

Service News



Castable

Castables are used in our steam boilers, thermal oil boilers and combustion room of waste oil incinerator. In this installment, castables are considered.

Why is a castable applied ? ... Why a castable is applied will be briefly explained.

[Steam boiler]

The combustion room of our steam boiler is fixed by inserting both ends of the water tubes into the upper and lower drums. The combustion room is formed by closely contacting the water tubes with each other, therefore, both ends of the water tubes are swaged. To prevent high-temperature combustion gas from flowing through gaps generated at both ends of the water tubes by swaging, a castable is applied.

Thus, a castable on the surface of the drum is intended for protection of the internal shell plate. Direct exposure to high temperature combustion gas is not recommended over in the log run. For this reason, a castable is applied on the upper drum and the furnace bottom.

[Thermal oil boiler]

In the combustion room of the thermal oil boiler, a set of several heating tubes cylindrically wound are arranged with a proper stacking margin and connected with upper and lower headers, then combustion gas is guided into the gap between the first layer and second layer of the cylindrical heating tubes. Therefore, since a thermal oil boiler does not have a drum above and below the combustion room as steam boiler does, a castable is applied in order to prevent the upper and lower portions of the boiler from being heated to high temperatures.

[Waste oil incinerator]

Waste oil incinerator burns waste oil or waste oil and solid waste, draws the generated high temperature gas to the chimney side by the ejector, and mixes it with cooling air, and then lowers the temperature to discharge. Therefore, a castable is applied to the entire surfaces of the combustion room.

In this way, a castable is important to prevent combustion gas generated in the combustion room from overheating the drum and the casing.

With the new type BGW-N conforming to MARPOL 73/78Annex VI, MEPC76(40), ship facility regulations have been structured to isolate the solid waste combustion room and waste oil

combustion room separately.

In general, hair cracks (gap smaller than 2 mm) and surface peeling (thickness of 5 mm or less) are formed on fire proofing materials of incinerator due to thermal expansion and cooling. Fire proofing materials for our incinerator are firmly fixed to the main body by multiple Y-shaped anchors. Additionally, fire proofing materials are sufficiently thick. Therefore, initial hair cracks or surface peeling rarely cause large-sized fire proofing material to fall off. However, since fire proofing materials are exposed to flame and corrosive combustion gas, it unavoidably becomes exhausted little by little. The exhausting rate depends on the content of waste oil, incinerating amount and property of solid matter to be incinerated.

Life of castables

Castables are exposed to high temperature combustion gas. Therefore, long-term use deteriorates the fire proofing material which in turn causes peeling, falling-off of a castable and reductions in thickness, whereby a castable cannot achieve its intended aims. Advancement of deterioration depends on use frequency, operating hours and the content of burned fuel respectively. In particular, in case of its waste oil incinerator, it depends on the content of waste oil to be processed and the processing amount. Inspect the inside of the combustion room periodically, and it is necessary to perform maintenance if the following situations are confirmed for a castable.

1. Castable is peeled and reduced in thickness, and the top end of the anchor for prevention of falling-off is exposed.
2. Castable is removed, has fallen off or is reduced in thickness, and the base material on the applied portion is exposed.
3. Casing of the castable applied portion became heated to a high temperature or discolored. Or, a short pass of the combustion gas is confirmed.
4. If the surface of the castable is tapped, it collapses.

If the equipment is used in the above conditions, serious trouble may result, therefore, perform maintenance as soon as possible.

