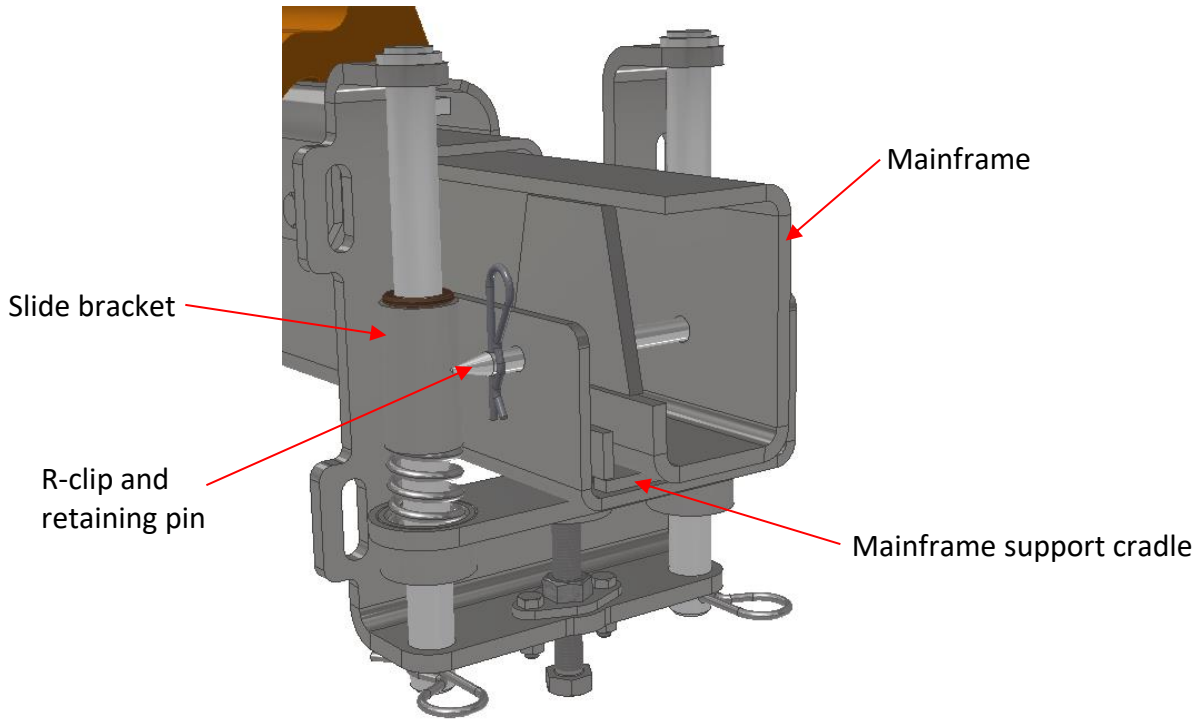


Figure 6 – Far side mainframe fitment

The operator side of the mainframe will sit on top of the operator side slide bracket ready for the cartridge to slide on.

Step 7 **Install blades**

Slide the Blade Cartridge onto the mainframe from the Operator Side. If not already done, fit the cleaning blades to the cartridge. If using tungsten carbide cleaning blades, a urethane end blade must be installed at each end of the blade set. End Blades support the belt and prevent scoring of the belt by the outer edge of the metal blade.

Centre the blades to the belt by loosening and re-positioning the blade locks.

Fit the cartridge retaining pin and R-clip, ensuring the pin has passed through the cartridge spacer bracket.

Note

If the cartridge is too long and cannot be installed without hitting the opposite end structure, contact *ESS* for instruction.

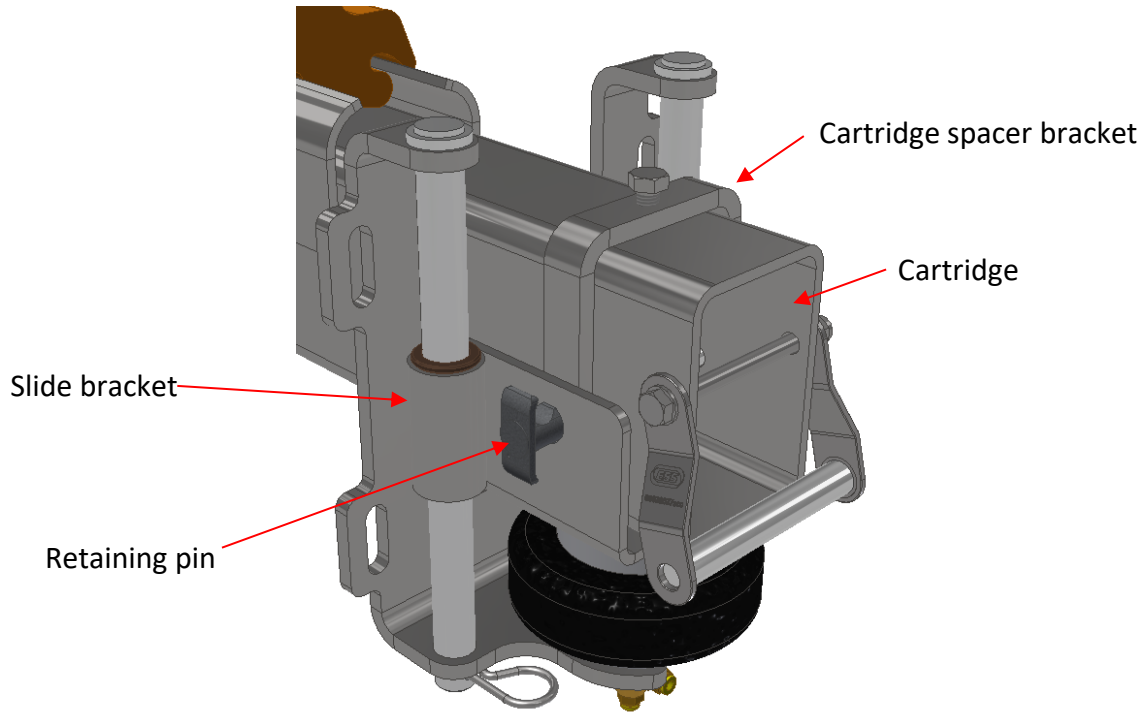


Figure 7 – Operator side cartridge fitment

Step 8 **Adjust Clearence**

With the cleaner tensioner in the fully retracted position, the cleaning blades should be approximately 15-20mm clear of the underside of the belt for Air Tensioned models, and 5-10mm clear for Spring Tensioned models, and this distance should be equal across the width of the belt.

If necessary, loosen the bolts and adjust the mounts up or down in the slots 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.

Step 9 **Air Tensioning (where applicable)**

For the Air Tensioned model only, connect the air tube to the fittings in the Far Side airbag, on the underside of the mount bracket. Pass the tube through the mainframe, and through the Airline Bracket at the Operator End of the mainframe. Connect the tube to the Tee air fitting in the Operator Side airbag, adjusting the tube length to suit by cutting.

Connect the other side of the Tee fitting to the incoming regulated compressed air supply from the *ESS* Air Tensioner Control Box. Connect the plant air supply to the inlet side of the Control Box. Refer to the installation manual for the *ESS* Control Box for further set-up instructions.

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

5.0 TENSIONER SETTINGS

5.1 SPRING TENSIONER

The Spring Tensioner on the Inline XHD differs from other ESS Inline models in the following areas:

- The two springs on the spring jacking plate are mounted directly under the slide bracket
- Two slide rods are used to control the vertical movement of the slide bracket

The Spring Tensioner consists of a centrally-located threaded jacking screw, a jacking screw plate and a pair of compression springs, all held in a base unit. The jacking screw pushes against the jacking plate to adjust the cleaner mainframe and blade assembly against the belt. The jacking screw locates in a recess in the base of the mount bracket. The springs allow storage of force to take up blade wear, and to absorb belt irregularities or impact from splices.

