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Compact Plus Primary Cleaner

Installation, Operation & Maintenance Manual

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WARRANTY

ESS warrants the **Compact Plus Primary 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.

This product 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 Compact Plus Primary Cleaner 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 Compact Plus is a conveyor belt primary cleaner, designed for use on smaller conveyors where space is often restricted. The Compact Plus is suitable for use on conveyor belts that range from 200 to 1200 mm wide, and where belt speed is low to moderate.

Figure 1 - Complete Single Tensioner Assembly

The patented CARP-2 blade design will provide excellent cleaning performance and long wear life under a range of conditions. Blade materials are available to suit most bulk materials handled.

The Compact Plus Primary Cleaner is normally mounted on the face of the conveyor head pulley and is designed to peel off the thick layer of loosely adhering material that often accounts for 80%-90% of carryback.

The Compact Plus is normally used in conjunction with at least one secondary cleaner, such as the ESS Compact Secondary, and often with a water spray system.

IMPORTANT

The segmented cleaning blades are of cast Urethane, and can be easily removed by sliding on and off the mainframe track for replacement when worn.

- The cleaner is directional - it will only clean a belt travelling in the design direction - however, the cleaner will not be damaged or affected by belt direction reversal.
- The cleaner is suitable for use on crowned head pulleys and damaged or grooved belts. The urethane blades quickly conform to the belt profile.
- 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.
- The cleaner requires an access point in the conveyor chute to install and replace the urethane blades. This should be in the form of a covered door of sufficient size to allow a technician to reach in and recover the blades. The access door should comply with all current conveyor and safety regulations.

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 and 2.

For installation on enclosed head pulley chutework, draw all dimension lines on the chute wall. In applications where head pulley is not enclosed, custom designed brackets are necessary to ensure correct cleaner position.

Step 1 **Locating mainframe's centreline**

Using the typical installation drawing supplied in this manual, locate the mainframe's centre-line on both sides of the conveyor chute. For conveyors that do not have an enclosed chute, fabricate suitable mounting plates each side of the conveyor, or contact ESS for assistance.

Measure radially **A** mm (see table following) from the face of the belt. From this point draw an arc using the pulley's centre-line as the centre point. The centre-line of the mainframe can be located anywhere along the radius as long as the blade does not lie in the material's trajectory.

- For faster belts, the blade tip should contact the belt near or just below the horizontal centre line of the head pulley.
- For slower moving belts, lower the cleaner until the tip of the blade clears the material trajectory.
- Do not place the cleaner lower on the head pulley than necessary, as this will cause the blade to lay flat and allow accumulation of material.
- Avoid placing the tip of the cleaner above the horizontal centre line of the pulley, as exposure to excessive amounts of material will result in low cleaning performance and high blade wear rates.
- Ensure that the mainframe is in the same position both sides of the belt – that is, the cleaner is parallel and level to the belt face and head pulley.

Note

-Material trajectory is defined as the path of the material being discharged from the belt.

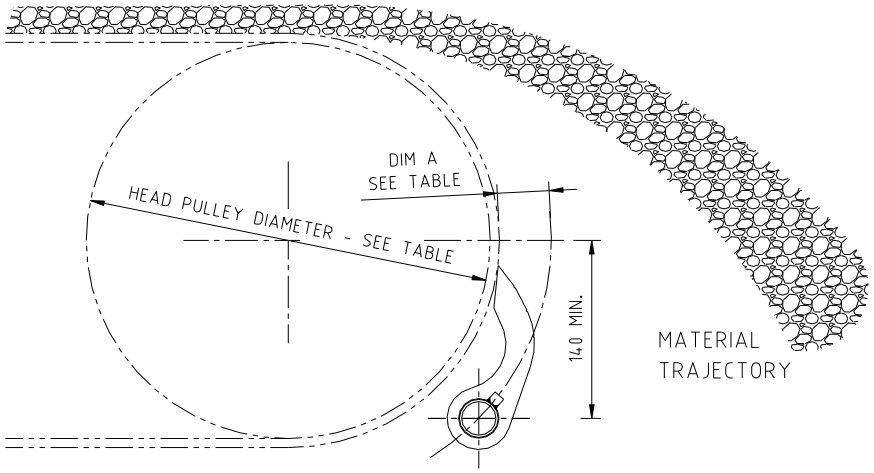


Figure 2 - Mainframe Setout Details

Table 2 - Offset Distances

Head Pulley Diameter	Offset Dim A
mm	mm
200	60
250	55
300	50
Over 300	45

Step 2 **Verify mainframe position**

Position the tensioner and 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 mounts or tensioner interfere with structural members, it may be necessary to locate the cleaner elsewhere on the A mm offset radius, but first remember these points:

