

# EasyClean SP Range

Installation, Operation & Maintenance Instructions



ENVIRONMENTAL TECHNOLOGY

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## Health and Safety

- This system has been designed for use only as a barrier fluid system for mechanical seals using a suitable non-hazardous barrier fluid.
- Isolate the process and power on installation, maintenance and decommissioning and ensure that the system pressure has been relieved before undertaking maintenance.
- The system should only be installed by competent engineering personnel.
- Electrical connections must be made in compliance with applicable legislation and / or local requirements by a competent / qualified electrician.
- If there is any risk of FIRE the system must be fitted with a suitable pressure relief device to prevent over-pressurisation.
- Pipe relief valves discharge to safe area (when fitted).
- Pressure test the complete system assembly at 1.1x maximum working pressure (duration 5 minutes) and ensure the system is completely leak free before full operation.
- Do not over-pressurise the system beyond the maximum design pressure. If there is any possibility of over-pressurisation, the system must be fitted with a suitable protection device.
- Do not exceed the operating limits of the system. Not designed for cyclic loading.
- The system may get hot in operation with risk of burn injury, and suitable engineering controls or guarding should be adopted where necessary. The risk from Legionella bacteria should be assessed with water barrier fluids at temperatures between 20°C to 45°C (68°F to 115°F).
- If the barrier fluid becomes contaminated it is recommended that the barrier fluid is replaced taking necessary precautions. If the contamination is potentially corrosive or damaging to the system remove from service and contact AESSEAL for technical advice.

## General Information

- The maximum operation pressure of the SP Oil Management system has been noted on the Vessel Label (I). The internal pressure of the system should at no point be allowed to exceed this pressure at any point.
- Temperature indicating strips have been supplied with this vessel which show the maximum temperature that the vessel has reached and the current temperature of the vessel.
- A warning label has been included with the assembly to inform the operator that the system must be fully depressurised prior to the removal of the clamp.
- All components included in the assembly provided by AESSEAL® have been designated as appropriate for the maximum temperatures and pressures that this system is rated to. No part of the system should be replaced without explicit agreement from AESSEAL®.



