

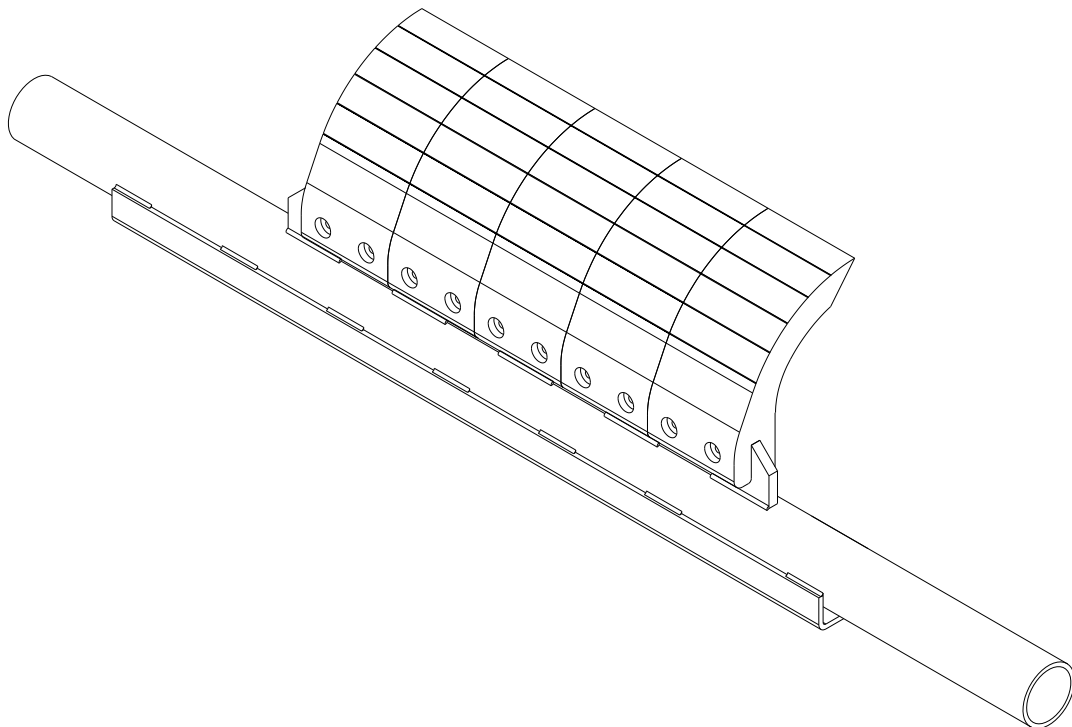


ENGINEERING SERVICES & SUPPLIES PTY LTD

Ph: 1800 074 446 www.esseng.com.au

XHD PRIMARY BELT CLEANER

BOLT-ON BLADE MODEL



Installation Operations Manual

National Office Details

Location	Address	Phone & Email
CURRUMBIN	11 – 13 Traders Way PO Box 121 Currumbin QLD 4223	(07) 5589 2000 esscur@esseng.com.au
GLADSTONE	Unit 2/34 Chapple Street PO Box 1475 Gladstone QLD 4680	(07) 4972 3759 essgla@esseng.com.au
KALGOORLIE	Unit 1 /182 Boulder Rd Kalgoorlie WA 6430 PO Box 10471 Kalgoorlie WA 6433	(08) 9021 7991 esskal@esseng.com.au
KARRATHA	26 Midas Road Malaga WA 6090	(08) 9248 4111 esskar@esseng.com.au
MACKAY	1 Progress Street Paget, QLD 4740 PO Box 5755 Mackay Mail Centre QLD 4741	(07) 4952 4600 essmac@esseng.com.au
MAITLAND	Unit 2 Barton Court 6 Johnson Street Maitland NSW 2320	(02) 4932 3544 essmai@esseng.com.au
PERTH	26 Midas Road Malaga WA 6090	(08) 9248 4111 essper@esseng.com.au
TOWNSVILLE	Unit 4/ 585 Ingham Rd Mt St John Townsville QLD 4818	(07) 4952 4600 esstow@esseng.com.au
SOUTH AUSTRALIA	38 Montpelier Terrace Port Elliot SA 5212	0408 948 175 esssa@esseng.com.au
VICTORIA	Unit 4 / 238 Governor Road Braeside VIC 3195	(03) 9587 3979 essvic@esseng.com.au
WOLLONGONG	Unit 1 / 20 Doyle Avenue PO Box 343 Unanderra NSW 2526	(02) 4272 4422 esswol@esseng.com.au
TOLL FREE 1800 074 446 FROM ANYWHERE IN AUSTRALIA VSS TOLL FREE 1800 300 877		

INDEX

<u>SECTION 1</u>	SAFETY
<u>SECTION 2</u>	INTRODUCTION
<u>SECTION 3</u>	PREPARATION FOR INSTALLATION
<u>SECTION 4</u>	INSTALLATION
<u>SECTION 5</u>	TENSIONERS
<u>SECTION 6</u>	COMMISSIONING
<u>SECTION 7</u>	OPERATOR TRAINING
<u>SECTION 8</u>	MAINTENANCE UPGRADES
<u>SECTION 9</u>	ROUTINE MAINTENANCE AND SERVICE
<u>SECTION 10</u>	TROUBLE SHOOTING
<u>SECTION 11</u>	INSTALLATION ARRANGEMENT DRAWING
<u>SECTION 12</u>	EXPLODED PARTS DRAWING
<u>SECTION 13</u>	FINAL CHECKLIST

WARRANTY NOTE

ESS WARRANTS the **XHD Primary Cleaner (Bolt-On Model)** 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 also is 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:

- (a) It will install the product and certify the correctness of such installation, or
- (b) 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.

THE CONTENTS OF THIS MANUAL ARE COPYRIGHT TO:

ESS ENGINEERING SERVICES AND SUPPLIES PTY LTD
ALL RIGHTS RESERVED

Information contained herein is for use in the operation of the **XHD Primary Cleaner (Bolt-On Model)**, purchased from **ESS** and cannot be passed on to any other party without express permission, in writing, from **ESS**.

SECTION 1 – 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 Primary Cleaner (Bolt-on Model) 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 XHD mainframe and blade assembly can be heavy (30 to 130 kg, depending on belt width). Sufficient personnel must be present to ensure a safe lifting load for installation of the unit, or lifting aids should be used.

The XHD 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 hazards may be present when installing this equipment:

	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	
	Confined Space Entry	

Once hazards have been identified, the installer should undertake and document a comprehensive Job Hazard Analysis 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.

SECTION 2 – INTRODUCTION

The **XHD (Bolt-on Model)** is a conveyor belt primary cleaner.

It is a cleaner of massive and robust construction and was designed for use on conveyor belts having large head pulleys, wide head chutes, high speeds or handling abrasive materials.

It is normally mounted on the face of the conveyor belt head pulley and is designed to peel off the thick layer of loosely adhering material that often accounts for up to 80% of carryback.

The **XHD Primary** is normally used in conjunction with at least one secondary cleaner, such as the Inline Premium Secondary Cleaner and often with a water spraying system.

The blade material is cast urethane. The **XHD Bolt-On** model has the blades located on a fixed mounting bar on the mainframe and secured by two bolts for each blade. This results in a low cost cleaner that will provide long blade life and excellent cleaning performance.

The cleaner can be upgraded to a Trac-mounted blade type, which allows blades to slide on and off the mainframe for easier maintenance. Refer to section 8 of this manual for details of the upgrade procedure.

Important Points to Remember Concerning the **XHD Primary** are;

1. The cleaner is directional - it will only clean the belt travelling in the design direction. However, the cleaner will not be damaged or affected by belt direction reversal.
2. The cleaner is suitable for use on crowned head pulleys and damaged or grooved belts. The urethane blades quickly conform to the belt profile.
3. For slow moving belts, the cleaner should be positioned lower on the head pulley to ensure the blades are clear of the main material flow.
4. For belts greater than 1500mm wide a tensioner is required on both sides to ensure equal cleaning pressure across the cleaning face.

SECTION 3 - 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 area, rather than at the conveyor. This will enable you to:
 - Verify all required equipment is present.
 - Familiarise yourself with the cleaner assembly.
 - Allow you to plan the installation, reducing installation time.
3. **ASSEMBLE ALL REQUIRED TOOLS AND SAFETY EQUIPMENT**
 - Ensure that correct tools and equipment are available to undertake a safe and tradesman-like installation.
 - Ensure that all Safety Equipment is provided to eliminate identified hazards – see Section 1.
 - Ensure that all tools and equipment are suitable for the installation area, and have current approval tagging.
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 and 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.

