ENGINEERING SERVICES & SUPPLIES PTY LTD
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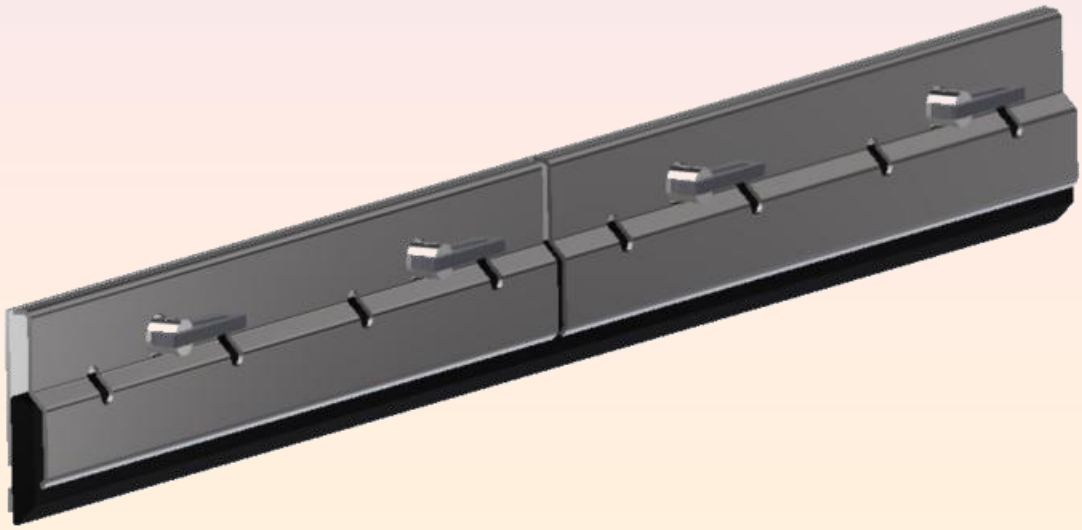
ESS 2000 Series Skirting System

Installation, Operation & Maintenance Manual



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TOLL FREE 1800 074 446 FROM ANYWHERE IN AUSTRALIA **VSS TOLL FREE 1800 300 877**		

WARRANTY

ESS WARRANTS the ESS 2000 Series Skirting System 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.

CONTENTS

FIGURES

TABLES

1.0 SAFETY

The *ESS* 2000 Conveyor Belt Skirting System is designed to be quickly and easily installed and serviced by appropriate personnel.

Under no circumstances should servicing or installation of the ESS 2000 Skirt System be carried out whilst the belt is in operation.

The conveyor must be shut down and locked out before any person enters or reaches into the conveyor enclosure.

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

All equipment, equipment access and installation / service procedures must comply with AS1755, Conveyors – Safety Requirements.

ESS strongly recommends that a thorough Job Safety Analysis should be undertaken prior to commencement of the installation to identify and manage hazards.

1.1 SAFETY LABELS

Pictograph labels are used to show graphically where potential safety hazards exist around this Air Cannon. 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 the technical manuals supplied with the Air Cannon, 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.

anger 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

ESS 2000 Series is a conveyor belt skirting and sealing system comprising a rubber or urethane seal and a weld-on clamp assembly.

ESS 2000 Series attaches to the outside of the conveyor belt load skirts to provide an effective seal and prevent material loss and dust emissions.

Each *ESS* 2000 Skirting assembly comprises a 1200mm long backplate with four captive wedge or cotter assemblies and two 590mm long clamp plates. The backplate may be site cut to 600mm long and used with a single clamp plate. This enables skirt lengths of any multiple of 600mm to be accommodated using standard components.

For skirt lengths that are not a multiple of 600mm, refer to Section 4.1for Installation Procedure.

The rubber seal is secured in place by the clamp plates which are in turn held by two captive wedges (or Cotters). This system allows ease of adjustment or replacement of the rubber seal.

Never install a Clamp Plate that is secured by only one captive wedge (Cotter). Severe belt damage may result. Refer to Section 4.1 for **Installation Procedure**.