- The mount can be rotated to any angle.
- The tensioner can be reverse assembled, as long as it is tensioning the blades in the correct direction – see diagram below.
- The tensioner assembly may be located on the opposite side of the conveyor, as long as access is available for maintenance.

Once mounting position is confirmed, proceed.

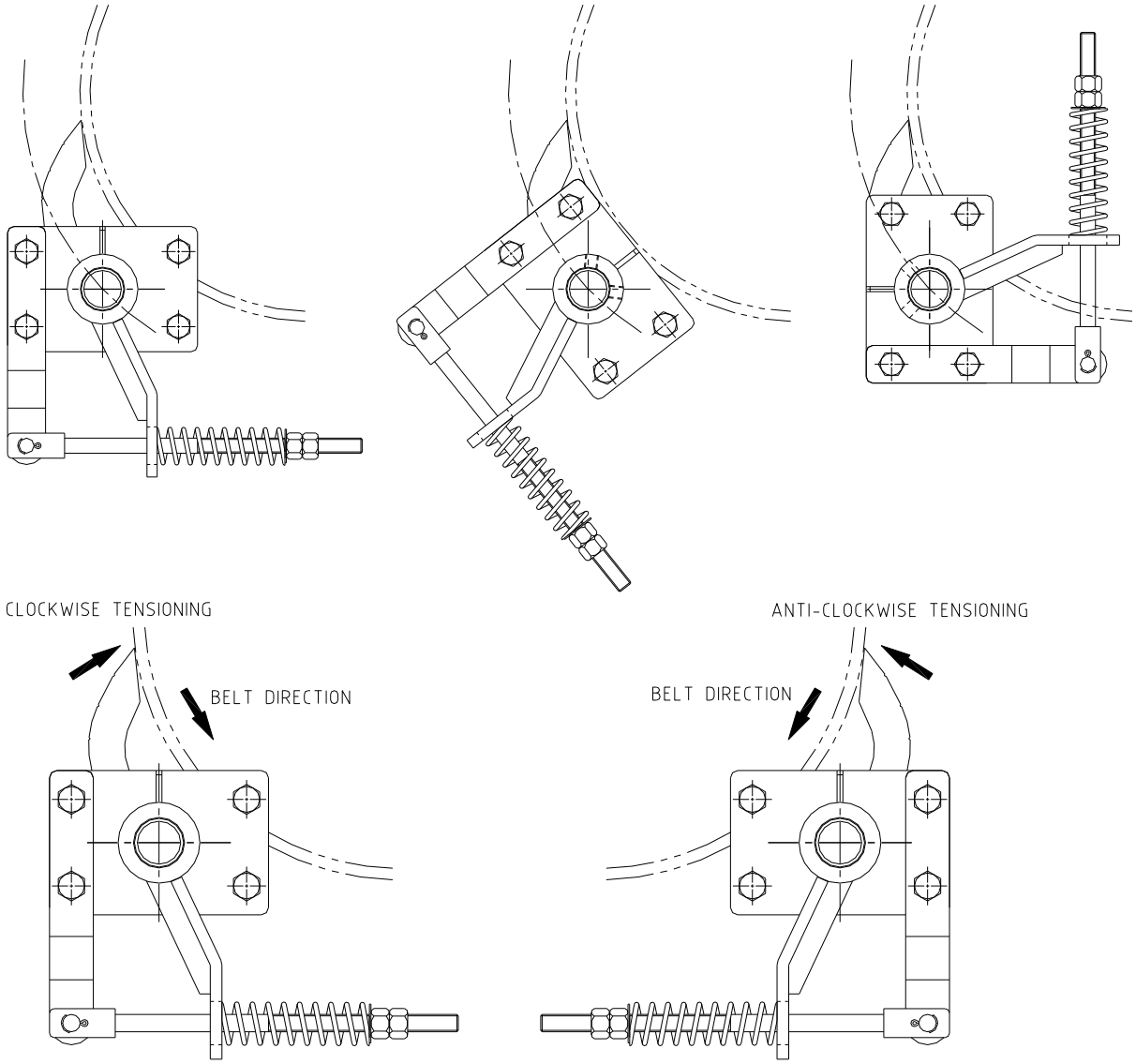


Figure 3 - Tensioner Orientations

Step 3 **Marking/cutting the mounting holes**

If the cleaner mounts are to be mounted to the chute wall cut a hole Ø70 at the selected mainframe mounting positions each side of the chute. Mark out and drill bolt holes as shown below. If the mount is to be rotated as described above, remember to rotate the bolt hole pattern to the same angle.

If the mount is to be attached to structure or brackets other than the chute wall, project the line of the mainframe centre to the mounting position, and provide cutouts and bolt holes at that position.

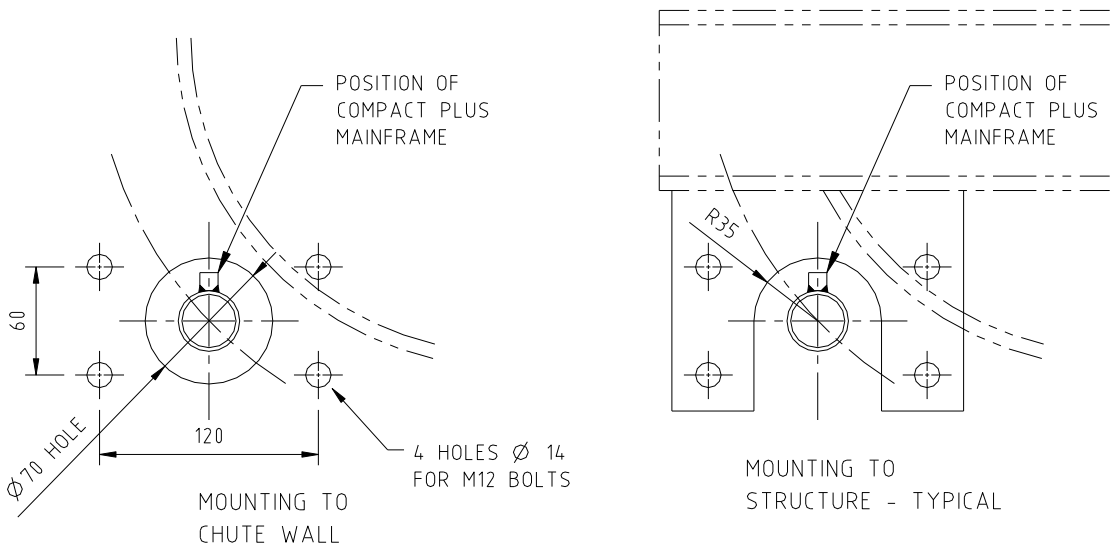


Figure 4 - Mounting Details

Step 4 **Insert the mainframe**

Remove the blades from the mainframe by first loosening and removing the blade locks. Insert the bare cleaner mainframe through the cutouts in the chute wall. Slide the tensioner side and far side mounts onto the pipe ends of the mainframe and loosely bolt the mounts to the chute walls with the mainframe in the pre-selected position. Do not secure the tensioner lockscrews to the mainframe.

- ☐ Does the centre-line of the mainframe lie A mm from the belt face? (The Compact Plus installation gauge is available to assist in checking this dimension).
- ☐ Is the mainframe level or equal to the pulley shaft?

Step 5 **Position the Mainframe**

Remove the far side mount bush, then slide the mainframe to the far (non tensioner) side until the tensioner end of the mainframe is clear of the inside of the chute.

Inside the chute or conveyor enclosure, slide a blade retainer onto the mainframe, followed by the required number of blades, and a second blade retainer. Ensure the blades are facing in the correct direction.

Slide the mainframe back through the tensioner side mount, and re-fit the mount bushes. Centre the blades on the mainframe, then tighten the blade retainers in place against either side of the blades. Rotate the mainframe until the blade tips lightly contact the belt.

Step 6 **Check position of the mainframe**

- ☐ Is the centreline of the mainframe positioned the correct 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?

