

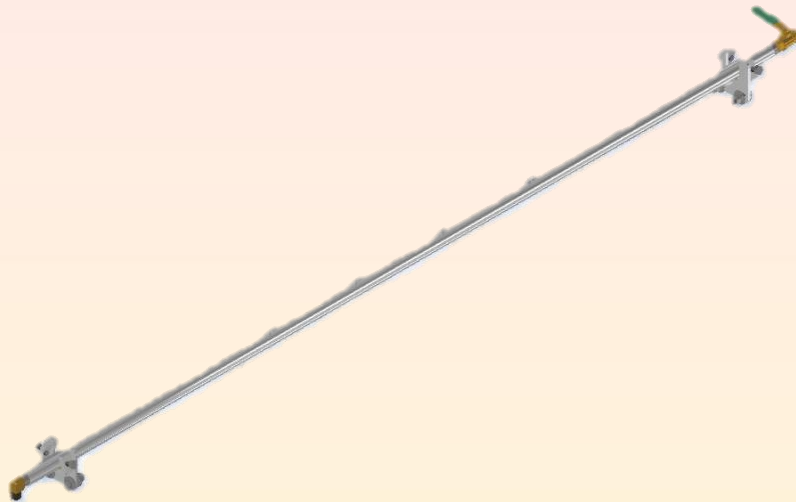


**ENGINEERING SERVICES & SUPPLIES PTY LTD**

**Ph: 1800 074 446 [www.esseng.com.au](http://www.esseng.com.au)**

# Spraybar DN25 (450 - 2000 Belt Widths)

Installation, Operation & Maintenance Manual





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## WARRANTY

ESS WARRANTS the *Spraybar DN25* 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](http://www.esseng.com.au) to register your product warranty.

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Information contained herein is for use in the operation of the Spraybar DN25, purchased from ESS and cannot be passed on to any other party without express permission, in writing, from ESS.



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## 1.0 SAFETY

The Spraybar 25nb is designed to be quickly and easily serviced by appropriate personnel.

Under no circumstances should servicing or installation of the Spraybar 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 personnel install and service this product. Ensure that all site and statutory safety procedures are followed.

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

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**.

Hazards that 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		

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 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** Spraybar is primarily intended as a Conveyor Belt washing Spraybar to be used in conjunction with a Conveyor Belt Cleaning system. It is normally positioned between the Primary and Secondary Cleaners, on the lower face of the head pulley.

The **ESS** Spraybar is designed to remove sticky adhering material from the Conveyor Belt surface by use of a high velocity, low volume, knife edge spray.

The **ESS** Spraybar has the added benefits of keeping both the Primary and Secondary cleaners free of material build-up (when positioned appropriately), as well as assisting in dust suppression.

The Spraybar is constructed from DN25 Stainless Steel Pipe, with Wash Jet Spray Nozzles positioned along the centreline of the pipe.



### 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 SPRAYBAR AND MOUNTS** - Do this in your workshop or similar free area, rather than at the Conveyor. This will enable you to:
  - a. verify all required equipment is present.
  - b. familiarise yourself with the Spraybar assembly.
  - c. plan the installation, reducing installation time.
3. **ASSEMBLE THE NECESSARY TOOLS & SAFETY EQUIPMENT REQUIRED FOR THE INSTALLATION**



## 4.0 INSTALLATION



Conveyor 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.

### NOTE 1

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

### NOTE 2

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



### Step 1 Locating the Spraybar Centreline

Using the typical installation drawing supplied in this manual, locate the mainframe's centreline on both sides of the conveyor. Select the desired impact point for the spray and measure radially 325mm in the direction of belt flow. The centreline of the Spraybar cutout is 165mm perpendicular to the belt and 280mm parallel to the belt giving an impact angle of approximately 30°. If impacting on the Head Pully, then these measurements are perpendicular to the tangent of impact (See Figure 1 - Locating the Centreline).