The amount of force required to be applied is dependent on the belt width and is gauged by the amount of spring compression. The reduction in spring length multiplied by the spring rate will equal the force applied. Because the spring rate and free length are known, the easiest method to measure blade force is to measure the amount of spring compression after adjustment.

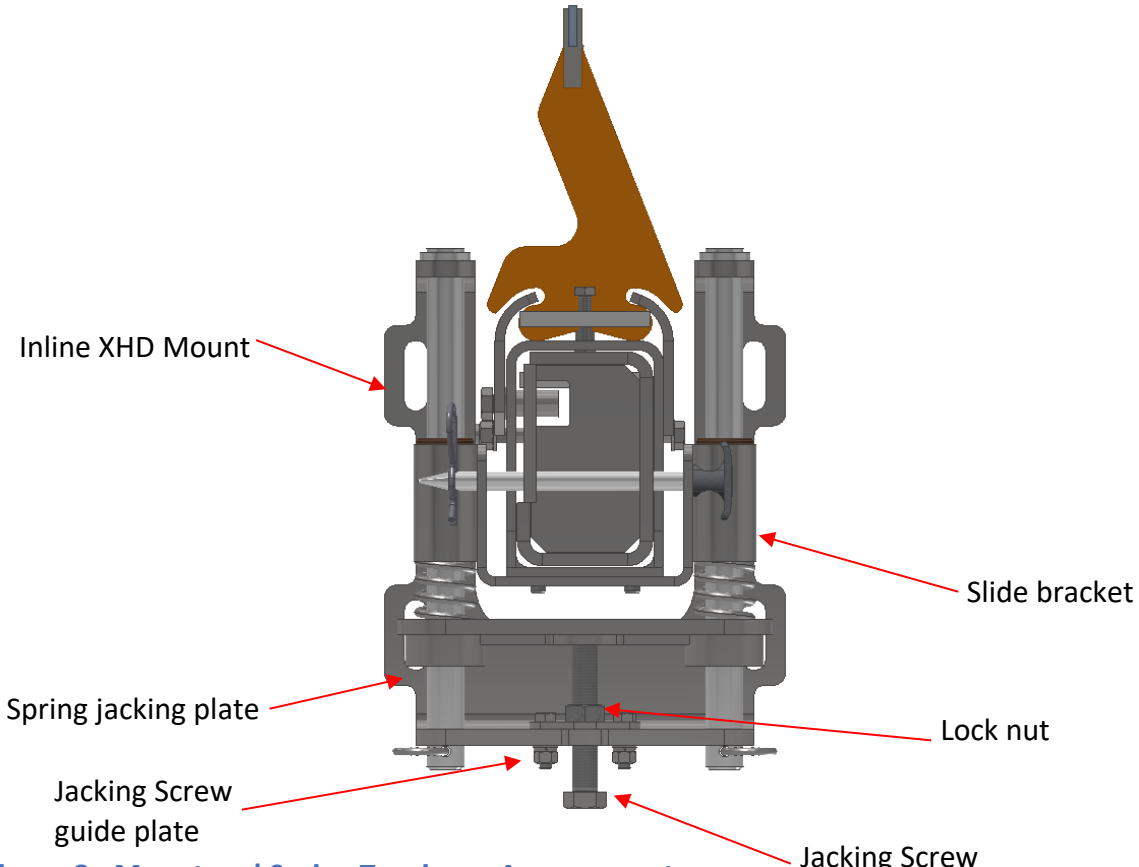


Figure 8 - Mount and Spring Tensioner Arrangement

5.2 INSTALLATION ON SHOCK OR TA MOUNT

Step 1 Loosen the locking nut below the spring jacking plate. Repeat for both sides.

Step 2 Turn the adjusting screw (equally on both sides) until the cleaner blades are just touching the belt. You might need to further release the locking nut during adjustment.

Step 3 Ensure that the blade position is equal across the belt – that is, the blades are just touching across the belt width.

Step 4 Continue turning the adjusting screw equally on both sides until the spring compression height aligns with the spring compression height setting indicated in the following table. This can be carried out using a ruler or measuring tape.

Note

the spring is recessed inside the spring jacking plate. Spring height measurement should therefore be carried out between the top of the spring jacking plate and the underside of the slide bracket.

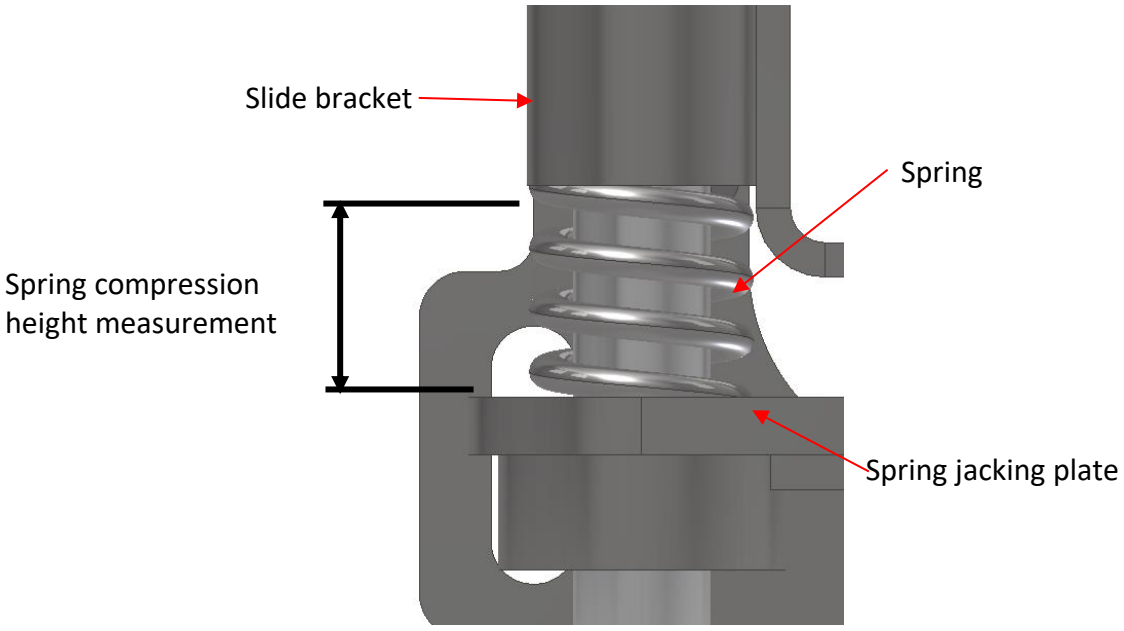


Figure 9 – Spring Height Measurement

Step 5 Tighten the locking nuts against the jacking screw guide plate.

Step 6 Start the conveyor and observe the cleaning action of the blades. Ensure that the blades ride smoothly on the belt with no vibration.

Table 2 - Recommended Spring Settings

Belt Width	Compressed Spring Height
	mm
1200	27
1350	26
1500	25
1600	25
1800	22
2000	21
2200	20
2400	18
2600 and over	16

Note

Figures show spring compression indicator reading (spring compressed length).

5.3 MAINTENANCE PROCEDURE

To access the blade cartridge for maintenance, first de-adjust the cleaner by reversing the above procedure. Loosen the locking nuts, and turn the adjusting screws to release the blades from the belt.

