

SWFF-TF Range

Installation, Operation & Maintenance Instructions





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.



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®**

Fig. 1 SWFF-TF Vessel Guide

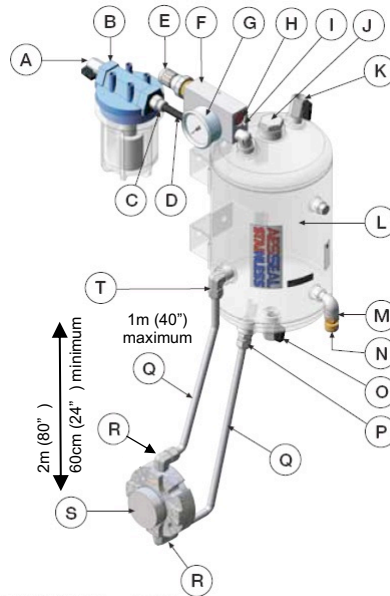


FIG 1. SWFF-TF™ Vessel Guide

Installing & Commissioning Components

- | | |
|--|-----------------------------|
| A In-line Filter Feed Connection | K Auxiliary Fill Connection |
| B In-line Filter (UV stabilized materials) | L Pressure Vessel |
| C In-line Filter Output Connection | M Relief Valve |
| D Flow Fuse Inlet Connection | N Relief Valve Adjuster Cap |
| E Water Regulator | O Vessel Drain Connection |
| F Flow Fuse Block | P Seal Supply Connection |
| G Pressure Gauge | Q Supply / Return Pipe |
| H Flow Indicator & Fill Button | R Seal Fittings |
| I Auto Re-set Adjustment Screw | S Mechanical Seal |
| J Spare Connection | T Seal Return Connection |

- Connect the Flow Fuse Block assembly (F) to the vessel as follows :
 - Push the 12mm OD tube fully into the elbow compression fitting and tighten the elbow nut by hand ('finger-tight').
 - Tighten the elbow nut 1.1/4 turns with a suitable tool.

Note: If the connection leaks on test, depressurise the system and further tighten the elbow nut slightly (only a little at a time).
- Install the System in a suitable location, which is free from vibration and within the following distances :
 - A minimum of 60cm (24") above the mechanical seal.
 - A maximum of 2 metres (80 inches) above and 1 metre (40 inches) from the side of the mechanical seal (S). If your vessel has a cooling coil, refer to Table 1 for commissioning details.
- Isolate the plant water supply. Connect the vessel from the seal supply connection (P) to the mechanical seal (S) and from the mechanical seal (S) to the seal return connection (T) using the two lengths of tubing provided. To prevent the compression fitting crushing the Nylon tubing (and possible leakage) push the metal tube insert (supplied) fully into the end of the tubing (right up to the shoulder on the insert). It is imperative that the return line from the seal (S) to the seal return connection (T) does not sag. If installing finned tubing please refer to Table 2.

4. Connect the water line to the in-line filter feed connection (A) and from the in-line filter output connection (C) to the Flow Fuse inlet connection (D). Note that the maximum input pressure of the in-line filter (B) is 8 bar / 116 psi. If the water line pressure feeding the in-line filter is above 8 bar / 116 psi we advise that you use a regulator to reduce this water pressure to below 8 bar / 116 psi before it reaches the in-line filter (B). Note that the maximum temperature the inline filter can withstand is 50°C / 122°F.
5. Release the cap on the black regulator adjustment (E) and rotate it fully counter clockwise.
6. Before filling the vessel with barrier fluid, disconnect the return pipe (Q) at the seal return connection on the vessel (L). This will allow any trapped air to escape out of the seal.
7. Turn on the plant water supply and fill the vessel by rotating the regulator handle clockwise (E) and holding in the red Flow Fuse fill button (H) until barrier fluid is seen at the end of the seal return pipe (Q). When barrier fluid is seen release the red Flow Fuse fill button (H).
8. Re-connect the seal return pipe (Q) to the vessel seal return connection (T).
9. Keep the red button (H) pressed in and turning the regulator handle (E) until the desired barrier pressure is achieved.
10. Once the desired barrier pressure is achieved, release the red button (H), which should stay depressed.

