



INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS FOR THE WORLD HEAT RANGE OF BLOWDOWN VESSELS

1.0 DESCRIPTION

World Heat range of Blowdown Vessels are designed to accept discharges from; Manual/Automatic Bottom Blowdown, TDS Blowdown, Continuous Blowdown, Level Control Chambers and Heat Recovery Equipment. These mixtures of steam and hot water are a potential hazard and cannot be drained to public sewers at this temperature; the discharges are safely contained within the Blowdown Vessel and allowed to cool.

World Heat manufactures Blowdown Vessels in P265GH Carbon Steel and Stainless Steel (various grades). The standard range covers Blowdown Line Sizes of 1" to 2" and Boiler Pressures of 5.5 BarG – 27.5 BarG.

2.0 PED INFORMATION

The World Heat standard range of Blowdown Vessels are designed and manufactured in accordance with the requirements of the Pressure Equipment Directive 2014/68/EU. As per the requirements of the directive, units that fall within the SEP (Sound Engineering Practice) category are not supplied with a CE Mark. Units that fall within categories I to IV are CE Marked and provided with the necessary markings, certification and inspectorates.

In reference to the Pressure Equipment Directive 2014/6/EU, Annex I Clause 2.11.2. and 7.3. any momentary pressure surge should be kept to 10% of the maximum allowable pressure, otherwise the vessel should be designed so that the maximum allowable pressure will not be permanently exceeded.

It is the responsibility of the user and/or installer to ensure that the unit is installed and operated safely, and in accordance with the instructions detailed within this document.

3.0 COSHH

Research has suggested that there are no specific items to highlight during normal operating conditions. However, during manufacture, dye-penetrant may be used as part of our pre-inspection process of testing welds. It is therefore essential that adequate flushing and sterilisation is carried out before use and that the quality of water produced is to acceptable standards.

4.0 INSTALLATION

4.1 LIFTING AND HANDLING

- a) Lifting lugs, where fitted, should be used for lifting purposes.
- b) For units without lifting lugs, the user must arrange suitable lifting arrangements (i.e. the use of slings, lifting eyes etc.) to avoid damaging the unit or its attachments during installation, taking into consideration the weight and design of the unit.
- c) Where fitted, insulation should not be used for lifting purposes.
- d) Due to the insulation and case characteristics, care should be taken when lifting and handling the unit to prevent damage.
- e) Do not lift the unit using chains which are directly in contact with the shell.
- f) Do not allow operatives to stand on the unit.



WARNING: When lifting, please ensure a clean of the vessel using the lifting lugs or attachments provided. The legs/ring stand/vessel supports are not designed for pivoting during lifting/siting/installation. Vessels should be kept in the upright position.

4.2 STORAGE – *If storing the unit for any period of time before installation*

- a) Upon receipt of the unit, please check the packaging to ensure that it has not been damaged during transport. Any damage to the packaging should be fixed or replaced as necessary.
- b) It is recommended that the unit be stored indoors within a dry, frost-free environment with ambient temperatures between 4°C and 40°C.
- c) The integrity of the packaging should be checked monthly. Should the external seal be found to have broken or its condition found to have deteriorated (i.e. become wet, hardened or split), the packaging should be repaired or replaced.
- d) Once sited and the packaging has been removed, the condition of the unit should be thoroughly examined for any signs of corrosion or contaminant ingress.

4.3 SITING

- a) Unless specified at enquiry stage and specifically ordered to suit an external installation, the vessel must be sited indoors.
- b) Foundations or plinths must be firm and level to prevent settling, pipe strain or distortion of shell.
- c) Unless specified at enquiry stage and specifically ordered, the vessel must be installed in a level position.
- d) Ensure that there is sufficient maintenance space surrounding the vessel.

4.4 INSTALLATION

- a) Protective covers and plugs may be fitted to connections to protect them in transit, these must be removed prior to use.
- b) If a connection is not required for any reason, the connection must be sealed appropriately.
- c) Check for any signs of contaminant ingress which may have got into the vessel during transportation or storage on site.
- d) Pipe-work connected to the vessel must be adequately supported to prevent any loads being transmitted to the vessel. Consideration must be taken with regards to thermal expansion through the use of bends and expansion joints.
- e) Isolation valves should be fitted prior the vessel connections (where safe to do so) to facilitate future maintenance and servicing.
- f) To avoid corrosion, use appropriate pipe materials to suit the vessel material.
- g) To connect to the vessel screwed connections, a suitable thread sealant should be used.
- h) To connect to the vessel flanged connections, bolts should be tightened in a diametrically opposite sequence in order to load the flanges evenly onto the gasket. The gasket should be suitably chosen for the application.
- i) A suitable safety relief valve should be fitted to the system to prevent overpressure.

