VIESSMANN

Datasheet

Part nos. and prices: see price list

Vitodens 100

Type WB1

Gas-fired wall-mounted condensing boiler,
with modulating stainless steel linear radiant burner
for balanced flue and open flue operation

For natural gas and LPG

VDE-designation approval with manufacturing controls
in accordance with DIN EN 50165

VDE-EMC designation for boilers to DIN VDE applied for

Awarded the DVGW quality symbol

CE designation in accordance with current
EC directives

Certified to DIN ISO 9001
Certificate no. 12 100 5581

Clean combustion. Performs significantly better than the limits
set by the "Blue Angel" certificate of environmental excellence
to RAL UZ 61.

VITODENS 100

Boiler performance is no longer a matter of size, but one of advanced technology. Translated, this means condensing technology. This technology uses the additional calorific value of flue gases intensively, which would otherwise escape through the chimney without benefit to you.
This is the core function of the Vitodens 100 system. Its advanced technology and excellent cost/benefit ratio make it the perfect choice. The expansion vessel is integrated into the boiler. This saves installation time and reduces your running costs.

Benefits at a glance

■ Gas-fired condensing boiler as central heating or combination boiler, 8.8 to 25.6 kW.

■ Standard efficiency: up to 107%.

■ Expansion vessel with 12 litres capacity inside the boiler cover.

■ Clean combustion. Performs substantially better than the limits set for the "Blue Angel" certificate of environmental excellence.

■ Low power consumption through governed DC fan and multi-staged heating circuit pump.

■ High operational reliability and long service life due to silicone-enriched condensate-resistant surface.

■ As a condensing combination boiler: High DHW convenience as a result of its integrated DHW Quick-System and comfort control – i.e. instant hot water at a constant temperature.

■ User-friendly controls with integral diagnostic system and Optolink laptop interface as well as new control functions.

■ Space saving, because clearances at the boiler sides are no longer required.

■ Flexible connections to competitive products enable the easy replacement of other boiler makes.
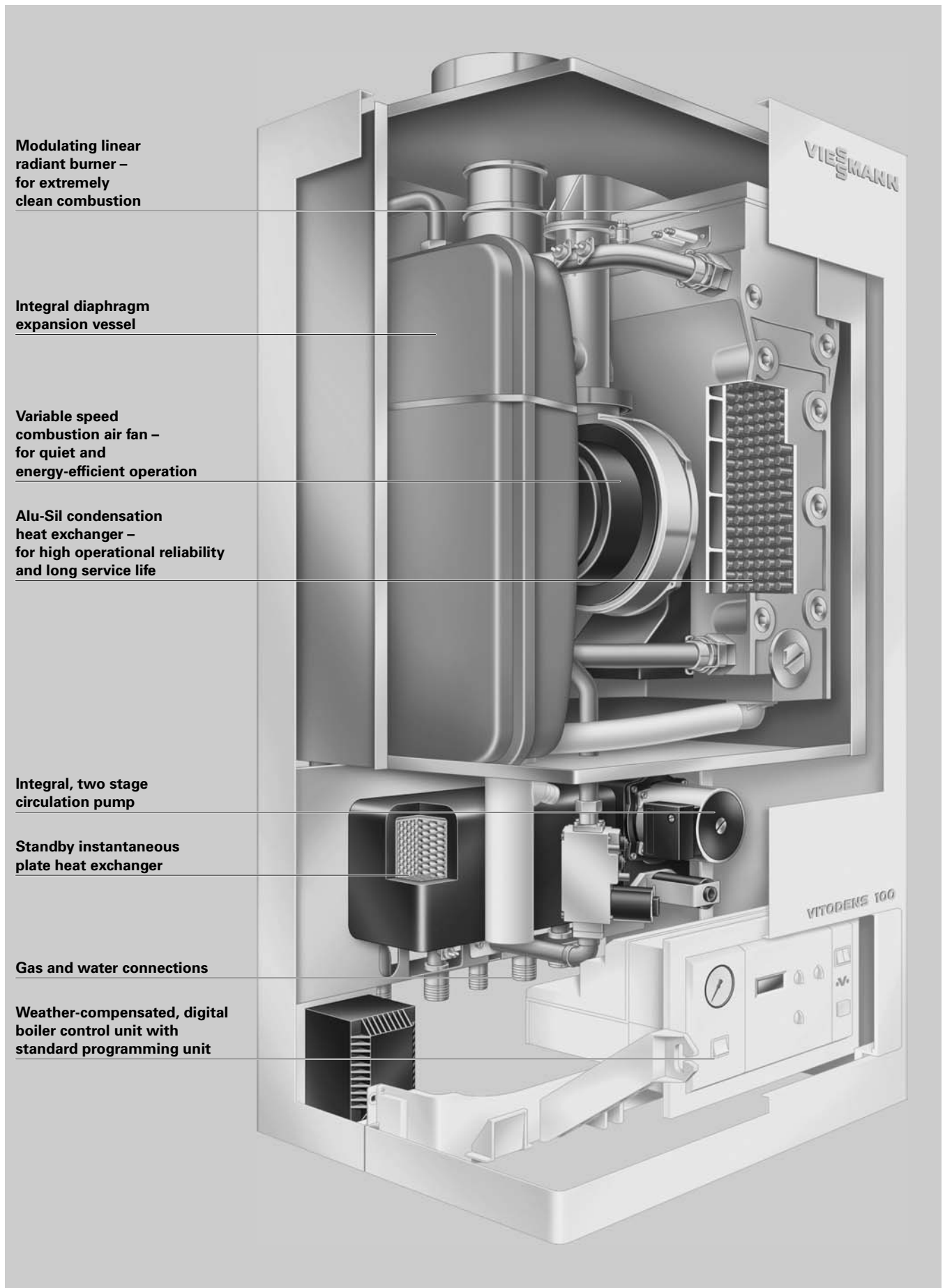
**Modulating linear
radiant burner –
for extremely
clean combustion**

