VIESMANN

VITOPLEX 100-LS

Nominal steam mass flow rate 0.26 to 2.2 t/h

Datasheet

For part no. and prices: see pricelist

VITOPLEX 100-LS Type SXD

Low pressure steam boiler
Certified in accordance with Pressure Equipment Directive
Suitable for the combustion of gas and fuel oil EL
Three-pass boiler
Permissible operating pressure 1 bar

Specification for burner selection

Note

All diagrams in this document are schematic, illustrative examples.

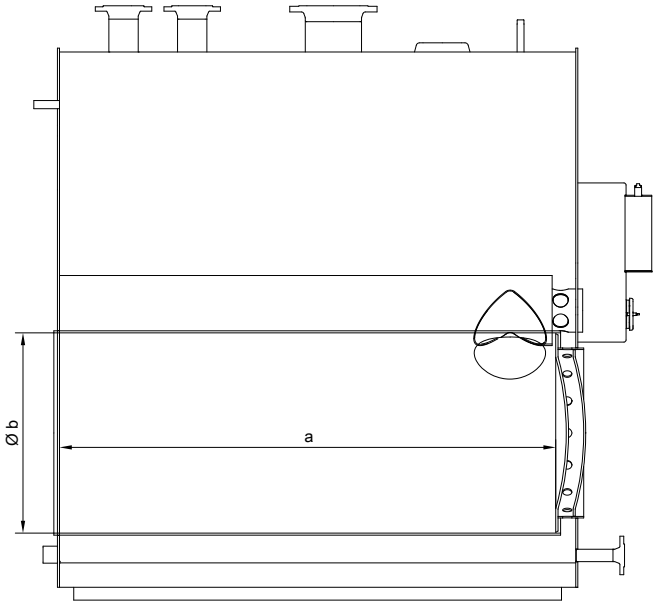
All dimensions are nominal.

General conditions

The information and values in the tables relate to the following general conditions:

- O_2 content in dry flue gas
  - For natural gas 3.0 % by vol.
  - For fuel oil 3.0 % by vol.
- Feedwater temperature 80 °C
- TDS rate 0 %
- 100 % load
- Installation altitude < 500 m above sea level
- Combustion air temperature 25 °C

Nominal steam mass flow rate		**t/h**	**0.26**	**0.44**	**0.7**	**0.9**	**1.4**	**2.2**
Rated heating output		kW	170	285	460	580	900	1450
Permissible combustion heating output		kW	186	311	503	634	984	1585
Pressure drop on flue gas side		mbar	0.9	1.8	2.5	3.0	3.6	4.7
Flame tube dimensions								
– Diameter	b	mm	480	550	585	685	780	840
– Length	a	mm	1120	1290	1440	1830	1980	2480



Flame tube dimensions

Engineering information for burner selection

Burner selection

Criteria for burner selection:

- The choice of burner depends on the combustion heating output and the pressure drop on the flue gas side.
- The burner must meet the requirements of EN 12953-7.
- The boiler/burner combination must comply with country-specific regulations (statutes, standards, guidelines, ordinances, etc.).
- The flame head must be suitable for operating temperatures of at least 500 °C.
- The minimum flame head length must be guaranteed.

Burner type	**Requirements**
Pressure-jet gas burner	Test and identification to EN 676
Pressure-jet oil burner	Test and identification to EN 267

Burner specification
Manufacturer's datasheets

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Engineering information for burner selection (cont.)

