

Compact system KDS 13 with accessories

## Desuperheater

### Desuperheater KDS 13, KDL 13

#### Description

The desuperheater KD...13 consists of a vessel with built-in nozzle arrangement for injecting and cooling superheated steam in a water bath. The KD...13 is suitable for all applications where an effective conversion of superheated steam into saturated steam is required. The desuperheater is available for different operating loads as horizontal design KDL 13 or vertical design KDS 13. The KD...13 is custom designed for each application and meets essential thermodynamic requirements to achieve optimal performance.

#### Function

Superheated steam at a max. temperature of 400 °C is introduced into a controlled system and injected through a nozzle into a water bath where it is cooled down to the temperature of the saturated steam. In passing through the water the superheat energy of the steam is given up to the cooling water, with some of the cooling water being evaporized and entrained as saturated steam. The steam content after the cooling process is 98 %. The desuperheater features an integral water separator that prevents the cooling water from being carried along into the steam line during peak loads. The level electrode NRG ... or NRGT ... detects the cooling water level and an electronic control unit ensures that the evaporized cooling water is replaced by make-up water. The cooling water at the required upstream pressure is fed into the lower part of the desuperheater via a control valve or a solenoid valve. If the temperature of the steam is very high the cooling water must be heated up. The water-bath desuperheater is the only steam cooling system that supplies saturated steam over a control range of 0 – 100 %.

## Design

### Desuperheater KDS 13

Made from steel type P265GH, tank as vertical design with built-in nozzle arrangement, mechanical water separator, inspection hole, vessel rests on section supports, without accessories. The vessel of a compact-type desuperheating installation is mounted on a steel frame.

Accessories (valves, sensors and controllers) are available at extra cost.

Stainless steel design available at extra cost.

### Desuperheater KDL13

Made from steel type P265GH, tank as horizontal design with built-in nozzle arrangement, mechanical water separator, inspection hole, vessel rests on boiler saddles, without accessories. The vessel of a compact-type desuperheating installation is mounted on a steel frame.

Accessories (valves, sensors and controllers) are available at extra cost.

Stainless steel design available at extra cost.

For other designs or special versions please consult us.