SECTION 4 – INSTALLATION

INSTALLATION OF XHD MAINFRAME ASSEMBLY

DANGER / CAUTION

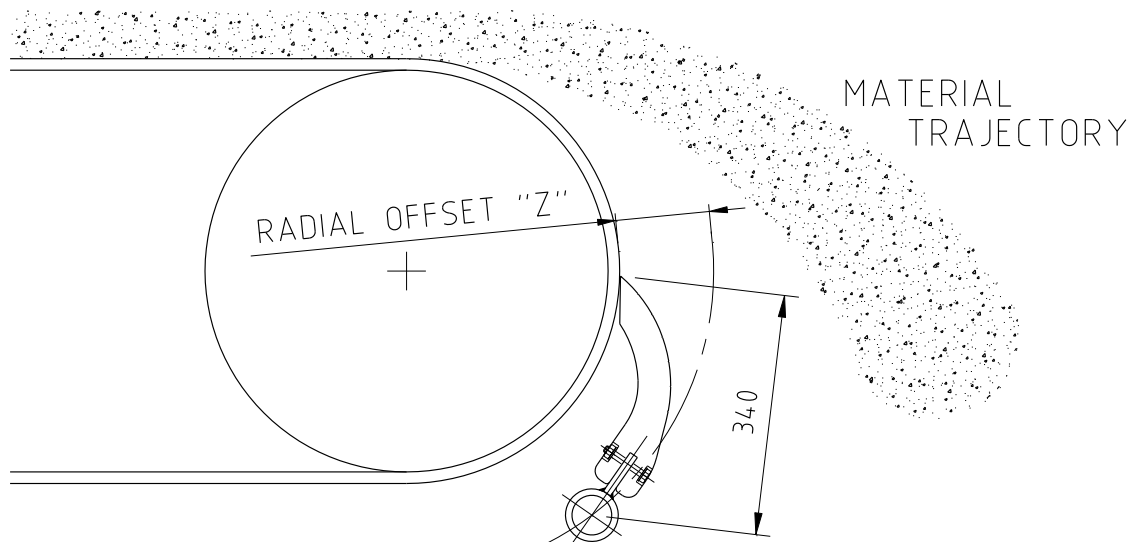
- Conveyor must be shut down and locked out before installation work is commenced.
- Follow all welding and safety guidelines.
- Protect the belt surface from weld spatter with appropriate shield.

Step 1: Locate the Centre-line of the XHD Primary Cleaner Mainframe

Determine the radial offset Z from table 1 for the head pulley diameter.

Determine the contact point for the blade tips. This should be between 0-15° below the horizontal centre line of the head pulley. Very slow belts may require the cleaner to be installed lower to clear the material flow.

Measure radially the offset dimension Z from the face of the belt. From this point draw an arc using the pulley's centre-line as the centre point. From the tip contact point measure a distance 340mm and mark the intersection on the offset arc. This will represent the centre point of the cleaner mainframe. Repeat for both sides.

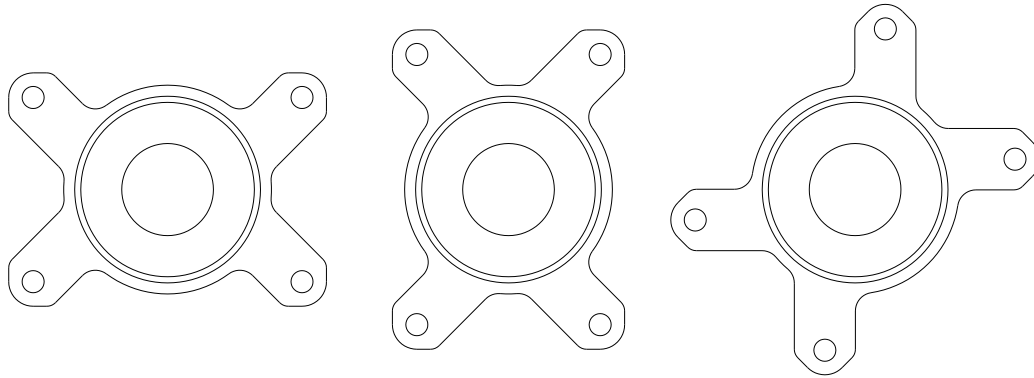


	Head Pulley Diameter					
	450	600	750	900	1050	1200
Mainframe Offset Z	145	135	125	120	110	100

Table 1: Cleaner Mainframe Offset Z for Different Head Pulley Diameters.
Contact ESS for head pulleys outside of this range.

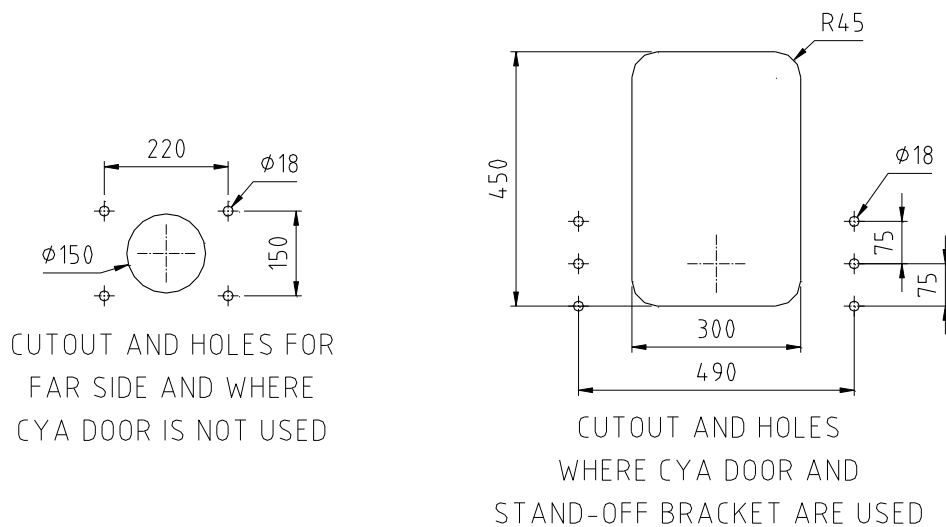
Verify Mainframe Position Before Proceeding

Position the selected tensioner / mount assembly over the centre-line marks for the mainframe. Verify that the mounts fit, and that adequate room is available to tension the cleaner. If used, position the CYA Door frame and Stand-off Bracket to ensure they fit. If mounts, brackets or doorframe interfere with structural members, it may be necessary to locate the cleaner elsewhere on the offset radius, or rotate the mount / bracket / door assembly to any angle to suit – see below. If the tensioner only interferes, remember that the tensioner can be assembled onto the other mount, (mirror reverse assembly) on belt widths under 1500.



Step 2:

At the selected mainframe mounting positions, cut a hole in each side of the chute as shown below. If a CYA Door is to be installed, use the cutout shown below on the operator side only. The doorframe supplied may be used as a template to mark the door cut out. Proceed to cut the holes, but ensure that the marked centre lines of the cleaner are not totally removed – you will need these to check the position of the mainframe.



Step 3:

If a CYA door cutout is provided, insert the cleaner mainframe and blade assembly through the door cutout until the end of the mainframe pipe passes through the far side cutout. Remember the XHD is a large and heavy cleaner. Use hoisting equipment or ensure adequate personnel are available to safely lift the cleaner into position.

If a CYA door or similar cutout is not available, remove the blades from the mainframe by first removing the securing bolts, then insert the bare mainframe through the cutouts as described above.

Step 4:

Slide the tensioner side and far side mounts onto the pipe ends of the mainframe and clamp or loosely bolt the mounts to the chute walls with the mainframe in the pre-selected position. If a CYA Door is to be used and the cutout has been made, fit the tensioner side mount to the appropriate stand-off bracket and clamp or bolt the stand-off bracket in the desired position.

NOTE: Slide CYA door frame loosely onto the pipe end before the mount to save later mount removal.

If the blades have been removed from the mainframe, place a blade in position at each end of the cleaner to proceed with checking as described below.

SAFETY NOTE: Re-fitting of blades in the chute will require safe access for personnel in the chute. Ensure that all safe working practices and regulations are followed in regard to chute entry and access.

Step 5:

- ↪ Does the centre-line of the mainframe lie the correct offset distance from the belt face?
- ↪ Is the mainframe level or equal to the pulley shaft?
- ↪ Do the blade tips all touch the belt at the same time? (± 1 mm).
- ↪ Do the tips contact the belt at the desired position, 0 to 15° below the pulley centre line?
- ↪ **NOTE:** Slight inconsistencies in the belt thickness and blade shape, accounting for small gaps between blade and belt, will quickly be taken up by blade flexure on tensioning.

If any questions above have been answered "NO", take appropriate action to correct the installation. If all questions are answered "YES", proceed.

Step 6:

Fully secure the cleaner mounts, brackets and CYA doorframe to the chute wall. The CYA doorframe is normally stitch welded to the chute wall, but may be drilled and bolted if required. If blades have been removed, refit all blades and secure with bolts supplied. Check the mainframe and blades are centred on the belt surface or pulley face.

Step 7:

If a CYA Door is used – Measure the position of the mainframe in relation to the CYA doorframe. Mark this position on the CYA Door rubber cover and cut a neat hole, approximately 75mm diameter in the cover. Cut a straight line from this hole to the nearest edge of the rubber cover. Install the rubber cover over the mainframe pipe and push into place on the doorframe. Anchor the loose end of the cover lanyard.

Step 8: Install tensioners. (see section 5).