Note

Slight inconsistencies in belt thickness, and blade shape which cause small gaps between blade and belt that will quickly be taken up by blade flexure on tensioning.

- ☐ For crowned head pulleys, ensure that the outside blades on each side are an equal distance from the belt, whilst the centre blade is touching. Again, these gaps will quickly close 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 7 **Attach mounts, brackets and door frame**

Securely bolt the cleaner mounts and brackets to the chute wall or structure. If not already done, fit and secure the tensioner components in place as shown previously. Ensure that the tensioner is operating in the correct direction. If not, reverse the tensioner assembly to achieve the correct direction.

5.0 TENSIONER SYSTEM

The Compact Plus Primary Cleaner is supplied with a pair of steel mount plates fitted with low friction 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 – see previous section.

The Compact Plus 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.

5.1 ASSEMBLY OF THE SPRING TENSIONER UNIT

The Compact Plus Spring Tensioner attaches to the cleaner mount by utilising two of the mounting bolts. Ensure that the low friction bush is in place in the mounts before proceeding. Assembly of the tensioner is as follows:

1. Select the tensioning direction required – see diagrams in the installation section.
2. Remove the appropriate mounting bolts from the tensioner side mount, and fit the pivot bracket, again ensuring that the bracket is positioned for the tensioning direction. Bolt the pivot bracket in place.

   Note

   Cast mounts used on later models will have a gusset on one side of the raised hub. This is used on the far side mount only, and has no use in the tensioner assembly.
3. Slide the eye end of the adjusting rod over the pin on the pivot bracket and and secure with the split pin.
4. Insert the threaded end of the adjusting rod into the slotted hole of the operating arm, ensuring the the arm is correctly orientated. Slide the operating arm down the adjusting rod, then manoeuvre the hub of the operating arm over the end of the mainframe.
5. Fit the spring over the threaded end of the adjusting rod, then fit the washer and adjusting nut, only a few turns. Loosley fit the locking nut.
6. Check that the cleaner and blades are centred to the belt, then rotate the mainframe until the blades are touching the belt. Position the operating arm so that the hub is within 1 - 2 mm of the mount and the tail is extended against the spring. Secure the lockscrews in the operating hub onto the mainframe.
7. By hand, turn the adjusting nut on the Adjusting Rod to bring the cleaner blade tips into light contact with the belt.
8. The tensioner side is now fitted and ready for adjustment. Fit the far side lock collar before proceeding.

5.2 ASSEMBLY OF THE FAR SIDE MOUNT AND LOCK COLLAR

The Far Side Lock Collar acts to prevent axial movement of the cleaner mainframe, but with the ESS Compact Plus cleaner, it also doubles as a wear indicator and limiter. Assembly is as follows:

1. Install the far side mount as previously described.
2. Slide the Lock Collar onto the Compact Plus mainframe, with the tab pointing inwards toward the mount.
3. With the cleaner blades just touching the belt, as previously described, position the Lock Collar tab at 30° to the mount gusset, in the opposite direction to the tensioning direction. For a clockwise tensioning cleaner, place the tab at 30° to the anticlockwise side of the gusset, and vice versa. Later model cast mounts will have indicator lines at 10°, 20° and 30°.
4. With the tab at 30°, and the Lock Collar approximately 1 - 2 mm clear of the mount, tighten the lockscrews on the Lock Collar to secure the collar to the mainframe.
5. As the cleaner blades wear, the Lock Collar tab will move toward the mount gusset, indicating the blade wear. The blades have approximately 30° of wear rotation, so the tab will contact the gusset, indicating blade replacement is required, and preventing further adjustment or wear of the blades.

5.3 ADJUSTMENT OF THE SPRING TENSIONER

The Spring Tensioner is adjusted by simply turning the adjusting nut until the spring is compressed to the length indicated on the table below. Once the correct spring compression is achieved for the belt width, secure the tensioner by tightening the lock nut against the adjusting nut.

