INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

COALESCING PLATE SEPARATOR

MODEL No BSV-96/6/12 BSV-96/9/12

CLIENT:

LOCATION:

DATE:

SUPPLIER: BALDWIN INDUSTRIAL SYSTEMS PTY LTD

13 Ranton Street CARDIFF NSW 2285 Ph 02 4954 0440 Fx 02 4954 2440



TABLE OF CONTENTS

1.0	EQUIPMENT LIST	1
2.0	APPLICATION DESCRIPTION	2
	2.1 DESIGN CONDITIONS	2
3.0	PRINCIPLES OF OPERATION	3
4.0	INSTALLATION AND COMMISSIONING INSTRUCTIONS	4
5.0	OPERATING INSTRUCTIONS	7
6.0	MAINTENANCE	9
7.0	STEPS FOR PLATE PACK INSPECTION AND SERVICING	10
8.0	SPARE PARTS LIST	12
APPE	NDIX A - Drawing	13
APPE	NDIX B – ASM Electric Diaphragm Pump	14
APPE	NDIX C - Baldwin Control Panel	15

1.0 EQUIPMENT LIST

BALDWIN CPS MODEL No BSV- 96/6/12 BSV-96/912

Dimensions: 2280mm long x 1016mm wide x 1615mm

high excluding pipe protrusions

Performance Rating: See "Design Conditions"

Approximate Dry Weight: 250kg

Approximate Operating Weight: 1300kg

ASM ELECTRIC DIAPHRAGM PUMP MODEL No DS-50 DT-50

Dimensions: 550mm long x 355mm wide x 520mm high

Performance Rating: Single 240V 1.1kw Motor / Three phase 415V 1.1kw

Motor

Suction Head: 2.0 metres vertical (typical)

Discharge Head: 2.0 metre vertical (typical)

Approximate Weight: 67kg

ASM ELECTRIC DIAPHRAGM PUMP MODEL No DS-76 DT-76

Dimensions: 590mm long x 385mm wide x 595mm high

Performance Rating: Single 240V 1.5kw Motor / Three phase 415V 1.5kw

Motor

Suction Head: 2.0 metres vertical (typical)

Discharge Head: 2.0 metre vertical (typical)

Approximate Weight: 80kg

BALDWIN CONTROL PANEL WITH FLOAT SWITCH/LEVEL PROBES MODEL No LP/LF INCLUDING.

Dimensions: 370mm long x 270mm wide x 180mm high

Performance Rating: Single 240V 50Hz / Three Phase 415V AC 50Hz

2.0 APPLICATION DESCRIPTION

We understand that wastewater from will gravitate to a below ground holding tank. The collected wastewater is then pumped to an above ground Coalescing Plate Separator (CPS) where free oils and suspended solids will be removed to a level suitable for discharge.

2.1 DESIGN CONDITIONS

The system has been selected based on the following design parameters:

- Maximum Flow Rate = 6,000L/hr / 9,000L/hr
- Average Oil SG = 0.85
- Minimum Operating Temperature = 22°C
- Influent Oil Concentration = 750ppm
- Effluent Oil Concentration = 25ppm / 29ppm
- Flow Status = Pumped by a diaphragm type pump operating at less than 2 strokes/second.

No chemical emulsions, surfactants, detergents or water soluble degreasers to be present.

Only "Quickbreak" type detergents may be used and only in minimal quantities.

3.0 PRINCIPLES OF OPERATION

Like all gravity separators, the Baldwin CPS depends on Stokes' Law for its performance prediction. Stokes' Law is the physical law governing the settling/rise rate of a particle/droplet in a fluid stream, and along with various design parameters, determines the size and type of CPS unit.

Operation of the CPS is simple:

- Contaminated water is introduced into the first section of the CPS via the diaphragm pump. Heavy solids settle out immediately and fall into the hopper, whilst large oil slugs rise to the surface.
- The remaining oily/water mixture flows through the closely spaced polypropylene plates with the smaller oil droplets and fine suspended solids being progressively separated. An oil dam prevents the collected (floating) oil from escaping into the outlet pipe. Oil skimmers are provided for the removal of the accumulated oil.
- Clean water passes underneath the base of the oil dam, over the outlet weir and gravitates to the point of discharge.