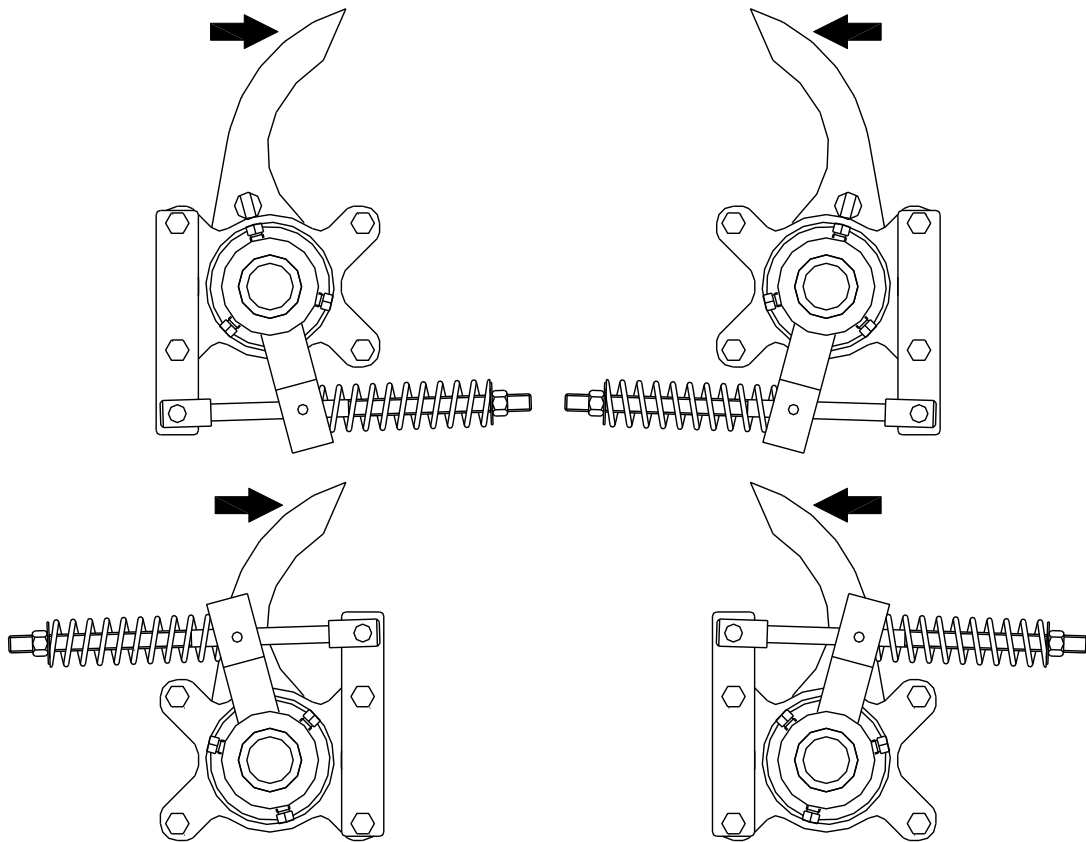
SECTION 5 - TENSIONERS

The **XHD** Primary is supplied with a pair of steel mount plates fitted with shock absorbing Urethane bushes. These mounts may be secured to the conveyor chute in any orientation (horizontal, vertical or inclined), to suit site restrictions.

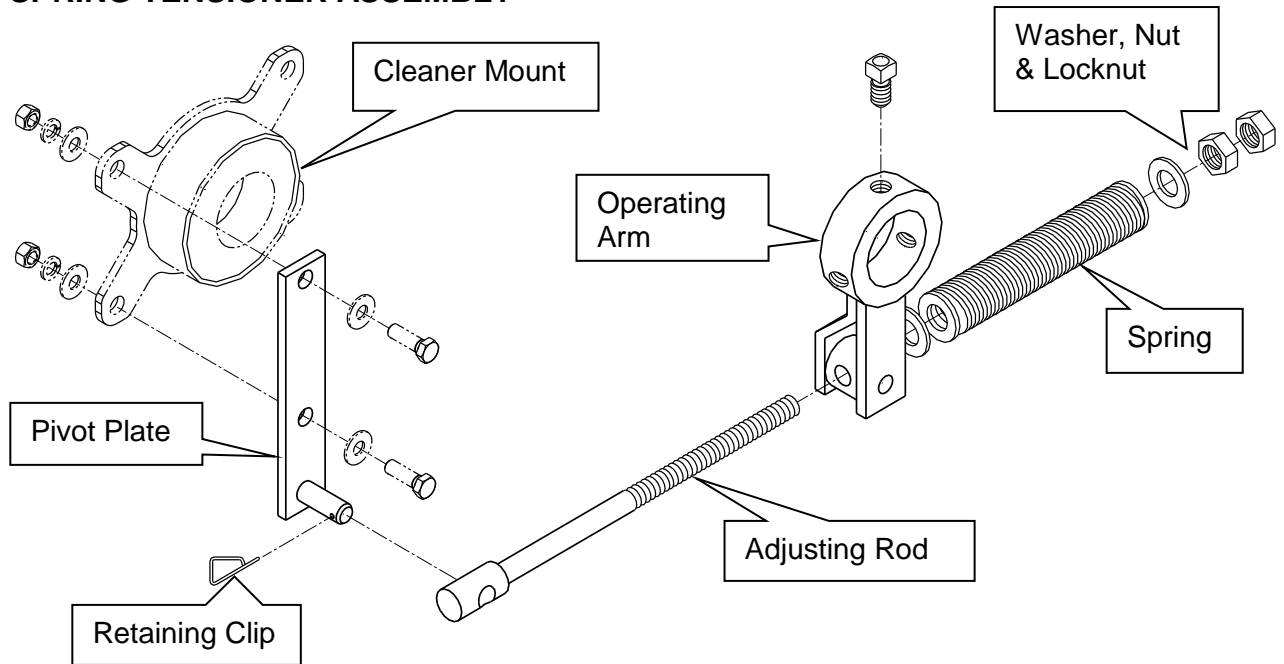
Remember, however, that the tensioner assembly also attaches to the mount, and that the tensioner assembly must also clear site restrictions. Familiarise yourself with the mount and tensioner before installation.

5.1 - SPRING TENSIONER

The XHD Spring Tensioner is a simple, robust and reliable tensioning unit. It can be assembled to tension in either the clockwise or anti-clockwise direction and has two mounting positions for each direction.



SPRING TENSIONER ASSEMBLY



1. Fit the pivot plate to the mount bolts as shown.
2. Slide the operating arm onto the cleaner mainframe with the swivel toward the chute wall.
3. Insert the threaded end of the adjusting rod through the operating arm swivel, with the clevis end toward the pivot plate.
4. Fit the adjusting rod clevis onto the pivot plate pin and secure with clip provided.
5. Fit spring, nut and locknut to the threaded end of the adjusting rod. Do not try to adjust or compress the spring yet.
6. Using a pipe wrench or similar, rotate the cleaner until the blade tips are lightly touching the belt. With the operating arm fully retracted against the spring, lock the operating arm onto the cleaner mainframe by tightening the three cone point lock screws. Ensure that the operating arm hub is 1-2 mm clear of the mount to allow free rotation without excessive lateral movement of the mainframe.
7. Adjust the nut (not locknut) against the spring until the spring just begins to compress.
8. For belts 1500 mm and wider, tensioners are fitted to both sides. Repeat above procedure for other side. For cleaners with one tensioner only, fit the locking collar onto the far end of the cleaner mainframe, again locking it into position 1-2 mm clear of the mount.
9. Tension the cleaner as per table below:

Table 2: Spring Compression Settings

Belt Width	Number of Blades	Spring Length	Number of Turns
450	2	172	14
600	3	172	14
750	4	169	15
900	5	162	18
1050	6	157	20
1200	6	157	20
1350	7	152	22
1500*	8	177**	12**
1600*	9	169**	15**
1800	10	162**	18**
2000*	11	157**	20**
2200*	12	152**	22**
2400*	13	152**	22**