Fuels

Gas
- Natural gas, town gas and LPG to DVGW Code of Practice G 260/I and II or local regulations

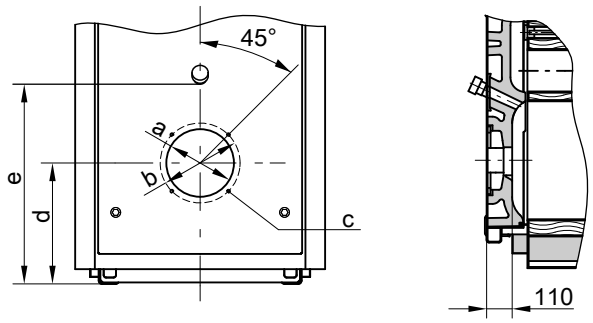
Oil
- Fuel oil EL to DIN 51603-1

Biodiesel
- To DIN SPEC 51603-6, EN 14213, EN 14214 (or equivalent)

Alternative fuels on request

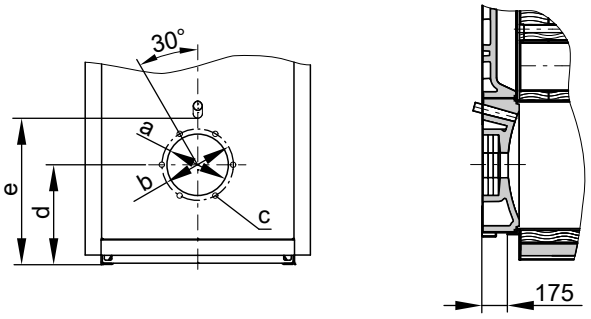
Burner installation

Size 0.26 to 0.7 t/h
The burner fixing hole circle, burner fixing holes and flame tube aperture meet the requirements of EN 303-1.
The burner can be fitted directly to the hinged boiler door. Fit the burner plate that is part of the standard delivery if the burner dimensions deviate from those stated in EN 303-1.
The burner plate can be factory-fitted on request (chargeable option). Please indicate the burner make and type when ordering.
The flame tube must protrude from the thermal insulation of the boiler door.



Nominal steam mass flow rate	t/h	0.26	0.44	0.7
a	∅ mm	240	240	290
b	∅ mm	270	270	330
c	Number	4	4	4
	Thread	M 10	M 10	M 12
d	mm	440	456	492
e	mm	696	749	804

Size 0.9 to 2.2 t/h
Fit the burner plate included in the standard delivery to the hinged boiler door. The burner must be fitted to the burner plate; mounting it directly onto the boiler door without a burner plate is not possible. Drill the supplied burner plate on site, in accordance with the burner dimensions.
Burner plates can be prepared at the factory on request (chargeable option). Please indicate the burner make and type when ordering.
The flame tube must protrude from the thermal insulation of the boiler door.



Nominal steam mass flow rate	t/h	0.9	1.4	2.2
a	∅ mm	350	400	400
b	∅ mm	412	490	490
c	Number	6	6	6
	Thread	M 12	M 12	M 12
d	mm	553	605	640
e	mm	826	927	967

Burner adjustment

Adjust the oil or gas throughput of the burner to the stated combustion heating output of the boiler.

Flue system

The steam boiler and flue system must be compatible.
According to EN 13384 and DIN 18160, flue gases must be expelled to the outdoors such that the precipitation of vaporised flue gas components inside the flue system will not cause any risks. A moisture-resistant flue system is recommended.

Equip the connection piece between the boiler flue connector and the chimney with thermal insulation.
We recommend you seek advice from your local flue gas inspector.