4.0 INSTALLATION AND COMMISSIONING INSTRUCTIONS

BALDWIN CPS

Installation should be carried out by a licensed plumber. The basic steps for installation of the Baldwin CPS unit are described as follows:

- Select a sound, level foundation for locating the unit. Secure the feet to the foundation with 12mm diameter (at least) corrosion resistant dynabolts or similar fasteners.
- 2. Connect clean water outlet pipe to the outlet connection of the CPS.
- 3. Connect the oily-water inlet pipe work from the collection pit to the suction side of the pump. Install a floating suction or coarse strainer to the end of the pipe work inside the collection tank. Install the pump discharge to the inlet connection of the CPS. Flexible hose or couplings may be required either side of the pump, to dampen shock from the pumps' operation. They must be installed on ridged steel pipe work to avoid system failures. Unions or other easily removable connections are required either side of the pump to allow the quick replacement of the consumable flap valves or removal of the pump.
- 4. Connect the oil outlets from the oil skimmers to a suitable oil collection drum. A normally open valve may be installed in the oil outlet line, if required for isolation purposes.
- 5. Connect the solids outlet (base of hopper) to suitable sludge disposal piping back to the holding well. Install a ¼ turn valve on the solids outlet at the base of the hopper.

Notes:

- * All pipework is to be independently supported not supported by the separator connection nozzles.
- * The connection sizes for the separator are shown on the provided drawing in Appendix A of this manual.
- * A bund (minimum capacity = 1500L) complete with a drain back into the dirty water collection tank should be constructed around the CPS unit, in case of spillage etc during servicing. Note; bunds must be constructed to relevant Australian Standards & local regulations. (BSV capacity = 1200 litres)

ASM ELECTRIC DIAPHRAGM PUMP

Secure the pump to the ground beneath the CPS using 10mm diameter "Dynabolts" or similar fasteners. The outlet port of the pump should be pointing away from the solids hopper enabling easy plumbing to the inlet port of the CPS.

If the pump is to be mounted in an area open to the weather (ie. not directly under the CPS), the manufacturer recommends that the unit be installed under a cowl or similar enclosure to exclude rainwater and allow free air flow to the pump motor.

Note: Remove small vent plug from oil filler cap before operating pump.

Please refer to the manufacturer's instructions in Appendix B of this manual for further details.

BALDWIN CONTROL PANEL

The control panel and float switch/level probes should be installed by a licensed electrician as per the wiring diagram supplied. All applicable wiring standards should be adhered to. For full details, please refer to the wiring diagrams in Appendix C of this manual.

LEVEL PROBE INSTALLATION:

- 1. **Reference Probe**: The reference probe (R) should be mounted so that the base is approximately 200mm above the floor of the collection well, enabling immersion of the probe in the wastewater at all times.
- 2. **Low Level Probe**: The low-level probe (L) is provided to stop the pump before the liquid level drops below the base of the suction pipe. This probe should be mounted so that the base of the probe is approximately 400mm above the bottom of the collection well.
- 3. **High Level Probe**: When the water level reaches the high-level probe (H), the pump is automatically switched on to pump the water to the CPS. This probe should be mounted so that the base of the probe is **at least** 500mm above the base of the low-level probe (ie > 900mm above the bottom collection well) and no more than 1300mm above the bottom of the collection well.

Note:

- * All collection tanks are different, therefore individual assessment is required to determine the correct height for the suction pipe & associated level probes.
- It is important to leave a 5-metre coil of wire at the electrode holder to allow easy removal of the probes for cleaning and servicing without the need for disconnection.
- * The Control Panel and IS Barrier Housing (if applicable) are to be mounted in a "safe" area; ie **outside any hazardous zone**.

PLUMBING INSTALLATION

Installation is to comply with all relevant Australian plumbing standards and the relevant local water authority requirements. Refer to the Typical Layout drawing in the appendix of this manual for general installation guidelines. Specific attention to be paid to the following points:

- Pump manufacturers pipe size requirements (Pump manual in Appendix)
- Collection Pit requirements
- Plumbing connections to & from collection pit for bund area and separator
- Waste collection containers
- Bund area requirements
- Trade waste sampling point with tundish

5.0 OPERATING INSTRUCTIONS

BALDWIN CPS

The basic steps for the general operation of the CPS unit are described below:

Initial Start-up

This procedure is to be followed after the initial installation, or after the unit has been drained, cleaned and is ready to be brought back into operation.