**Integral diaphragm
expansion vessel**

**Variable speed
combustion air fan –
for quiet and
energy-efficient operation**

**Alu-Sil condensation
heat exchanger –
for high operational reliability
and long service life**

**Integral, two stage
circulation pump**

**Standby instantaneous
plate heat exchanger**

Gas and water connections

**Weather-compensated, digital
boiler control unit with
standard programming unit**

VIE**S**MANN

VITODENS 100

Vitodens 100

Specification

Gas-fired boiler, series C₃, Category II₂ELL 3P		Gas-fired boiler	Gas-fired combination boiler
Rated output range[*1]			
T_V/T_R = 50/30 °C	kW	8.8-25.6	8.8-25.6
T_V/T_R = 80/60 °C	kW	8-24	8-24
Rated thermal load	kW	8.4-25	8.4-25
Product ID		CE-0085 AU 0029	
Gas supply pressure			
Natural gas	mbar	20	20
LPG	mbar	50	50
Max. permiss. gas supply pressure[*2]			
Natural gas	mbar	25.0	25.0
LPG	mbar	57.5	57.5
Max. power consumption (incl. circulation pump)	W	165	165
Weight	kg	60	63
Capacity heat exchanger	litres	3.5	4.3
Heating water volume flow at 200 mbar residual head	l/h	1060	1060
Max. volume flow (limits for the use of a hydraulic de-coupler)	l/h	1400	1400
Rated circulation water volume at ΔT = 20 K	l/h	1032	1032
Permiss. operating pressure	bar	3	3
Connections			
Boiler flow and return	G (male thread)	¾"	¾"
Safety valve	R (female thread)	¾"	¾"
Dimensions			
Length	mm	406	406
Width	mm	500	500
Height	mm	900	900
Height with DHW cylinder installed below the boiler	mm	1975	1975
Gas connection	R (male thread)	½"	½"
Standby instantaneous water heater[*3]			
Capacity DHW	litres	—	1.0
Heating water	litres	—	0.7
Hot and cold water connections	G (male thread)	—	½"
Permissible operating pressure (secondary side)	bar	—	10
Outlet temperature (adjustable)	°C	—	38-57
Continuous DHW output	kW	—	24
for DHW temperature rise from 10 to 45 °C	l/h	—	590
Drawing rate	litres/min	—	3-8
Connection values relative to max. output with gas with H_{uB}			
natural gas E 9.45 kWh/m³ 34.01 MJ/m³	m³/h	2.65	2.65
natural gas LL 8.13 kWh/m³ 29.25 MJ/m³	m³/h	3.08	3.08
LPG 12.79 kWh/m³ 46.04 MJ/m³	kg/h	1.94	1.94
Flue gas values[*4]			
Flue gas value category		G₅₂	G₅₂
Temperature (at a return temperature of 30 °C)			
– at rated output	°C	55	55
– at partial load	°C	32	32
Temperature (at a return temperature of 60 °C)	°C	78	78
Mass flow rate			
– for natural gas			
– at rated output	kg/h	42.0	42.0
– at partial load	kg/h	14.0	14.0
– for LPG			
– at rated output	kg/h	46.4	46.4
– at partial load	kg/h	15.4	15.4
Available draught	Pa	100	100
	mbar	1.0	1.0