Alternate sides every 2 turns (or use an assistant) to ensure that the cleaner is backed off the belt evenly.

When fully retracted, remove the retaining pin securing the blade cartridge to the operator end of the mainframe. The cartridge spacer bracket should now be able to be easily removed.

Grasp the handle and pull the blade cartridge off the mainframe and away from the mount bracket. The blade cartridge can either be pulled out far enough to access all blades and bolts for the removable track, or it can be completely removed from the mainframe. If completely removed, ensure proper lifting tools are used for larger and/or heavier cartridges and place it in a suitable position for maintenance work to be carried out. Refer to the Routine Maintenance Section.

Re-assembly is the reverse of the above procedure. Re-adjust the cleaner as described in Section 5.

5.4 AIR TENSIONER

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

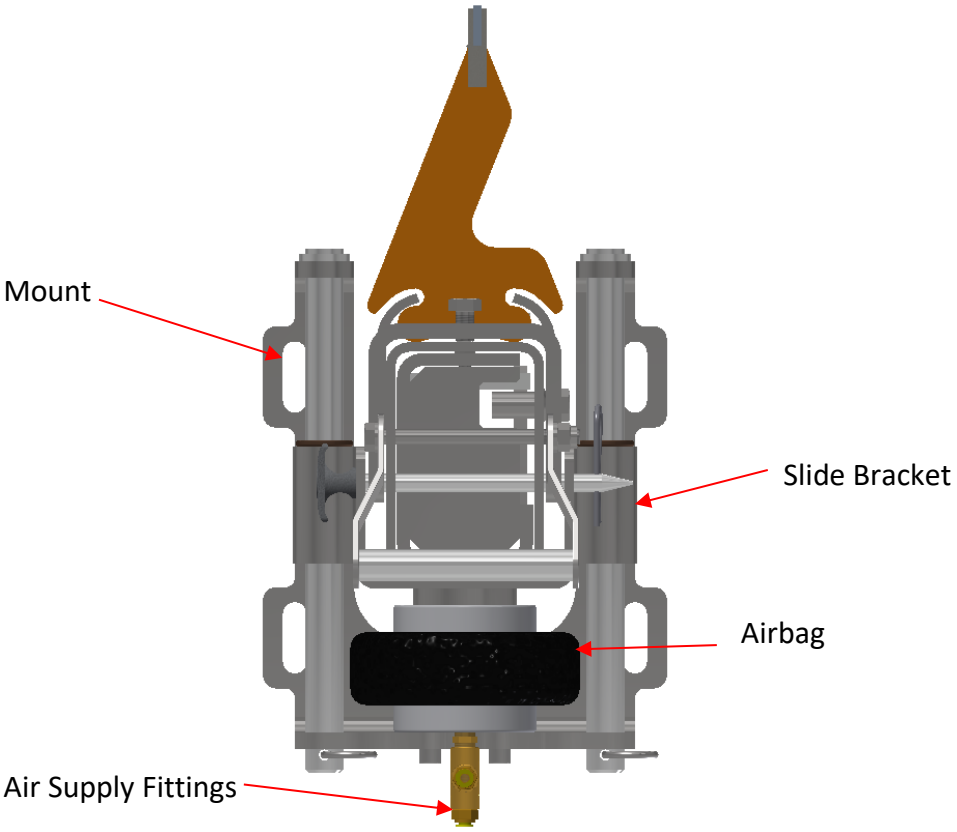


Figure 10 - Air Tensioner and Mount Arrangement

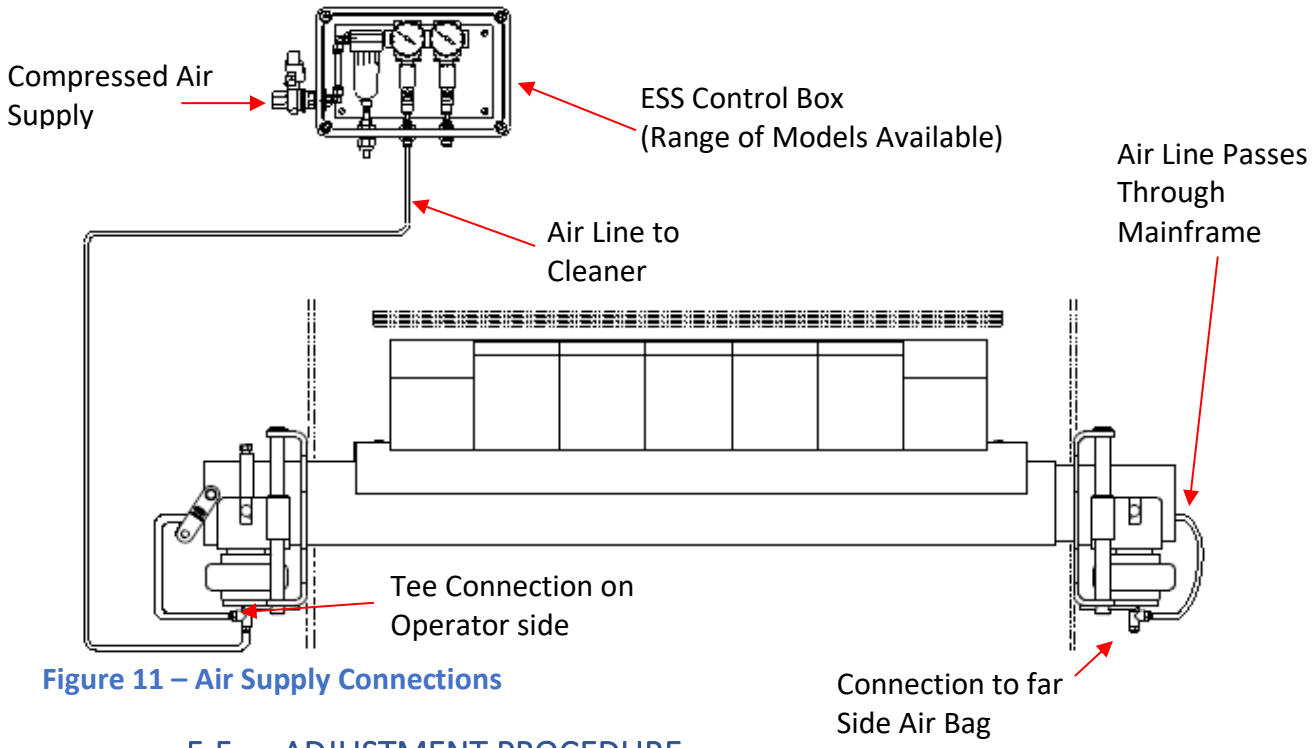


Figure 11 – Air Supply Connections

5.5 ADJUSTMENT PROCEDURE

Adjusting the Air Tensioned Inline XHD cleaner is simply a matter of supplying air at the appropriate pressure to the tensioner air bags. Refer to the table below for recommended air pressures.

If using an *ESS* Air Tensioner Control Box, connect the plant air line to the lockable ball valve on the outside of the enclosure, and check that all air connections are in place as per the *ESS* Control Box manual. Turn on the air supply and open the lockable ball valve. Open the individual isolation valve for this cleaner in the *ESS* Control Box to pressurise the tensioner. The cleaner will automatically raise, and the blades will contact the belt.

Adjust the pressure to the required level via the regulator unit inside the Control Unit. The regulator is self-relieving, so the pressure will stabilise, 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, lock the regulator adjustor, and replace the lid on the enclosure.