Table 3 - Spring Tensioner Adjustment Values

Belt Width	Number Of Blades	Compressed Spring Length
mm		mm
300	2	91
450	3	87
600	4	82
750	5	78
900	6	74
1050	7	69
1200	8	65
1350	10	56

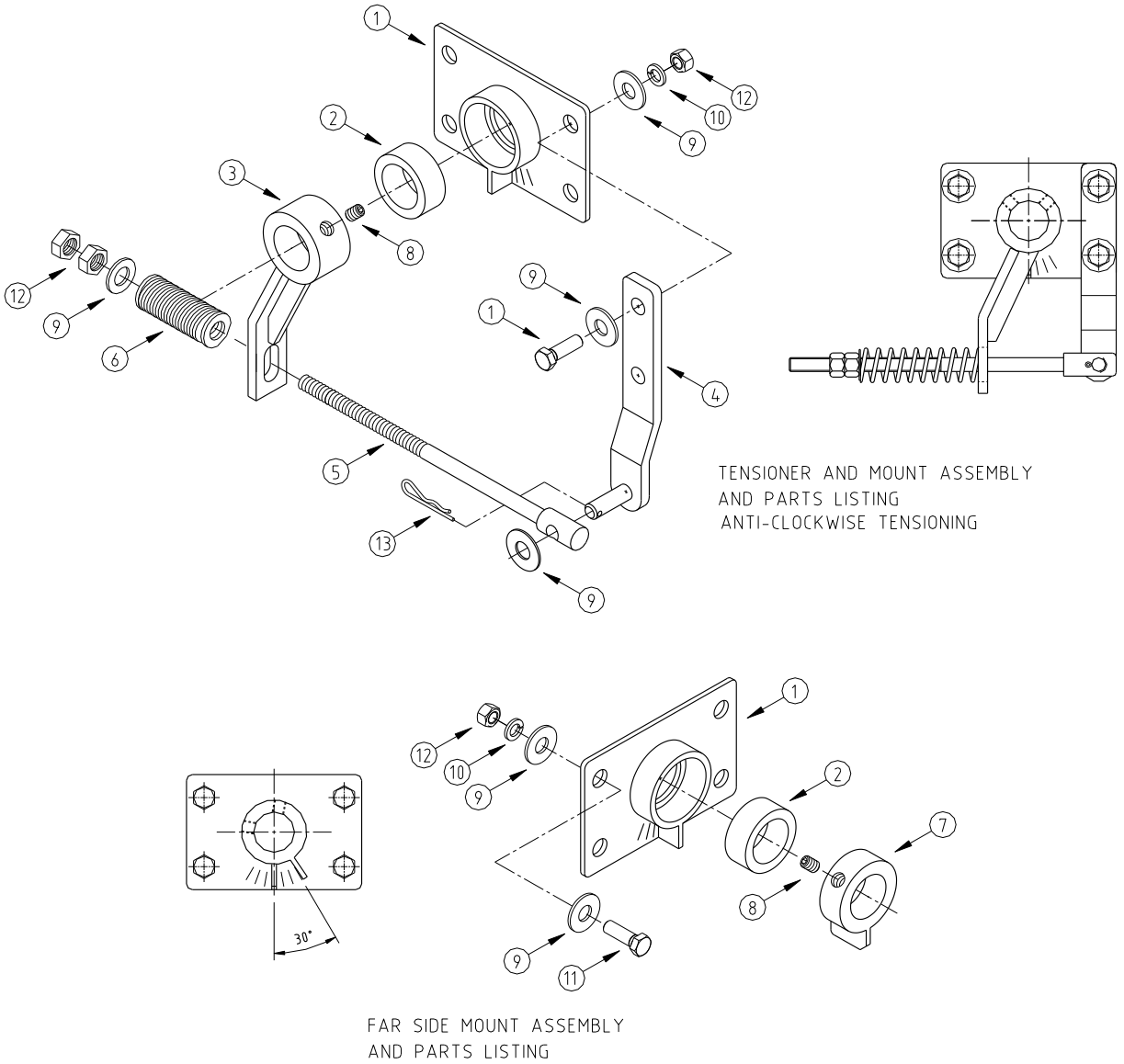


Figure 5 - Spring Tensioner Assembly and Parts Diagram

Item	Description	Part Number	Item	Description	Part Number
1	Mount Plate	09040030	8	M10 Grub Screw	02315413
2	Mount Bush	09040032	9	M12 Flat Washer	02319512
3	Operating Arm	09040396	10	M12 Spring Washer	02319514
4	Pivot Bracket	09040398	11	M12 x 40 Setscrew	02315540
5	Adjusting Rod	09040397	12	M12 Nut	02311512
6	Spring	09040399	13	R-Clip	02308005
7	Far Side Lock Collar	09040033			

Note

Add suffix **S** to part numbers for stainless steel.