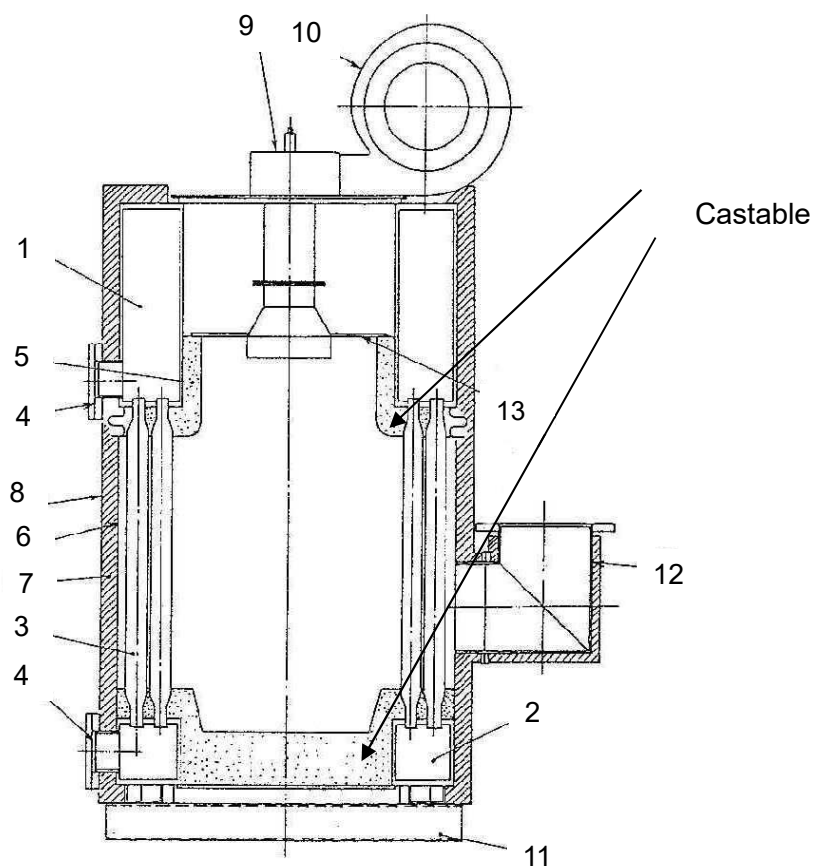
Maintenance of castables

To perform maintenance of castables, pay close attention to the following. For the type of castable, contact our maintenance department.

1. Perform maintenance with a castable suitable for the maintenance portion. Use a sticky plastic castable for the upper swaged section of the water tube and the upper maintenance part. Use a castable that can withstand temperatures of combustion gas.
2. Apply a castable from the base material of the bottom for maintenance. Even if a new castable is applied on the surface for which a castable has been removed and reduced in thickness, the castable will be removed at an early date. Install anchors to prevent falling on the upper maintenance portions and vertical maintenance portions.

3. Apply a castable so that the atmospheric layer is not formed in a castable. An atmospheric layer may cause cracks, removal and falling off of a castable.
4. When using powdered castable mixed with water, pay attention to the water amount. Excessive or insufficient water amounts may cause early damage, therefore, the specified water amount should be observed.
5. After application of a castable, sufficiently dry for use. Insufficient drying may cause early damage of a castable.

