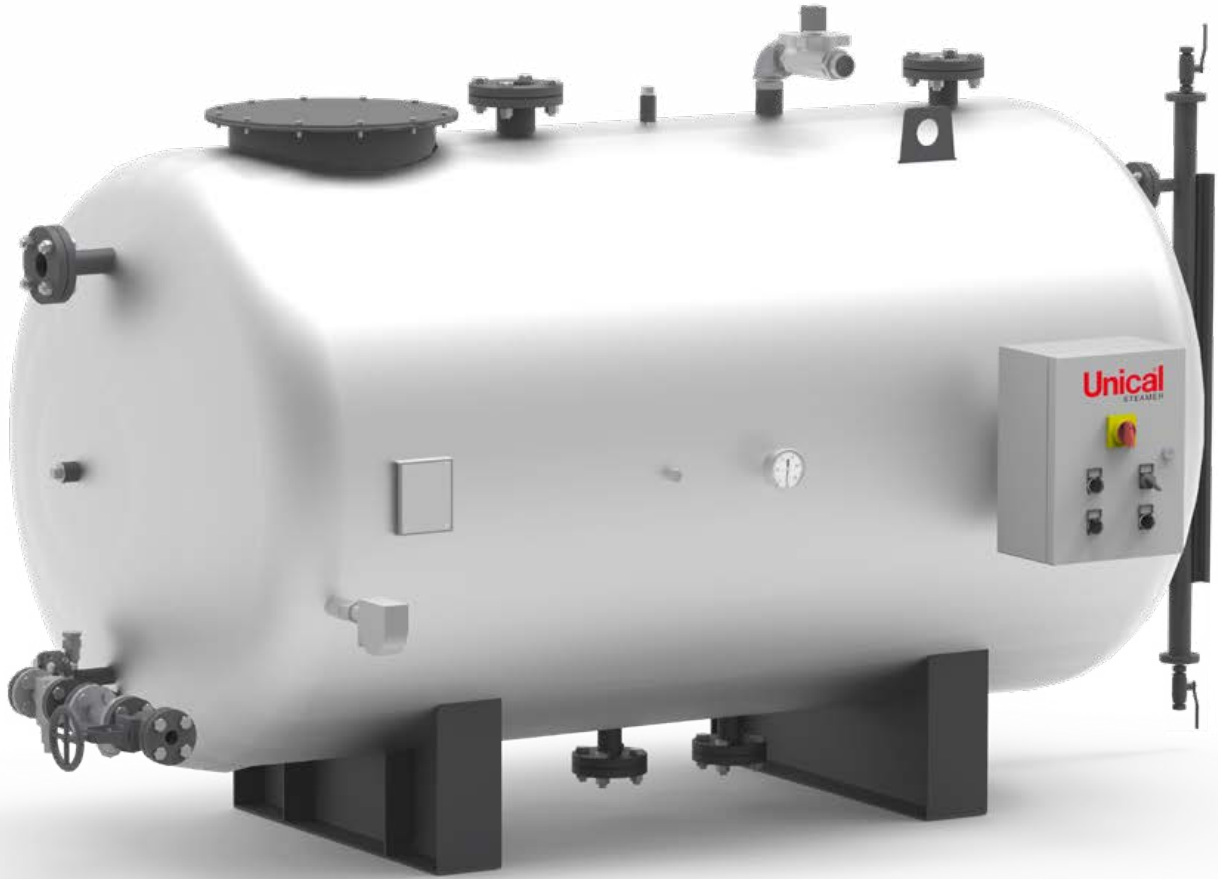


Unical

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

6000

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 (50 mm) and covered with embossed aluminum foil.

Standard-production equipment:

- Deaerator tank made of steel
- Automatic steam injection system

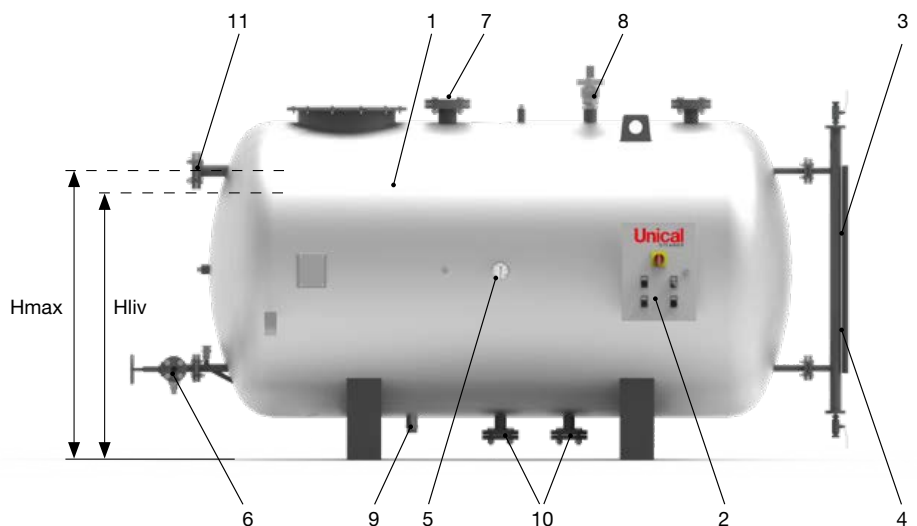
- Magnetic level indicator
- Probes for water level control
- Inlet water line with pneumatic valve and filter
- Condensate return inlet
- Air vent
- Overflow
- Drain valve
- Thermometer
- n. 2 degassed water connections (n. 1 for mod. 500)
- Electric panel board IP55.

In case of plant operating data different than what is reported in the standard "TECHNICAL DATA" table, it is possible to supply atmospheric deaerators sized according to the data supplied by the customer (non-standard).

For more details and data collection: see table "data request" entered on page 82.

MAIN COMPONENTS

1. Degassing tank
2. Electric panel board
3. Level indicator
4. Level regulation sensors
5. Thermometer
6. Steam injection thermoregulation group
7. Condensates return
8. Reinstatement water inlet
9. Drain
10. Hot water flow connections
11. Overflow connection

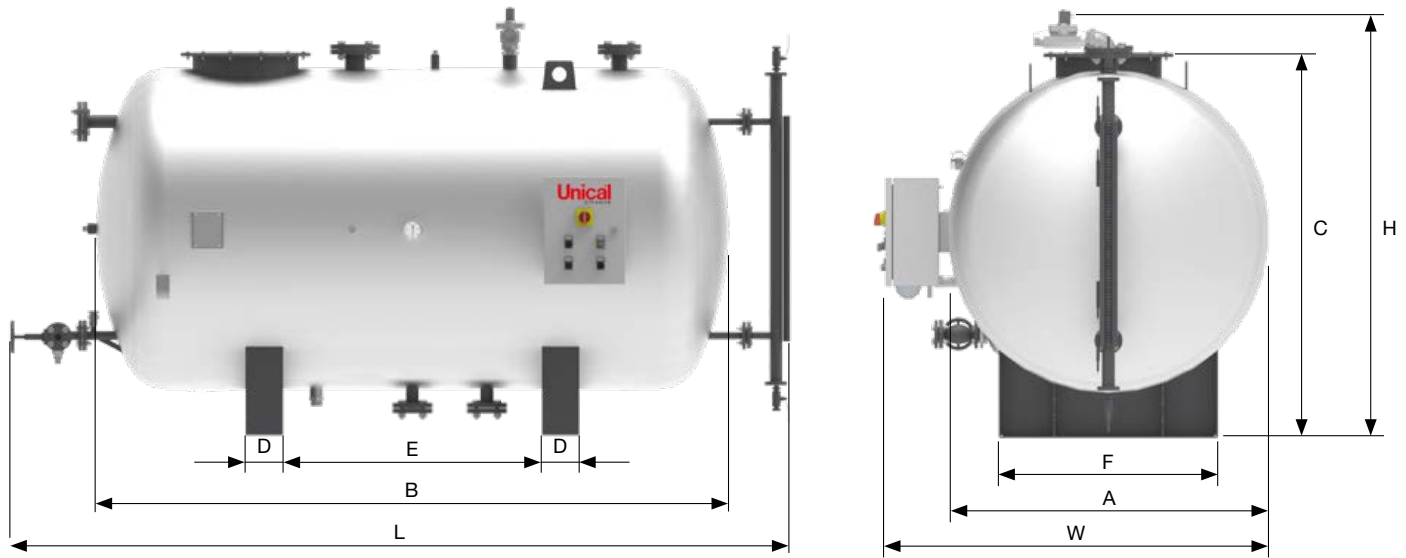


TECHNICAL DATA (standard)