3.0 PREPARATION FOR INSTALLATION

3.1 CHECK INSTALLATION DRAWINGS

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

ASSEMBLE THE NECESSARY TOOLS & SAFETY EQUIPMENT REQUIRED FOR THE INSTALLATION

3.2 OBSERVE THE CONVEYOR WHILE RUNNING AND CONVEYING MATERIAL

- Determine loading point.
- Note direction of conveyor belt travel.
- Observe conveyor belt tracking. Conveyor belt must track centrally.
- Observe idlers;
- Ensure conveyor belt does not raise from idlers
- Ensure idlers are spaced correctly so conveyor belt does not sag. If conveyor belt does sag under material loading, additional idlers or *ESS* GUARDABELT Impact Cradle or GUARDASEAL Belt Support Systems should be installed.
- Observe Material on conveyor belt. Material should be loaded on centre of belt.

3.3 INSPECT WEAR LINERS AND CHUTE WALL

- Ensure wear liners and chute wall are in good condition (no cracks, holes, slits or grooves).
- Ensure wear liners and chute wall are straight along bottom edge or material will build up between wear liner and the skirting system.
- or Snug Fit Rubber Skirt ensure dimension 'A' from conveyor belt to the bottom of the existing steel work is obtainable. See table below, and drawing F0169 in section 7.

SNUG-FIT SKIRT RUBBER		
BELT THROUGH ANGLE	DIM 'A'	WHICH EDGE DOWN
15°	10 - 15	20°
20°	10 - 15	20°
30°	15	45°
35°	15 - 20	45°
45°	25	45°

Table 1 - Snug-Fit Skirt Rubber

For Square Edge Skirting Rubber ensure 8 – 12mm from conveyor belt to the bottom of the existing steel work is obtainable.

IF ANY OF THE ABOVE PROBLEMS EXIST, CORRECT BEFORE INSTALLATION OR CONTACT ESS.

IF PRESENT, REMOVE EXISTING SKIRTING SYSTEM AND MOUNTING HARDWARE.

3.4 UNUSUAL CONDITIONS-

CONTACT *ESS* ON 1800 074 446 before installation if any of the following conditions exist:

- concave or convex curves in chute wall or belt.
- extreme side pressures
- fast (>4.6 m/sec) conveyor belt
- temperature extremes - below 7° C or above 65° C
- corrosive atmosphere

4.0 INSTALLATION

WARNING BEFORE PROCEEDING WITH INSTALLATION, ENSURE THAT THE CONVEYOR BELT DRIVE AND ALL ASSOCIATED EQUIPMENT IS FULLY ISOLATED AND LOCKED OUT.

CONTACT WITH A MOVING CONVEYOR BELT OR ITS COMPONENTS CAN RESULT IN SERIOUS INJURY OR DEATH.

4.1 INSTALLATION PROCEDURE

1. If the steel skirt plates are greater than dimension A (Section 3.4) from the belt surface, it may be necessary to extend the plates closer to the belt. A 150x10 flat bar welded to the outside of the chute or skirt side walls is an easy way to achieve this, as long as sufficient freeboard is available outside the skirt line.

2. Take an ESS 2000 Back Plate section and position it such that the bottom edge is uniformly dimension A (Sect 3.4) from the belt, and one end is at the required start point of the skirt seal (preferably toward the tail end of the conveyor). The bottom edge of the ESS 2000 must not protrude below the bottom edge of the skirt plate or chute wall – see step 1 above.

   Weld the backplate to the skirt / chute wall, using a 3mm x 25 long fillet weld at the top above each captive wedge, and plug weld in each lower slot. Use an appropriate welding blanket to protect the belt surface.

3. Repeat step 2 for the full skirt length, simply butting consecutive Backing Plates against each other, maintaining dimension A from the belt. For skirt lengths that are multiples of 600mm, and the final or closing length required is 600mm, simply cut the backing plate in half (2 x 600mm sections), and fit the half length of Backplate with one full Clamp Plate.

   For closing lengths greater than 600mm, but less than 1200mm, cut a Backing Plate to 600mm and install as described above. Use the following procedures to complete the installation.