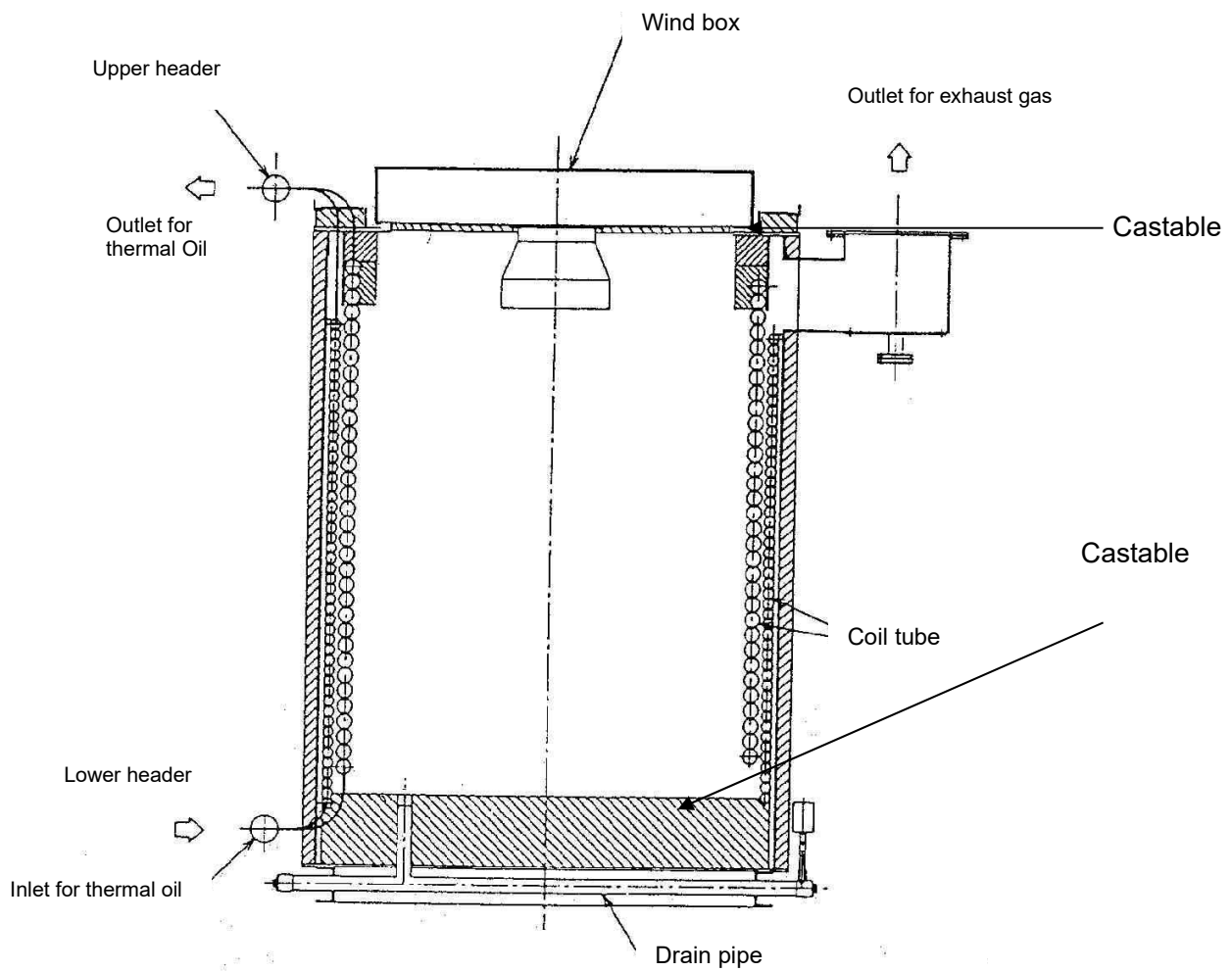
< Steam Boiler > VWH Type



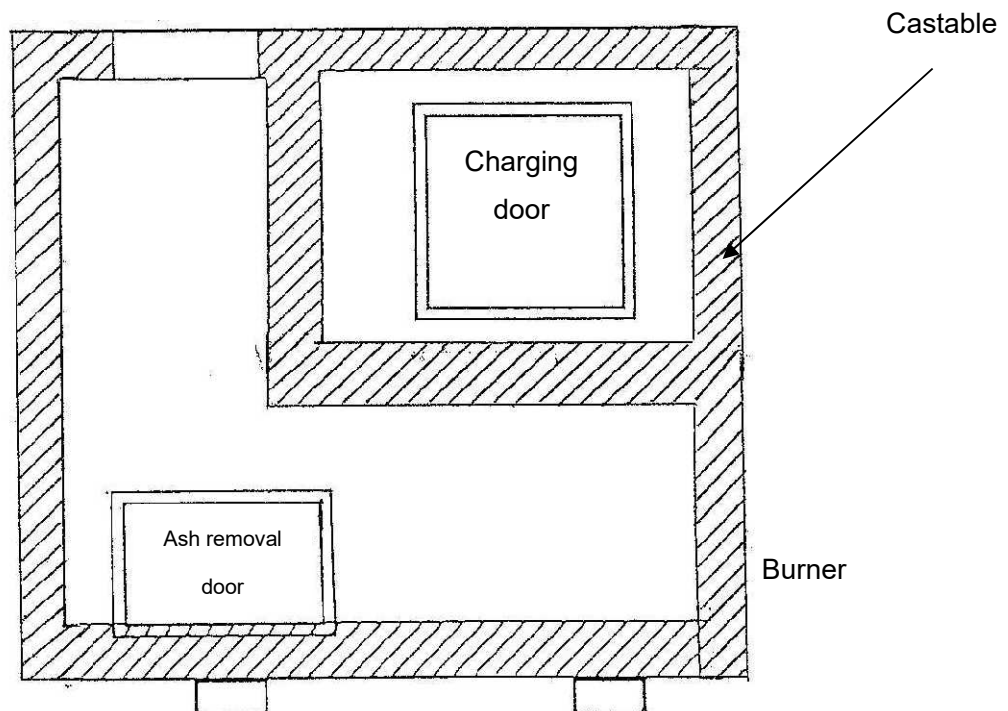
1	Steam Drum	8	Outer Casing
2	Water Drum	9	Burner
3	Water Tube	10	Fan
4	Inspection Hole	11	Base
5	Castable	12	Chimney Base
6	Inner Casing	13	Shielding Plate
7	Castable		

Caution : A castable applied portion depends on the Model.

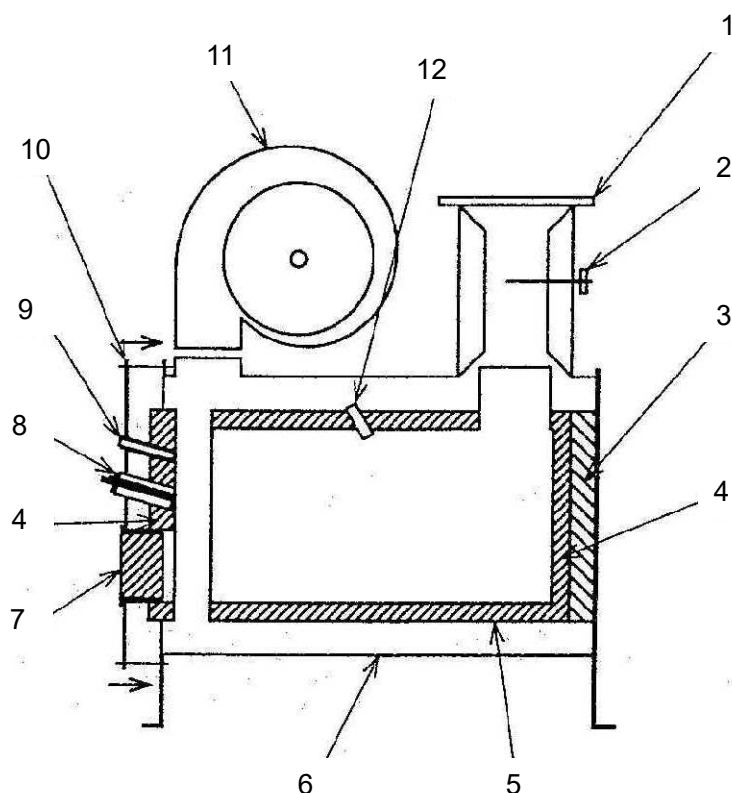
< Thermal oil boiler > HTB Type



< Waste oil incinerator > BGW-N Type



< Waste oil incinerator > BGW Type



BGW-10, 20, 30

1	Chimney base	7	Charging door
2	Thermocouple for Exh. Gas Temp.	8	Auxiliary burner
3	Insulation castable	9	Waste oil burner
4	Heat resistant castable	10	Front casing
5	Inner casing	11	Cooling fan
6	Outer casing	12	Furnace air intake

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<https://www.miuraz.co.jp/en/marine/service/network.html>



If you have any questions, please contact nearest MIURA's office.

We hope to receive your continuous support in the future.