Boiler geometry

Size 0.26 to 0.7 t/h

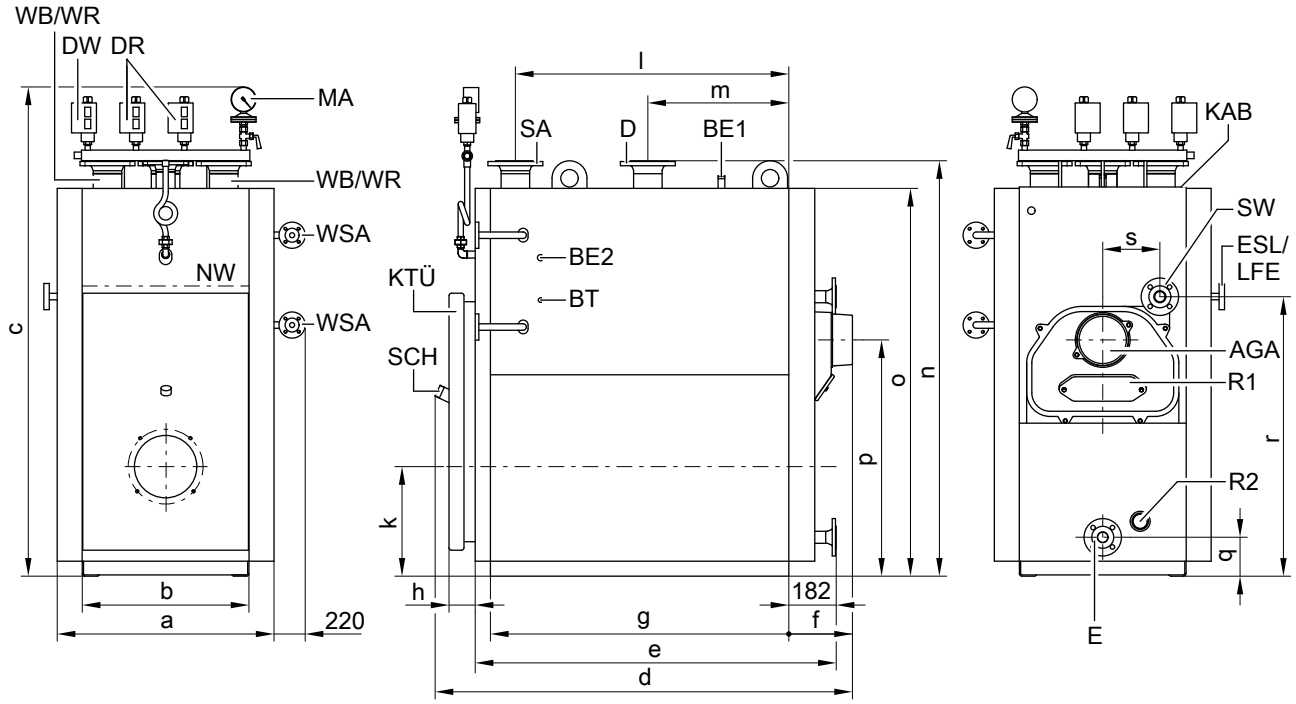


Illustration shows pressure switch, pressure regulator and pressure gauge (accessories)

AGA	Flue outlet
BE1	Connector R ¾ for ventilation
BE2	Female connection R ¾ for ventilation
BT	Female connection R ½ for temperature controller (standby)
D	Steam connector
DR	2 female connections R ½ for pressure regulator
DW	Female connection R ½ for pressure switch
E	Drain
ESL	Connector for TDS line PN16 DN20
KAB	Boiler cover (load bearing)
KTÜ	Boiler door
LFE	Connector for conductivity electrode
MA	Female connection R ½ for pressure gauge PN16 DN20
NW	Minimum water level
R1	Cleaning aperture
R2	Female cleaning connection
SA	Safety connection (safety valve)
SCH	Inspection port
SW	Feedwater connector
WB/WR	Connection PN16 DN100 for water level limiter/water level controller
WSA	Connection PN16 DN20 for water level indicator

Nominal steam mass flow rate	t/h	0.26	0.44	0.7
a	mm	770	950	1025
b	mm	670	750	825
c	mm	1880	2020	2185
d	mm	1630	1800	1980
e (transport dimension)	mm	1490	1655	1820
f	mm	215	215	230
g (length of base rails)	mm	1195	1360	1510
h	mm	166	166	186
k	mm	440	450	490
l	mm	1090	1260	1375
m	mm	565	620	685
n	mm	1665	1805	1970
o	mm	1560	1700	1865
p	mm	950	1045	1135
q	mm	160	135	155
r	mm	1120	1205	1325
s	mm	230	245	260

- Dimension e: with boiler door and flue gas collector removed
- Dimension k: observe the installed burner height