NEVER INSTALL A CLAMP PLATE WITH ONLY ONE CAPTIVE WEDGE OR COTTER. SEVERE BELT DAMAGE MAY RESULT

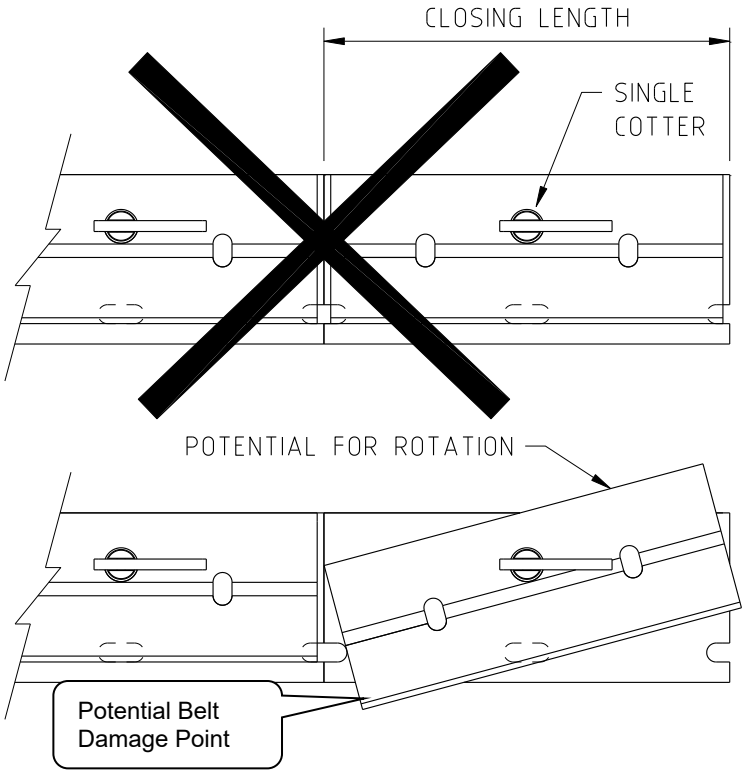


Figure 1 – Potential Belt Damage

For closing lengths less than 600mm the following procedures may be utilised:

There are four options for a smaller Clamp Plate length:

For lengths of 500-600mm, the Backplate may be trimmed to the required length at one end only. Cut the end furthest from the previous Backplate. Fit the Backplate as previously described. Cut the Clamp plate at the same end.

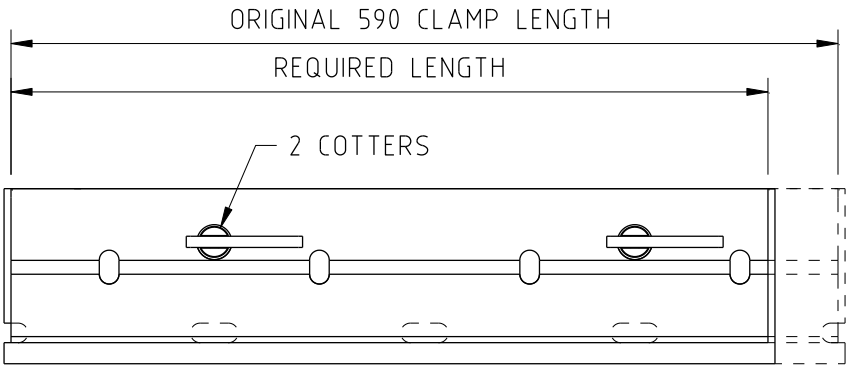


Figure 2 – 500 – 600 nn kengths

- For lengths of 380 – 600mm, the Backplate can be trimmed equally from both ends so that the two captive wedges (cotters) remain in the centre. Fit the Backplate as described above. Similarly, trim the Clamp Plate to the same length, minus 5mm each end for clearance.