- 1. Ensure that the water inlet is closed off by isolating the pump (ie switch on the control panel to "OFF").
- Set the oil skimmers at their highest level. Ensure that there are no obstructions in the oil or water outlet piping and remove any foreign matter if necessary.
- 3. Ensure all fittings are tight and secure.
- 4. Fill the CPS with **clean** water until water starts to flow over the outlet weir.
- 5. Check for leaks or blockages.
- 6. Set the selector on the Control Panel to "AUTO".
- 7. Once sufficient wastewater has accumulated in the pumping/holding well, the pump will activate to allow the contaminated oil/water mixture to enter the tank.

Note: When "AUTO" is selected, the float switch or level probes are responsible for pump control.

8. After the pump has primed & then operated for approximately 5mins, set the top of the inlet oil skimmer socket approximately 5mm above and the discharge end approximately 3mm above the maximum operating water level by screwing the sockets up or down. Secure the lock nuts on each skimmer socket to ensure no movement.

Note:

- Skimmers can be adjusted if necessary, but remember that it is acceptable for an oil layer of approximately 5mm to be maintained on the surface at all times.
- * Always adjust oil skimmers relating to the *MAXIMUM* water level (ie at full flow conditions).

ASM ELECTRIC DIAPHRAGM PUMP

Please refer to the manufacturer's instructions in Appendix B of this manual.

• BALDWIN CONTROL PANEL

Once the pump and controls have been wired up correctly and once the CPS has been commissioned, the operating switch on the control box should be turned to "AUTO".

Note:

- If at any time the pit needs to be pumped down to a low level, the unit should be switched to "MANUAL".
- * In the "MANUAL" mode, the pump must be switched off by the operator ie. the switch must be returned to the "AUTO" of "OFF" position to stop the pump. The low-level position of the float switch/level probes will **not** override the manual position.

6.0 MAINTENANCE

BALDWIN CPS

The solids hopper should be drained fortnightly by opening a valve on the solids hopper until clean water is flowing (ie all the accumulated solids have been removed - usually a few seconds). The waste sludge should be contained and disposed of by a suitable contractor or drained back into the pumping/holding well.

It is recommended that the CPS unit be serviced regularly; the frequency being determined by the amount of solids built up in the plates at the time of the first inspection, which should take place approximately 3 months after installation.

A thin oil film present on the plates is normal. Cleaning need only be carried out if the plates are blocked by an oily **sludge**.

ASM ELECTRIC DIAPHRAGM PUMP

Please refer to the manufacturer's instructions in Appendix B of this manual.

BALDWIN CONTROL PANEL

Nil maintenance is required. Should any problems or difficulty arise, please contact us immediately.

7.0 STEPS FOR PLATE PACK INSPECTION AND SERVICING

- 1. The flow to the separator is to be isolated by turning the control switch to the "*OFF*" position.
- The oil skimmers can be lowered to remove accumulated oil from the surface of the CPS if required. The skimmers must be raise back up to the operating position.
- 3. Remove the plates by lifting slowly, allowing the water to drain back into the CPS.

Visual inspection will determine the amount of solids built up in the plates. If any of the plates appear to be silted up or partially blocked, they can be cleaned in one of the two following methods:

METHOD 1 - CLEANING IN SITU (OPERATING POSITION)

- a) Lower the plates back into the CPS and drain the water through the solids valve on the bottom of the hopper back into the collection tank or other suitable storage tank. Note: Any waste to be disposed of must be collected by a licensed waste contractor.
- b) Hose down the plates with a hose or pressure washer until all sludge and oil has been removed. Remove any built up solids by hosing underneath the packs, ensuring no sludge remains in the CPS.

DO NOT USE ANY DETERGENTS

- c) Hose the inside of the CPS ensuring all collected sludge and oil is removed. Drain the CPS again and dispose of the waste as above.
- d) Fill the CPS with **clean** water until water starts to flow over the outlet weir.
- e) Return the switch on the control box to the "AUTO" position.

METHOD 2 - CLEANING IN BUNDED AREA

- a) Drain the CPS through the valve on the solids hopper back to the holding well. The waste must be collected by a licensed waste contractor or contained for suitable disposal. Close the valve on the solids hopper.
- b) Remove the plate packs from the CPS. Hose the plates thoroughly (in a bunded area draining back into the holding well), ensuring built up sludge (if any) is removed.