6.0 COMMISSIONING

Step 1 **Back the cleaners away from the belt**

Double check the items in previous sections, Safety, Preparation and 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 as they may damage the belt cleaners or clog up the conveyor systems.

Step 3 **Place conveyed product on the belt**

Place some material on the belt before starting up system. This helps to quickly "wear in" the blades and reduce the initial friction between the belt and the blades. Handfuls of conveyed material spaced along the belt will do. The belt may also be moistened with water.

Step 4 **Start the conveyor**

Follow the established safety rules.

Step 5 **Adjust the Primary Cleaner evenly onto the belt**

Adjust the cleaner so that all of the blades are touching the belt with even pressure - DO NOT OVER-ADJUST. Each blade should be in contact and flexing back and forth with the irregularities of the belt surface. The blade 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 blades without any increase in cleaner efficiency.

Step 6 **Observe the cleaning action**

Using a light, observe the belt and the action of the cleaner. Place material on the belt. Look for blades that are not touching the belt. Run for 5 minutes to get a good idea of the action and the 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, putting 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.

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**

Step 2 **Release blades**

Release the tension and back the blades away from the belt. Sharply rap the blades against the belt to dislodge any build-up. 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 operator side blade retainer and slide the blade assemblies from the track. The blades may require a slight rap with a hammer to loosen before sliding.

Step 4 **Clean and inspect the blades**

If blades are worn past the wear line on the back of the blade, replace with new (or refurbished) blades.

Step 5 **Re-install**

Re-install blades into mainframe track, followed by blade retainer. Re-tension the cleaner as previously described.

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

Observe cleaner action and blade effectiveness. Clean up work area.