[1]Details to EN 677.
[2]If the gas supply pressure is higher than the maximum permissible value, install a separate gas governor upstream of the system.
[3]Minimum pressure of the cold water connection 1 bar.
[4]Calculation values for sizing the flue gas system to DIN 4705.
Flue gas temperatures measured as gross values at 20 °C combustion air temperature.
The details for partial load refer to an output of 30 % of rated output. Calculate the flue gas mass flow rate accordingly, when the partial load differs from that stated above (subject to the burner mode).
*The flue gas temperature at a return temperature of 30 °C is decisive for sizing the flue gas system.*
The flue gas temperature at a return temperature of 60 °C is used to decide the application range of flue pipes with maximum operating temperatures.

Specification (cont.)

Gas-fired boiler		Gas-fired boiler	Gas-fired combination boiler
Rated output range			
$T_V/T_R = 50/30\ ^{\circ}C$	kW	8.8-25.6	8.8-25.6
$T_V/T_R = 80/60\ ^{\circ}C$	kW	8-24	8-24
Standard efficiency			
at			
$T_V/T_R = 50/30\ ^{\circ}C$	%	107	107
$T_V/T_R = 80/60\ ^{\circ}C$	%	104	104
Average condensate volume			
for natural gas and			
$T_V/T_R = 50/30\ ^{\circ}C$	litres/day	7-8	7-8
$T_V/T_R = 80/60\ ^{\circ}C$	litres/day	4-5	4-5
Flue outlet	Internal diameter $\varnothing$ mm	80	80
Ventilation pipe	External $\varnothing$ mm	125	125