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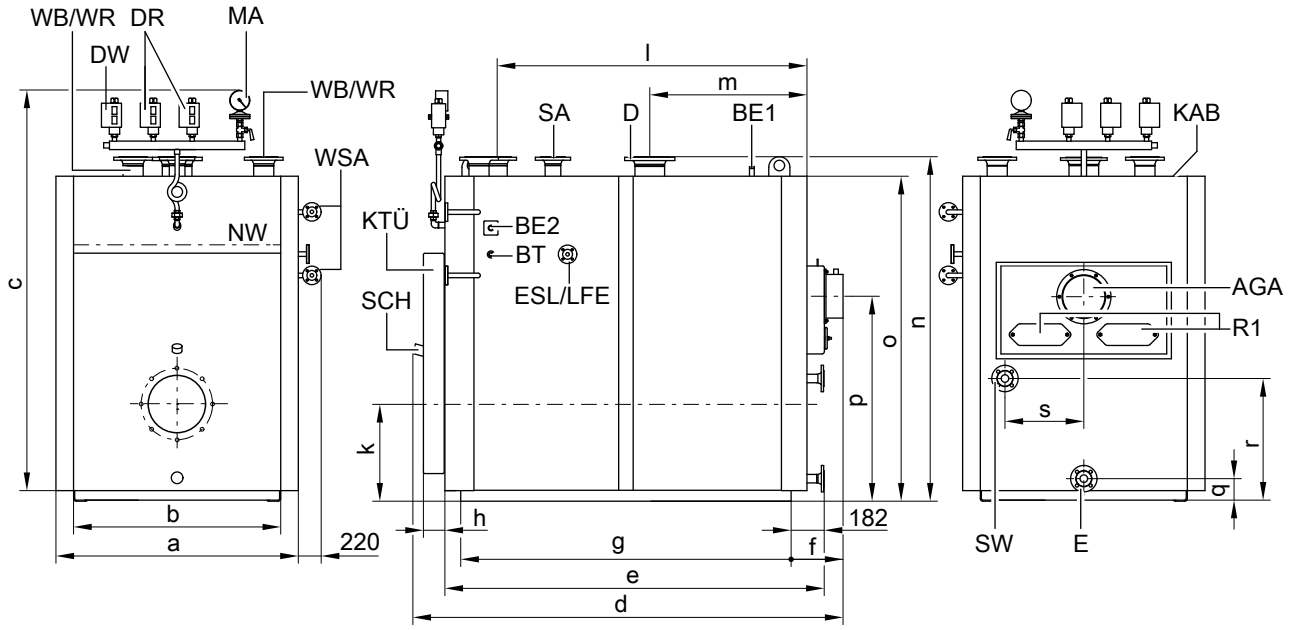
Boiler geometry (cont.)

Size 0.9 to 2.2 t/h



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SW	Feedwater connector
WB/WR	Connection PN16 DN100 for water level limiter/water level controller
WSA	Connection PN16 DN20 for water level indicator

Nominal steam mass flow rate		t/h	0.9	1.4	2.2
a		mm	1380	1445	1580
b		mm	1175	1245	1380
c		mm	2165	2280	2695
d		mm	2440	2590	3135
e (transport dimension)		mm	2310	2460	2970
f		mm	290	290	300
g (length of base rails)		mm	1880	2030	2525
h		mm	212	212	247
k		mm	550	605	640
l		mm	1350	1500	2095
m		mm	800	950	1145
n		mm	1960	2270	2490
o		mm	1880	2195	2410
p		mm	1170	1385	1490
r		mm	700	820	905
q		mm	130	130	135
s		mm	450	480	550

- Dimension e: with boiler door removed
- Dimension k: observe the installed burner height

Transport information

Nominal steam mass flow rate		t/h	0.26	0.44	0.7	0.9	1.4	2.2
Shipping dimensions								
– Length	e	mm	1490*1	1655*1	1820*1	2310*2	2460*2	2970*2

*1 *With boiler door and flue gas collector removed*

*2 *With boiler door removed*

Boiler geometry (cont.)