Set Relief Valve Relieving Pressure

11. The working pressure of the relief valve (M) must be set before the working pressure of the system (the working pressure of the relief valve should be 1 bar / 14.5 psi above the System working pressure). The operating parameters of the relief valve are 5 - 10 bar / 72.5 - 145 psi (maximum relief valve set pressure 10 Barg / 145 psig).
12. Unscrew the relief valve adjuster cap (N) fully anti-clockwise.
13. Press and hold in the red Flow Fuse fill button (H) for approximately 3 minutes to fill the vessel. When the vessel is filled, rotate the black Flow Fuse regulator adjustment (E) clockwise, until the desired relieving pressure of the the relief valve is seen on the pressure gauge (G).
14. Screw the relief valve adjuster cap (N) clockwise until the Relief valve (M) starts to leak.
15. At this point stop turning the relief valve adjuster cap (N), and lock it using the lock nut. This is now set as the relieving pressure for the system.

Note : If the relief valve has been factory pre-set the set pressure will be detailed on the nameplate.

Set the Flow Fuse Barrier Fluid Pressure

16. Open the drain valve (O) for 2 minutes to drain the vessel.
17. Repeat installation and commissioning steps 5 – 8.
18. Press and Hold in the red Flow Fuse fill button (H) for approximately 3 minutes to fill the vessel. When the vessel is filled rotate the black Flow Fuse regulator adjustment (E) clockwise until the desired barrier fluid pressure is seen on the pressure gauge (G). Please note that the Flow Fuse is at its optimum operating condition when the barrier fluid pressure is set 2 bar / 30 psi above stuffing box pressure (to a maximum regulator set pressure of 6 Barg / 87 psig).
19. Once the desired pressure is shown on the pressure gauge (G) close the black regulator adjustment cap (E). Slowly release the red Flow Fuse fill button (H). The red Flow Fuse fill button should be level with the Flow Fuse casing. **
20. For direction of flow details please refer to Table 3.
Note that the Flow Fuse has two operating modes:
 - a. Manual Re-Set mode – The Re-Set mode adjuster (I) will be screwed completely in. In this mode the Flow Fuse will completely shut off the plant water supply upon any seal failure. To reset the Flow Fuse press the red button (H).
 - b. Auto Re-Set mode – The Re-Set mode adjuster (I) will be screwed counter clockwise. In this mode the Flow Fuse will re-establish operating conditions after seal failure by allowing a small flow of water from the plant water supply back into the vessel. The amount of flow will depend on how far the Re-Set mode adjuster (I) is screwed counter clockwise (4 full turns counter clockwise sets the Flow Fuse in full Auto Re-Set). The Flow Fuse comes factory set in Auto Re-Set mode.

Relief Valve

- The relief valve (M) is fitted to limit any pressure build up due to excessive heat developing in the barrier fluid.
- When pressure increase is detected the relief valve will trigger and relieve the excess pressure in the vessel.
- With the Flow Fuse in Auto Re-Set mode, the pressure drop will be detected and colder water from the plant water supply will be allowed to enter the vessel and replace the warmer water lost.
- The original working pressure of the vessel will be re-established automatically with the Flow Fuse in Auto Re-Set mode.

Table 1: Cooling Coil

Connect the water supply to one of the cooling coil ports, inlet or outlet can be used, once the inlet has been connected, pipe the outlet to drain. Turn the cooling coil water supply on.

Table 2: Finned Tubing

- Install the supplied lengths of finned tubing by connecting one length to the seal supply connection (P) and the other to the seal return connection (T) on the vessel (L) *.
- The end user supplies and connects the hard pipe from the seal to the finned tubing.
**Finned tubing can be bent to suit the application.*

Table 3: Direction of Flow

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

Optional Extra's Installation/ Commissioning

If you have purchased an optional extra please refer to the installation instructions supplied with it.

For further information please contact **AESSEAL®**

Maintenance

The system should be maintained in accordance with site standards.

Daily

- Check for leaks and barrier fluid pressure & temperature.

Annually

- Check and examine the system for leaks and deterioration.

5 years

- Complete a full internal and external inspection of the vessel and all system component parts.

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 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.*

System Details

Vessel	Vessel Volume	System Maximum Design Pressure	System Maximum SET Pressure	System Minimum / Maximum Temperature
SSE10	10 litres / 2.64 gal (US)	10 Barg (145 psig)	6 Barg (87 psig)	0°C (32°F) to 80°C (176°F)
SSE25	25 litres / 6.60 gal (US)	10 Barg (145 psig)	6 Barg (87 psig)	0°C (32°F) to 80°C (176°F)

Minimum Piping / Hosing Specification

- 10 bar / 145 psi at 80°C / 176 °F (minimum temperature 0°C /(32°F)

Vessel Design Code

- ASME VIII Div.1
Complies with Pressure Equipment Directive (2014/68/EU)
- For W2 and P2 Systems, when used with a water based barrier/buffer the Chloride content shall not exceed 100ppm*