DO NOT USE ANY DETERGENTS

- c) Hose the inside of the CPS, ensuring all collected sludge and oil is removed. Drain the CPS once again and dispose of the waste as above.
- d) Replace the cleaned plate packs to the CPS. Fill the CPS with clean water until water starts to flow over the outlet weir.
- e) Return the switch on the control box to the "AUTO" position.

Note:

- * The quantity of sludge found in the hopper and in the plates should be used as a basis for determining the interval between subsequent cleaning operations.
- * A thin film of oil on the surface of each plate is normal.

COLLECTION WELL CLEANING

At frequencies, depending upon the build up of sludge and oil, the collection well is to be emptied (sucked out by a suitable contractor) and cleaned so that all sludge and oil has been removed. Scrape the walls of the collection well if necessary.

8.0 SPARE PARTS LIST

BALDWIN CPS

No spare parts are required for the CPS. Should any plates or oil skimmer parts become damaged, they can be repaired or replaced by contacting:

Baldwin Industrial Systems Pty Ltd 13 Ranton Street CARDIFF NSW 2285

PO Box 605 CARDIFF NSW 2285

Phone: 02 4954 0440 Fax: 02 4954 2440

Email: sales@baldwin.com.au

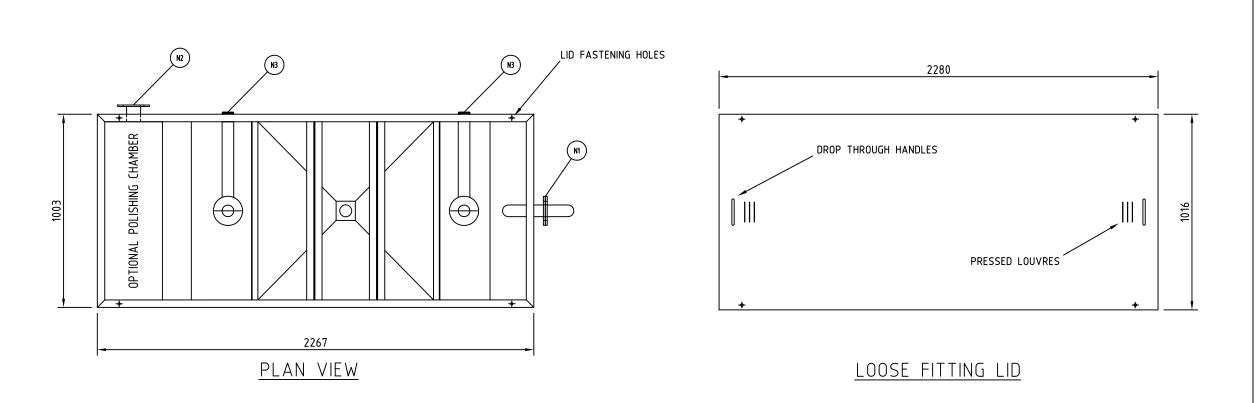
ASM ELECTRIC DIAPHRAGM PUMP

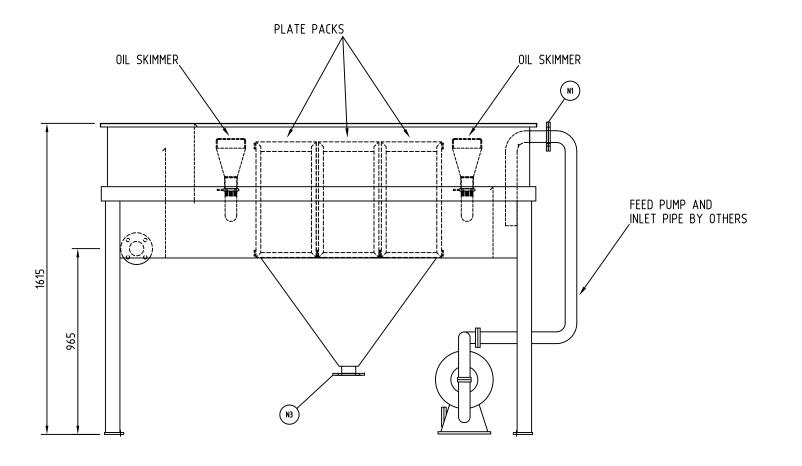
Please refer to manufacturer's instructions in Appendix B of this manual.