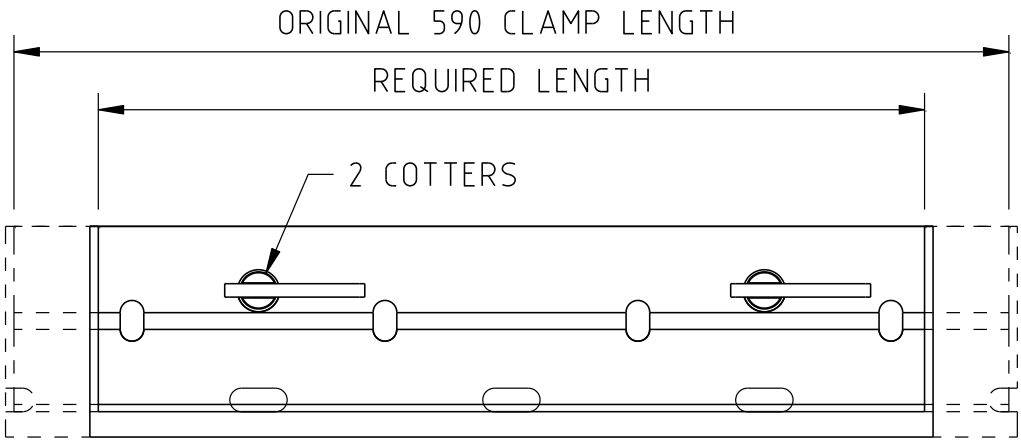


Figure 3 – 380 – 600 mm lengths

- For smaller lengths, the Backplate may be trimmed as described above, plus cut and joined in the middle to reduce the centres of the captive wedges (cotters). The two cotters may be reduced to 150mm centres minimum. Weld the Backplate sections back together and dress smooth with a grinder. The Clamp Plate will also be cut and re-joined in a similar manner, again allowing 5mm clearance at the ends.

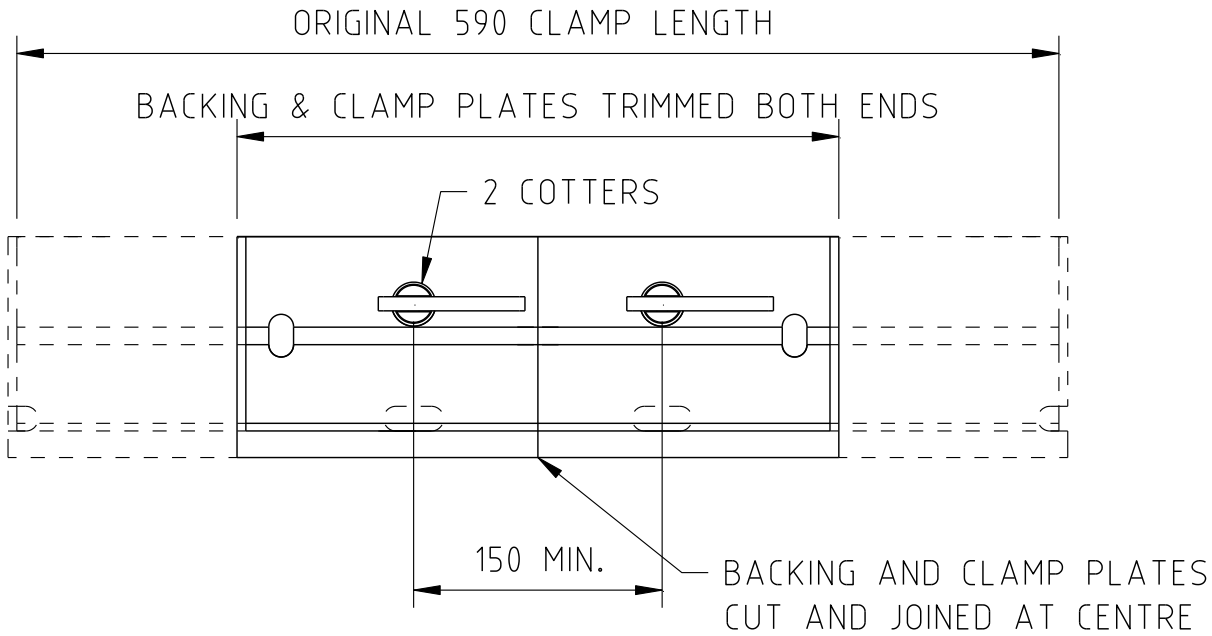


Figure 4 - < 300 mm lengths

- Finally, a Three-Cotter Clamp Plate may be constructed. The Backplate can be cut to a single cotter and installed as per standard units. The Clamp Plate is then cut to match the Backplate, and welded to the adjacent Clamp Plate to form a longer Clamp Plate with three cotters. Ensure that the fabricated longer Clamp Plate has its holes at the same centres as the Cotters in the Backplate.