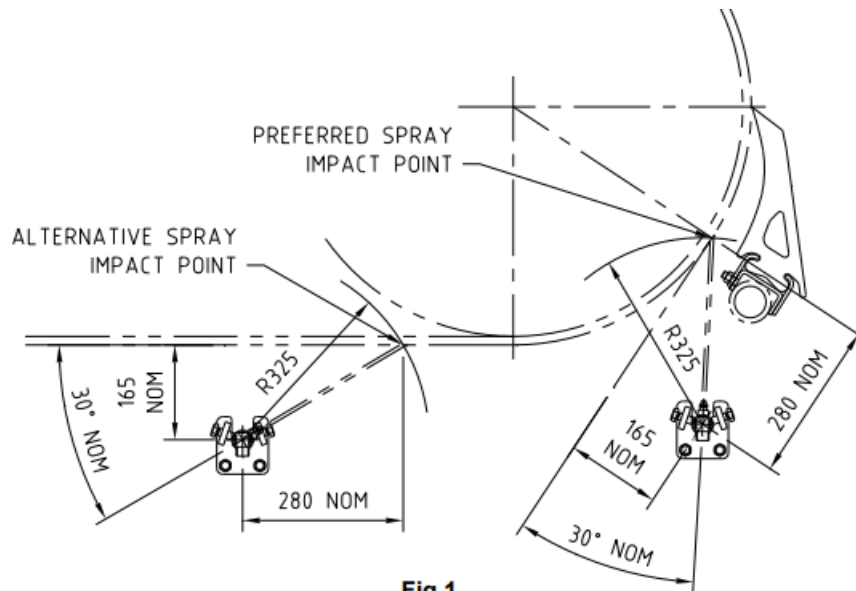


Fig 1.

Figure 1 - Locating the Centreline

### Verify Mainframe Position before Proceeding

Position the mount assembly over the centreline marks for the Spraybar. Verify that the mounts fit, if mounts interfere with structural members, it may be necessary to locate the Spraybar elsewhere along the belt. Once mounting position is confirmed, proceed.

### Step 2 Mount Fastener Holes

At the selected Spraybar mounting position, mark out and cut the Spraybar and mount fastener holes in each side of the chute. Refer to the installation drawing at the back of this manual.

### Step 3 Water Inlet

Insert the Spraybar through the cutouts making sure that the water inlet is on the correct side.



#### Step 4 Positioning Spraybar

Place the mounts over each end and bolt to structure. Set the Spraybar in approximate correct position and lightly tighten up lock screws.

#### Step 5 Filter Kit

If supplied, position the Filter Kit (Figure 2) in an appropriate position (remember that the flexible hose is 2m long), and secure using appropriate fasteners. The figure below shows an ESS Type 2 Filter Kit. If another type of Filter Assembly is used, ensure that the assembly is mounted correctly in an appropriate position adjacent to the Spraybar. ESS has a range of Filter Kits, including the Type 3, which has pressure control, gauge, filter by-pass and solenoid valve.

#### Step 6 Solenoid Valve

Connect the site water supply to the inlet side of the Filter Assembly. If no solenoid valve is present, ensure that the isolating valve is closed until final connection is completed. If a solenoid valve is included, connect the solenoid valve so that the valve is opened when the conveyor belt is running, and if possible, when material is present on the belt.

#### Step 7 Completion

Connect the flexible hose from the Filter Assembly to the Spraybar. The Spraybar is now ready for commissioning and operation.

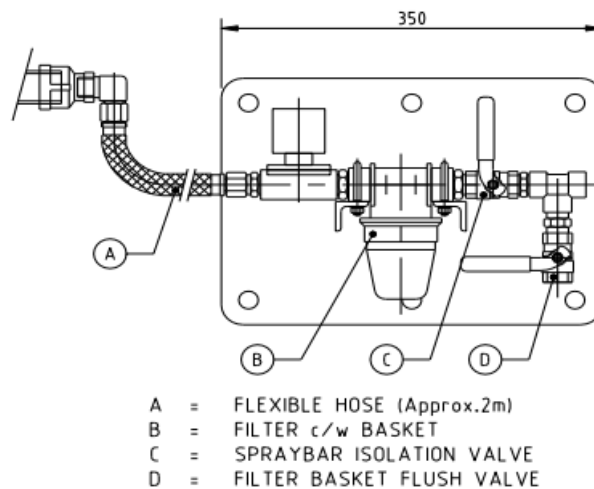


Figure 2 - Complete Spraybar



## 5.0 COMMISSIONING

### Step 1 TURN WATER SUPPLY ON

Double check the items in previous sections - safety - preparation - installation.