Nominal steam mass flow rate		t/h	0.26	0.44	0.7	0.9	1.4	2.2
– Width	b	mm	670	750	825	1175	1245	1380
– Height (incl. connectors)	n	mm	1665	1805	1970	1960	2270	2490
Overall dimensions								
– Total length	d	mm	1630	1800	1980	2440	2590	3135
– Total width	a	mm	770	950	1025	1380	1445	1580
– Total height (incl. connectors)	c	mm	1880	2020	2185	2165	2280	2695
– Height of anti-vibration supports (under load)		mm	37	37	37	37	37	37
Foundation (recommended)								
– Length		mm	1400	1550	1750	1900	2100	2600
– Width		mm	870	950	1025	1200	1260	1400
Weight of boiler shell		kg	685	975	1350	1715	2360	3550
Total weight incl. thermal insulation and fittings		kg	770	1075	1480	1850	2520	3752

Boiler connections

Nominal steam mass flow rate	t/h	0.26	0.44	0.7	0.9	1.4	2.2
Steam connector	PN16 DN	100	125	125	150	20	200
Feedwater connector	PN16 DN	40	40	40	40	40	40
Safety connection (safety valve)	PN16 DN	65	65	80	80	100	125
Drain	PN16 DN	40	40	40	40	40	40
Flue outlet	∅ mm	200	200	250	250	300	400

Performance data

Nominal steam mass flow rate	t/h	0.26	0.44	0.7	0.9	1.4	2.2
Boiler water capacity	m^3	0.552	0.735	0.980	1.730	2.261	3.240
– Average operating range*3	m^3	0.345	0.460	0.615	1.316	1.709	2.377
Steam chamber volume*3	m^3	0.207	0.275	0.365	0.414	0.552	0.863
Water level*3	m^2	0.677	0.861	1.058	1.565	1.180	2.544
– Minimum water level	mm	1146	1243	1378	1422	1680	1844

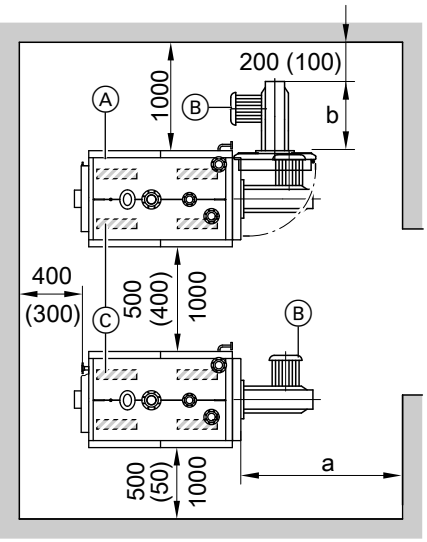
Nominal steam mass flow rate	t/h	0.26	0.44	0.7	0.9	1.4	2.2
Flue gas temperature*4							
– At rated heating output	°C	200	200	200	200	200	200
– At partial load (50 % of rated heating output)	°C	130	130	130	130	130	130
Flue gas mass flow rate*4 (for fuel oil EL and natural gas)							
– At rated heating output	kg/h	290	485	780	980	1525	2445
– At partial load (50 % of rated heating output)	kg/h	145	240	390	490	760	1220
Required draught	Pa/mbar	0	0	0	0	0	0
Gas content							
– Combustion chamber and hot gas flues	m^3	0.296	0.449	0.603	0.942	1.204	2.193

*3 *Average water level between pump "ON" and pump "OFF"*

*4 *Values for calculating the size of the flue system to EN 13384 relative to 13 % CO_2 for fuel oil EL and 10 % CO_2 for natural gas.*
Flue gas temperatures captured as gross values at 20 °C combustion air temperature.
Partial load corresponds to 50 % of rated heating output; calculate the flue gas mass flow rate when the partial load differs from that stated (subject to operating mode).

Specification

Recommended minimum clearances



Ⓐ Boiler
Ⓑ Burner
Ⓒ Anti-vibration supports

Note
Observe the specified clearances to ensure easy installation and maintenance. Dimensions in brackets are minimum clearances. Observe the clearances with regard to the regulations applicable at the installation site. Allow for equipment and accessories.