Table 3 - Recommended Air Pressure

Belt Width mm	kPa	PSI
1200	230	33
1350	260	38
1500	290	42
1600	290	42
1800	320	46
2000	350	51
2200	380	55
2400	440	64
2600 and over	470	68

5.6 MAINTENANCE PROCEDURE

To access the blade cartridge for maintenance, first de-adjust the cleaner by shutting off the air supply at the individual isolation valve for the cleaner in the Air Tensioner Control Box.

The cleaner will automatically drop down from the belt. When fully dropped, close or re-fit the Control Box lid. This will prevent re-pressurising of the Air tensioners during maintenance.

Next, remove the retaining pin and spacer bracket 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.

The blade cartridge can either be pulled out far enough to access all blades and bolts for the removable track, or it can be completely removed from the mainframe. If completely removed, ensure proper lifting tools are used for larger and/or heavier cartridges and place it in a suitable position for maintenance work to be carried out. Refer to the Routine Maintenance Section.

Re-assembly is the reverse of the above procedure. Once the blade cartridge has been re-fitted and secured, open the isolation valve in the Control Box to pressurise and automatically adjust the cleaner to the belt. Check that the air pressure is to specification and adjust if necessary.

6.0 COMMISSIONING

Step 1 Ensure that the cleaners are correctly adjusted against the belt as described in the previous sections.

Step 2 Ensure that all foreign materials, tools and rubbish have been removed from the belt and the immediate area.

Step 3 Start the conveyor, following all appropriate safety start-up procedures.

Step 4 Observe the action of the cleaner blades. Ensure that there is no vibration in the blades or mainframe. Ensure that all blades are contacting the belt evenly. Ensure that there is no marking of the belt surface from the cleaner blades. Refer to the Trouble Shooting section or contact *ESS* if any problems are observed.

Step 5 If possible, observe the operation of the cleaner once the belt is loaded. Observe the cleaning action of the blades. Is the belt clean after the cleaner? If not, check the cleaner adjustment again, referring to the appropriate tensioner section. If problems persist, contact *ESS*.

Step 6 Shut down the conveyor. Correct any problems observed. Re-test if necessary. The cleaner is now ready for production.

7.0 OPERATOR TRAINING

The decision to purchase *ESS* cleaning equipment has put within easy reach the reality of a clean plant. The last step is the correct training of personnel to maintain and service the equipment or employ *ESS* on a contract basis to maintain the cleaners so that they remain at optimum efficiency.

The benefits of efficient cleaners outweigh the cost of maintaining the cleaners many times.

If you wish to have your cleaning system maintained on a regular contract basis, contact *ESS*. If not, train your own personnel as follows:

1. **Ensure that personnel working around conveyors are thoroughly trained to recognise existing and potential hazards involved, and that a Job Safety Analysis is conducted to identify and control those hazards.**
2. **Ensure personnel are trained in correct equipment isolation and lock-out procedures.**
3. **Ensure that personnel have all required safety equipment and are thoroughly trained in the use of that equipment.**
4. **Ensure that all appropriate permits are in place, and that personnel involved are qualified to undertake the required work.**
5. Provide the trainee with a copy of this manual and ensure that they read and understand the contents.
6. Provide the trainee with all relevant conveyor data, such as belt speed, width and material handled, and ensure that they understand the required belt cleaner settings and adjustments that pertain to the conveyor.
7. Instruct the trainee to look for problems existing or developing in the belt cleaning system, such as increasing carryback, irregular or excessive blade wear, blade vibration and the like. Encourage them to **safely** observe and try to determine the cause of the problem.
8. Ensure that the trainee is given hands-on instruction in maintenance procedures during down-time, in the company of an experienced service technician.
9. Ensure that the trainee is provided additional support and instruction at regular future intervals to ensure that all information has been understood and retained.
10. Encourage the trainee to look for and report other problems developing on the conveyor system such as excessive belt tracking, belt damage, seized idlers, missing bolts and the like.

8.0 MAINTENANCE

Regular inspection and servicing is the key to effective conveyor belt cleaning. It is recommended that the cleaner be inspected once per week. Actual service intervals will vary considerably from plant to plant.

DO NOT REACH INSIDE THE CONVEYOR CHUTE UNDER ANY CIRCUMSTANCES WHILST THE CONVEYOR IS RUNNING

8.1 INSPECTION & TENSIONING

Step 1 **Inspect the condition of the cleaner**

Open the inspection door (if fitted) and observe the condition and action of the blades and cleaner.

Step 2 **Clean blades and mainframe**

If necessary (and if plant rules allow it), hose any material build-up from the blades or mainframe - DO NOT REACH INTO THE CHUTE WHILST CONVEYOR IS RUNNING.

Step 3 **Re-tension**

If necessary, re-tension the cleaner - refer to Section 5.

8.2 BLADE SERVICING

Step 1 **Shut down and lock out the conveyor**

Shut down and lock out the conveyor if deemed necessary by site safety officer, or site regulations. The Inline XHD Cleaner is able to be serviced with the belt running, but this may contradict site rules, CHECK SITE RULES FIRST.

Step 2 **Release blades**

De-adjust the cleaner as described in Section 5, Spring Tensioner or Air Tensioner.

Visually inspect the blades.

- 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.

Step 3 **Remove blade locks**

Remove the retaining pin and cartridge spacer 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. The blade cartridge can either be pulled out far enough to access all blades and bolts for the removable track, or it can be completely removed from the mainframe. If completely removed, ensure proper lifting tools are used for larger and/or heavier cartridges and place it in a suitable position for maintenance work to be carried out.

Step 4 **Clean and inspect the blades**

Clean and inspect the blades. If blades are excessively worn replace with new blades. Remove the blades from the cartridge by first removing one of the Blade Locks. Unbolt the removable track from the cartridge (refer Figure below). Remove the blades out of the cartridge and replace by fitting in new blades. Ensure that the blades face in the correct direction. Re-fit the Blade Lock. When replacing metal tipped blades, ensure that the urethane end blades are also replaced. End Blades 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.

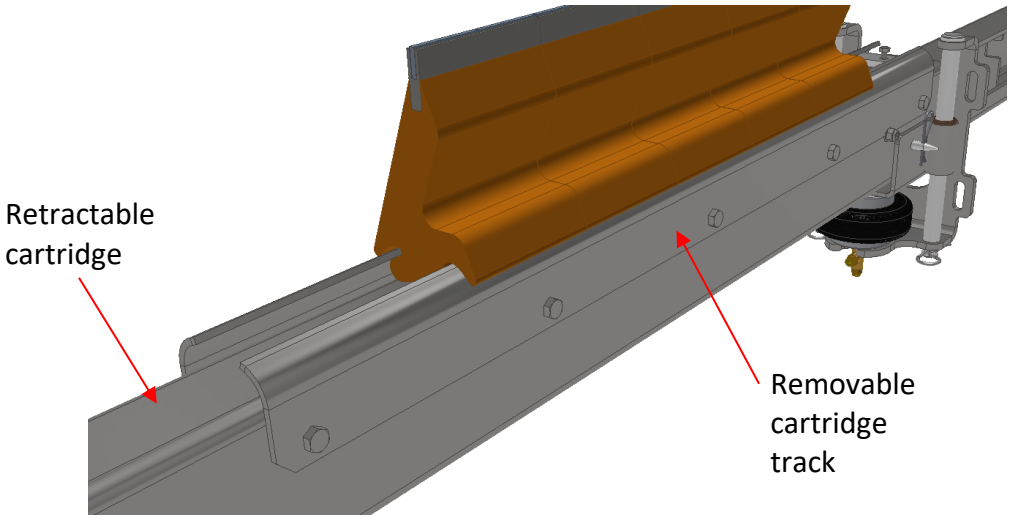


Figure 12 - Removable track

Step 5 **Re-install**

Re-install blade cartridge onto the cleaner mainframe, and re-fit the securing pin at the operator side. Re-tension the cleaner as described previously.