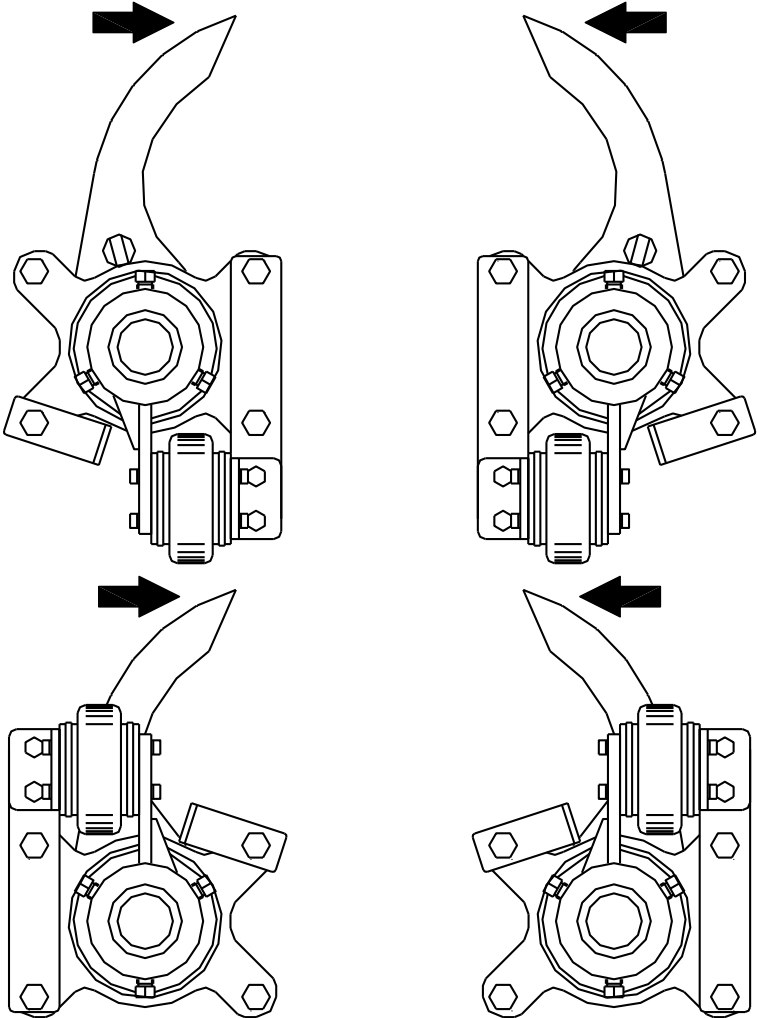
* = Dual Tensioners Required

** = Adjustment per Tensioner

5.2 – AIR TENSIONER

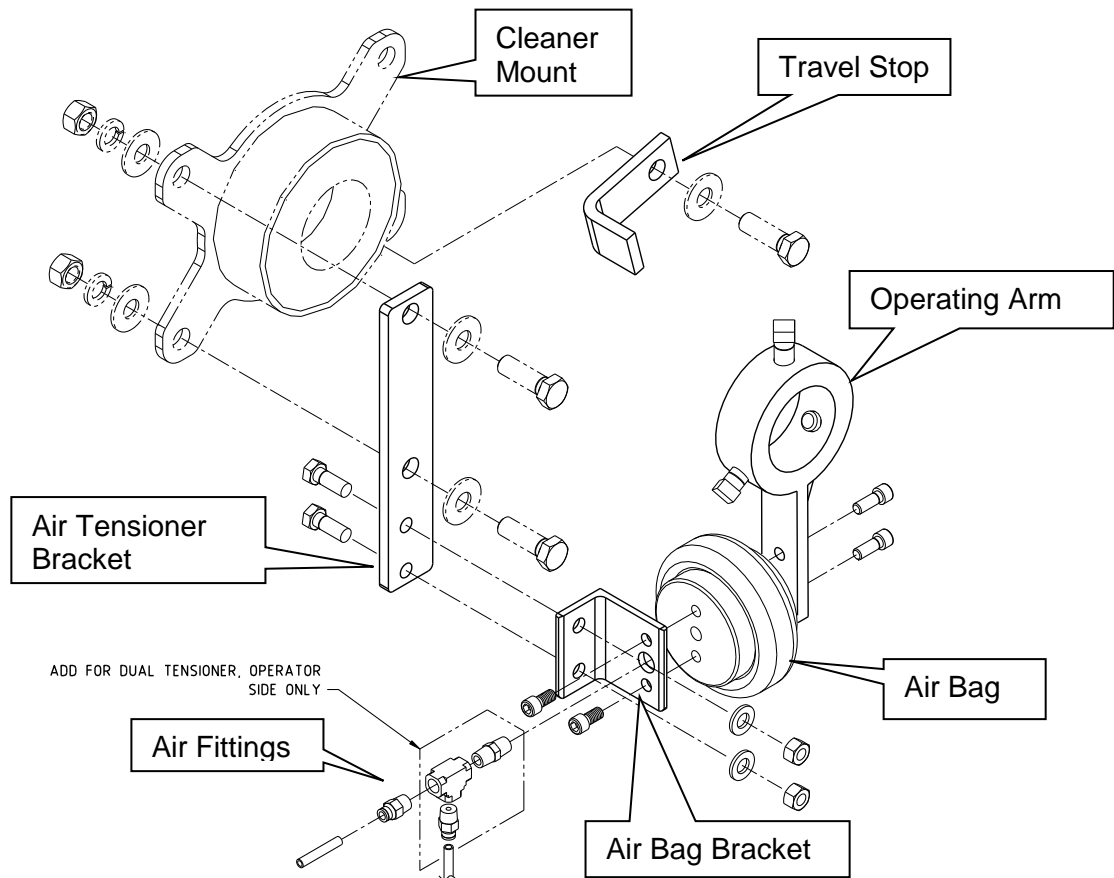
The XHD Air Tensioner is a robust tensioner capable of delivering very precise blade to belt contact force, whilst allowing the cleaner to respond and absorb belt or pulley irregularities.

It can also be assembled to tension in either direction and has two mounting positions for each direction.



AIR TENSIONER ASSEMBLY

NOTE: The air tensioner assembly is normally dispatched from the factory fully assembled and may only require the installer to slide the assembly onto the mainframe, (as step 4), and secure the air tensioner bracket to the mount (step 1). Disassembly will only be required if the tensioner is setup to tension in the wrong direction.



1. Fit the air tensioner bracket to the mount utilising two of the mount bolts, ensuring it is on the correct side for the tensioning direction required.
2. Attach the air bag bracket to the air tensioner bracket using two only M12 bolts, nuts and washers.
3. Attach the blank end of the airbag to the operating arm using two only 3/8" UNC socket head screws.
4. Slide the operating arm onto the cleaner mainframe with the airbag towards the airbag bracket side of the mount.
5. Attach the open end of the airbag (this end has 3 tapped holes) to the airbag bracket, using two only 3/8" UNC socket head screws.
6. **NO** air supply fittings should be connected at this point. Using a pipe wrench or similar, rotate the cleaner mainframe until the blade tips lightly touch the belt surface at the cleaning position.
With the airbag fully compressed, secure the operating arm to the cleaner mainframe using the three locking screws. Ensure a clearance of 1-2mm between the operating arm and the mount to enable free rotation whilst minimising lateral movement.
7. For cleaners on belts 1500mm or wider, repeat above for the far side. For belts less than 1500mm wide, simply fit the locking collar onto the far end of the cleaner, again allowing 1-2mm clearance between collar and mount.
8. The cleaner is now ready for the attachment of the air supply system.

AIR SUPPLY CONNECTION

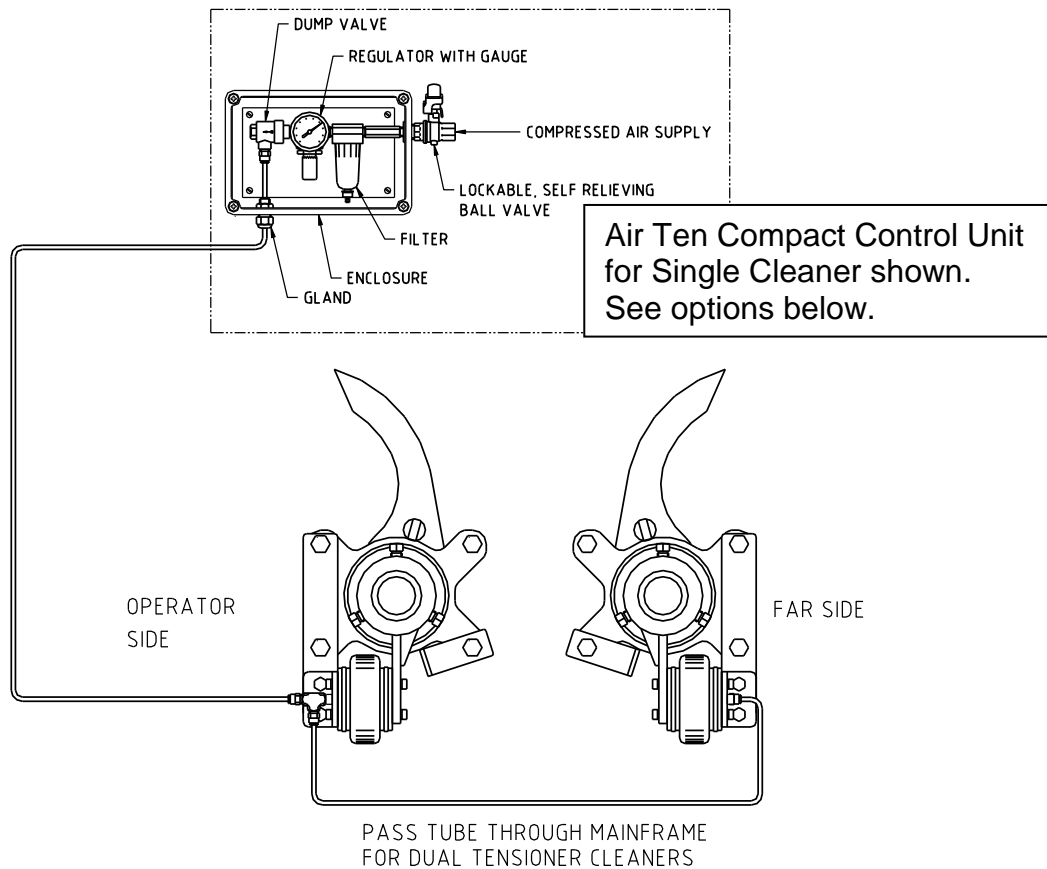
The XHD Air Tensioner Assembly is supplied with a ¼” BSP / 6mm push fit tube connector. This fitting is simply screwed into the air bag, and the 6mm air supply tube pushed into the fitting.