Maintain a side clearance of 1000 mm when using the TDS unit.
Maintain length a in front of the boiler to enable the removal of the turbulators or cleaning of the hot gas flues.
An appropriate height must be provided above the boiler for the installation or removal of the multiple level electrode.
In the delivered condition, the boiler door is fitted so it opens to the left. The hinge pins can be repositioned so the door swings open to the right.

Nominal steam mass flow rate	**t/h**	**0.26**	**0.44**	**0.7**	**0.9**	**1.4**	**2.2**
a	mm	1200	1300	1400	2100	2300	2700
b	mm	Installed burner length					
Height above boiler	mm	800	800	850	800	800	850

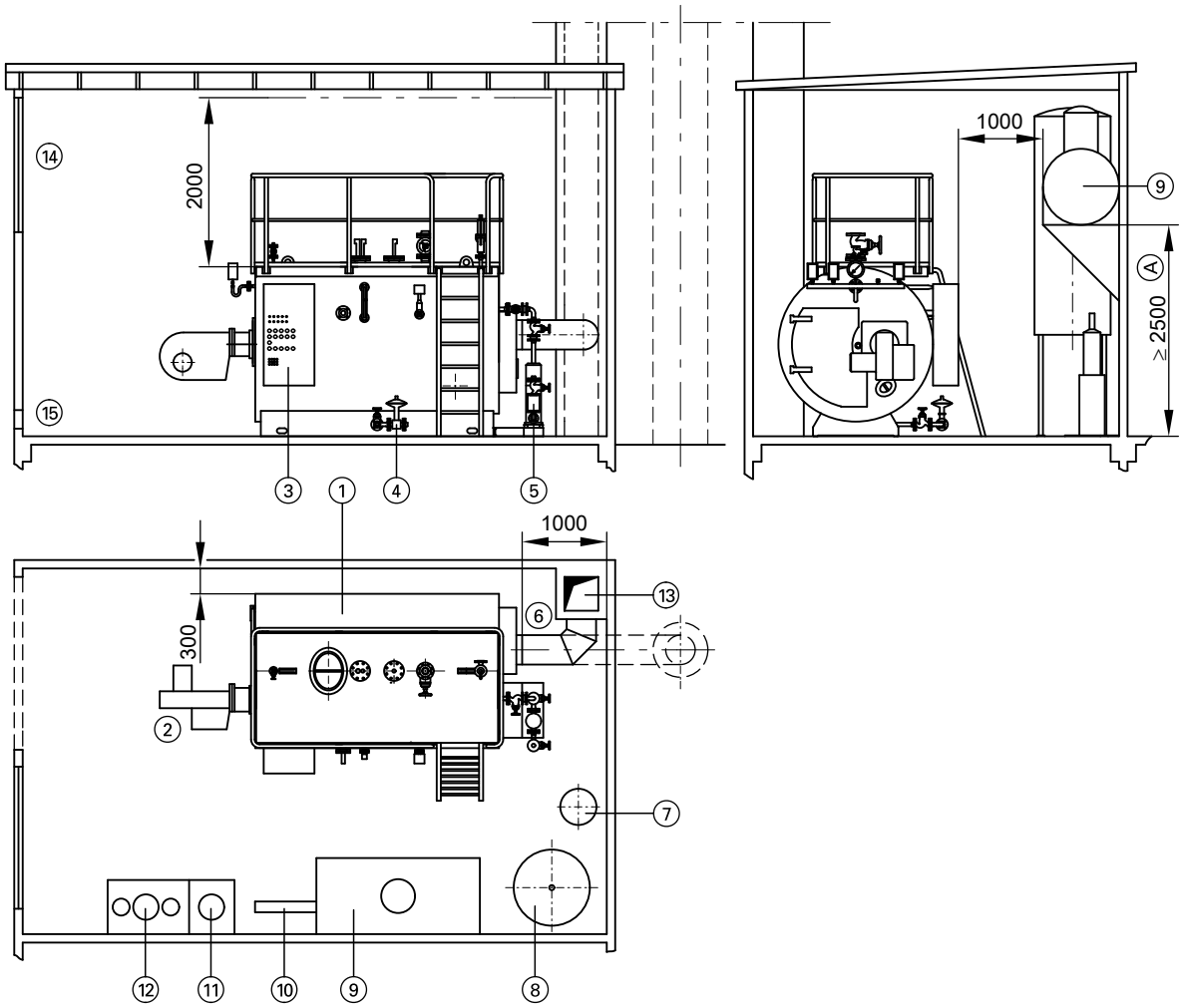
Siting conditions

- Contamination of the combustion air from halogenated hydrocarbons is not permissible. Halogenated hydrocarbons can be found in sprays, paints, solvents and cleaning agents, for example.
- Provide an adequate supply of uncontaminated combustion air if there is a risk of air contamination from halogenated hydrocarbons where the boiler is sited.
- Avoid high incidence of dust exposure.
- Avoid high levels of humidity.
