

DEAR



**ATMOSPHERIC DEAERATOR FOR STEAM BOILERS
IN CARBON STEEL (in stainless steel on request)**

RANGE

from 500 to 16000 liters

WORKING PRESSURE

atmospheric

WORKING
TEMPERATURE

90÷95°C

MODELS	500	1000	1500	2000	2500	3000
	4000	5000	8000	10000	16000	-

DESCRIPTION

Atmospheric deaerator for steam boilers.

The atmospheric deaerator is a steam heated feed water tank necessary for a (partial) deaeration process.

The steam, necessary to reduce the quantity of dissolved gases in the water, is injected through a sparging tube positioned in the lower part of the tank.

The steam injection is controlled, by an electromechanical thermostat set to the temperature of 95°C.

Execution in horizontal cylindrical shape, with convex end-plates, and mounted on a stable steel support device designed for installing at proper height to avoid the cavitation phenomenon.

Complete with an electronic water level management system and related alarms (low and high levels).

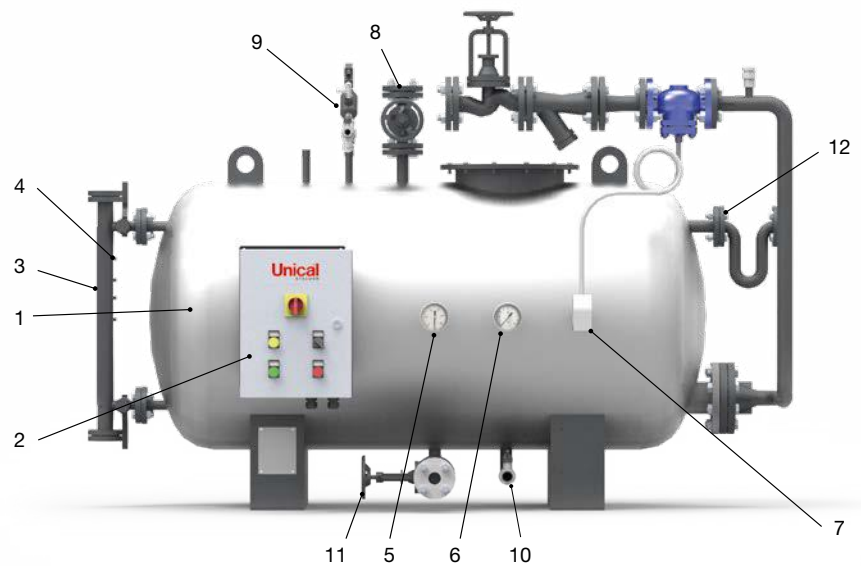
Insulated with high-density rockwool and covered with embossed aluminum foil.

Standard-production equipment:

- Deaerator tank made of steel
- Steam injection system
- Magnetic level indicator
- Probes for water level control
- Inlet water line with pneumatic valve and filter
- Condensate return inlet
- Degassed hot water supply to boiler
- Air vent
- Overflow
- Drain valve
- Temperature gauge
- Pressure gauge
- Board panel IP55.

MAIN COMPONENTS

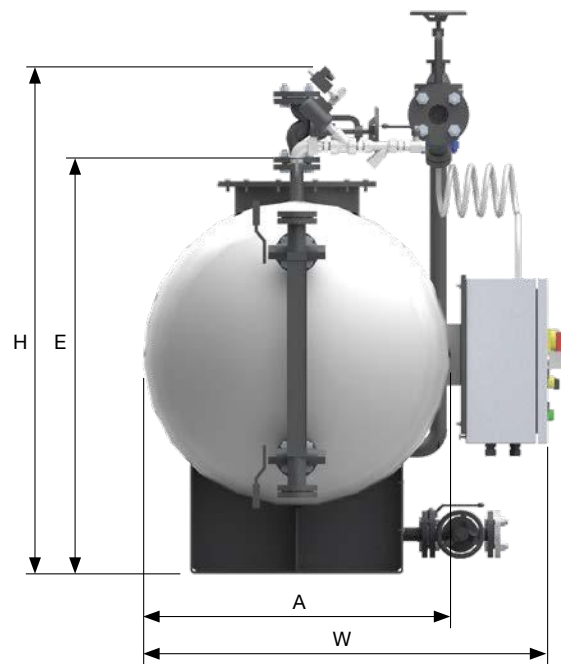
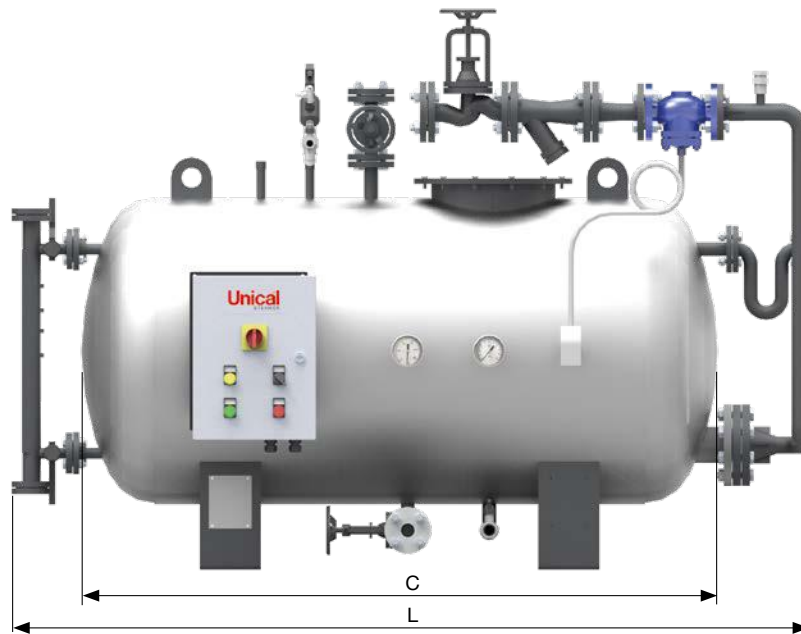
1. Degassing tank
2. Board panel
3. Level indicator
4. Level regulation sensors
5. Thermometer
6. Manometer
7. Steam injection thermoregulation group
8. Condensates return
9. Reinstatement water inlet
10. Drain
11. Hot water flow to the steam boiler
12. Overflow connection