NOTE REGARDING VENTING

The vent pipe from the vessel should go vertically up and not join other vent pipes. If it is required to run horizontally, then it should have an incline draining back to the vessel.



A vent head may be supplied with the unit which is fitted to maximise the separation of any entrained water. The vent head will impose a minimal back pressure on the vessel.

The vent connection must never be blanked off and under no circumstances should an isolating valve or check valve be fitted in the vent pipe.

For specific information regarding the maintenance of the Vent Head, please refer to WH-IOM-017 – Vent Head, which is available for download from our website www.whcylinders.co.uk/technical-literature/.

NOTE REGARDING OUTLET PIPEWORK

The outlet connection should always be piped to a drain at a lower level than the vessel itself.

The outlet connection must never be blanked off and under no circumstances should an isolating valve or check valve be fitted in the outlet pipe work.

NOTE REGARDING COOLING WATER

If the temperature of the discharge from the vessel is expected to exceed 43°C, then it is necessary to supply a cooling water system. The control sensor wired to the control valve of the system should be set to 43°C. The cooling system should be installed as per the relevant instructions provided separately.

NOTE REGARDING SAFETY PERIMETER

Due to the high temperatures which could be reached within the vessel (up to 171°C), the surfaces of the unit may become very hot during periods of operation. Therefore, it is recommended that a safety perimeter is installed around the unit using safety rails where necessary.

5.0 COMMISSIONING & OPERATION

Do not operate the equipment at pressures or temperatures in excess of those specified on the nameplate of the unit. Do not subject the vessel to conditions of vacuum or partial vacuum. For example, partial vacuum may occur if the vent is restricted during drain down.

Before putting the vessel into operation;

- Ensure plugs are tightened; additional tightening may be required when the vessel has reached normal operating temperature.
WARNING: Take care when tightening plugs, the vessel can reach temperatures up to 171°C
- Ensure all connections are sound and secure and that loads aren't being transferred to the vessel.
- Ensure that the vessel is filled with a standing level of water.

Operation of the standard Blowdown Vessel is simple and no special operating instructions are required. Before use and after draining/flushing, the vessel must be replenished and filled to its standard level of water by introducing fresh water until it discharges at the outlet.



During operation periodically check the following;

- Check that the pressure displayed on the pressure gauge does not exceed 0.25 BarG during bottom blow down. Excess pressure may indicate a blockage in the outlet or vent pipe work. This should be immediately rectified.

6.0 MAINTENANCE

As per the requirements of the Pressure Systems Regulations, each vessel installed must have a "Written Scheme of Examination" which must be completed by a suitably qualified competent person.

Maintenance of Blowdown Vessels is critical as repairs are not recommended due to the high specification design procedures, welding procedures and inspectorates required.

In order to isolate the vessel;

1. Close and secure the stop valves installed on each of the blow down lines at the vessel inlets.
2. Close all boiler blow down valves and open any line valves (i.e. double block and bleed principle).

The vessel must be drained every six months to remove concentrated blow down water or sludge which may have accumulated at the bottom of the vessel. Sludge and sediment must be rinsed from the vessel using a hose through the inspection opening, flushing the material through the drain connection. A new inspection opening gasket should be fitted once removed.

Blowdown vessels should be thoroughly examined by a suitable qualified competent person every 14 months or at every major boiler inspection. The examination normally consists of a visual inspection of the internal surfaces to check for signs of corrosion, erosion, scaling or sediment build up. A new inspection opening gasket should be fitted once removed. It is the responsibility of the suitably qualified competent person to determine the frequency of examinations and the procedure and include this within a Written Scheme of Examination.

NOTE REGARDING HYDRAULIC PRESSURE TESTING ON SITE

If a hydraulic pressure test is required as part of examination, the pressure gauge will need to be replaced with a calibrated gauge capable of withstanding the required test pressure. All connections should be blanked off and the test should be conducted in accordance with Health and Safety Executive Guidance Note GS4 "Safety in Pressure Testing" and any other relevant procedures and regulations.

7.0 RECYCLING

For details on the end of life disassembly, recycling and disposal requirements of the unit, please consult the general assembly drawing and technical data sheet issued at quote/order stage, to determine the materials used.

All materials should be disposed of responsibly and in accordance with local regulations.

Please contact our technical team for further information.



WORLD HEAT
CYLINDERS

WH-IOM-018

Installation, Operation & Maintenance Instructions

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8.0 SPARES

World Heat recommends the following spares for a standard Blowdown Vessel;

- Inspection Opening Gasket

Please contact our sales department for recommended spare prices and availability, please quote your vessel serial number in order for our sales team to correctly specify the spares required.