## Technical Data

### Service pressure

32 barg

### Service temperature

400 °C

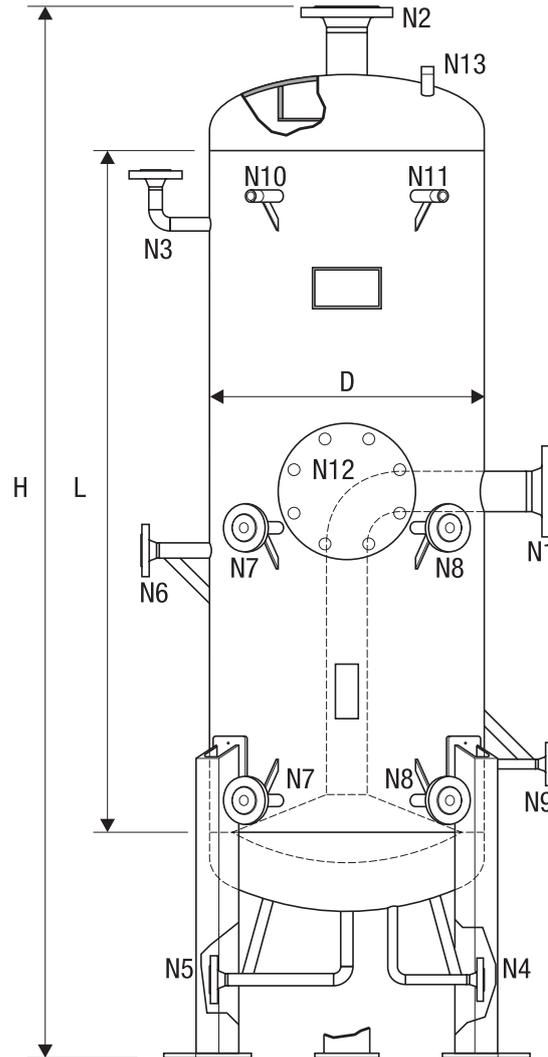
### Capacity

0.06 t/h to 40 t/h

40 m<sup>3</sup>/h available on request

## Technical Data

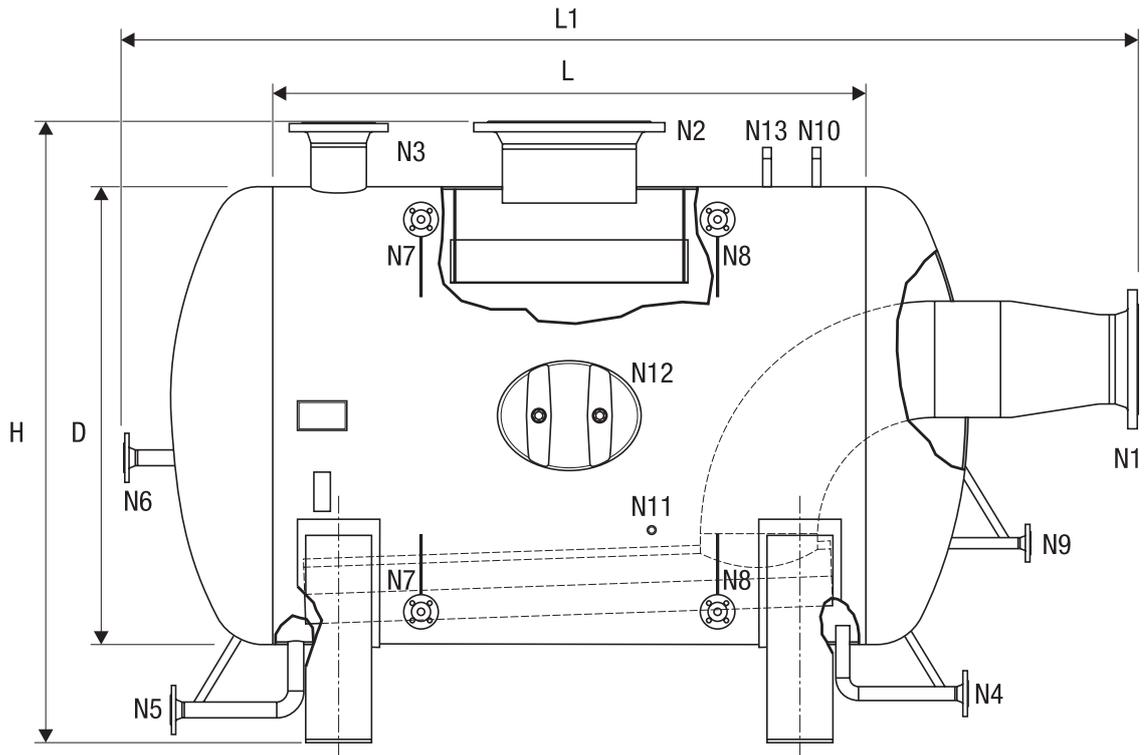
### Desuperheater KDS 13



KDS 13								
Volume	[l]	50	100	195	450	850	1350	2570
Capacity	[t/h]	0.06 - 0.9	0.15 - 1.9	0.2 - 2.8	0.5 - 5.0	0.9 - 9.0	1.4 - 13.0	2.0 - 20.0
D	[mm]	119	324	400	600	800	1000	1200
H	[mm]	1980	1770	2950	2130	2290	2370	2940
L	[mm]	1500	1250	1500	1500	1500	1500	2000
Superheated steam inlet N1	DN							
Saturated steam outlet N2	DN							
Safety valve N3	DN							
Cooling water inlet N4	DN							
Drain N5	DN							
Overflow N6	DN							
Measuring pot N7	DN							
Water level N8	DN							
Warm-up system N9	DN							
Pressure gauge N10	G							
Thermometer N11	G							
Inspection hole N12	DN							
Pressure sensor N13	G							
Weight	[kg]	350	510	750	810	980	1700	2250

Sizing of standpipe in accordance with specified operating data.

**Technical Data**  
**Desuperheater KDL 13**



<b>KDL 13</b>								
Volume	[l]	850	1350	2570	3630	4850	8800	11350
Capacity	[t/h]	0.9 - 9.0	1.4 - 13.0	2.0 - 20.0	2.5 - 21.0	2.7 - 22.0	4.8 - 28.0	5.5 - 40.0
D	[mm]	800	1000	1200	1400	1600	1800	1800
H	[mm]	1200	1400	1600	1850	2050	2250	2250
L	[mm]	1500	1500	2000	2000	2000	3000	4000
L1	[mm]	2190	2270	2840	2900	3000	4000	5000
Superheated steam inlet N1	DN							
Saturated steam outlet*) N2	DN							
Safety valve N3	DN							
Cooling water inlet N4	DN							
Drain N5	DN							
Overflow N6	DN							
Measuring pot N7	DN							
Water level N8	DN							
Warm-up system N9	DN							
Pressure gauge N10	G							
Thermometer N11	G							
Inspection hole N12	DN							
Pressure sensor N13	G							
Weight	[kg]	350	510	750	810	980	1700	2250

\*) Saturated steam outlet on steam dome available on request.  
 Sizing of standpipe in accordance with specified operating data.