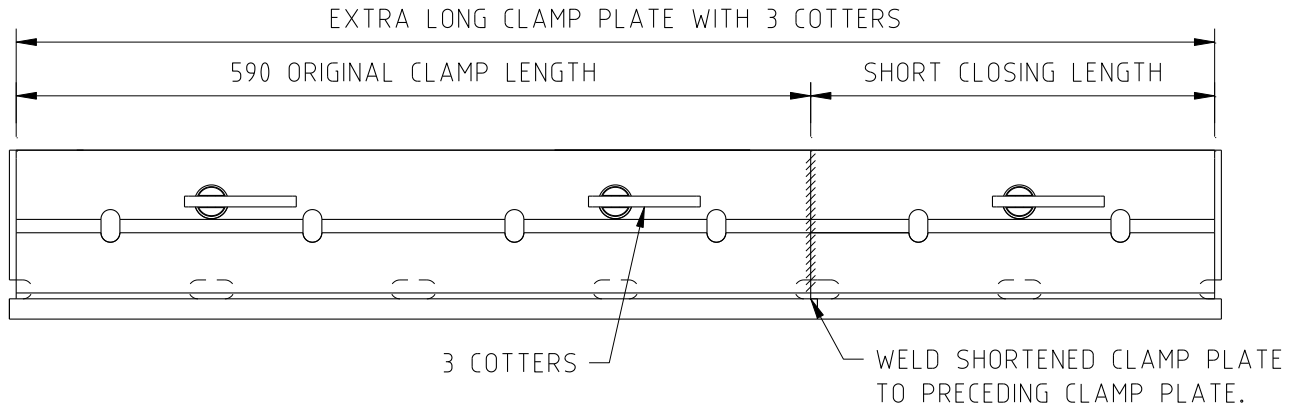


Figure 5 Clamp Plates

Any of the above methods is acceptable. **Again, NEVER install a Clamp Plate with only a single Captive Wedge or Cotter. A minimum of two Cotters is required for each Clamp Plate.**

4. Grind each plug weld flush with the face of the backing plate if necessary.

5. Measure the required length of skirting rubber required, and cut this length from the roll supplied. **See the cutting procedure following in section 4.2.**

6. Insert the skirting rubber from one end, making sure that the correct edge is downward. Secure the rubber by placing the ESS 2000 clamps plates in position over the captive wedges, and lightly tapping the wedges to hold the rubber.

7. Insert a screwdriver in the Clamp plate slot and push down the rubber until it lightly but uniformly contacts the conveyor belt, loosening the nearest wedge if necessary. Firmly tap wedges tight and repeat the process for consecutive clamp plates. Do not overtighten the rubber against the belt, or the wedge.

8. Remove the weld blanket, and any installation debris from the conveyor.

9. Remove danger tags and return conveyor to service, following plant procedures.

NOTE: **IF YOU HAVE ANY PROBLEMS, OR ARE UNCLEAR ON ANY INSTALLATION STEP, CONTACT *ESS* ON CUSTOMER SERVICE NUMBER 1800 074 446.**