• BALDWIN CONTROL PANEL

No spare parts are required.

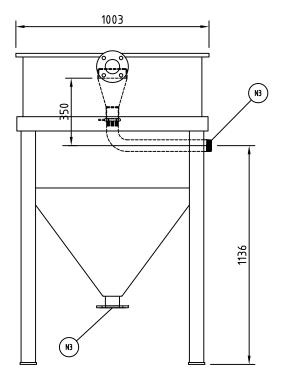






SIDE VIEW

FILE No: BSV-96-9



END VIEW

						TITI
_	04.06.13	ISSUED FOR INFORMATION	JENSEN	SEEFUS		
٥	04.00.13	ISSUED FUR INFURMATION	05.06.13	05.06.13		SCAL
NO:	DATE	REVISION DESCRIPTION	DRWN	CHKD	APRV	
NU:	DATE	REVISION DESCRIPTION	DATE	DATE	DATE	

NOTES

- 1 UNLESS OTHERWISE STATED, ALL DIMENSIONS ARE INTERNAL (mm)
- 2 ALL WEIRS, CONNECTIONS & JOINS TO BE FULLY WELDED (WATERTIGHT)
- 3 TANK & WEIRS TO BE FABRICATED FROM 304 STAINLESS STEEL
 4 METAL THICKNESS TO BE 2mm
 5 ALL FITTINGS TO BE 304 STAINLESS STEEL U.N.O.

- 5 ALL FITHINGS TO BE SUBJECT OF STREET, STREET STREET, STREET STREET, STREET STREET, S
- 8 THE TANK IS TO BE EXTERNALLY WELDED ONLY
 9 ALL WELDS ARE TO BE FULL PENETRATION WELDS, EXCLUDING STITCH WELDS.
 10 GENERAL TOLERANCES TO BE ± 3mm U.N.O.
- 11 ALL TANKS TO BE SUBJECTED TO A STATIC HYDRAULIC TEST (12 HOURS)
- 12 ALL WELDS TO BE PASSIVATED INTERNALLY & EXTERNALLY
- 13 WEIR TOP TURN-DOWNS & BOTTOM TURN-UPS ARE AT 45° 14 SOME ITEMS NOT SHOWN IN DIFFERENT VIEWS FOR CLARITY.

MATERIAL LIST				
LID 1.5MM 304 GRADE STAINLESS STEEL				
2MM 304 GRADE STAINLESS STEEL				
STAINLESS STEEL ANGLE 75 X 75 X 10				
ANSI B36.19 SCH10 MATL. ASTM A312 TP 304				
ANSI B16.9 SCH10 MATL. ASTM A312 TP 304				

NOZZLE SCHEDULE

NOZZLE MARK No	No REQD	SERVICE	SIZE	RATING	REMARKS
N1	1	WATER INLET	65	TABLE E	FLANGED
N2	1	WATER OUTLET	80	TABLE E	FLANGED
N3	2	OIL OUTLETS	50	150Lb	MALE BSP
N4	1	SOLIDS OUTLET	65	TABLE E	FLANGED

RWN	S JENSEN	CHKD	S SHEEHAN	APRV	APRV	
ATE	04.06.13	DATE	04.06.13	DATE	DATE	



UNAUTHORISED USE, REPRODUCTION OR MANUFACTURE IN WHOLE OR IN PART IS PROHIBITED. DRAWING DESIGN AND OTHER DISCLOSURES ARE THE PROPERTY OF BALDWIN INDUSTRIAL SYSTEMS PTY.LTD.