Model	Water content at level	Total volume	Working temperature	Degassing capacity ^(*)	Hliv	Hmax
	l	l	°C	l/h	mm	mm
500	375	500	90÷95	500	684	764
1000	750	1000	90÷95	1000	842	936
1500	1125	1500	90÷95	1500	918	988
2000	1500	2000	90÷95	2000	1105	1235
2500	1875	2500	90÷95	2500	1105	1235
3000	2250	3000	90÷95	3000	1180	1302
4000	3000	4000	90÷95	4000	1330	1459
5000	3750	5000	90÷95	5000	1330	1459
6000	4500	6000	90÷95	6000	1330	1459
8000	6000	8000	90÷95	8000	1480	1650
10000	7500	10000	90÷95	10000	1756	1951
16000	12000	16000	90÷95	16000	1760	1951

(*) data referred to the following conditions: condensate return equal to 50% - condensate temperature 80°C - make-up water temperature 15°C

DIMENSIONS (indicative)



Modell	W	L	H	A	B	C	D	E	F	Empty weight
	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
500	1050	2320	1203	750	1870	953	120	950	470	350
1000	1250	2466	1404	950	2016	1154	120	810	611	480
1500	1350	3050	1505	1050	2600	1255	120	1310	682	535
2000	1600	2630	1755	1300	2180	1505	140	770	859	580
2500	1600	3130	1755	1300	2680	1505	140	1270	859	685
3000	1700	3220	1855	1400	2770	1605	140	1270	929	785
4000	1900	3200	1955	1600	2750	1705	160	1130	1071	970
5000	1900	3800	2005	1600	3300	1705	160	1680	1071	1080
6000	1900	4350	2135	1600	3850	1835	160	2230	1071	1200
8000	2100	4408	2365	1800	3908	2015	160	2030	1212	1350
10000	2400	4592	2726	2100	4042	2376	180	1990	1424	1760
16000	2400	6160	3040	2100	5560	2690	200	3500	1424	2450

The company reserves the right to modify / adapt the technical and dimensional information of the products included in this catalog, even without notice, in order to improve the quality of the products themselves.

ELECTRIC PANEL BOARD



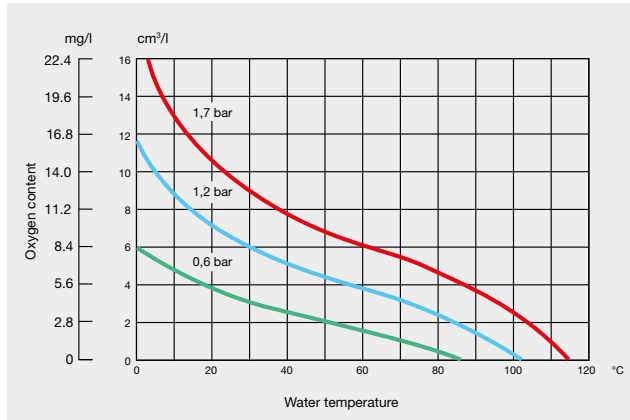
- ON/OFF regulation of water level in the reservoir
- Nr. 1 low level signalling
- Nr. 1 high level signalling
- Electrical protection degree IP55

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°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°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.

DEAERATORS DATA COLLECTION FOR OFFER PREPARATION

Description	Unit / Select	Note
Degasser type (cross the selected case): "DEAR": atmospheric "DETE": thermophysical (pressurized)	/	[] DEAR [] DETE
Plant steam production (*)	kg/h	
Condensate return (*)	%	if no data available, value considered is 50%
Condensate return temperature (*)	°C	if no data available, value considered is 80°C
Feed water temperature	°C	if no data available, value considered is 15°C
Steam pressure at deaerator inlet (*)	bar	if no data available, value considered is 8.0 bar
Steam generator nominal pressure (PS)	bar	
Steam generator working pressure	bar	
Feed water inlet pressure	bar	if no data available, value considered: 2.0 to 4.0 bar
Tank material	/	[] carbon steel [] stainless steel
Evaporation tower material - for "DETE" only	/	[] carbon steel [] stainless steel
Piping supply - for "DETE" only	yes/no	standard: piping not supplied (in this case it is released P&ID with info for the realization)
Insulation	yes/no	standard: insulation supplied thick. 50 mm
Management electrical panel	yes/no	standard: electrical panel is provided

(*) mandatory data