▶ *For the specification of DHW cylinders and Viessmann system design components, see separate datasheets.*
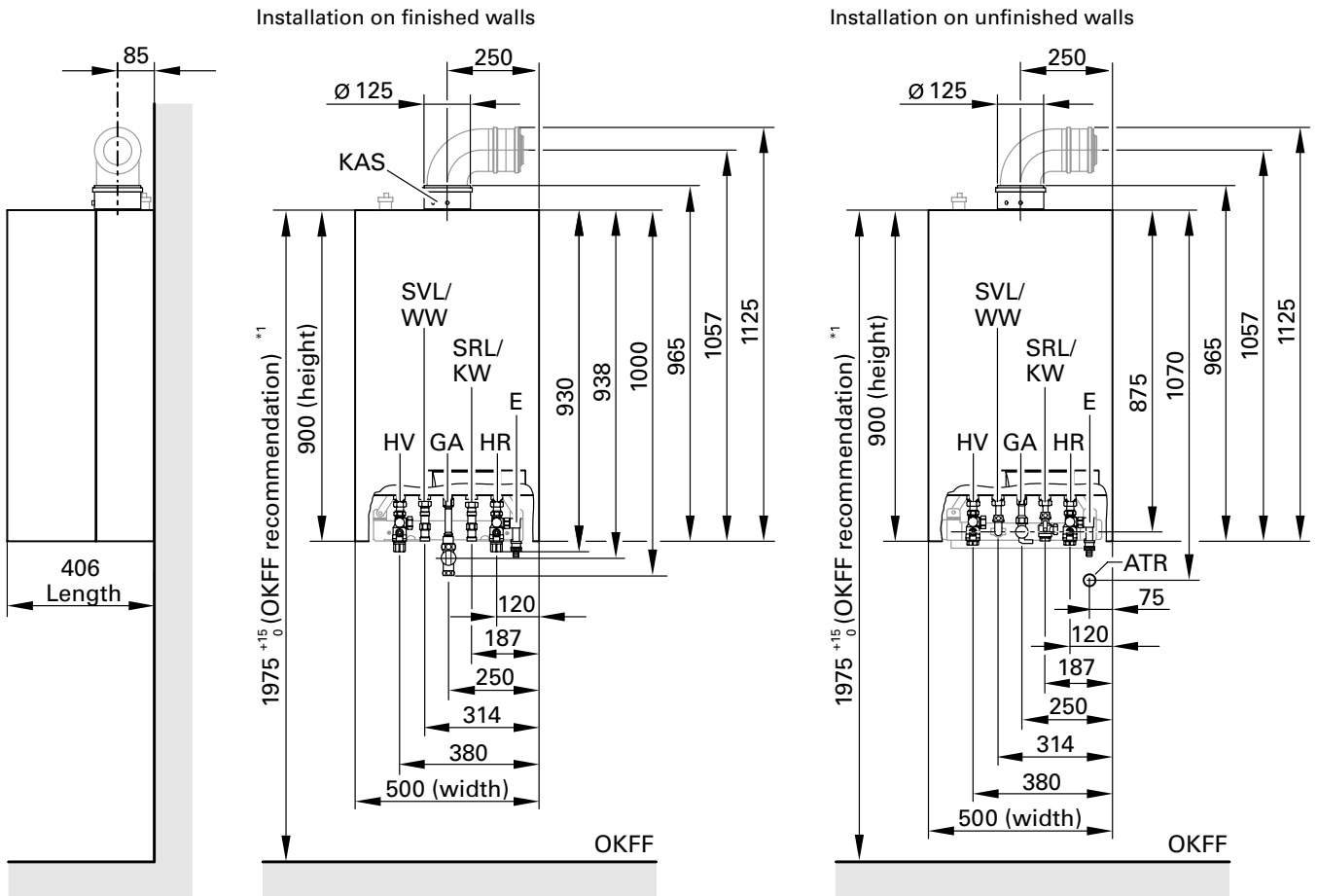
Installation on finished walls   Installation on unfinished walls

*[1]Obligatory in conjunction with DHW cylinders installed below the boiler.
Otherwise, recommendation only.*

Key

ATR	Drain funnel connection
E	Drain
GA	Gas connection
HR	Heating return
HV	Heating flow
KAS	Boiler adaptor
OKFF	Top edge finished floor

Gas-fired combination boilers only:

KW	Cold water G ½"
WW	Hot water G ½"

Gas-fired boilers only:

SRL	Cylinder return G ¾"
SVL	Cylinder flow G ¾"
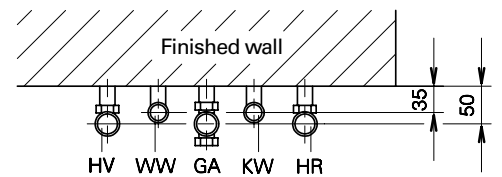
Pre-installation in unfinished buildings for Vitodens 100 installation directly to wall – installation on finished walls

Required accessories for installation without DHW cylinder

Installation template
incl. fixing parts, valves and gas stop cock R ½″ with integral thermal safety shut-off valve