TECHNICAL DATA

Model	Water content at level	Total volume	Working temperature	Degassing capacity
	l	l	°C	l/h
500	325	500	90÷95	500
1000	650	1000	90÷95	1000
1500	975	1500	90÷95	1500
2000	1300	2000	90÷95	2000
2500	1625	2500	90÷95	2500
3000	1950	3000	90÷95	3000
4000	2800	4000	90÷95	4000
5000	3500	5000	90÷95	5000
8000	5600	8000	90÷95	8000
10000	7000	10000	90÷95	10000
16000	11200	16000	90÷95	16000

DIMENSIONS



Model	W	L	H	A	C	E	Empty weight
	mm	mm	mm	mm	mm	mm	kg
500	1045	1970	1330	750	4560	1000	350
1000	1245	2400	1440	950	2000	1210	480
1500	1495	2315	1690	1200	1900	1460	535
2000	1585	1935	1845	1300	1880	1560	580
2500	1585	2990	1845	1300	2530	1560	685
3000	1665	3080	1915	1370	2630	1630	785
4000	1795	3060	2090	1500	2610	1760	970
5000	1995	3130	2300	1700	2650	2000	1080
8000	2085	4750	2420	1800	4125	2100	1650
10000	2085	5215	2500	1800	4625	2100	1760
16000	2385	5960	2810	2100	5560	2690	2450

BOARD PANEL

DEAR

- ON/OFF regulation of water level in the reservoir
- Nr.1 low level signalling
- Nr.1 high level signalling
- Electrical protection degree IP55



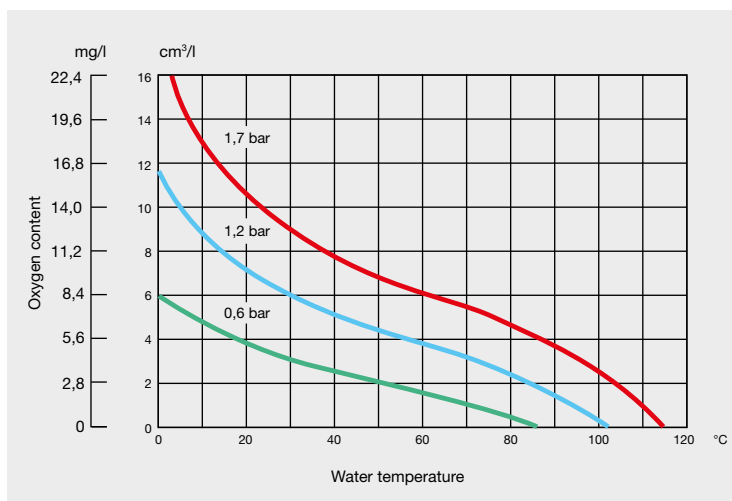
DEGASSING

The deaerator has the function to reduce the concentration of the corrosive gases O_2 and CO_2 dissolved in the feeding water of the boiler.

The dangerousness of these gases is, in fact, that combining themselves with other elements, such as the iron and other metals of the pressure vessel, can provoke corrosion. It is, therefore, fundamental to free the feeding water from these gases.

Since the solubility of the gases in the water reduces when the temperature increases, the problem's solution is to increase the feeding water temperature; the extreme case is represented by the water in evaporation, situation in which all the gases would be released (total de-aeration).

The following diagram shows the oxygen content dissolved in the water according to the pressure and the temperature. It can be noticed that at the boiling temperature of $105^\circ C$ for an absolute working pressure of 1.2 bar we are in a zone where the O_2 content in the water is practically void.

**Atmospheric deaerator (Partial de-aeration)**

In the partial de-aeration the process happens under atmospheric pressure; the atmospheric deaerator is connected to the atmosphere through a ventilation duct. It is the simplest thermal treatment form for the water deaeration.

The "hot" steam, necessary to remove the gases, is introduced through injectors positioned in the low part of the reservoir. The vapour feeding is controlled, in the simplest form, by an electromechanical thermostat adjusted to the temperature of $95^\circ C$.

The topping up of the fresh water is checked through an electronic level regulator.

This simple system is normally used in low capacity and low pressure installations.

NOTE: the thermo-physical de-aeration must always be coupled with a chemical de-aeration.

The deaerators of the DEAR series are deaerators of the atmospheric type for the degassing of the feeding water of the steam boilers. The appliance falls in the limits of application of the art. 3 par. 3 of the PED Directive 2014/68/UE.

The water temperature is checked and maintained through the thermometric system that checks the steam injection in the reservoir.

Endowed with steel basement that allows the installation at a level higher than 5 meters from the axle of the boiler feeding pumps, thus avoiding the cavitation phenomenon.

The deaerator is endowed with a water level management system, in mixing mode between the return condensates from the installation and the chemically treated reinstatement water.

The DEAR deaerator is composed by the following groups:

- Steam feeding group interlocked with a thermometric system (regulation through a thermo-regulating valve for the holding of the planned temperature).
- Magnetic level indicator, with 4 bi-stable contacts, opportunely positioned for the ON-OFF control of the water level in the tank and for the alarms of low and high level.
- Pneumatic valve on the entry water line
- Degassed water drawing group
- Air vent
- Overflow
- Drain
- Board panel