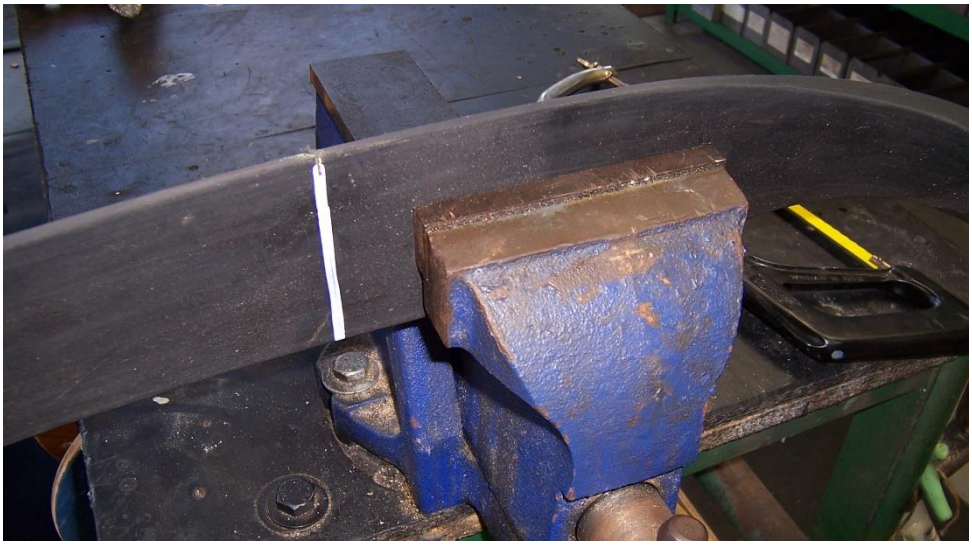
4.2 CUTTING PROCEDURE FOR ESS 2000 RUBBER SKIRT SEALS

Ensure that the following procedure is carried out in a safe position away from the conveyor belt. This procedure is to be undertaken in conjunction with the Safe Working Practices outlined in this Installation Manual.

Any installation of equipment, and any equipment installed must comply with AS 1755-2000 Conveyors – Safety requirements.

The following steps are recommended for the safe cutting of ESS Snug-Fit and Square Edge rubber skirt seals:

Step 1 Measure and mark the required length of ESS 2000 skirt rubber for the job being undertaken. A white paint marker is recommended, and the mark should be perpendicular to the length of the rubber.



Step 2 Place the rubber in a vice, or firmly clamp it to a suitable piece of structure. Position the cut mark so that it is free and accessible for a cut to be made, and that the rubber is free on one side of the mark.

Step 3 Have an assistant grip the free end of the rubber to prevent excessive movement, and to open the cut as it progresses. Using a hacksaw with a fresh blade, slowly begin to cut the rubber from the top of the mark.

A knife or sharp blade is not recommended due to the hazards involved. Ensure that appropriate PPE is worn, including eye protection and suitable gloves.

Step 4 The assistant should hold the cut open by firmly holding the rubber and turning it slightly downward. Do not apply excessive load – this could result in a fall when the final cut releases the rubber.

Step 5 Continue as above until the cut is completed. Release the end of the rubber from the vice, and install as described in the ESS 2000 manual. Store the left over rubber in a suitable place in line with good house-keeping practice.

5.0 COMMISSIONING

A note on safety:

No additional safety hazards are present with *ESS* 2000® Skirting other than normal conveyor belt dangers.

In particular:

- Beware of moving conveyor belts.
- Beware of pinch points
- Do not attempt to install, maintain or disassemble any part of a conveyor belt without first isolating and tagging the conveyor drive.

1. Following site safety and start-up procedures, start conveyor belt and run under normal conditions for 10 minutes. Observe *ESS* 2000® Skirting and look for material leakage.

WARNING

BEFORE PROCEEDING WITH COMMISSIONING, ENSURE THAT THE CONVEYOR BELT DRIVE IS FULLY ISOLATED AND LOCKED OUT.