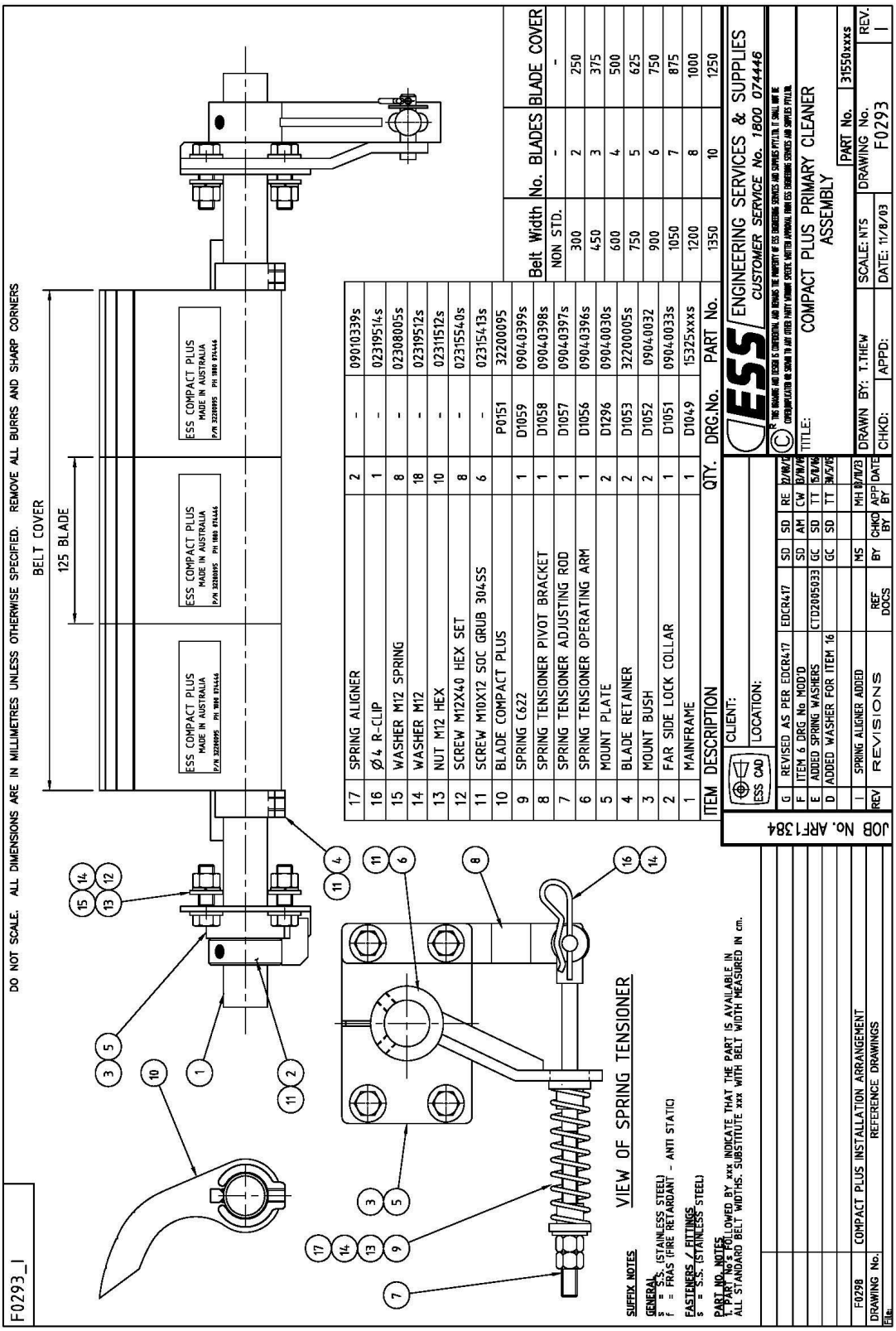
9.0 TROUBLE SHOOTING

PROBLEM	CAUSE	SOLUTION
Blades fold through on start-up	Incorrect angle of attack / installation dimensions	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 recommended in installation instructions
	Belt running dry	Always place material on the belt for start-up or a little water if material is unavailable
	Poor belt condition	Repair belt, dress spices to smooth contour
	New belt with sticky surface	Fit low friction blades – contact *ESS* for assistance.
Mounts do not fit	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 only with plant engineer approval
	Obstructions prevent mounting to chute wall	Provide gussets or spacers to secure mounts away from obstructions
Mainframe bent	Excessive tension	Relax blade tension to maximum tension recommended in installation instructions
	Blades folded through	See above
	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	Rap blades against belt. Increase service frequency
	Cleaner overloaded	Add additional secondary cleaner
	Secondary cleaner not functioning correctly	Service the secondary cleaner

