



山東北辰

Shan Dong Bei Chen



REGULAR SEWAGE EXPANSION TANK

Operation and Maintenance Instruction Manual

Shandong Beichen Mechanical&Electrical Equipment Co.,Ltd.

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1. Equipment Overview

1.1 Equipment Purpose and Principle

The periodic blowdown expansion vessel described in this manual is applicable to thermal power plants or other industries where it is used for boiler periodic blowdown water or condensate discharge from other equipment.

Principle: The boiler's periodic blowdown water, continuous blowdown expansion vessel, or other equipment's condensate enters the device through the condensate inlet. Inside the device, the water is uniformly diffused by internal components to ensure thorough separation of steam and water. The separated steam (exhaust steam) is discharged through the top to the atmosphere, while the separated water at the bottom of the device is discharged directly to the trench or wastewater treatment system.

1.2 Equipment Parameters

Please refer to the "Technical Specifications Table" in the accompanying drawings.

1.3 Equipment External Diagram

Please refer to the accompanying drawings.

1.4 Attachments

The equipment body is equipped with a pressure measurement port.

2. Equipment Description

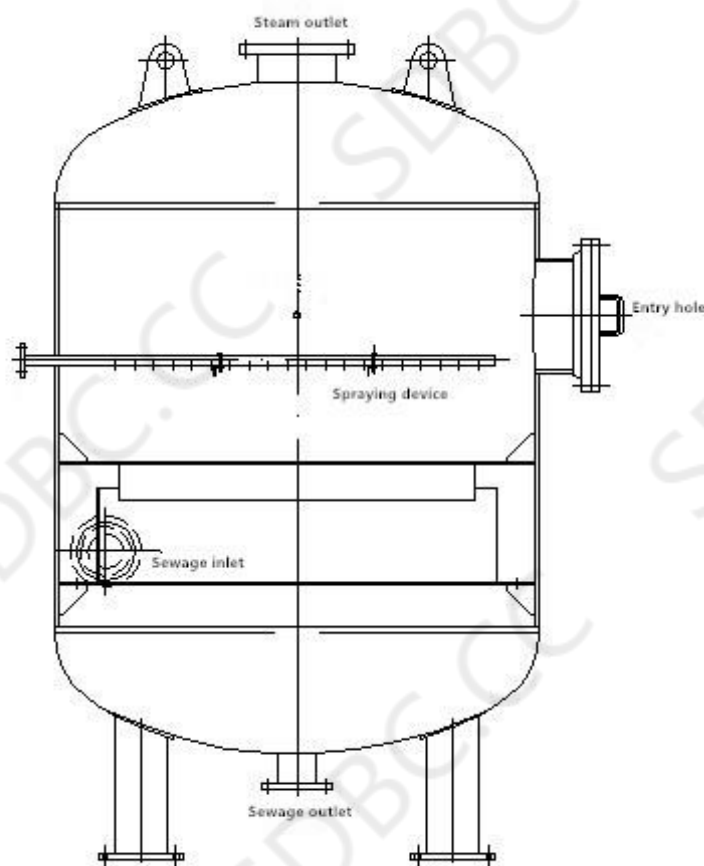
2.1 The main components of the continuous blowdown expansion vessel include:

The cylinder and support.

2.1.1 Cylinder:

The cylinder is welded with standard elliptical heads at both ends and a shell section. It includes internal spray and swirling devices. The external interfaces include sewage inlet and outlet, steam outlet,

cooling water inlet, and manholes. The structural schematic diagram is as follows:



2.1.2 Bracket

The equipment is equipped with three B4-type supports (refer to JB/T4712.4-2007) to bear the weight of the equipment.

2.2 Factory Documentation

- a. Product Certificate;
- b. Quality Certificate;
- c. Completion Drawings;
- d. Installation, Operation, Maintenance, and User Manual;
- e. Delivery List.

3. Installation

3.1 Pre-installation Inspection

3.1.1 Check whether the equipment's appearance conforms to the design drawings and inspect for any damage during transportation.

3.1.2 Inspect whether there is rust on the interfaces that might affect the sealing.

3.2.3 Check if the fasteners are loose, rusty, or damaged.

3.2 Site and Foundation

3.2.1 Based on the equipment's structural form, ensure there is enough space at both ends after installation to accommodate disassembly and maintenance.

3.2.2 The foundation size should match the dimensions of the supports. The foundation can be poured with concrete or made of steel structure. If a concrete foundation is used, the foundation plate for the movable support should be embedded, and the foundation plate must remain smooth and flat.

3.3 Equipment Hoisting

3.3.1 Equipment hoisting must strictly follow on-site operating standards.

3.3.2 Pay attention to the center of gravity during lifting.

3.3.3 If the equipment has lifting lugs, use the lugs for hoisting. If not, the equipment body or other safe methods must be used for hoisting. At no time should parts like the equipment's lifting lugs or pipe connections be used for hoisting.

3.4 Positioning and Installation of Equipment

3.4.1 Place the equipment on the foundation and align it vertically, ensuring the centerline deviation is less than 5mm. Then, tighten the nuts.

3.4.2 For movable supports with foundation bolts, install two locking nuts, ensuring a 1-3mm gap between the nut and the base plate.

3.4.3 After installation, the movable or rolling supports should not obstruct the thermal expansion of the equipment.

3.4.4 Piping and fittings should be connected without applying force to the equipment to avoid stress during assembly.

3.4.5 Before the test run, install valves and instruments as required by the system control drawings.

4. Operation and Maintenance

4.1 The equipment must not operate under conditions exceeding the specifications on the nameplate.

4.2 During operation, frequently check whether all valves and measuring instruments are functioning properly and whether there are any leaks. If any abnormalities are found, promptly repair or replace the parts.

4.3 Regularly monitor the temperature, pressure, flow rate, and vibration of the equipment during operation. If any anomalies are detected, analyze the cause and, if necessary, perform repairs and maintenance. Maintenance and repairs must be conducted during shutdown periods.

4.4 Regular Inspections

a. Periodic inspections of classified vessels should follow the "Safety

Technical Supervision Regulations for Fixed Pressure Vessels."

b. External and internal inspections, as well as safety status ratings, should be conducted according to the "Inspection Regulations for In-Service Pressure Vessels."

5. Precautions

5.1 When disassembling the equipment, if any gaskets have become loose, they must be replaced with new ones during reassembly.

5.2 The equipment can only be used after passing a pressure test upon installation.

5.3 Before using the equipment, open the bypass valve to drain the wastewater inside and flush the equipment to ensure there are no particulate impurities. Afterward, close the bypass valve, and the equipment can be put into normal operation.