Additional requirements when connecting a DHW cylinder

Connection set for DHW cylinders

Please note:
Ensure a clearance of 700 mm in front of Vitodens or the DHW cylinder for maintenance purposes.
Maintenance spaces to the l.h. or r.h. side of Vitodens are **not** required.
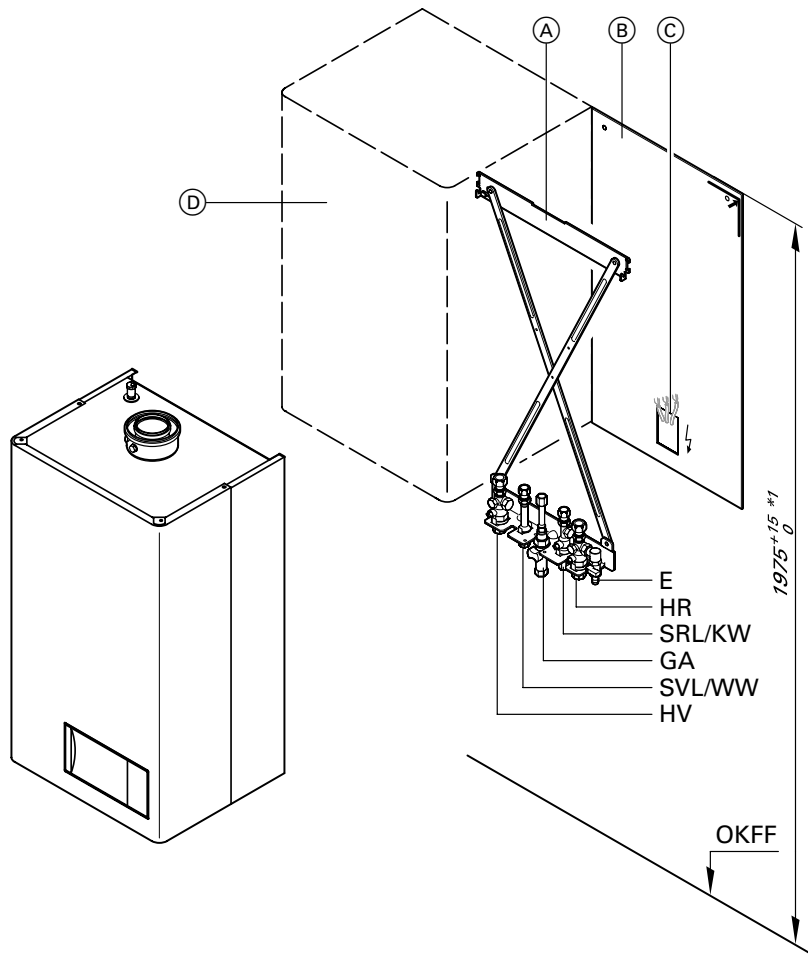
Illustration: Gas-fired combination boiler connection

Key
E   Drain
GA   Gas connection R ½″
HR   Heating return G ¾″
HV   Heating flow G ¾″
OKFF Top edge finished floor

Only for gas-fired combination boilers
KW   Cold water G ½″
WW   Hot water G ½″

Only for gas-fired boilers
SRL   Cylinder return G ¾″
SVL   Cylinder flow G ¾″

*1Obligatory in conjunction with DHW cylinders installed below the boiler. Otherwise, recommendation only.

Ⓐ Installation template
Ⓑ Vitodens
Ⓒ Area for electrical supply cables. Allow all cables to protrude approx. 1200 mm from the wall.
Ⓓ Wall-mounted DHW cylinder (if installed)

Pre-installation in unfinished buildings for Vitodens 100 installation directly to wall – installation on unfinished walls

Required accessories for installations without DHW cylinder

Installation template
incl. fixing parts, valves and gas stop cock R ½″ with integral thermal safety shut-off valve

Additional requirements when connecting a DHW cylinder

Connection set for DHW cylinders

Please note:
Ensure a clearance of 700 mm in front of Vitodens or the DHW cylinder for maintenance purposes.
Maintenance spaces to the l.h. or r.h. side of Vitodens are **not** required.

Pre-assembly unit
For the pre-assembly of on-site pipework without fitting valves.
The pre-assembly unit is fitted instead of valves to the installation template for unfinished walls. The pre-assembly unit is removed before the boiler is installed and can be reused.

