

INSTALLATION, OPERATION, MAINTENANCE INSTRUCTIONS FOR GMS BV BLOWDOWN VESSELS

1. INSTALLATION

The BV vessel accommodates blowdown from:-

- Bottom Blowdown
- Automatic TDS system
- Level Control and Level Gauge drains

Blowdown from a single boiler

The TDS blowdown can be connected to the bottom blowdown pipeline downstream of the bottom blowdown valve and then in a single pipeline to the blowdown vessel. The blowdown from Level Control and Level Gauge drains can be manifolded into a single, separate line to a separate, dedicated connection on the vessel.

Blowdown from two or more boilers

When blowdown from two or more boilers is manifolded to one blowdown vessel, the vessel must be sized for the total blowdown rate. To safeguard personnel, who may be working on a shutdown boiler, the pipework must be designed to prevent blowdown from one boiler entering any other. The blowdown vessel must have three separate inlets for each type of blowdown drain - one each for Bottom Blowdown, Automatic TDS system, and Level Control/Level Gauge drains. Manifolds are connected to each of these inlets. The number of branch connections on each manifold equals the number of boilers. The drains from each boiler are run to the relevant manifold in separate pipework, each pipe terminating at the manifold in an isolating valve and check valve.

Positioning: Care must be taken not to damage the blowdown vessel during installation. Damage may cause delay and expense due to re-inspection, re-work, re-testing and re-certification. Position so that the inspection opening is accessible. Remove temporary packaging and dirt seals from connections. Blank off or plug any connections, which will not be used. DO NOT PLUG/BLANK OFF VENT OR OUTLET CONNECTIONS.

Pipework – General: If possible arrange pipework with short stool-pieces at the vessel connections (these can be removed during servicing and replaced by blanks to facilitate hydraulic testing of the vessel).

Vent Pipe: The vent pipe should be fully vertical if possible. If this is not possible then non-vertical sections must be minimised and arranged so that condensate can freely run down to the vessel. NEVER FIT ANY ISOLATION OR NON-RETURN VALVES, OR OTHER OBSTRUCTION IN THE VENT PIPE.

Vent Header: The vent pipe may be terminated in a suitable vent header. This will reduce discharge velocity and minimise entrained water vapour, giving safety and environmental benefits. The vent header's drain connection should be piped to a suitable drain point (not the blowdown vessel) to prevent damage to building fabric by hot condensate. Contact us for details of GMS Thermal Products Vent Headers.

Inlet Pipework: Keep inlet pipework low down to ensure that it remains flooded. Each inlet pipe should be fitted with an isolation and non-return valve. The standard BV vessel layout has 3 inlet connections for main blowdown, TDS system blowdown and gauge/level control blowdown.

Outlet Pipework: The outlet pipework should discharge to a drain at a lower level than the vessel. NEVER FIT ANY ISOLATION OR NON-RETURN VALVES, OR OTHER OBSTRUCTION IN THE OUTLET PIPE.

Pressure Gauge Connection: Fit a U-Siphon, Cock and Pressure Gauge to the vessel. During operation, the pressure in the vessel will not normally exceed 0.25 BarG Select a gauge with a suitable range.

Cooling Water System: If the temperature of the discharged water can exceed 43°C, then it is necessary to supply cooling water via a control valve. Set the control valve sensor to 43°C

Surface Finish: The BV vessel will be painted with one coat gloss paint.

Insulation: If the vessel is to be sited outdoors it should be insulated to prevent freezing of the standing water. Trace heating may also be required. If insulated then a cooling water system must be fitted to keep discharge temperatures below 43°C.

Safety Rail: The surfaces of the blowdown vessel will become very hot during operation. In some locations this could pose a hazard and safety rails may be necessary.

2. OPERATION

- Check the pressure gauge during blow-down operations. If the pressure exceeds 0.25 BarG then a blocked outlet, vent or vent header may be the problem.
- Occasionally clear out any sludge from the bottom of the BV by opening up the bottom drain valve and allowing any sediment to be discharged.
- Ensure that all isolating valves for blowdown inlet to the vessel are fully open prior to operation

3. MAINTENANCE

To meet the requirements of the Pressure Systems Regulations there must be a "written scheme of examination" for the vessel. A typical example follows:-

"A competent person will examine the blowdown vessel once every 12 months or at each major boiler examination by the following procedure:-

- Isolate the vessel from the boiler and other pipework
- Drain the vessel, remove the inspection cover and visually examine the internal surfaces. Rinse any sediment away from the bottom. If excessive corrosion or erosion is evident inside the shell commission a non-destructive examination (e.g. by ultrasonic testing) to measure metal thickness. If the depth of corrosion exceeds the corrosion allowance shown on the drawing then further advice must be sought immediately.
- Replace the inspection opening with a new gasket.
- If a hydraulic pressure test is required replace the pressure gauge with one suitable to the site test pressure. Blank/spade off all connections. Conduct the test in accordance with Health and Safety Executive Guidance Note GS4 "Safety in Pressure Testing" (HMSO)."