### Step 2 TURN ON SUPPLY TO THE SPRAYBAR

If a solenoid valve is used, have electrical personnel override the controls to open the valve for testing and commissioning, with the conveyor locked out. Check all joints for leaks. (If there are any leaks, isolate the water supply, dismantle the appropriate joint and reseal with appropriate thread sealing tape or compound).

### Step 3 CHECK SPRAY IMPACT POINT

If the spray impact point is not at the intended position, loosen off the lock screws and rotate the Spraybar as required.

Once correct spray impact point is achieved, tighten the lock screws.

Check the water spray pattern adjacent patterns are overlapping. If adjacent spray patterns are colliding, use a spanner to rotate the nozzles slightly to prevent, until the patterns just clear.

### Step 4 START THE CONVEYOR

Follow the established safety rules.

### Step 5 OBSERVE THE CLEANING ACTION

If installed as part of a total cleaning system with ESS Primary and Secondary Cleaners, then observe the cleaning action of the entire system.

Place some product on the belt and look to see that all cleaners are operating properly.

### Step 6 DEMONSTRATE THE SYSTEM TO THE OPERATING SUPERVISORS AND CREW

Call the supervisors responsible for maintenance and operation of 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 7 SECURE THE SYSTEM FOR PRODUCTION

Follow plant procedure to secure the conveyor for actual production.



## 6.0 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 Adhere to all local safety rules.
- 2 Give a “Hands On” instruction with the conveyor system shut down.
- 3 Give a “Hands On” instruction with the conveyor system running.
- 4 All service must be recorded and given to a person of responsibility.
- 5 Encourage the person being trained to look for possible problems developing on the system, eg. Belt tracking excessively, tears or damage to belt, seized idlers, missing bolts, etc.
- 6 A warning to the maintenance department to rectify small problems can save the company a lot of money in repairs and production costs.
- 7 Impress how important it is to maintain and service the cleaners correctly.



## 7.0 ROUTINE MAINTENANCE & SERVICE

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

### CAUTION

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

#### Routine Inspection

##### Step 1 Inspect the Spraybar

Inspect the condition of the Spraybar. Open the inspection door (if fitted) and observe the condition and action of the cleaning system.

##### Step 2 Clean Material Build Up

If necessary (and if plant rules allow it), hose any material build-up from the Spraybar –

**DO NOT REACH INTO THE CHUTE WHILST CONVEYOR IS RUNNING.**

##### Step 3 Rotate the Spraybar

If necessary, rotate the Spraybar- refer to Section 5 [Commissioning](#).

#### When Spray Pattern Appears Weak or Incomplete

##### Step 1 Isolate

Isolate the Spraybar water by closing isolating valve ('C' in Figure 2 - Complete Spraybar)

##### Step 2 Inspect

Remove filter basket and visually inspect for any material buildup on filter.

By opening valve 'D' you can wash the filter basket clean.

##### Step 3 Flush

If pressure is still low, then undo plug from far end of the Spraybar and flush the Spraybar out.

##### Step 4 Clean

If pressure is still low, then remove the entire Spraybar from the structure by loosening lockscrews on mount then remove and clean the nozzles.





# 9.0 ESS BELT CLEANER QUICK REFERENCE

## F0347 QUICK REFERENCE CHART

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

### ESS BELT CLEANER QUICK REFERENCE

#### XHD CENTRE TENSIONED

BELT WIDTH	450	495	750	900	1050	1200	1350	1500	1600	1800	2000	2200	2400
No. HOZES	1	1	2	2	3	3	4	5	5	6	6	7	8
TRACK LENGTH	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970
SPRAY COVER-DIMS	267	267	517	517	767	767	1017	1017	1267	1267	1517	1517	1517
FRAME LENGTH	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
BLADE COVER	185	185	185	185	185	185	185	185	185	185	185	185	185
STIFFENER LENGTH	1430	1430	1430	1430	1430	1430	1430	1430	1430	1430	1430	1430	1430
6 BAR I/AM	5.6	5.6	11.2	11.2	16.8	16.8	22.4	22.4	28	28	33.6	33.6	33.6
10 BAR I/AM	7.2	7.2	14.4	14.4	21.6	21.6	28.8	28.8	36	36	43.2	43.2	43.2