For cleaners with dual tensioners, additional fittings are supplied to allow the air supply to be connected to both air bags via a tee. The 6mm tube is passed through the cleaner mainframe to provide air to the far side airbag.

Connect all air fittings using a good quality liquid compound or gas seal thread tape.

AIR SUPPLY CONTROLS

ESS recommends the use of an ESS air control box to deliver the correct air pressure to the tensioner(s). A number of models are available. All utilise 6mm nylon pressure tubing and push fit connectors for simple, trouble free installations.



Control boxes available include:

Part Number	Description	Enclosure Material
09000123	Air Ten Compact Control Unit – Single Cleaner	Plastic
09000124	Air Ten Compact Control Unit – Dual Cleaner	Plastic
09000115	Air Ten Control Box – 1 Cleaner	Stainless Steel
09000116	Air Ten Control Box – 2 Cleaner	Stainless Steel
09000117	Air Ten Control Box – 3 Cleaner	Stainless Steel
09000118	Air Ten Control Box – 4 Cleaner	Stainless Steel

The Air Tensioner Control Boxes are available with optional solenoid valve.

Once the fittings are connected and secured, the air tensioner may be pressurised. Pressures are indicated in the following table.

Table 3: Air Pressure Settings

BELT WIDTH	PRESSURES	
	kPa	PSI
450	55	8
600	69	10
750	82	12
900	96	14
1050	110	16
1200	124	18
1350	138	20
1500	*82	*12
1600	*96	*14
1800	*96	*14
2000	*110	*16
2200	*124	*18
2400	*138	*20

* = Two Tensioners fitted.

SECTION 6 - COMMISSIONING

- Step 1:** **Back the cleaners away from the belt.**
Double check the items in previous sections – safety, preparation, installation.
- Step 2:** **Is the belt empty?**
Make sure there are no foreign objects such as tools or clean-up debris left on the belt. They may damage the belt cleaners or clog up the conveyor systems.
- Step 3:** **Put material to be conveyed on the belt.**
If possible, test run conveyor with some material on the belt. This helps to quickly “wear in” the blades and reduce the initial friction between the belt and the blades. The belt may also be moistened with water.
- Step 4:** **Start the conveyor.**
Follow the established safety rules.
- Step 5:** **Adjust XHD Primary Cleaner evenly onto the belt.**
Refer to previous section – Operation of Tensioner. Adjust the cleaner evenly onto the belt. Adjust the cleaner until the blades are touching the belt with minimum pressure – **DO NOT OVER ADJUST**. Each blade should be in contact and flexing back and forth with the irregularities of the belt surface. The XHD Primary is designed to lightly ride on the surface of the belt and remove a large percentage of the carryback. Excessive pressure unnecessarily reduces the life of the blade, without any increase in the cleaner effectiveness.
- Step 6:** **Observe the cleaning action.**
Using a light, observe the underside of the belt and the action of the cleaner. Place material on the belt. Look for blades that are not touching the belt. Run for five minutes to get a good idea of the action and effect of the splices on the belt cleaner.
- Step 7:** **Demonstrate the system to the Operating Supervisors and Crew.**
Call the Supervisors responsible for maintenance and operation to the site. Make a short run of the system. Put material on the belt. Show the operator how to adjust and operate the system.
- Step 8:** **Secure the system for production.**
Follow plant procedure to secure the conveyor for actual production.

SECTION 7 – OPERATOR TRAINING

The decision to purchase XHD Primary 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 over.

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

1. Adhere to all safety rules, regulations and procedures.
2. Give a “hands on” instruction with your conveyor system shutdown.
3. Give a “hands on” instruction with conveyor system running.
4. All services must be recorded and filed by responsible personnel.
5. Encourage the person being trained to look for possible problems developing on the system, e.g. belt tracking excessively, tears or damage to belt, seized idlers, missing bolts etc. A warning to the Maintenance Department to rectify small problems can save the company a lot of money in repairs and production costs.
6. Impress how important it is to maintain and service the cleaners correctly.

SECTION 8 – MAINTENANCE UPGRADES

The XHD Bolt-On Model is a basic model cleaner that will provide excellent belt cleaning performance and blade wear-life.

This model does not have the maintenance advantages of the standard XHD , meaning that blade servicing will require chute entry.

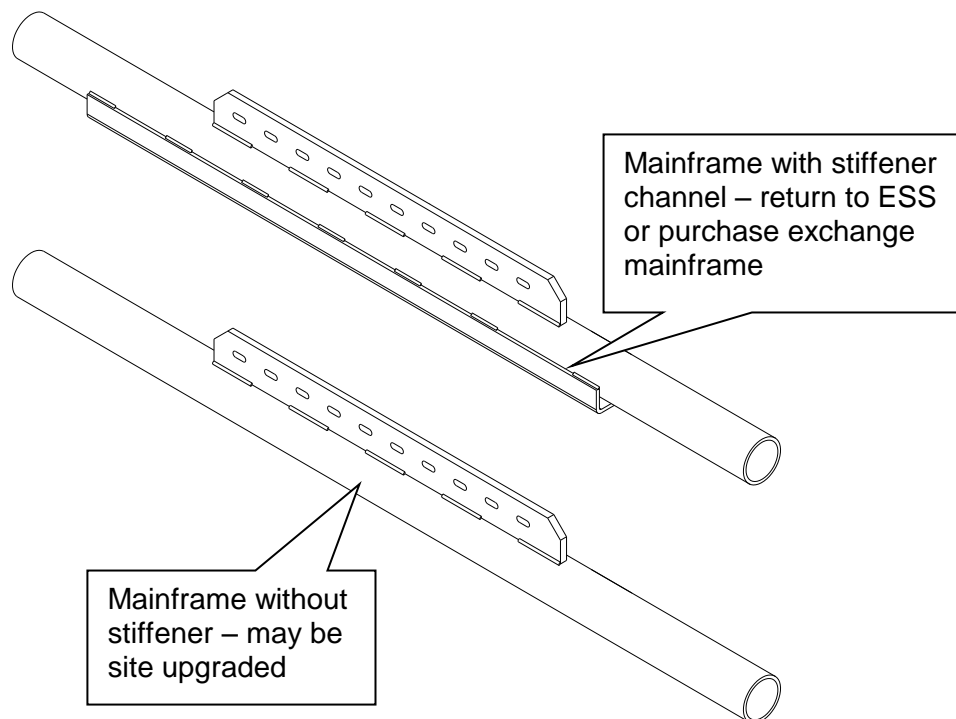
Alternatively the cleaner can be upgraded by either of two methods to allow blade servicing from outside the chute.

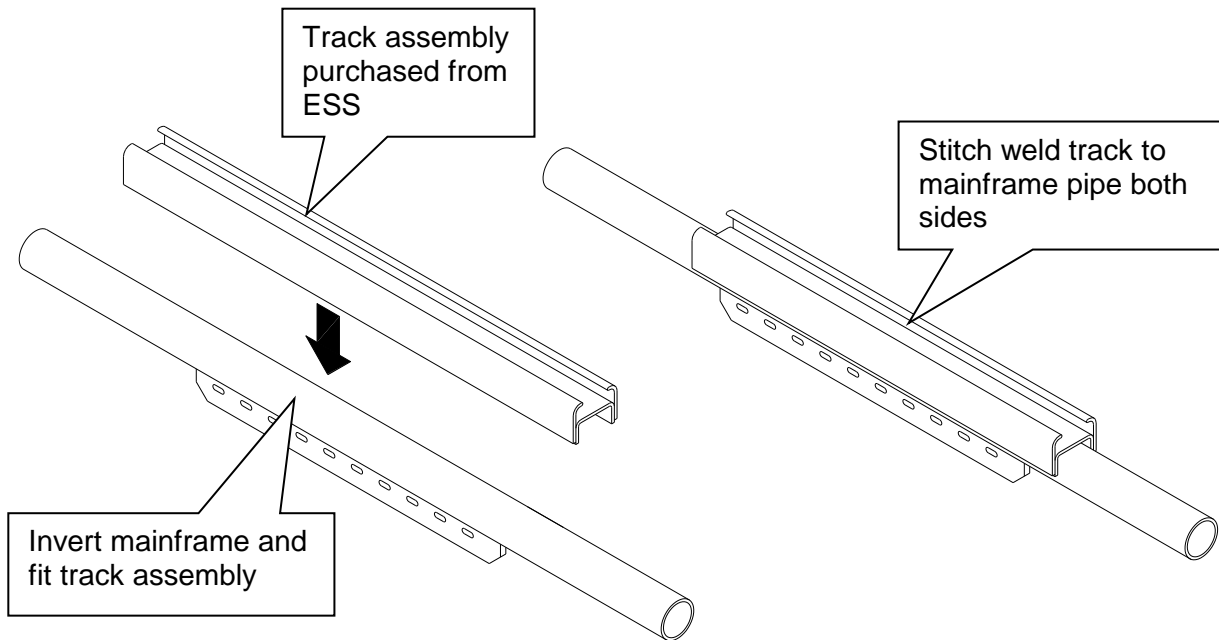
8.1 UPGRADE TO TRAC-MOUNT STYLE MAINFRAME

This involves adding the blade track assembly to the mainframe to allow standard XHD blades to slide on and off the mainframe. This will also allow the user to utilise the Keysafe feature now included in all XHD track type blades. This feature allows the service person the remove the blades one at a time from outside the chute.