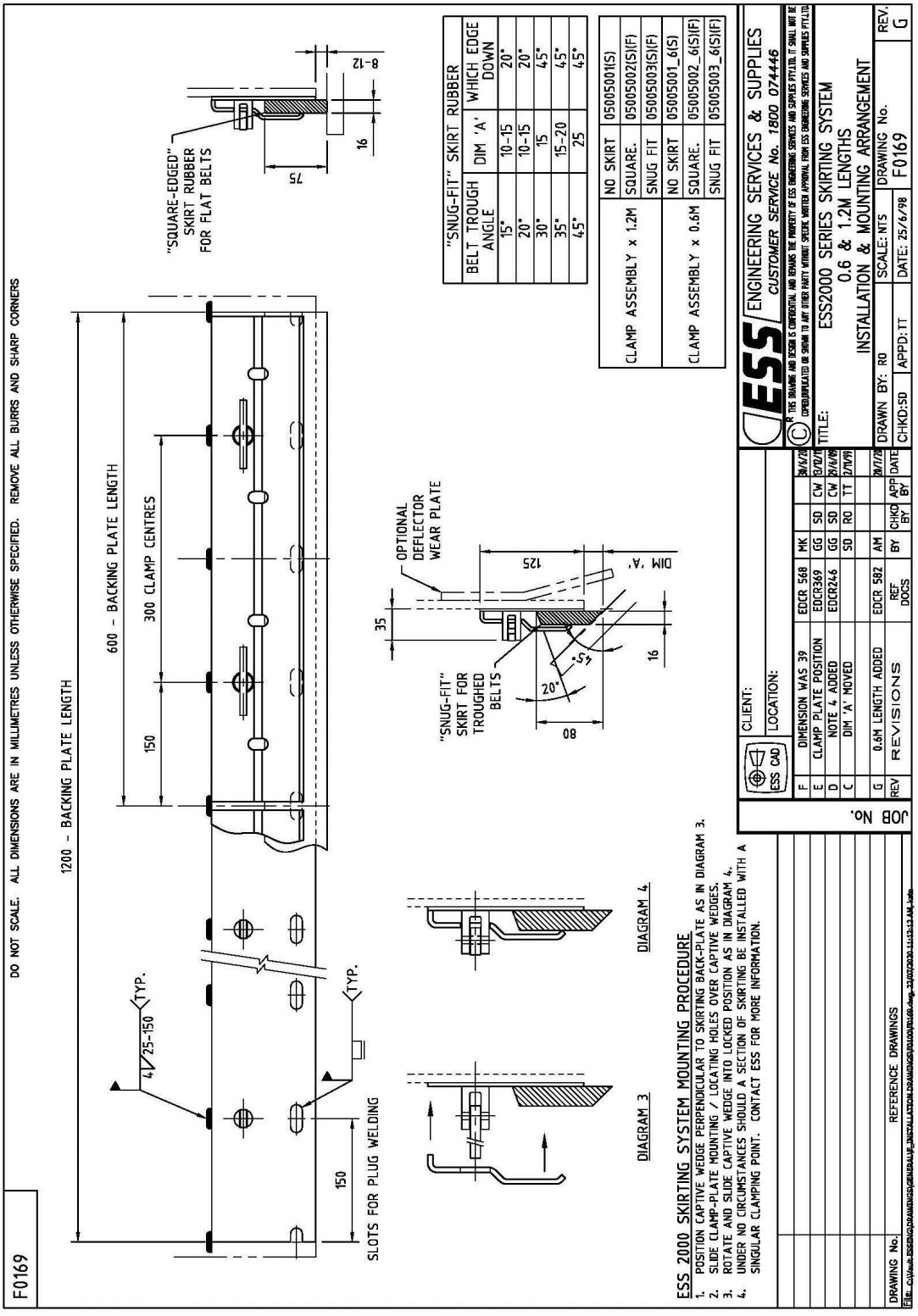
2. Lockout / tagout all power to conveyor belt and conveyor accessories.
3. Adjust skirting rubber by following step 7 in Section 4.1 Installation Procedure.
4. Remove danger tags and return conveyor to service, following plant procedures.
5. Start conveyor and run under normal conditions.

6.0 TROUBLESHOOTING

	PROBLEM	SOLUTION
1.	Conveyor belt won't run after installation.	Skirting Rubber is installed too tightly against conveyor belt.
2.	Excessive Skirting Rubber wear.	Skirting Rubber is installed too tightly against conveyor belt.
3.	Product leaking from under skirting.	Skirting rubber is not installed uniformly against the belt.