#### TRAC MOUNT PRIMARY

BELT WIDTH	450	495	750	900	1050	1200	1350	1500	1600	1800	2000	2200	2400
TRACK LENGTH	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970
BLADE COVER	330	330	330	330	330	330	330	330	330	330	330	330	330
FRAME LENGTH	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
STIFFENER LENGTH	-	-	-	-	-	-	-	-	-	-	-	-	-

#### TRAC MOUNT SECONDARY CLEANER

BELT WIDTH	450	495	750	900	1050	1200	1350	1500	1600	1800	2000	2200	2400
MAINFRAME LENGTH	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
CARTRIDGE LENGTH	950	950	950	950	950	950	950	950	950	950	950	950	950
No. OF CLEANING BLADES	4	5	6	8	9	10	12	13	14	16	18	20	22
CLEANING BLADE COVERAGE	400	500	600	800	900	1000	1200	1300	1400	1600	1800	2000	2200
END BLADE WIDTH	75	75	75	75	75	75	75	75	75	75	75	75	75
MIN. MOUNT FACE	770	870	1070	1270	1320	1520	1720	1820	1970	2170	2370	2570	2770
MAX. MOUNT FACE	880	980	1180	1380	1480	1680	1880	2030	2230	2430	2630	2830	3030

#### DURT TRACKER

BELT WIDTH	450	495	750	900	1050	1200	1350	1500	1600	1800	2000	2200	2400
TRACK LENGTH	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970
No. BLADES	3	4	5	6	7	8	9	10	11	12	13	14	15
PRIM. BLADE COVER	304	454	604	754	904	1054	1204	1354	1504	1654	1804	1954	2104
SEC. BLADE COVER	317	467	617	767	917	1067	1217	1367	1517	1667	1817	1967	2117
FRAME LENGTH	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
STIFFENER LENGTH	-	-	-	-	-	-	-	-	-	-	-	-	-

#### HAWG BONE / DURT HAWG

BELT WIDTH	450	495	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
P/B COVER	317	467	617	767	917	1067	1217	1367	1517	1667	1817	1967	2117
D/H COVER	335	485	635	785	935	1085	1235	1385	1535	1685	1835	1985	2135
FRAME LENGTH	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
STIFFENER LENGTH	-	-	-	-	-	-	-	-	-	-	-	-	-

#### RBC

BELT WIDTH	480	750	900	1050	1200	1350	1500	1600	1800	2000	2200	2400
BLADE LENGTH	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970	1970
No. HOLES	1	2	3	4	5	6	7	8	9	10	11	12
PIPE SIZE	100	100	100	100	100	100	100	100	100	100	100	100
BLADE COVER	730	930	1130	1330	1530	1730	1930	2130	2330	2530	2730	2930

#### HEAVY DUTY RBC

BELT WIDTH	900	1050	1200	1350	1500	1600	1800	2000	2200	2400	2600	2800	3000
BLADE LENGTH	275	322	445	457	738	872	1013	1155	1296	1437	1579	1721	1863
PIPE LENGTH	1550	1750	2000	2200	2500	2700	3000	3300	3600	3900	4200	4500	4800
PIPE SIZE	100	100	100	100	100	100	100	100	100	100	100	100	100
BLADE COVER	1030	1180	1330	1480	1630	1780	1930	2080	2230	2380	2530	2680	2830

#### DIAGONAL PLOUGH

BELT WIDTH	450	495	750	900	1050	1200	1350	1500	1600	1800	2000	2200	2400
M/FRAME LENGTH	440	480	730	880	1030	1180	1330	1480	1630	1780	1930	2080	2230
MIN. MOUNT FACES	645	685	935	1085	1235	1385	1535	1685	1835	1985	2135	2285	2435
MAX. MOUNT FACES	755	795	1045	1195	1345	1495	1645	1795	1945	2095	2245	2395	2545
BLADE LENGTH	725	765	1015	1165	1315	1465	1615	1765	1915	2065	2215	2365	2515
No. HOLES	5	7	8	9	10	11	12	13	14	15	16	17	19
21	23	25											