- Prevent frost and ensure good ventilation.
- Site on a level surface.
- Align the boiler horizontally.

Failure to observe these instructions can cause system faults and damage.

Specification (cont.)

Recommended boiler installation room



Example illustration

Ⓐ Inlet height (subject to feedwater temperature, type of feedwater pump, load pressure inside the feedwater tank)
① High pressure steam boiler
② Burner
③ Control panel
④ Blowdown
⑤ Feedwater pump (observe the inlet height during installation)
⑥ Flue pipe
⑦ Blowdown vessel
⑧ Spray circulation deaerator (alternative to ⑨)
⑨ Feedwater tank with trickle deaerator
⑩ Steam distributor
⑪ Dosing
⑫ Chemical water treatment
⑬ Flue system
⑭ Extract air aperture
⑮ Supply air aperture

Design information

Standard equipment for steam boilers with a safety pressure up to 0.5 bar

Note
For a safety pressure of 1 bar, install 2 water level limiters of a special type (fail-safe, redundancy, heterogeneity and self-monitoring) in accordance with the Pressure Equipment Directive.

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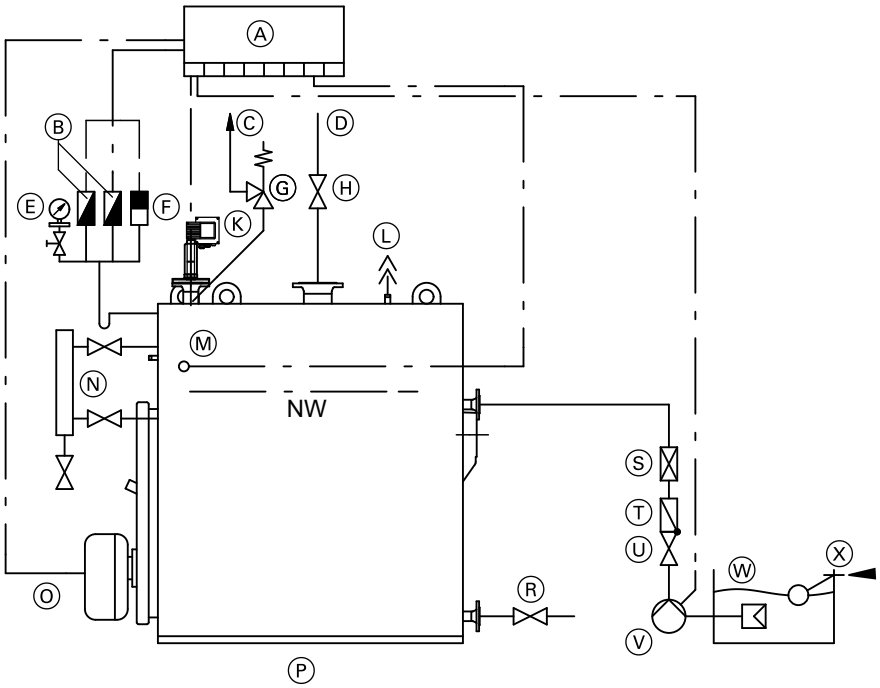
Design information (cont.)