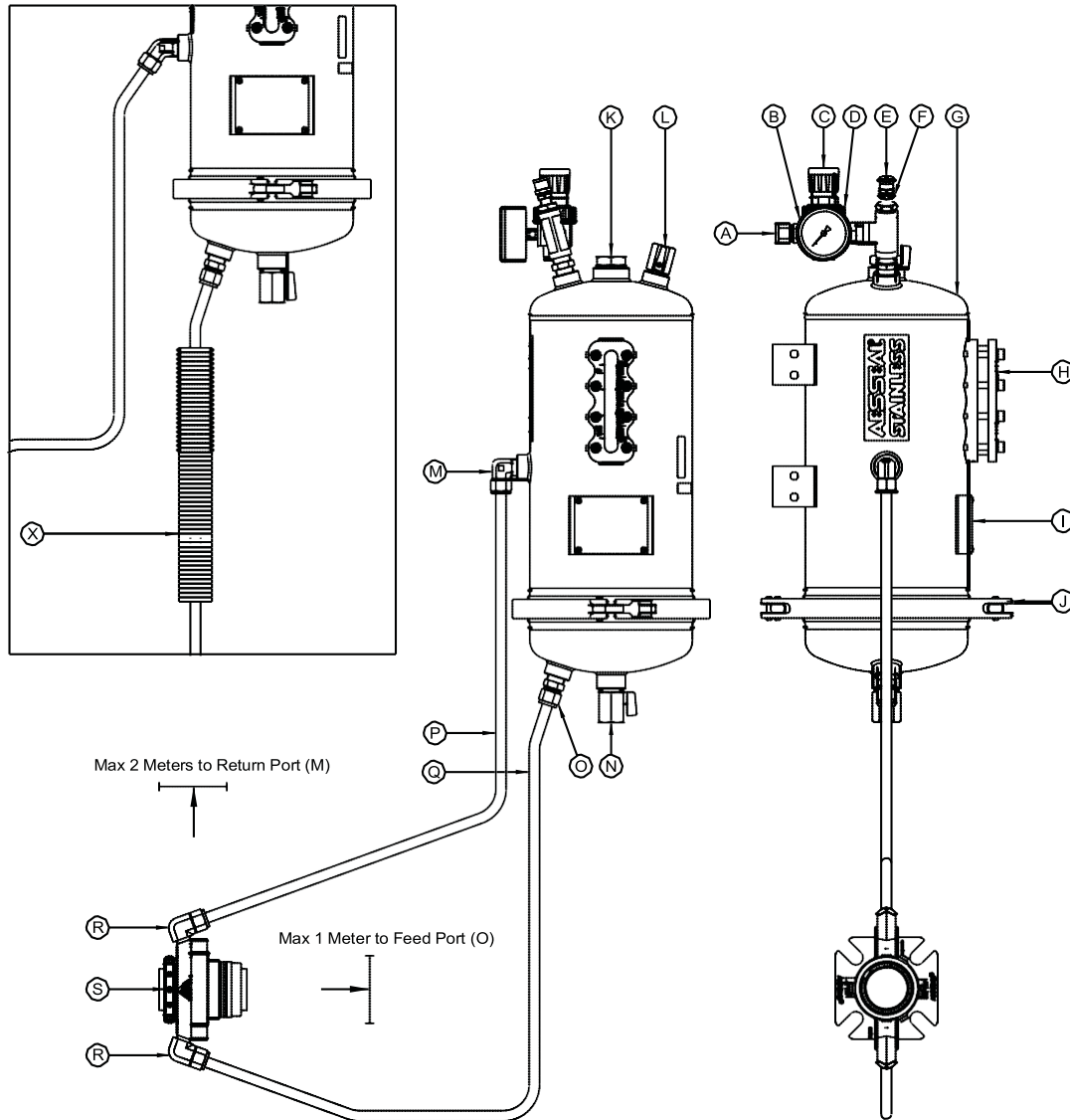
## Environment

Once the barrier fluid and system have reached the end of its life, it should be disposed of in accordance with local regulations and with due regard to the environment.

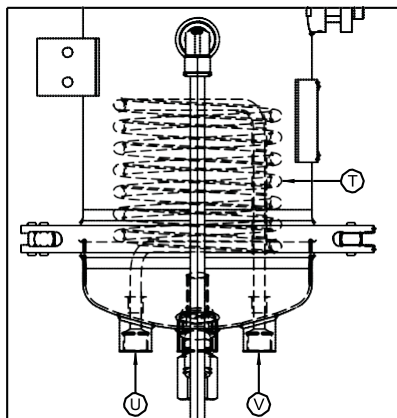
**For further information please contact AESSEAL®**

## Installing & Commissioning

### Option: Finned Tubing



### Option: Cooling Coil

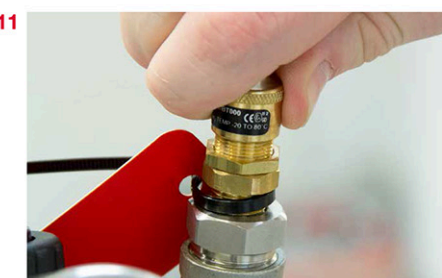
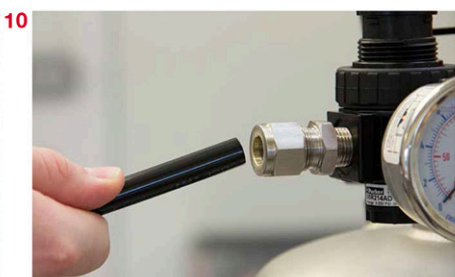
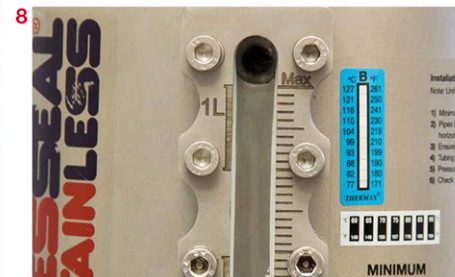
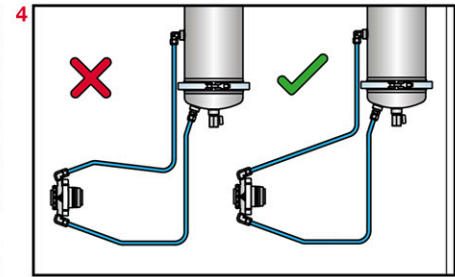
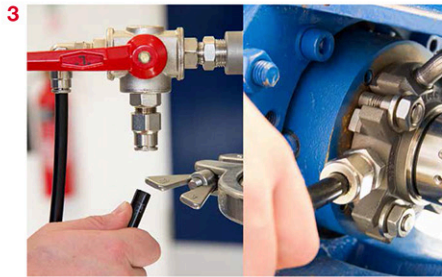
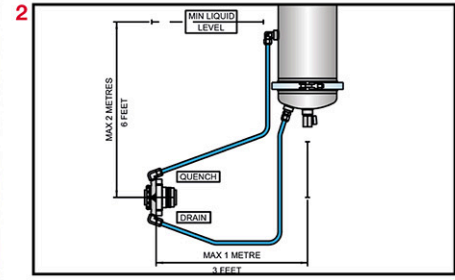