#### BRUSH CLEANER

BELT WIDTH	450	495	750	900	1050	1200	1350	1500	1600	1800	2000	2200	2400
No. BRUSHES	4	5	6	8	9	10	12	13	14	16	18	20	22
BRUSH COVERAGE	430	470	620	770	920	1070	1220	1370	1520	1670	1820	1970	2120
MIN. MOUNT FACES	640	680	930	1080	1230	1380	1530	1680	1830	1980	2130	2280	2430
MAX. MOUNT FACES	750	790	1040	1190	1340	1490	1640	1790	1940	2090	2240	2390	2540

#### COMPACT BRUSH CLEANER

BELT WIDTH	300	400	450	500	600	650	750	900
BRUSH COVERAGE	270	370	420	470	570	620	720	870
MIN. MOUNT FACES	300	400	450	500	600	650	750	900
MAX. MOUNT FACES	370	470	520	570	670	720	820	970

#### COMPACT DIAGONAL PLOUGH

BELT WIDTH	350	400	450	500	600	650	750	900
MAINFRAME LENGTH	475	485	495	505	515	525	535	545
CENTRE FRAME LENGTH	540	540	540	540	540	540	540	540
BLADE LENGTH	540	540	540	540	540	540	540	540

#### COMPACT PLUS PRIMARY

BELT WIDTH	300	450	600	750	900	1050	1200	1350
No. BLADES	2	3	4	5	6	7	8	10
BLADE COVER	250	375	500	625	750	875	1000	1125
FRAME LENGTH	1100	1250	1400	1550	1700	1850	2000	2150

#### COMPACT - PRIMARY & SECONDARY

BELT WIDTH	300	400	450	500	600	650	750	900
BLADE COVER	225	325	375	425	525	575	675	825
FRAME LENGTH	600	800	800	850	1000	1050	1200	1400

#### GENERAL NOTES

- WHERE NOT BELT CLEANERS SHOW 9000 BLADES, 9 IS THE DEFAULT UNLESS OTHERWISE STATED WHERE STIFFENERS ARE REQUIRED PLEASE SUPPLY THE RELEVANT DIMENSIONAL DATA
- HANDRAIL MOUNTS ARE AVAILABLE FOR XHD, TRACK-MOUNT, DURT TRACKER (WITHOUT STIFFENER) & HAWG BONE / DURT HAWG CLEANERS
- DUAL TENSIONERS ARE USED ON ALL CLEANERS
- 1500 BELT WIDTH AND OVER ONLINE SECONDARY & COMPACT SECONDARY CLEANERS ALWAYS HAVE DUAL TENSIONERS
- TELESCOPING CHMS USED
- 450-900 BELT / 400 LONG
- 1200 - 2400 BELT / 900 LONG

#### CLIENT: ESS

LOCATION: QUEENSLAND

ESS O&D

ESS ENGINEERING SERVICES & SUPPLIES  
 CUSTOMER SERVICE No. 1800 074446

IF YOU HAVE ANY COMMENTS OR REQUIREMENTS PLEASE CONTACT US AT 1800 074446 OR VISIT OUR WEBSITE AT WWW.ESS.COM.AU

TITLE: ESS BELT CLEANERS QUICK REFERENCE CHART

REV APPR BY DATE

REV 1 BY DATE

REV 2 BY DATE

REV 3 BY DATE

REV 4 BY DATE

REV 5 BY DATE

REV 6 BY DATE

REV 7 BY DATE

REV 8 BY DATE

REV 9 BY DATE

REV 10 BY DATE

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REV 95 BY DATE

REV 96 BY DATE

REV 97 BY DATE

REV 98 BY DATE

REV 99 BY DATE

REV 100 BY DATE

ESS ENGINEERING SERVICES & SUPPLIES  
 CUSTOMER SERVICE No. 1800 074446

IF YOU HAVE ANY COMMENTS OR REQUIREMENTS PLEASE CONTACT US AT 1800 074446 OR VISIT OUR WEBSITE AT WWW.ESS.COM.AU

TITLE: ESS BELT CLEANERS QUICK REFERENCE CHART

DRAWN BY: SD

SCALE: NTS

DATE: 18/7/06

APPD: TT

CHKD: GC

DRAWING No. F0347

REV. L



## 10.0 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: \_\_\_\_\_