For larger belts, the XHD mainframe will have a channel stiffener on the opposite side to the blade bar. For these cleaners ESS recommends that the cleaner mainframe be returned to ESS for conversion, or an exchange mainframe purchased.

For smaller belts that do not have the stiffener, the mainframe can be inverted so that the blade bar is downward, and an XHD track assembly welded on the opposite side. Track assemblies can be purchased from ESS, or again an exchange mainframe can be purchased.





Note: When upgrading the mainframe, the blade type will change, and a pair of blade locks will need to be purchased to retain the blades in the track. Request the XHD standard manual to view cleaner set-up and blade options available.

8.1 ADD AN XHD MANDRELL

The **XHD Bolt On Model** can be easily retro-fitted with an ESS Mandrell, which will allow the removal of the cleaner mainframe and blade assembly from the chute without the need for chute entry.

This eliminates hazards associated with chute entry, but on large belts the use of the Mandrell will require the implementation of some manual handling procedures. The mainframe with blades can be a large and heavy assembly.

Request the XHD Mandrell manual from ESS so that this option can be fully assessed.

SECTION 9 – ROUTINE MAINTENANCE AND SERVICE

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.

Danger: Before attempting any service work that requires a person or any part of a person to enter the chute or conveyor enclosure, ensure that the conveyor and associated equipment is stopped, isolated and locked out to all site safety procedures. Contact with a moving conveyor can result in serious injury or death.

Routine Inspection / Tension:

Step 1: Inspect the condition of the cleaner. Open the safety inspection door (if fitted), and observe the condition and action of the blades and cleaner.

Step 2: If necessary (and if plant rules allow it), hose any material build-up from the blades or mainframe – DO NOT REACH INTO THE CHUTE UNLESS THE CONVEYOR IS STOPPED, ISOLATED AND LOCKED OUT.

Step 3: If necessary, re-tension the cleaner. Remember, the primary cleaner is meant to be only in light contact with the belt – DO NOT OVER TENSION.

If Blade Servicing is Required:

SAFETY NOTE: Removing and re-fitting of blades in the chute will require safe access for personnel in the chute. Ensure that all safe working practices and regulations are followed in regard to chute entry and access.

Alternatively, contact ESS and ask about converting the XHD to a slide out (Trac-mount) model, or adding an XHD Mandrel to facilitate servicing from outside the chute. Refer to Section 8 of this manual.

Step 1: Shut down and lock out the conveyor.

Step 2: Release the tension and back blades away from the belt.

Step 3: Inspect the blade tips and replace if necessary. Remove the blade by first removing the securing bolts. Fit new blades and re-fit the securing bolts.

Step 4: Re-tension cleaner onto the belt as previously described.

Step 8: Check that all personnel are clear, and that all service equipment has been removed from the conveyor and enclosure. Remove locks or tags and restart belt. Observe cleaner action and blade effectiveness. Replace CYA Door cover if necessary. Clean up work area.

SECTION 10 – TROUBLE SHOOTING

- **Problem:** **Mounts won't fit in desired location**

<u>CAUSE</u>	<u>SOLUTION</u>
Structural members in the way.	Relocate the cleaner elsewhere on the offset radial. Consult ESS if unsure. Modify structural members only as a last resort, and after discussions with plant engineers.
Obstructions prevent mounting to chute wall.	Provide gussets or spacers to secure mounts away from obstructions.

- **Problem:** **Blades fold under at Start-up**

<u>CAUSE</u>	<u>SOLUTION</u>
Incorrect angle of attack	Relocate mounts so that the shaft is the correct radial distance from the belt face on the head pulley.
Excessive tension	Relax blade tension to maximum tension required in installation instructions.
Belt running dry	Always put material on belt for start-up or a little water if material is unavailable.
Poor belt condition	Repair belt, dress splices to smooth contour.

- **Problem:** **Poor blade life**

<u>CAUSE</u>	<u>SOLUTION</u>
Excessive tension	Reduce tension to that specified in the instructions for XHD Primary.
Improper blade application	Consult ESS .

SECTION 11- INSTALLATION ARRANGEMENT DRAWINGS

F0314

DO NOT SCALE. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED. REMOVE ALL BURRS AND SHARP CORNERS

HEAD PULLEY DIAMETER	450	600	750	900	1050	1200
RADIAL OFFSET	145	135	125	120	110	100

NOTE: FOR HEAD PULLEYS OUTSIDE OF THIS RANGE CONTACT ESS

NOTES

- THE OPTIMUM INSTALLATION OF THE XHD PRIMARY CLEANER IS WITH ITS TIP BETWEEN 0° & 15° BELOW THE HORIZONTAL ϕ OF THE HEAD PULLEY. MAINTAIN THE RADIAL OFFSET DIMENSION AND ENSURE THE CLEANER IS CLEAR OF MATERIAL FLOW.
- OPTIONAL ESS STAND-OFF BRACKET AND CYA1218 ACCESS DOOR ALLOW FOR EASY INSPECTION AND BLADE REPLACEMENT ON ENCLOSED HEAD CHUTES.
- FOR BELTS UP TO 1350mm WIDE, THE FAR SIDE MOUNT IS COUPLED WITH A SIMPLE LOCK COLLAR TO PREVENT AXIAL MOVEMENT.
- BELTS 1500mm AND WIDER REQUIRE TENSIONERS ON BOTH SIDES.
- HIGH TEMPERATURE AND MINES DEPARTMENT APPROVED ASSEMBLIES ARE AVAILABLE.

EXPLODED PARTS DRAWING

CHUTE CUT OUT DETAIL

TABLE

BELT WIDTH	450	600	750	900	1050	1200	1350	1500	1600	1800	2000	2200	2400	
No. BLADES	2	3	4	5	6	7	8	9	10	11	12	13	14	
BLADE COVER	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	
FRAME LENGTH	1250	1400	1600	1800	1950	2100	2300	2450	2600	2800	3000	3300	3600	
STIFFENER LENGTH	-	-	-	-	-	-	-	-	1600	1800	1950	2150	2400	2600

REVISIONS

REV	BY	CHKD	APPD	DATE
1	GG	SD	TT	14/9/05
2	GG	SD	TT	14/9/05

CLIENT: _____

LOCATION: _____

ESS CAD

REV	DESCRIPTION	DATE
F	SUPERSEDED SEE F0431	19/7/20
E	DESC. WAS XHD STANDARD	14/4/06
D	RADIAL OFFSET TABLE CHANGED	20/9/07
C	UPDATED NOTES	20/7/08
B	RADIAL OFFSET TABLE ADDED	14/9/05
A	AMENDED	14/9/05

ESS ENGINEERING SERVICES & SUPPLIES
CUSTOMER SERVICE No. 1800 074446

TITLE: XHD 80 MODEL PRIMARY CLEANER C/W SPRING TENSIONER INSTALLATION ARRANGEMENT

DRAWN BY: TT **SCALE:** NTS **DRAWING No.:** F0314

CHKD:SD **APPD:RL** **DATE:** 10/9/04

REV.: F

EXPLODED PARTS DRAWING

INSTALLATION ARRANGEMENT C/W AIR TENSIONED REFERENCE DRAWINGS

DRAWING No.: _____

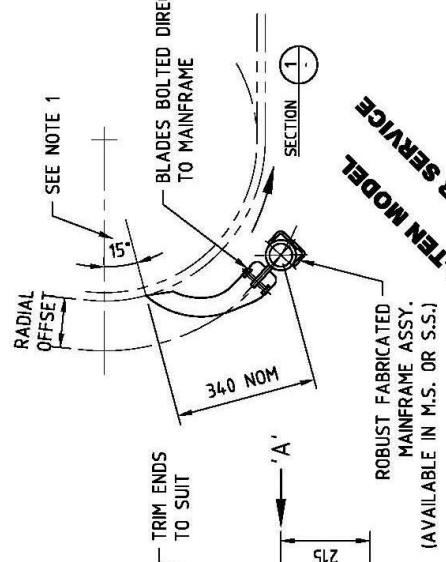
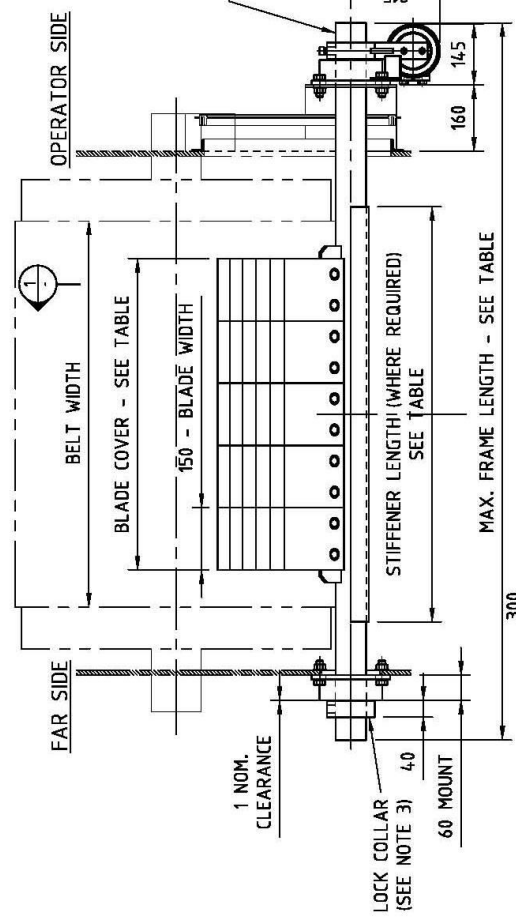
FILE: C:\Work\Bldg\Drawings\GENERAL\INSTALLATION DRAWINGS\B03001B0314.dwg - 19/07/2013 10:46:22 AM, kmp