Step 6 **Remove locks or tags and restart belt**

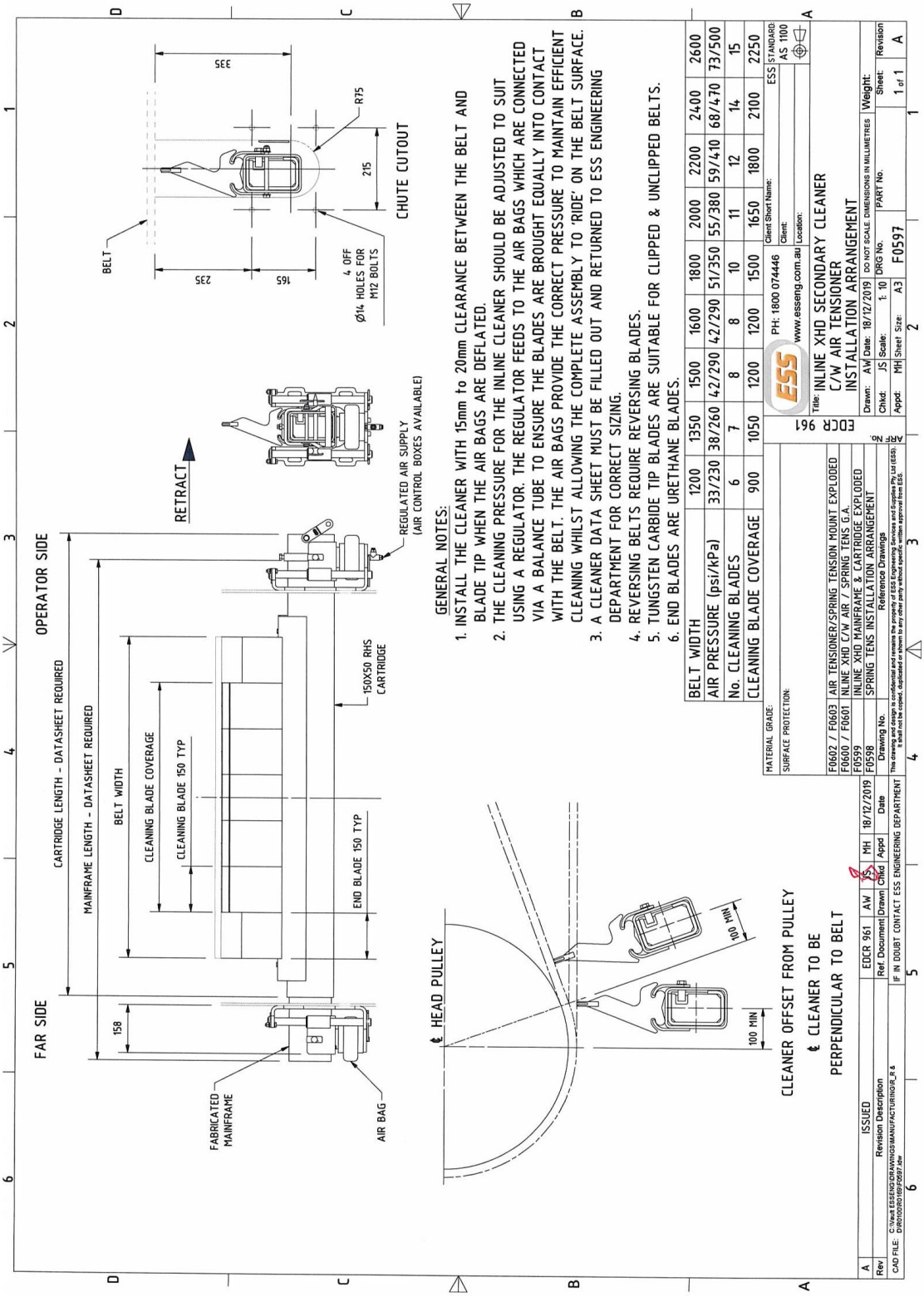
Observe cleaner action and blade effectiveness. Replace cover (where applicable). Clean up work area.

9.0 TROUBLE SHOOTING

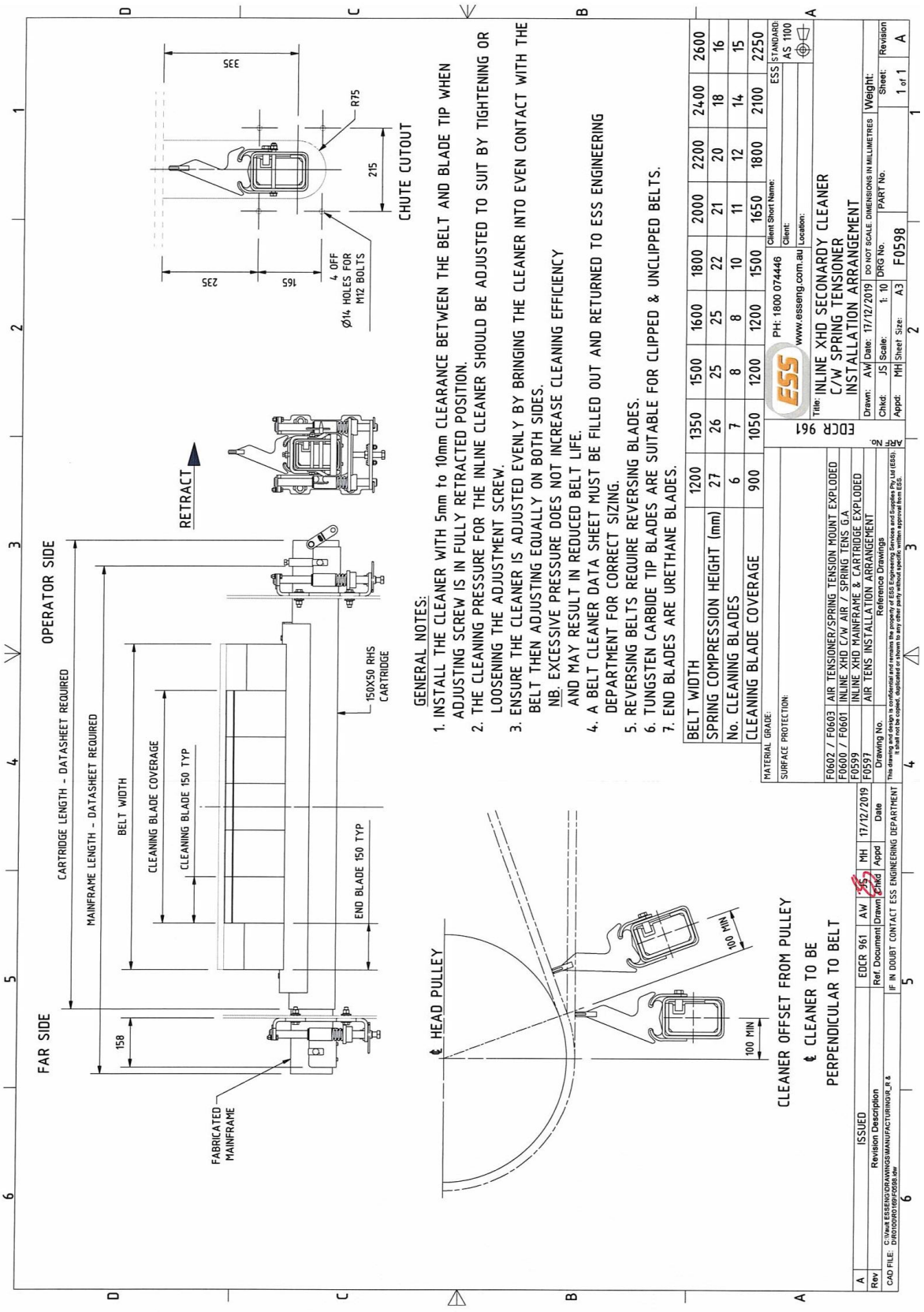
PROBLEM	CAUSE	SOLUTION
Blades Vibrate	Incorrect installation angle	Check installation, ensuring cleaner mount is perpendicular to belt
	Belt deflected upward on tensioning of cleaner	Install an idler roller over the belt near the belt contact point
	Belt vibration being transferred to cleaner	Install an idler roller over the belt near the blade contact point
Mainframe bent	Mainframe undersized	Stiffened mainframe required. Contact *ESS* for assistance
	Excessive tension	Relax blade tension to maximum tension recommended in installation instructions
	Material build-up between blades/ mainframe and belt	Increase frequency of inspection and service once a week
	Normal deflection	A small amount of deflection is considered normal. Contact *ESS* if excessive deflection occurs
Poor blade life	Cleaner over-tensioned	Tension cleaner enough to clean the belt only
	Incorrect blade material	Contact *ESS* for re-appraisal
Insufficient cleaning (excessive carryback)	Cleaner under-tensioned	Re-tension cleaner
	Build-up on blade	Remove blades and clean. Increase service frequency
	Primary Cleaner not functioning correctly	Service the Primary Cleaner
	Blade vibration	See start of this section
	Cleaner overloaded	Add additional cleaner