Figure 6 - Trouble Shooting

10.0 INSTALLATION ARRANGEMENT DRAWINGS

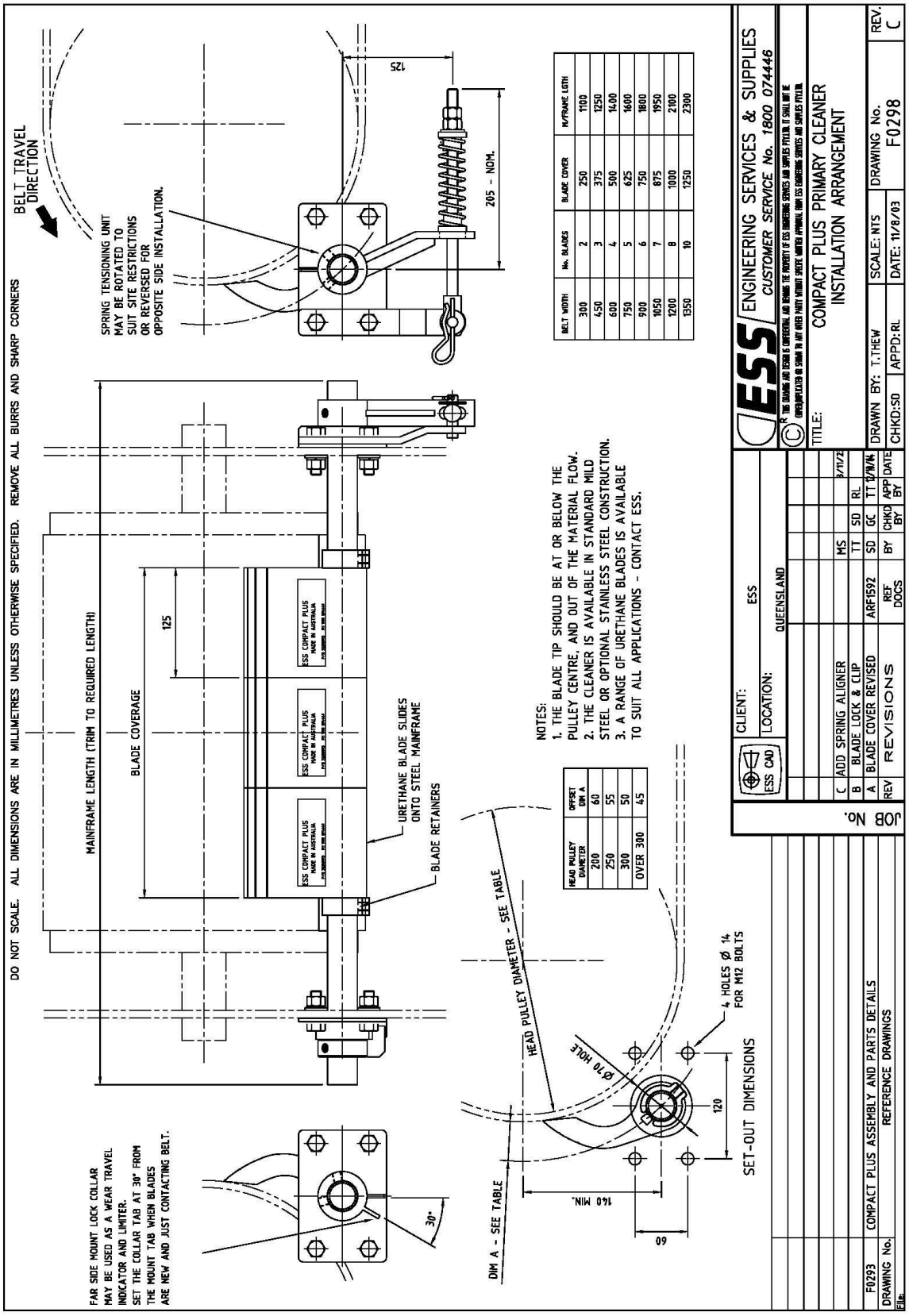
F0293 ASSEMBLY DRAWING



ITEM	DESCRIPTION	QTY.	DRG.No.	PART No.	Belt Width	No. BLADES	BLADE COVER
17	SPRING ALIGNER	2	-	09010339s	NON STD.	-	-
16	Ø4 R-CLIP	1	-	02319514s	300	2	250
15	WASHER M12 SPRING	8	-	02308005s	450	3	375
14	WASHER M12	18	-	02319512s	600	4	500
13	NUT M12 HEX	10	-	02311512s	750	5	625
12	SCREW M12X40 HEX SET	8	-	02315540s	900	6	750
11	SCREW M10X12 SOC GRUB 304SS	6	-	02315413s	1050	7	875
10	BLADE COMPACT PLUS		P0151	32200095	1200	8	1000
9	SPRING C622	1	D1059	09040399s	1350	10	1250
8	SPRING TENSIONER PIVOT BRACKET	1	D1058	09040398s			
7	SPRING TENSIONER ADJUSTING ROD	1	D1057	09040397s			
6	SPRING TENSIONER OPERATING ARM	1	D1056	09040396s			
5	MOUNT PLATE	2	D1296	09040030s			
4	BLADE RETAINER	2	D1053	32200005s			
3	MOUNT BUSH	2	D1052	09040032			
2	FAR SIDE LOCK COLLAR	1	D1051	09040033s			
1	MAINFRAME	1	D1049	15325xxxs			

REV	REVISIONS	REF DOCS	BY	CHKD BY	APP BY	DATE
G	REVISED AS PER EDCR417	EDCR417	SD	SD	RE	27/10/03
F	ITEM 6 DRG No MOD'D		SD	AM	CW	8/10/03
E	ADDED SPRING WASHERS	CTD2005033	GC	SD	TT	15/4/05
D	ADDED WASHER FOR ITEM 16		GC	SD	TT	30/5/05
I	SPRING ALIGNER ADDED		MS		MH	02/11/23

F0298 INSTALLATION ARRANGEMENT DRAWING



11.0 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:** _____

12.0 NOTES