F0329

DO NOT SCALE. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED. REMOVE ALL BURRS AND SHARP CORNERS

HEAD PULLEY DIAMETER	450	600	750	900	1050	1200
RADIAL OFFSET	145	135	125	120	110	100

NOTE: FOR HEAD PULLEYS OUTSIDE OF THIS RANGE CONTACT ESS



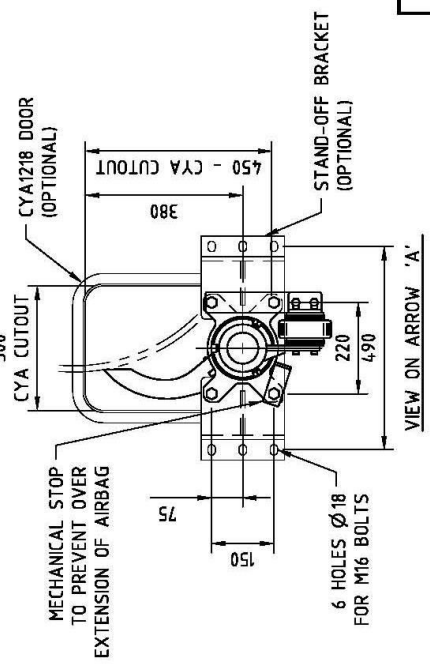
AIRBAG NOTES

- WHERE DUAL AIR TENSIONERS ARE USED (1500 BELTS AND WIDER) A BALANCE TUBE PASSED THROUGH THE PIPE FRAME JOINS THE AIRBAGS TO ALLOW INFLATION FROM ONE POINT AND ENSURE EQUAL PRESSURE.
- OPTIONAL CONTROL BOX CAN BE SUPPLIED.

NOTES

- THE OPTIMUM INSTALLATION OF THE XHD PRIMARY CLEANER IS WITH ITS TIP BETWEEN 0° & 15° BELOW THE HORIZONTAL ϕ OF THE HEAD PULLEY. MAINTAIN THE RADIAL OFFSET DIMENSION AND ENSURE THE CLEANER IS CLEAR OF MATERIAL FLOW.
- OPTIONAL ESS STAND-OFF BRACKET AND CYA1218 ACCESS DOOR ALLOW FOR EASY INSPECTION AND BLADE REPLACEMENT ON ENCLOSED HEAD CHUTES.
- FOR BELTS UP TO 1350mm WIDE, THE FAR SIDE MOUNT IS COUPLED WITH A SIMPLE LOCK COLLAR TO PREVENT AXIAL MOVEMENT.
- BELTS 1500mm AND WIDER REQUIRE TENSIONERS ON BOTH SIDES.
- HIGH TEMPERATURE AND MINES DEPARTMENT APPROVED ASSEMBLIES ARE AVAILABLE.

SUPERSEDED BY 20-TEN MODEL DRAWING F0433 REFER F0433 & SPARE PARTS USE



BELT WIDTH	450	600	750	900	1050	1200	1350	1500	1600	1800	2000	2200	2400
No. BLADES	2	3	4	5	6	7	8	9	10	11	12	13	14
BLADE COVER	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100
FRAME LENGTH	1250	1400	1600	1800	1950	2100	2300	2450	2600	2800	3000	3300	3600
STIFFENER LENGTH	-	-	-	-	-	-	-	-	1600	1800	1950	2150	2400

CLIENT: _____ LOCATION: _____

ESS CAD

F	SUPERSEDED - SEE F0433	EDCR282	KR	SD	TT	10/17/21
E	DESC. WAS XHD STANDARD	SD	GG	TT	30/4/09	
D	RADIAL OFFSET TABLE CHANGED	EDCR135	GG	SD	TT	21/01/07
C	UPDATED NOTES	GG	SD	TT	30/7/06	
B	RADIAL OFFSET TABLE ADDED	GG	SD	TT	10/09/06	
A	REDRAWN FOR F0315	GG	SD	TT	13/09/05	

REV REVISIONS

REV	BY	CHKD	APPD	DATE

JOB No. _____

EXPLODED PARTS DRAWING

INSTALLATION ARRANGEMENT C/W SPRING TENSIONER

REFERENCE DRAWINGS

DRAWING No. F0314

ESS ENGINEERING SERVICES & SUPPLIES
CUSTOMER SERVICE No. 1800 074446

TITLE: XHD 80 MODEL PRIMARY CLEANER C/W AIR TENSIONER INSTALLATION ARRANGEMENT

DRAWN BY: GG

CHKD: SD

APPD: TT

SCALE: NTS

DATE: 13/9/05

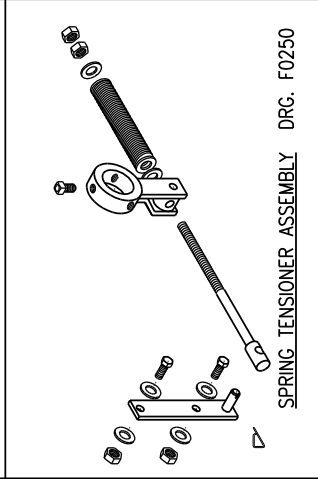
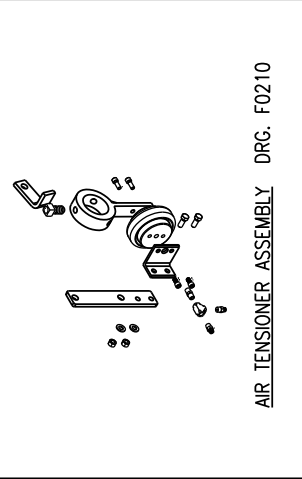
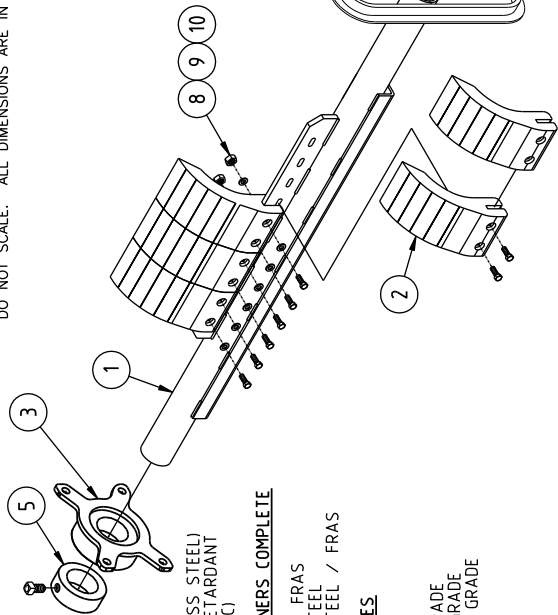
DRAWING No. F0329

REV. F

SECTION 12- EXPLODED PARTS DRAWINGS

DO NOT SCALE. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED. REMOVE ALL BURRS AND SHARP CORNERS

BELT WIDTH	450	600	750	900	1050	1200	1350	1500	1600	1800	2000	2200	2400
MOUNT LENGTH	350	500	650	800	955	1115	1260	1410	1560	1715	1865	2020	2170
No. BLADES	2	3	4	5	6	7	8	9	10	11	12	13	14
BLADE COVER	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100
FRAME LENGTH	1250	1400	1600	1800	1950	2100	2300	2450	2600	2800	3000	3300	3600
STIFFENER LENGTH	-	-	-	-	-	-	-	-	1600	1800	1950	2150	2400



PART No's FOR BELT CLEANER ASSEMBLIES
 35 51x xxx xx - SUFFIX LETTERS
 - SEE SUFFIX NOTE

TENSIONER
 1-AIR TENSIONER
 3-SPRING TENSIONER

BELT WIDTH(cm)
 e.g. 450-045
 2400-240
 (AS PER TABLE)

SUFFIX NOTES

GENERAL
 s = S.S. (STAINLESS STEEL)
 f = FRAS (FIRE RETARDANT)
 - ANTI STATIC

XHD PRIMARY CLEANERS COMPLETE
 = MILD STEEL
 f = MILD STEEL / FRAS
 s = STAINLESS STEEL
 sf = STAINLESS STEEL / FRAS

XHD PRIMARY BLADES
 = ORANGE
 b = BLUE
 g = GREEN
 fc = FRAS CLIP GRADE
 fh = FRAS HARD GRADE
 fm = FRAS MEDIUM GRADE

FLEX MOUNT BUSH
 = ORANGE
 f = FRAS
 g = GREEN
 p = UHMWPE
 pf = PA99 FRAS

PART NO. NOTES
 I: PART No's FOLLOWED BY xxx INDICATE THAT THE PART IS AVAILABLE IN ALL STANDARD BELT WIDTHS. SUBSTITUTE xxx WITH BELT WIDTH MEASURED IN cm.