A	Gas supply Connection	M	Seal Return Port
B	Pressure Gauge	N	Vessel Drain Port
C	Pressure Regulator Cap	O	Seal Feed Port
D	Pressure Regulator	P	Seal Return Pipe
E	Relief Valve	Q	Seal Supply Pipe
F	Relief Valve Lock Nut	R	Seal Fittings
G	Pressure Vessel	S	Mechanical Seal
H	Weld Pad	T	Cooling Coil
I	Vessel Label	U	Cooling Coil Inlet
J	Pipe Clamp	V	Cooling Coil Outlet
K	Instrumentation Port	X	Finned Tubing
L	Vessel Fill		

## Section 1:

### Installation & Commissioning

1. Install the system in a suitable location, which is free from vibration. If your vessel has a cooling coil please refer to section 2 of this document.
2. Ensure that the vessel is within the following distances from the mechanical seal:
  - a. A minimum of 60cm (24") above the mechanical seal (R).
  - b. A maximum of 2 metres (80") above and 1 metre (40 inches) to the side of the mechanical seal (R).
3. Connect the vessel from the supply connection (O) to the mechanical seal and from the mechanical seal (S) to the seal return connection (M) using the two lengths of tubing provided. To prevent the compression fitting crushing the Nylon tubing (and possible leakage) push the metal tube insert (provided) fully into the end of the tubing (right up to the shoulder on the insert).
4. It is imperative to ensure that the seal supply (Q) and return (P) pipelines do not sag and have no sharp bends. If installing finned tubing please refer to section 3.
5. Before filling the vessel, disconnect the return pipe (P) at the seal return connection (M). This will allow trapped air to escape from the seal.
6. Open the fill valve (L) and fill the vessel using the barrier fluid you have chosen.
7. Once the fluid is seen visible from the return pipe, re-connect it to the vessel.
8. Continue to fill the vessel until the liquid level reaches a few millimetres below the top of the weld pad level gauge.
9. Close the fill valve (L).
10. With your gas supply isolated (inert gas only), connect the supply to the pressure regulator (D). NOTE: The pressure regulator has a max inlet pressure of 17 bar/ 250 psi and a max outlet pressure of no more than 10 bar/ 145 psi.
11. Screw the cap on the relief valve (E) fully clockwise.
12. Pull up the cap on the pressure regulator and turn it fully anticlockwise.



## Section 2:

### Set Relief Valve Pressure

13. The working pressure of the relief valve (E) must be set before the working pressure of the system.  
NOTE: the working pressure of the relief valve should be 1 bar/ 14.5psi above the system working pressure.
14. To set the relieving pressure of the relief valve (E), turn on your gas supply and turn the pressure regulator cap (C) clockwise until your desired pressure for the relief valve (E) is reached on the pressure gauge.
15. Turn the cap on the relief valve (E) slowly anti-clockwise until a small volume of gas begins to dispel from the relief valve. NOTE: A slight sound will be heard when the gas begins to dispel from the relief valve.
16. At this point stop turning the relief valve cap anti-clockwise, and lock it using the lock nut (F). This is now set as the relieving pressure for the system,
17. The customer should set the relief valve (E) to their requirements, and record the set pressure on the vessel label (I). NOTE: If the relief valve has been preset as a customer requirement, then this section of the name plate will be completed on receipt.