875

1975^{+15}_{0} *1

ATR
E
HR
SRL/KW
GA
SVL/WW
HV
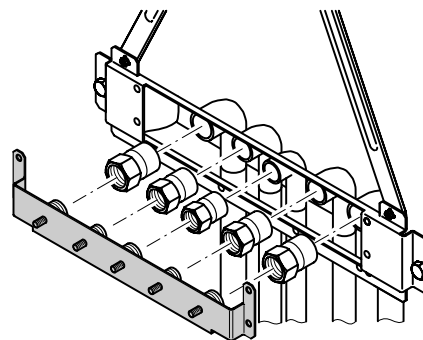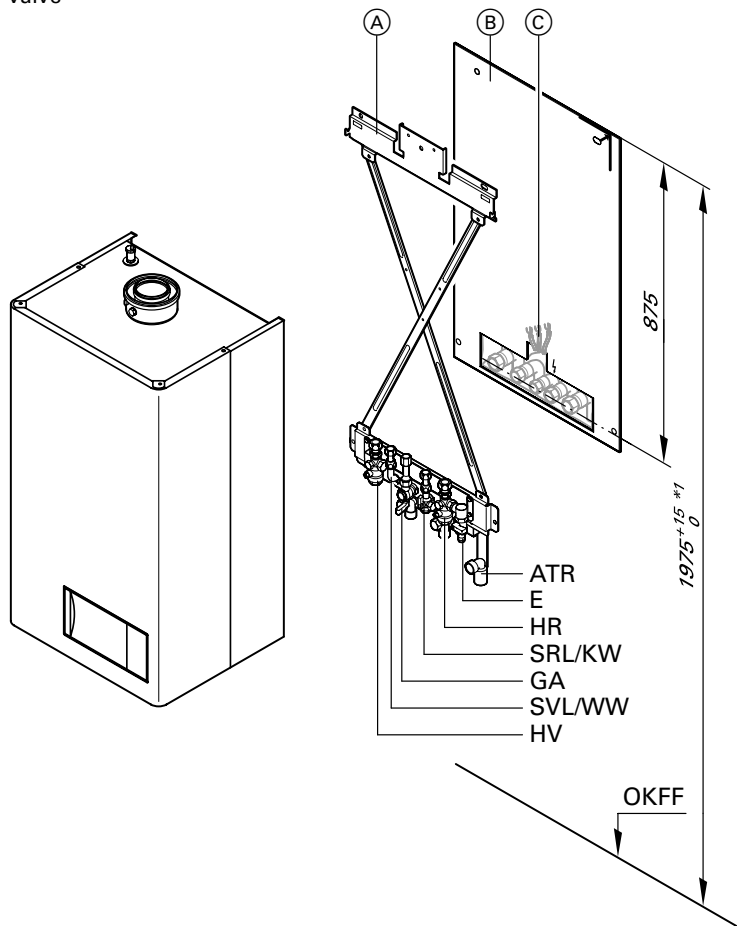
OKFF

Illustration: Gas-fired combination boiler connection

Key
ATR   Drain funnel connection R 1″
E   Drain
GA   Gas connection R ½″
HR   Heating return G ¾″
HV   Heating flow G ¾″
OKFF Top edge finished floor

Only for gas-fired combination boilers
KW   Cold water G ½″
WW   Hot water G ½″

Only for gas-fired boilers
SRL   Cylinder return G ¾″
SVL   Cylinder flow G ¾″

Ⓐ Installation template
Ⓑ Vitodens
Ⓒ Area for electrical supply cables. Allow all cables to protrude approx. 1200 mm from the wall.

*1Obligatory in conjunction with DHW cylinders installed below the boiler. Otherwise, recommendation only.