BALDWIN

BALDWIN INDUSTRIAL SYSTEMS PTY LTD 13 RANTON ST CARDIFF NSW 2285 AUSTRALIA. PHONE (02) 4954 0440 FAX (02) 4954 2440 ABN 30 002 218 457

CAD DRAWING - DO NOT REVISE BY HAND

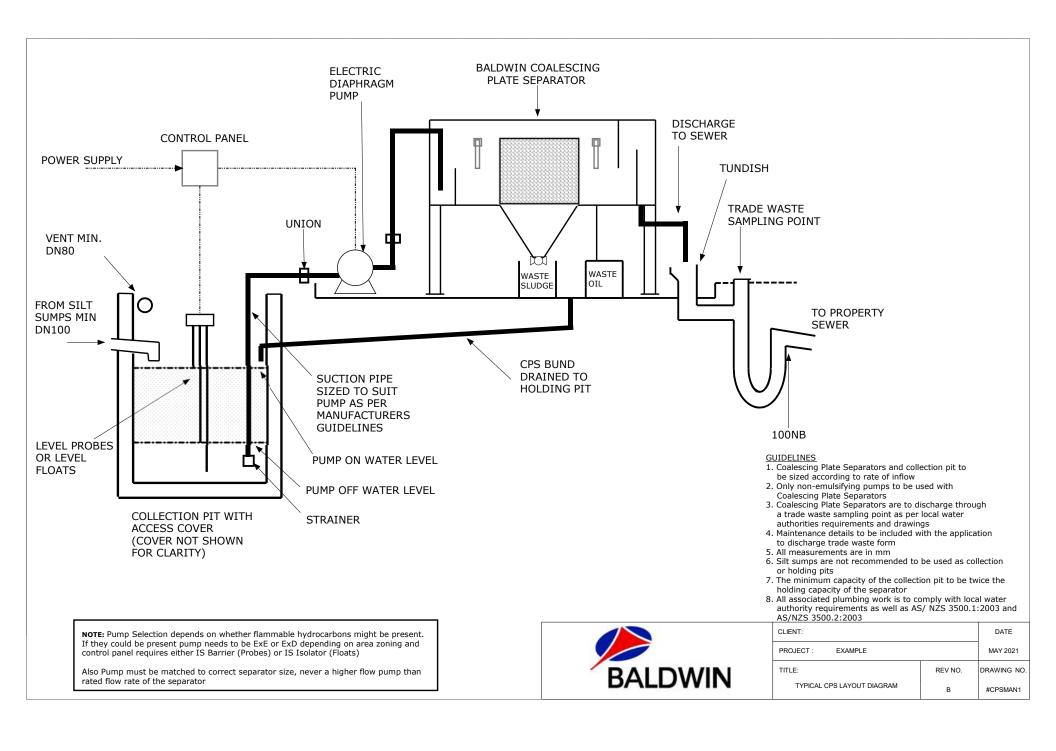
BALDWIN INDUSTRIAL SYSTEMS

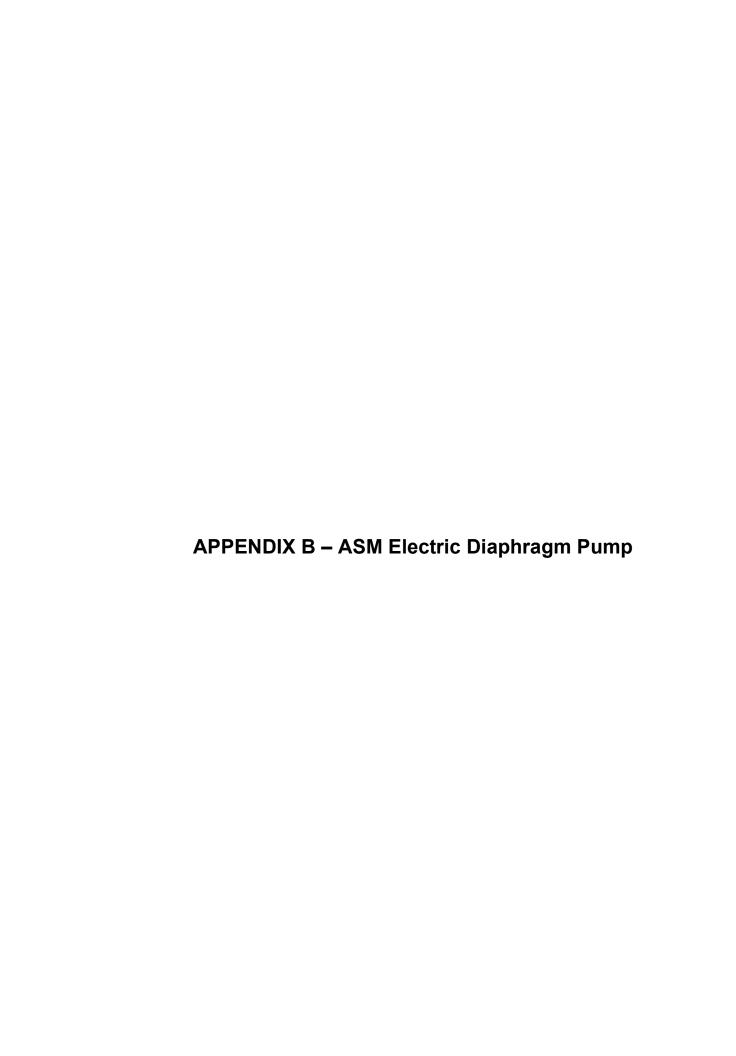
PROJECT:

COALESCING PLATE SEPARATOR STANDARD ASSEMBLY

MODEL BSV-96-9 GENERAL ARRANGEMENT

FOR INFORMATION DRAWING NO: SHEET: 1 OF 1 STOCK BSV-96-9-02

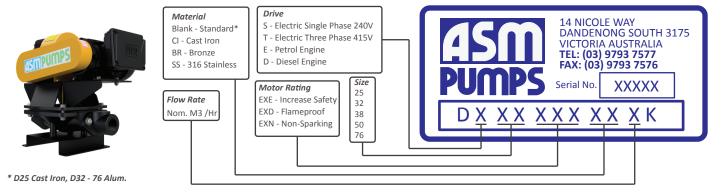




D SERIES INSTALLATION & MAINTENANCE MANUAL



READ THIS MANUAL BEFORE INSTALLING, OPERATING OR SERVICING DIAPHRAGM PUMP FAILURE TO FOLLOW INSTRUCTIONS MAY RESULT IN PUMP FAILURE & VOID WARRANTY



General

Install the pump in a level position and secure using mounting holes in base plate. *Remove vent plug from gear reducer oil filler cap*Check oil is visible in the sight glass. Use high quality 460 grade gear oil. ASM Diaphragm pumps do not require priming and can run dry without damage. For start up ensure all valves are fully open before running the pump. With the pump delivering liquid check the motor current draw is below the full load current on the motor nameplate.

Electrical

Have the electrical connection installed by a qualified electrician. Connect motor as per the motor manufacturers instructions and fit a motor overload protection device. Ensure there is unobstructed airflow to the motor cooling fan and the motor is protected from the weather and water. The correct motor rotation is clockwise viewed from the fan end.



Warning

Incorrect rotation will damage the pump

<u>Pipework</u>

Correct pipe size is a critical factor affecting pump performance and service life. Refer to pipe selection chart below. Pipework should be airtight, adequately supported and as short and direct as possible.

Use flexible connectors between pump and rigid pipe work. Fit an ASM Pulsation Dampener if rigid pipework exceeds 3m in length.

For flexible installations use reinforced suction hose for suction and discharge.



Warning

Never restrict or dead head the pump damage will occur. Use of incorrect pipe sizes will void warranty

Engine Drives

Refer to manufacturers instructions for commisioning



Warning

Maximum pump speed must not exceed 40 strokes per min.

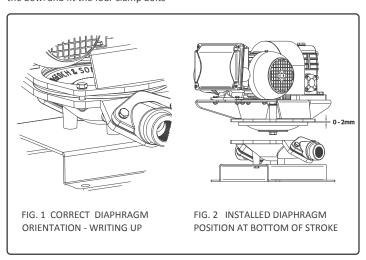
IMPORTANT INFORMATION FOR INSTALLERS INTERNAL PIPE SIZE FOR ASM DIAPHRAGM PUMPS						
F	FOR CLEAN LIQUIDS WITH SAME VISCOSITY AS WATER					
SUCTION PIPE LENGTH M			DISCHA	ARGE PIPE LEN	GTH M	
PUMP SIZE	0 - 5	5 - 10	0 - 5	5 - 10	10 - 20	
D25	25	32	32	40	40	
D32	32	40	40	50	50	
D38	40	50	50	65	65	
D50	50	80	65	80	80	
D76	80	80	80	100	100	
	SUCTION PIPE ID IN MM		DISCH	ARGE PIPE ID I	NMM	

Maintenance

After 10 Hours operation check the oil level in the gear reducer and re-tension fasteners if required. After 100 Hours drain reducer, flush thouroughly with a light oil and replace with 460 grade gear oil. Replace gear reducer oil every 2500 Hours there after. The operator should not need to carry out further maintenance, rather inspect the pump on a regular basis and be aware of changes to the pumps normal operation. Diaphragm and valve assemblies are consumable items and will require replacement.