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www.aesseal.com		SSE 12 VESSEL	
DESIGN CODE		ASME VII Div 1 (NOT U STAMPED)	
PED 97/23/EC			
YEAR BUILT			
CE MARK			
VOLUME		N/A	
DESIGN PRESSURE		bar G	
TEST PRESSURE		bar G	
MAX DESIGN TEMP		°C	
MIN DESIGN TEMP		°C	
SET PRESS (PRV)		bar G	
MANUFACTURER		AESSEAL plc, UK	

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Record Pressure Here

YEAR BUILT	CE MARK	CE 0045	CE	N/A
VOLUME	DESIGN PRESSURE	12 litre (3.17 gal US)	16 bar G (232 psi G)	bar G
TEST PRESSURE	MAX DESIGN TEMP	24 bar G (346.1 psi G)	100°C (212°F)	bar G
MIN DESIGN TEMP	SET PRESS (PRV)	-20°C (-4°F)	N/A	°C
MANUFACTURER	AESSEAL Cold Weld Pvt. Ltd. VASAL, INDIA		AESSEAL plc, UK	

## Section 3:

### Set Working Pressure of System

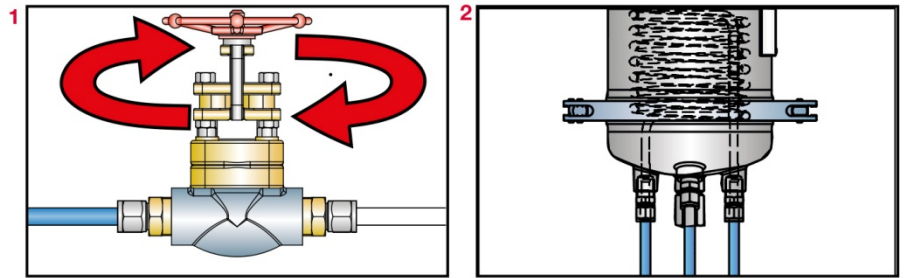
18. To set the working pressure of the system, isolate the gas supply and turn the pressure regulator cap (C) fully anti-clockwise until all the gas in the vessel has escaped which was present from setting the relieving pressure for the relief valve.
19. Turn on the gas supply and turn the pressure regulator cap (C) clockwise until the desired pressure is shown on the pressure gauge (B). This is now set as the system working pressure.
20. Press the cap down to lock it so that the pressure cannot be altered.
21. Ensure that the gas supply to the vessel remains on after commissioning is complete.



## Section 4:

### Cooling Coil

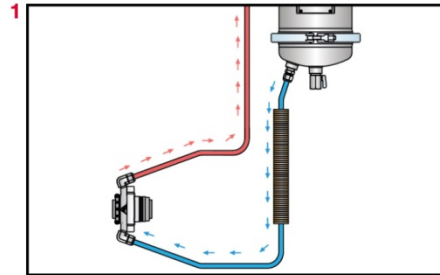
1. Isolate the water supply that you intend to use to the cooling coil.
2. Connect the water supply to the cooling coil inlet port (U) on the vessel and from the cooling coil outlet port (V) to an appropriate drain.



## Section 5:

### Finned Tubing

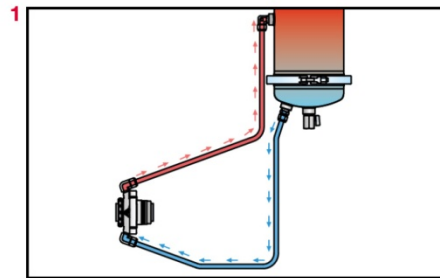
1. Install the supplied finned tubing by connecting it to the seal supply connection (O).
2. The end user supplies and connects the hard pipe from the seal to the finned tubing.



## Section 6:

### Direction of Flow

1. When the system is first run, check the direction of flow – i.e. which pipe gets hot. The hot pipe must flow to the return port (M) on the vessel or flow may cease. If the flow is incorrect, reverse the connections at the seal or vessel.