5822 149 GB

## Installation on a wall-mounting frame
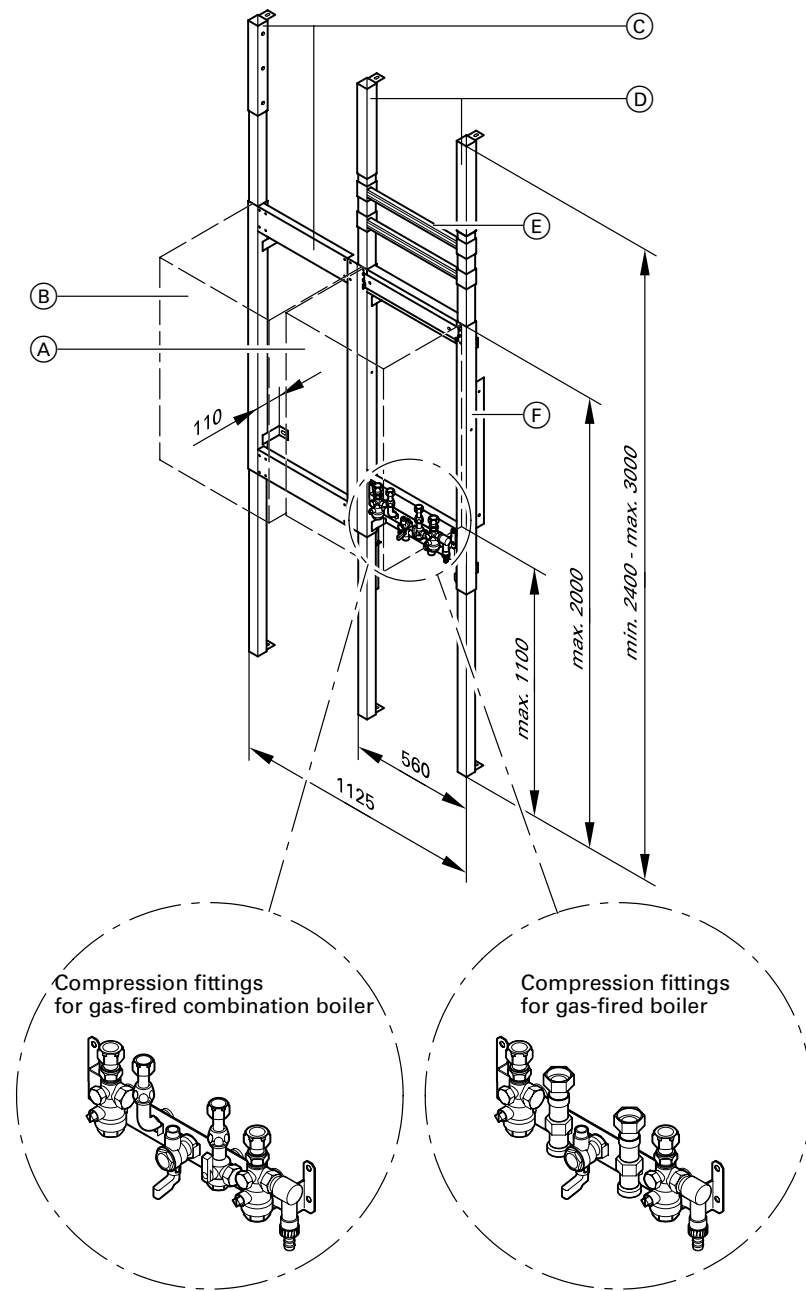
Self-supporting mounting frame
for Vitodens and wall-mounted DHW
cylinder (80 litres capacity).
Suitable for wall mounting, for
freestanding pre-installation or covering
with various materials.
Incl. valves and gas angle valve R ½″ with
thermal safety shut-off valve.
- for gas-fired combination boiler
  - with solder fittings
  - with compression fittings
- for gas-fired boiler
  - with solder fittings
  - with compression fittings

(A) Vitodens
(B) Wall-mounted DHW cylinder
    (80 litres capacity)
(C) Self-supporting mounting frame for
    wall-mounted DHW cylinders
    incl. ceiling fixing extension
(D) Ceiling fixing extension (Vitodens)
(E) Extension – on-site diaphragm
    expansion vessel
(F) Self-supporting mounting frame for
    Vitodens incl. mounting bracket