ITEM PART No.	DESCRIPTION
1 15350xxx(s)	MAINFRAME x BELT WIDTH(cm)
2 36023095(xx)	XHD STD BOLT ON C2 BLADE
3 09020031(s)	MOUNT WITHOUT BUSH C/W FASTENERS
4 09020032(XX)	MOUNT BUSH (xx SUFFIX SPECIFIES TYPE)
5 09020035(s)	LOCK COLLAR 65NB C/W SET SCREWS
6 23011218(s)	CYA ACCESS DOOR ASSY 300 x 450
7 09020036(s)	STAND-OFF BRACKET C/W FASTENERS
8 0231141x(z)(s)	NUT M10 NYLOC
9 02315465Z	SCREW M10x65 HEX SET ZP
02303465S	BOLT M10x65 HEX 304SS
02319410Z	WASHER M10x21 DIA ENG ZP
02319410S	WASHER M10 304SS

NOTES:

- CLEANERS FOR BELTS 1500mm AND WIDER REQUIRE TENSIONER ASSEMBLIES ON BOTH SIDES.
- FOR CLOSED CHUTE CONVEYORS ESS RECOMMENDS THE USE OF CYA DOORS FOR EASE OF BLADE INSPECTION AND REPLACEMENT.
- A MANDREL MOUNT TO ENABLE TOTAL CLEANER REMOVAL IS ALSO AVAILABLE - CONTACT ESS FOR MORE INFORMATION.
- MINES DEPARTMENT APPROVED FRAS, HIGH TEMPERATURE AND ABRASION RESISTANT URETHANE BLADES ARE AVAILABLE. CONTACT ESS.
- LOCK COLLAR USED ON SINGLE TENSIONED CLEANERS BELOW 1500 WIDTH

ATTACH TENSIONER HERE

ESS ENGINEERING SERVICES & SUPPLIES
 CUSTOMER SERVICE No. 1800 074446

TITLE:
 XHD BO MODEL
 EXPLODED PARTS
 ASSEMBLY

SCALE: NTS
DRAWING No. F0387
REV. A

DRAWN BY: A. MASEYK
CHKD:SD APPD:CW
DATE: 9/6/93

REV	ISSUED	REVISIONS	REF DOCS	AM	SD	CW	JM/WR
A							

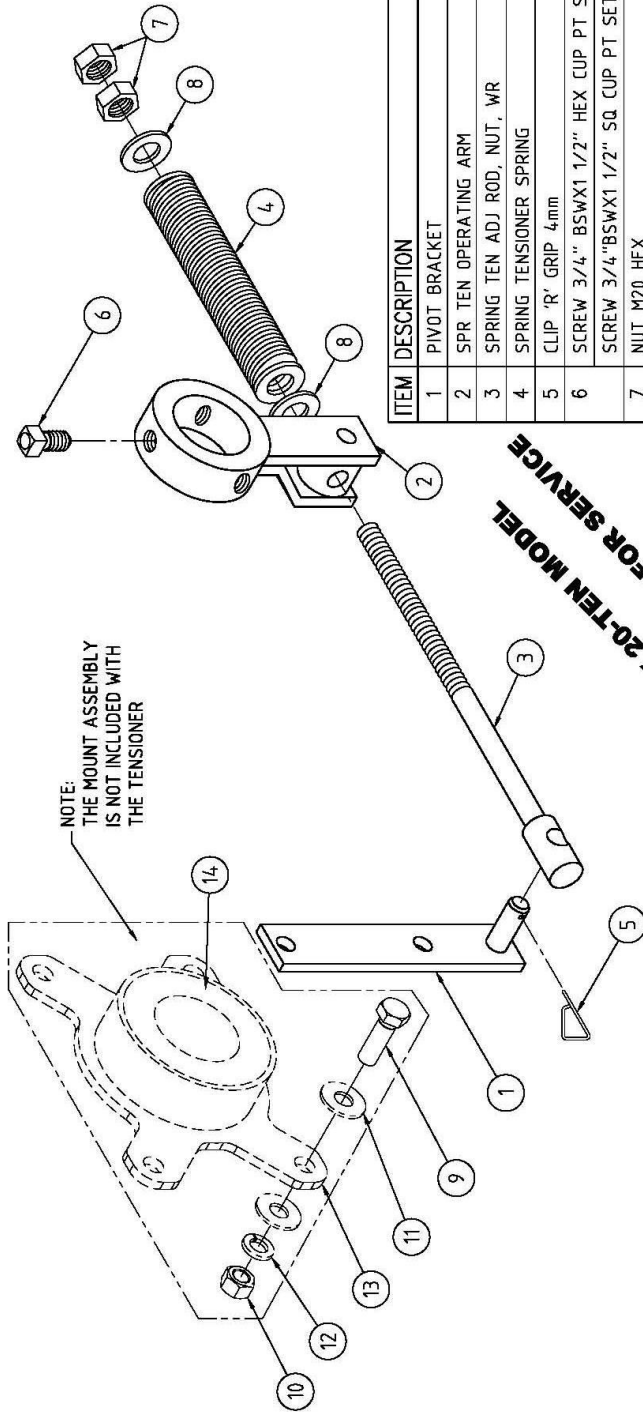
JOB No.	DESCRIPTION
F0329	XHD BO MODEL AIR TENSIONER INSTALLATION ASSEMBLY
F0314	XHD BO MODEL SPRING TENSIONER INSTALLATION ASSEMBLY
	REFERENCE DRAWINGS

ESS CAD

CLIENT:
 LOCATION:

FILE:

DO NOT SCALE. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED. REMOVE ALL BURRS AND SHARP CORNERS



NOTE:
THE MOUNT ASSEMBLY
IS NOT INCLUDED WITH
THE TENSIONER

SUFFIX NOTES
GENERAL
 S.S. = STAINLESS STEEL
 f = FRAS (FIRE RETARDANT) - ANTI STATIC
EASTENERS / FITTINGS
 S = S.S. (STAINLESS STEEL)
 z = ZINC PLATED
XHD FLEX MOUNT BUSH
 = ORANGE
 f = FRAS
 g = GREEN
 p = UHMWPE
 pt = PA99 FRAS

ITEM	DESCRIPTION	QTY.	DRG. No.	PART No.
1	PIVOT BRACKET	1	D0299	09020330(s)
2	SPR TEN OPERATING ARM	1	D0295	09020332(s)
3	SPRING TEN ADJ ROD, NUT, WR	1	D0294	09020331(s)
4	SPRING TENSIONER SPRING	1	-	09020333
5	CLIP 'R' GRIP 4mm	1	-	02308005(s)
6	SCREW 3/4" BSWX1 1/2" HEX CUP PT SET 304SS	3	-	09000020s
7	SCREW 3/4" BSWX1 1/2" SQ CUP PT SET ZP	3	-	02316531z
8	NUT M20 HEX	2	-	02311720(z)(s)
9	WASHER M20 H/D ZP	2	-	02319721z
10	WASHER M20 304SS	2	-	02319720s
11	SCREW M16 x 50 HEX ZP	2	-	02315640z
12	BOLT M16 x 50 HEX 304SS	2	-	02303610s
13	NUT M16 HEX	2	-	02311616(z)(s)
14	WASHER M16 H/D ZP	4	-	02319671z
	WASHER 5/8" 304SS	4	-	02320458s
	WASHER M16 SPRING	4	-	02319618(z)(s)
	XHD MOUNT WITHOUT BUSH	1	D0164	09020031(s)
	XHD MOUNT BUSH (xx SUFFIX NOTE)	4	P0092	09020032xx

**SUPERSEDED BY 20-TEN MODEL
 & SPARE PARTS USE
 DRAWING F0422
 REFER F0422**

ESS ENGINEERING SERVICES & SUPPLIES CUSTOMER SERVICE No. 1800 074446	
CLIENT: ESS LOCATION: QUEENSLAND	
JOB No.	REF DOCS
REV	REVISIONS
B.P. SD TT 26/6/08	BY CHKD APP DATE
A MOUNT MODIFIED EDCR119	SD AM CW 07/09
C DRAWING SUPERSEDED	KR SD TT 10/12/22
TITLE: XHD PRIMARY CLEANER SPRING TENSIONER EXPLODED PARTS	
SCALE: 1:5 DRAWN BY: B.PRYDE APPD: T.T.	
DATE: 28/06/02 DRAWING No. F0250	
REV. C	

SECTION 13

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: _____