Ⓐ Vitocontrol control panel with interlock circuit
Ⓑ Pressure regulator
Ⓒ Discharge pipe leading outdoors
Ⓓ Steam pipe
Ⓔ Pressure gauge and test valve
Ⓕ Pressure switch
Ⓖ Safety valve
Ⓗ Steam shut-off valve
Ⓚ Fill level electrode as a water level controller and limiter
Ⓛ Steam vent valve
Ⓜ Temperature controller (standby)
Ⓝ Water level indicator
Ⓞ Fully automatic combustion equipment to DIN standards
Ⓟ Viessmann steam boiler
Max. steam pressure 1.0 bar
Ⓡ Blowdown valve
Ⓢ Adjustable fem. connection (butterfly valve)
Ⓣ Non-return valve (feedwater)
Ⓤ Shut-off valve (feedwater)
Ⓥ Feedwater pump
Ⓦ Feedwater tank
Ⓧ Feedwater to VdTÜV guideline
NW Minimum water level

Note
*Steam boilers with a nominal steam mass flow rate of **0.26 to 0.7 t/h** and a safety pressure **in excess of 0.5 bar** must be supervised according to the Operational Safety Ordinance [Germany – check local regulations]. In accordance with conformity assessment diagram no. 5 of the Pressure Equipment Directive, these boilers must be classed as category III.*
Prior to the commissioning, the system must be tested by an approved inspection body (ZÜS [Germany]).

*Steam boilers with a nominal steam mass flow rate of **0.9 to 2.2 t/h** and a safety pressure **in excess of 0.5 bar** must be supervised according to the Operational Safety Ordinance [Germany – check local regulations]. In accordance with conformity assessment diagram no. 5 of the Pressure Equipment Directive, these boilers must be classed as category IV.*
Assembly, installation and operation are subject to approval by the appropriate local authority. The system must be tested prior to the commissioning. Steam boilers must be tested at certain intervals by an approved inspection body (ZÜS [Germany]).

Permissible operating pressure

Steam boiler for operating pressure:
- 1.0 bar equipped to EN 12953-6
- 0.5 bar equipped to TRD 701

Tested quality

CE designation according to the Pressure Equipment Directive.

Delivered condition

Boiler shell with
- Fitted boiler door
- Fitted cleaning cover
- Welded load bearing boiler cover
- Inserted turbulators
- Mating flanges with screws and gaskets on all connectors

Delivered condition (cont.)

- Crate with thermal insulation
- Box with burner plate

Accessories (contained in the combustion chamber):
- Fitting assembly
- Adjusting screws
- Sight tube
- Pipe connectors for water level indicator
- Gaskets

Delivery of cleaning brush and turbulator extractor:
- Fitted on top for boilers with a nominal steam mass flow rate up to 0.7 t/h
- Fitted in the combustion chamber for boilers with a nominal steam mass flow rate from 0.9 t/h

Load bearing boiler cover
The Vitoplex 100-LS is supplied with a fitted load bearing boiler cover to assist in the installation. Boiler platforms and ladders can be supplied on request.

Boiler accessories

All boiler equipment can be provided. Further information and prices on request.

Safety equipment
- Safety valve
- Multiple level electrode
- Pressure regulator
- Pressure limiter
- Pressure gauge
- Water level indicator
- Water level limiter
- Temperature controller (standby)

Further accessories
- Anti-vibration supports
- Steam shut-off valve
- Feedwater valve
- Condensate management
- Feedwater non-return valve
- Feedwater pump
- Automatic steam vent valve
- Quick-action blowdown valve
- TDS unit with TDS valve
- Shut-off damper
- Mating flanges with screws and gaskets

Water treatment systems
- Chemical and thermal systems

Burner
- Burner for liquid or gaseous fuels (types on request)

Vitocontrol control panels
- Boiler control panel for wall mounting or floorstanding

Services
- Delivery
- Handling
- Commissioning
- Maintenance and service

Subject to technical modifications.

Represented by

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