10.0 INSTALLATION OF THE 40 NB SPRING TENSIONER

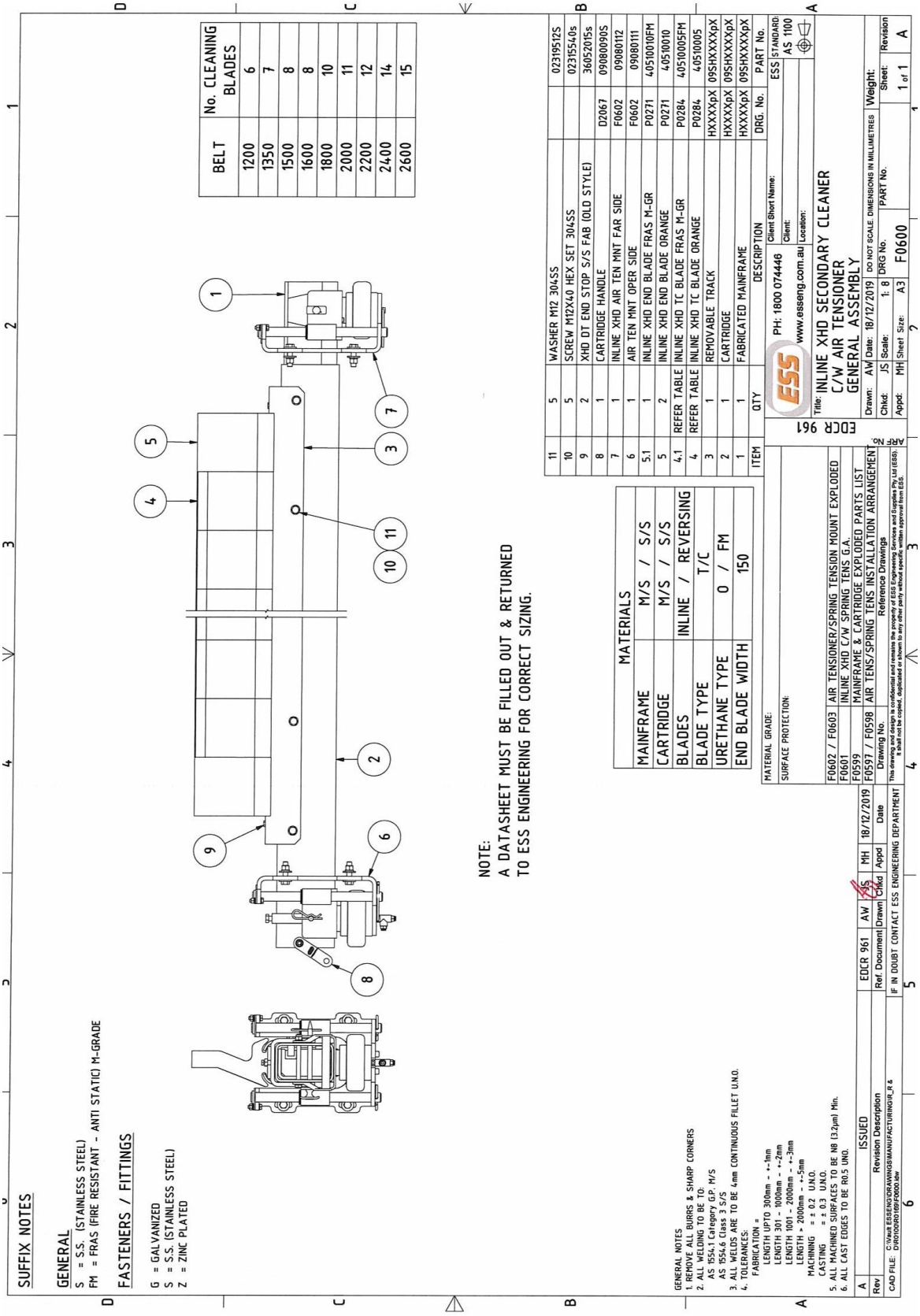
F0597 - C/W AIR TENSIONER



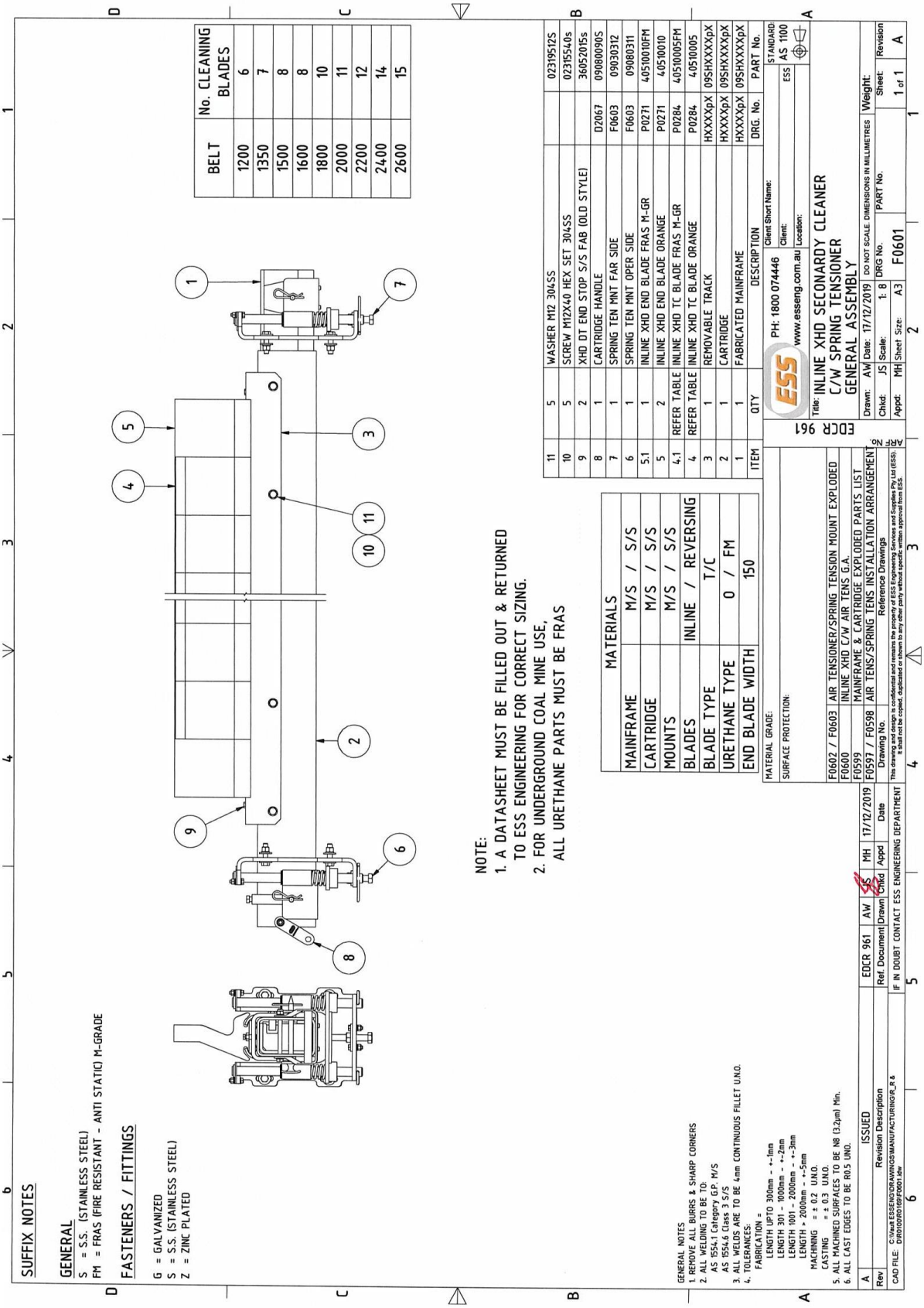
F0598 C/W SPRING TENSIONER



F0600 C/W AIR TENSIONER

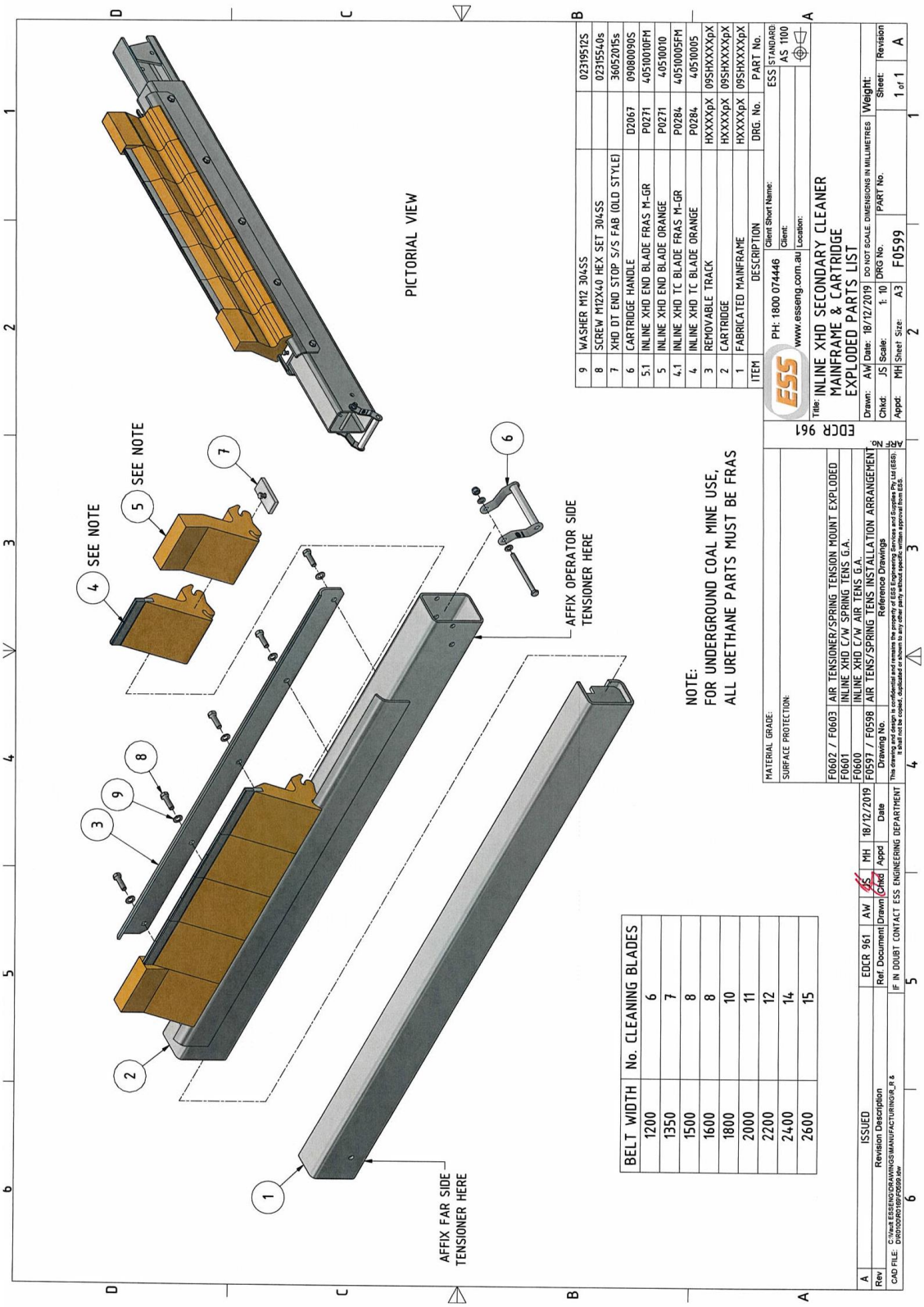


F0601 C/W SPRING TENSIONER

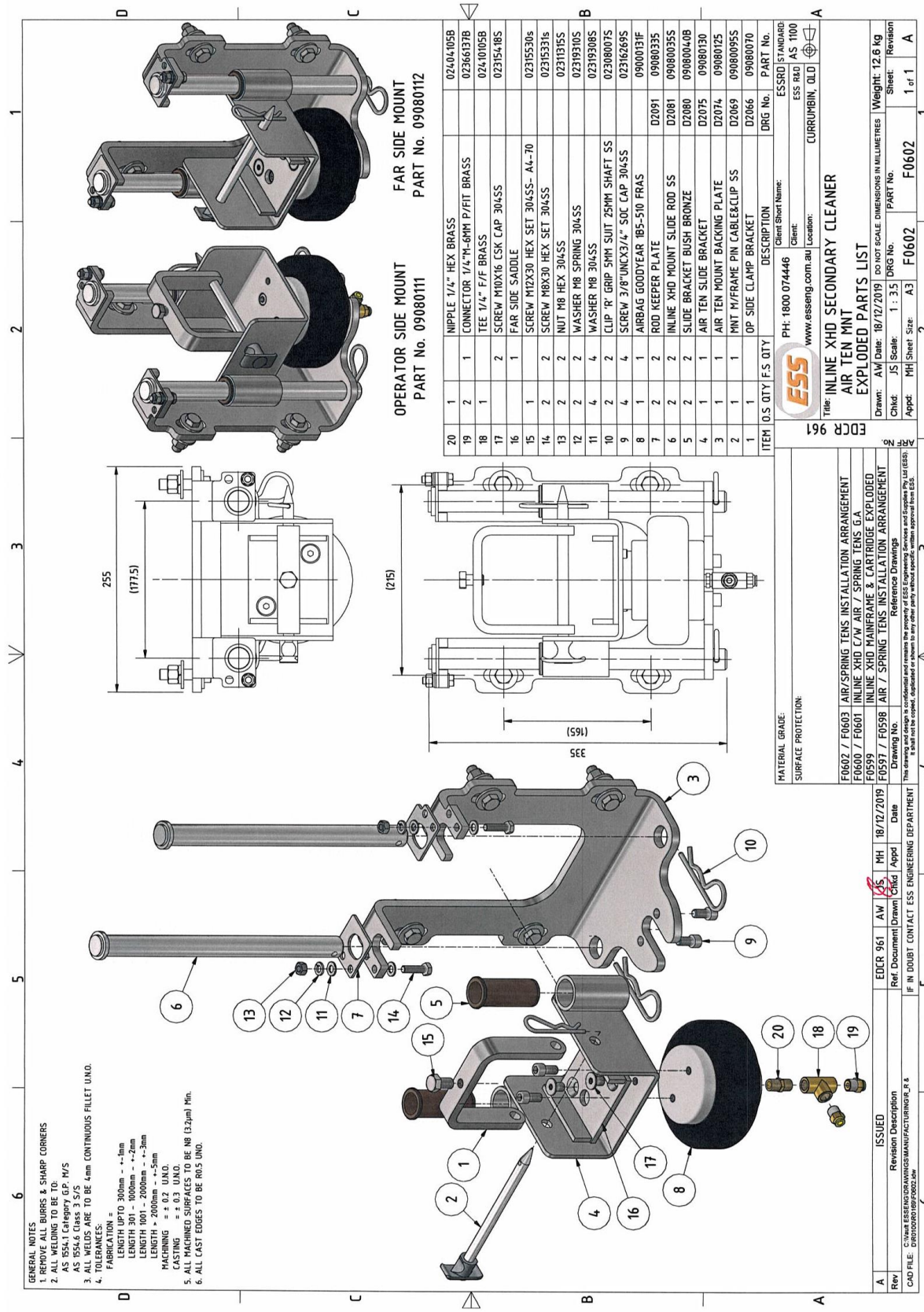


11.0 EXPLODED DRAWINGS

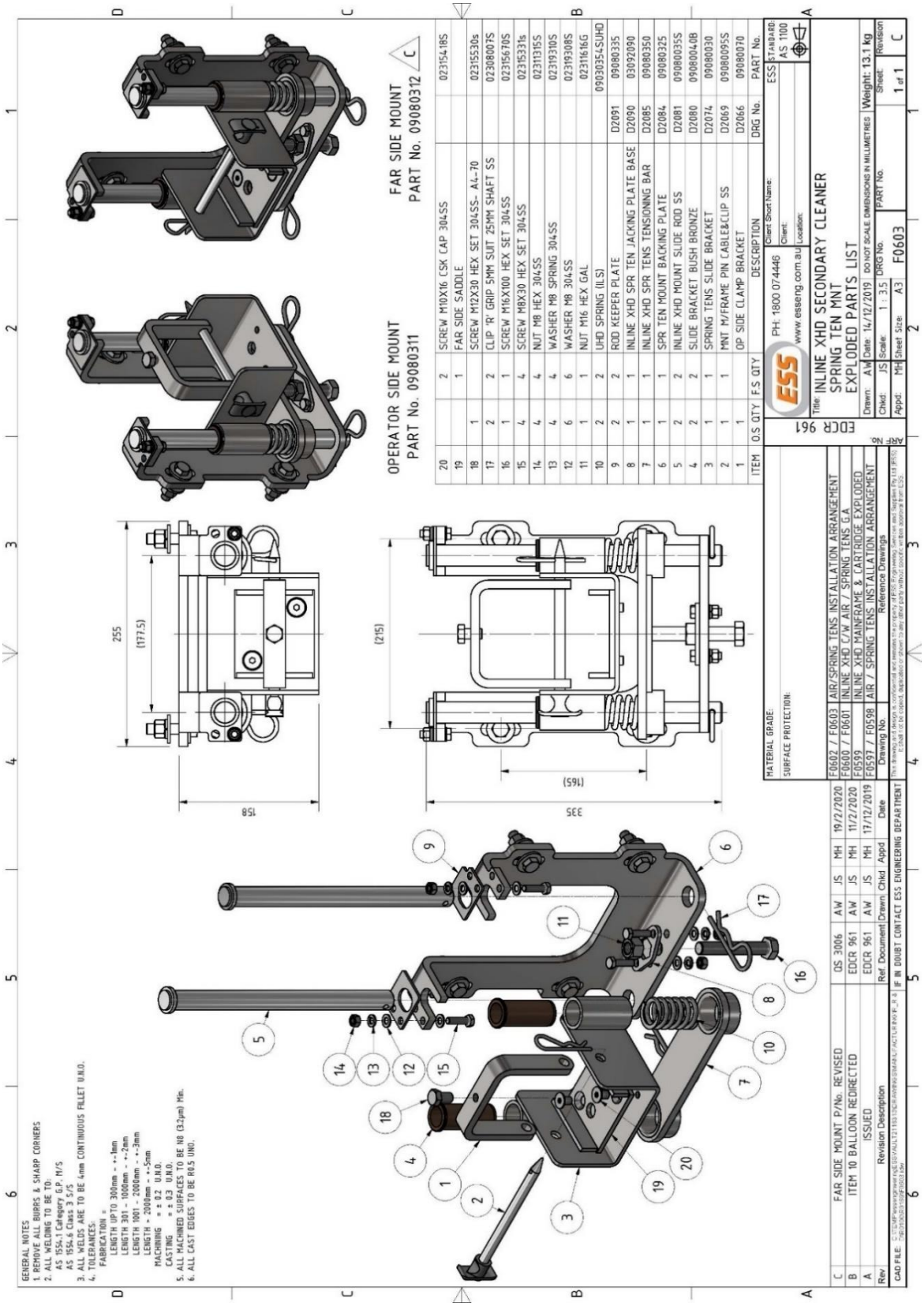
F0599 MAINFRAME & CARTRIDGE



F0602 AIR TENSIONER MOUNT



F0603 SPRING TENSIONER MOUNT



12.0 FINAL CHECKLIST

Site: _____ Number: _____ Date: _____

Site Equipment No./Location: _____ Site Contact: _____

Completed By: _____ **(Circle Yes or No Below)**

1. **Was equipment to *ESS* Specification? _____ Yes/No**

   Drawing No. Ref: _____ Attached? Yes/No

   If No, WHY _____

   _____

   Will this affect performance? Yes/No

   If Yes, WHY _____

   _____

2. **Was this a standard ☐ service ☐ inspection ☐ installation? Yes/No**

   If No, WHY _____

   _____

3. **Was work carried out as per procedure and JSA? Yes/No**

   If No, WHY _____

   _____

4. **Is equipment fit for commissioning? Yes/No**

   If No, WHY _____

   _____

5. **Was a final inspection carried out while plant was running? Yes/No**

   If No, WHY _____

   _____

6. **Has anything changed from previous service / inspection / installation? Yes/No**

   If Yes, WHAT _____

   _____

7. **Is equipment performance to Client expectations? Yes/No**

   If No, WHY _____

   _____

   ***ESS* Signature: _____ Client Signature: _____**

13.0 NOTES