## Installation Notes

- When assembling the vessel, the alignment of the gasket should be checked to make sure that the ridge of the gasket slots in to the groove of the ferrule.
- Failure to complete/check the following may result in a malfunction and could cause serious injury.
- When tightening the clamp, it is important that each end of the clamp is tightened evenly and that the bolts are tightened to a torque reading of 20Nm. The use of anti-seizing compound on threaded surfaces is strongly advised.
- When assembling the vessel, it is important to make sure that the sealing surfaces of the ferrule on the lower and upper parts of the vessel are clean and free from surface defects.
- When assembling the vessel, it is important that the gasket is in a pristine condition and has no abrasions or surface defects in any way.
- If in doubt please contact AESSEAL® for further advice.

## Assembly and Disassembly of Lower Section

1. Carefully align the gasket with the ferrule on the lower section of the vessel.
2. Hold the lower section and offer it up to the upper section of the vessel, ensuring that the gasket lines up with the corresponding groove in both ferrules.
3. Make sure that the clamp is a loose fit on one half of the vessel assembly so that its form encompasses the two ferrules and the gasket.
4. Bring the second arm of the clamp up and so that it fits around the ferrules and gasket. Apply a suitable anti-seizing compound to all threaded components, then align and tighten the bolts to 20Nm. The system should then be pressurised to 1.1 times the operating pressure for a minimum of 5 minutes.



## System Details

### System Design Limits

Max Design Pressure: 10 barg / 145 psig

Max Temperature: 100°C / 212°F (with suitably rated piping) or 80°C / 176°F (with suitably rated hosing\*)

Min Temperature: -20°C / -4°F

- For W2 and P2 Systems, when used with a water based barrier/buffer the Chloride content shall not exceed 100ppm

\* Maximum piping / hosing pressure 10 bar / 145 psi at 80°C / 176°F (minimum temperature -20°C / -4°F)

### Vessel Maximum Volume:

SSE10: 10 litres / 2.64 gal (US)

SSE12: 12 litres / 3.00 gal (US)

SSE25: 25 litres / 6.60 gal (US)

**Design Code:** ASME VIII Div.1

Complies with Pressure Equipment Directive.

## Operation

- If required the system should be flushed and cleaned / sterilised in accordance with site standards prior to commissioning.
- Prior to operation the system should be pressurised with the barrier fluid or another compatible fluid to 1.1 times the working pressure. This pressure should be held for 5 minutes wherein there should be no leakage or drop in pressure. After the completion of the test, the vessel should be filled as per the instructions in Section 1: Installation & Commissioning.
- Use leak detection spray / fluid to check for leaks on all ports and connected equipment at top of vessel.
- Barrier fluid is cooled through a thermosyphon effect. Higher temperature barrier fluid rises into the seal pot allowing cooler fluid to flow out of the seal pot and into the seal. This thermosyphon effect ensures that the seal is kept cool.
- It is important to check the direction of flow by checking the relative temperatures of the inlet and outlet pipes on the vessel to the seal. In normal operation the outlet pipe should be warmer than the inlet pipe.
- Please contact AESSEAL® for further advice

## Maintenance

- The gasket should be inspected for wear prior to each use. There should be no visible damage to the gasket and all the surfaces should be free from dirt or grease. In the event that the gasket is deemed unsuitable it should be destroyed and replaced immediately.
- When re-installing the clamp make sure that the threads on the bolts and hex nuts is clean and free from any build up of dirt or grease and that there is no cross threading. Reapply anti-seizing compound between installations.
- The system and all its components should be maintained in accordance with site standards and as detailed below.
- **Annually**
  - Check and examine the system for leaks and deterioration. Check expansion vessel pre-charge pressure (when fitted).
  - As a minimum the gasket should be replaced after 1 year in operation or as site conditions dictate.
- **After 5 Years**
  - It is recommended that after 5 years in operation a complete internal and external inspection be conducted on the vessel and all system components by an AESSEAL® recommended engineer.
  - It is recommended that the clamp be replaced after a period of 5 years in operation.
- **After 10 Years**
  - The system / vessel should be subjected to a complete and thorough examination, including the undertaking of a full system hydrostatic proof pressure integrity test by a suitably qualified and competent person\*. AESSEAL recommends this should form part of the written scheme of examination as per the UK PSSR 2000 regulations.

*\* AESSEAL offers a full examination, integrity testing and refurbishment service (or, where necessary, a replacement system / vessel), to ensure continued optimum and safe system performance.*
- If in doubt please contact AESSEAL® for further advice.