# Desuperheater Desuperheater KDS 13, KDL 13

## Please Note:

The cooling water must at least be of condensate quality. The cooling water temperature at the inlet  $\geq 100^\circ\text{C}$ . Desuperheater made from stainless steel: The chloride content of the make-up water or the returned condensate must not exceed 50 mg/l (conductivity 250  $\mu\text{S/cm}$ ).

## Order & Enquiry Specification

GESTRA Desuperheater KDS 13, KDL 13  
System: Water bath type desuperheater

Superheated steam flowrate .....  
 Steam pressure upstream of desuperheater / reducing valve .....  
 Steam pressure downstream of desuperheater .....  
 Cooling water temperature .....  
 Cooling water pressure .....  
 Steam pressure control: mechanical / electric / pneumatic .....  
 Cooling water supply via solenoid valve / control valve / pump .....

Feedwater tank made from steel / stainless steel  
 Complete system with accessories yes / no  
 Complete system on frame yes / no  
 Partial system .....  
 Special design requested yes / no  
 Please enter data and cross out portion not applicable.

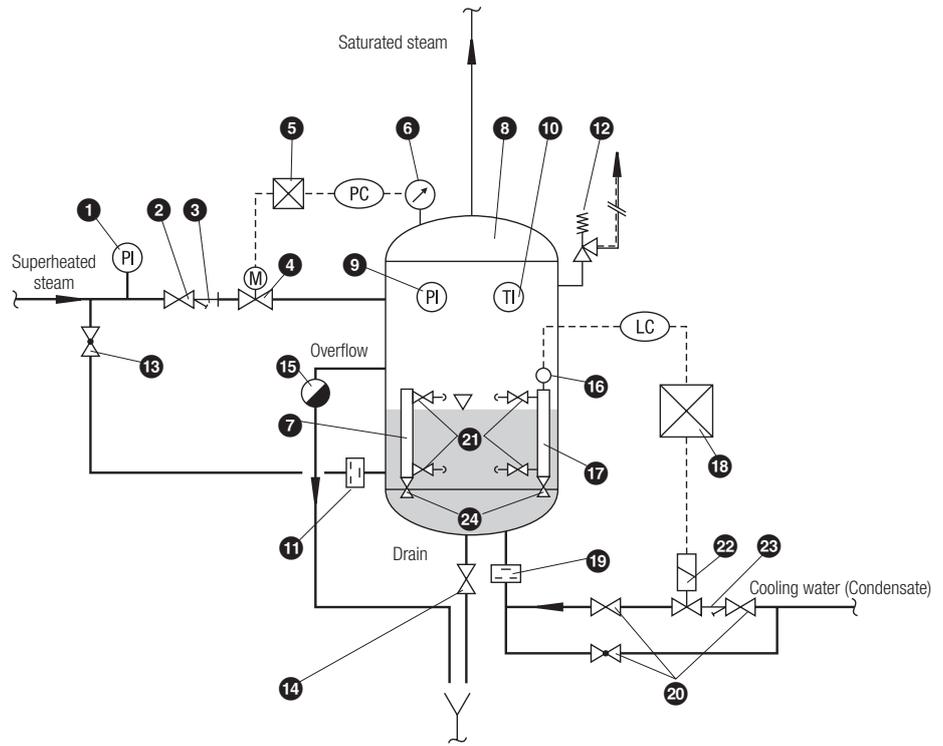
For more information see our folder "GESTRA Specification Texts".

## Pressure Equipment Directive (PED)

These products comply with the requirements of the Pressure Equipment Directive PED 97/23/EC and the AD 2000 Bulletin, taking the conformity assessment into account. Applicable with fluids of group 1 and 2. With CE marking, except for equipment according to section 3.3. For more information refer to our PED Declaration of Conformity.

Supply in accordance with our general terms of business.

## Schematic layout



## Key

- |  |                                   |
|--|-----------------------------------|
| 1 Pressure gauge unit                          | 13 Shut-off valve GAV...          |
| 2 Shut-off valve GAV...                        | 14 Shut-off valve GAV...          |
| 3 Strainer GSF...                              | 15 Ball float trap UNA...         |
| 4 Control valve                                | 16 Level electrode NRG..., NRG... |
| 5 Universal controller                         | 17 Measuring pot                  |
| 6 Pressure gauge transducer                    | 18 Preamplifier / controller      |
| 7 Water level indicator                        | 19 Non-return valve RK...         |
| 8 Desuperheater                                | 20 Shut-off valve GAV...          |
| 9 Pressure gauge unit                          | 21 Shut-off valve GAV...          |
| 10 Bimetallic dial thermometer                 | 22 Solenoid valve                 |
| 11 Non-return valve RK...                      | 23 Strainer GSF ...               |
| 12 Full-lift spring-loaded safety valve GSV... | 24 Drain valve                    |

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