Diaphragm Fitting

Jog pump to take the diaprhagm, Item 3 to the bottom of the stroke. Disconnect power supply. Remove the four clamping bolts holding the drive support housing, Item 12 to the bowl casing, Item 1 and lift the drive support and diaphragm assembly clear. Remove stainless bolt Item 9 for D25 and D32 or nut for D38, D50 and D76. Remove the washer set set Item 10 and diaphragm plate Item 2. Clean and inspect both diaphragm plates and replace washer set. Replace diaphragm. The correct orrientation is with the writing up. See Fig.1 The top outer lip of the diaphragm should be 0 - 2mm from the drive support housing clamp face. See Fig.2 below. The diaphragm position will generally not require adjustment. If required, loosen and adjust the connecting rod nut/s. Mount the drive support and diaphragm assembly onto the bowl casing ensuring the diaphragm is central and located in the groove of the bowl and fit the four clamp bolts





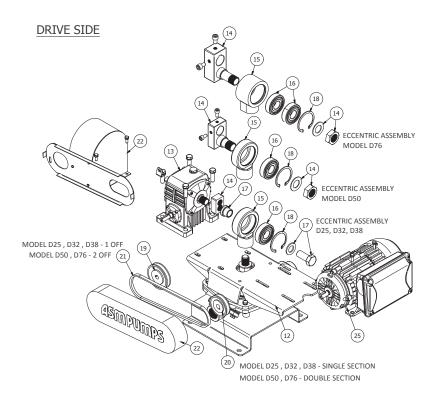
Not

All installation, repair and maintenance work should be carried out by trained, qualified personnel.

For further information contact ASM PUMPS



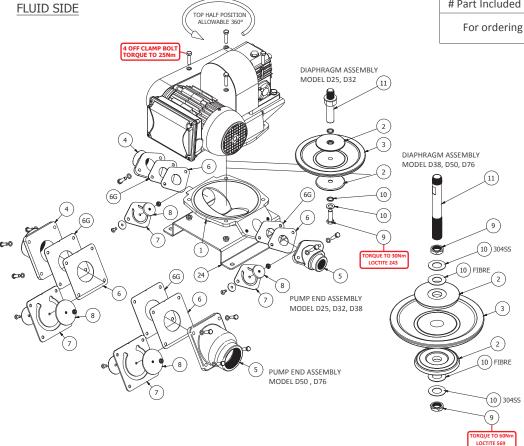




D SERIES PUMP PARTS LIST				
ITEM	DESCRIPTION	QTY.		
1	Bowl Casing	1		
2	Diaphragm Plate	2		
3 *	Diaphragm	1		
4	Suction Valve Body	1		
5	Discharge Valve Body	1		
6 * #	Valve Seat - Stainless	2		
6G * #	Valve Seat Gasket - Rubber	2		
7 * #	Flap Valve	2		
8 * #	Flap Valve Weight Set	2		
9	SS Bolt / Nut	1/2		
10 *	Washer Set	1		
11	Connecting Rod	1		
12 Drive Support Housing		1		
13	Gear Reducer	1		
14	Eccentric Block Assembly	1		
15	Eccentric Housing	1		
16	Eccentric Bearing	1 OR 2		
17	Eccentric Bolt & Spacer	1		
18	Circlip	1		
19	Gear Reducer Pulley	1		
20	Motor Pulley	1		
21 *	V-Belt	1 OR 2		
22	Gaurd Assembly	1		
23	Carry Frame	OPT.		
24	Base Plate	1		
25	Motor	1		
VA	Valve Assembly	2		
K1 Service Kit 1				
* Dart Included in K1 Corvice Kit				

* Part Included in K1 Service Kit # Part Included in VA Valve Assembly

For ordering Part No. = Model - Item No.



PD1 & PD2 PULSATION				
DAMPE	DAMPENER PARTS LIST			
ITEM	ITEM DESCRIPTION			
1	Top Half			
2	Bottom Half			
3	Diaphragm			
	am Orientation Concave (as shown)			