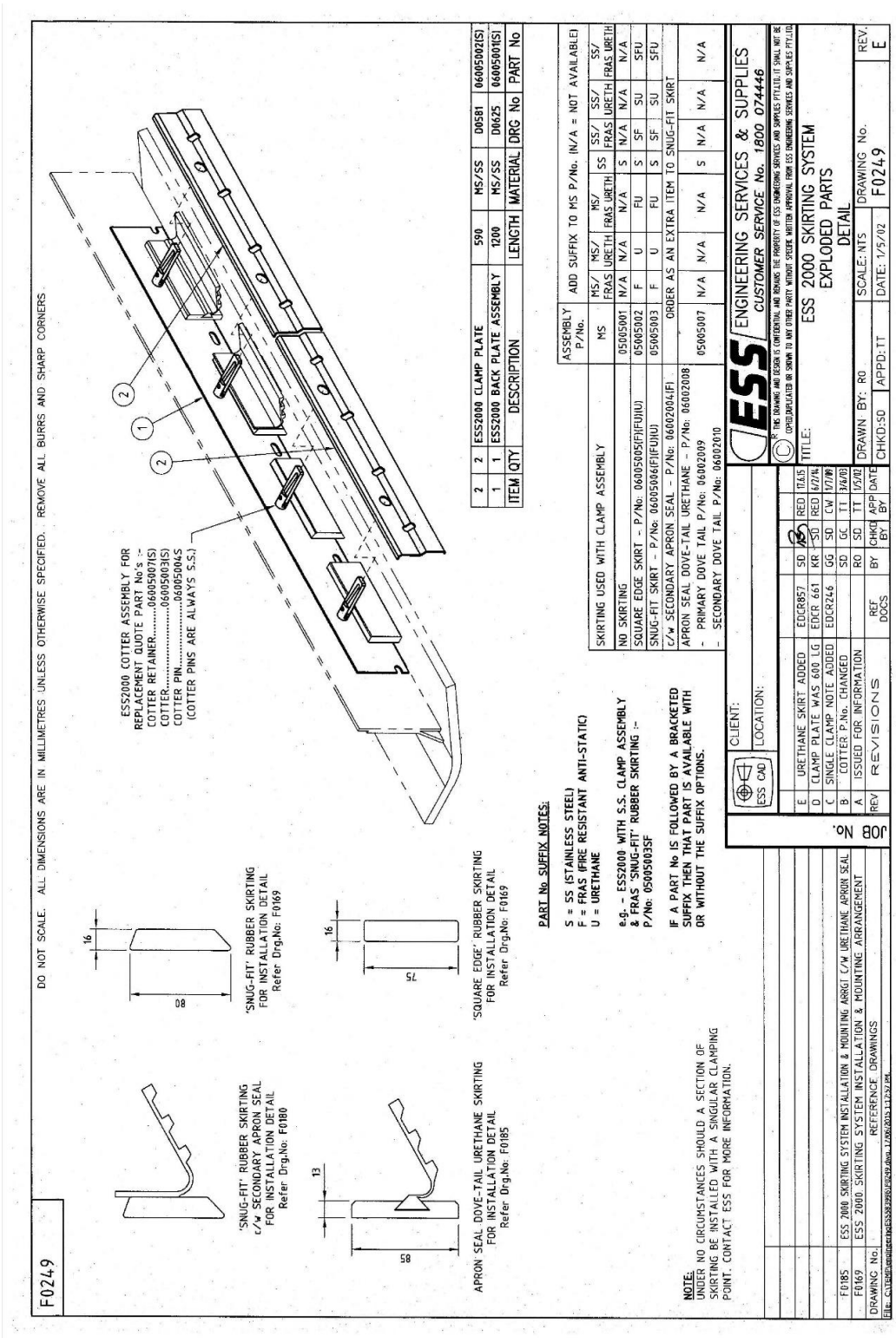
7.0 INSTALLATION ARRANGEMENT DRAWING

1. F0169 600 – 1200 LENGTHS



8.0 EXPLODED PARTS DRAWING

2. F0249 ESS 2000 SKIRTING SYSTEM



9.0 FINAL CHECKLIST

Site:_____ Number: _____ Date:_____

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

Completed By: _____

(Circle Yes or No Below)

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 _____

_____

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

If No, WHY _____

_____

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

If No, WHY _____

_____

Is equipment fit for commissioning? Yes/No

If No, WHY_____

_____

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

If No, WHY_____

_____

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

If Yes, WHAT _____

_____

Is equipment performance to Client expectations? Yes/No

If No, WHY _____

_____

ESS Signature: _____ Client Signature: _____

10.0 NOTES