Compression fittings
for gas-fired combination boiler

Compression fittings
for gas-fired boiler

Residual heads

(A) Stage 1
(B) Stage 2

Flow rate in m^3/h

Head mWS kPa
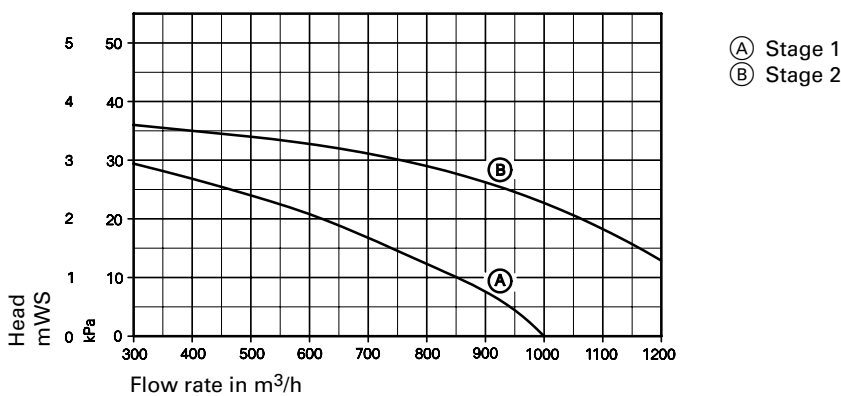
Electrical connection

Observe the requirements of your local electricity supply company and all local regulations when implementing the necessary steps to provide the mains power connection.
The mains power cable must be protected by a fuse with a maximum rating of 16 A.
Connect the mains (230 V~, 50 Hz) via a permanent connection.
Connect the supply cables and accessories at the terminal strips inside the boiler.

Mains electrical connection of accessories

The accessory mains supply can be connected directly to the control unit. This connection is controlled with the system ON/OFF switch (max. 3 A).
Where the boiler is installed in a wet area, the mains connection of accessories must not be carried out at the control unit.
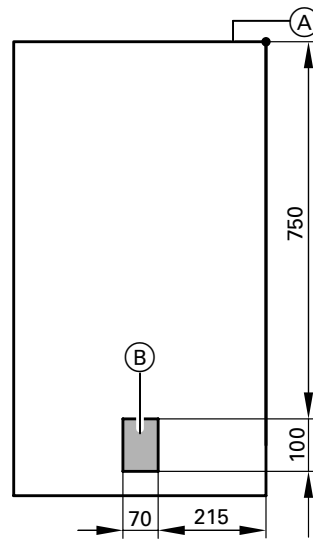
Ⓐ Reference point Vitodens top edge
Ⓑ Area for electrical supply cables

Let cables inside the marked area (see diagram) protrude 1 200 mm from the wall.

Use the following cables:
NYM-J 3×1.5 mm^2 for mains power cables.

NYM with the required number of conductors for the external connections.

2-core cables for
- Adaptor connection extension
- Outside temperature sensor
- Vitotronic 050
- Extension kit for heating circuit with mixer
- External heating program changeover
- External blocking
- Central fault message
- F clock thermostat
- M clock thermostat
- Wall mounting plinth.

3-core cable for
- WS/RS remote control unit
- A clock thermostat
- DHW circulation pump.

Interlock switch

An interlock must be installed for open flue operation, if an exhaust device (cooker hood, extractor fan, etc.) is fitted in the installation room.

For this, you can use the adaptor connection extension (accessory). This adaptor causes the exhaust air equipment to be switched OFF, when the burner is switched ON (do not install the adaptor inside protection areas 1 or 2).

Vitodens 100 as replacement for third party boilers

Using an adaptor, Vitodens may be connected to the water and flue pipe connections of Cerastar-ZR-/ZWR and Thermoblock-VC/-VCW.

For modernisation, adaptors with primary and secondary water connections and

fixing parts are offered as accessories for replacing the following old devices made by third parties, with Vitodens (see price list).
Replacing these devices with Vitodens will not lead to a higher installation effort than for the original equipment.

Generally, where a gas-fired wall-mounted boiler is replaced by a Vitodens 100 gas-fired condensing boiler, the flue pipe must also be replaced with a system which is suitable for condensing operations (see price list for flue gas systems for Vitodens).

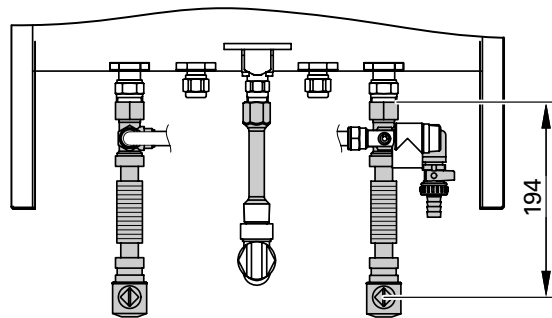### Replacing Cerastar-ZR/-ZWR
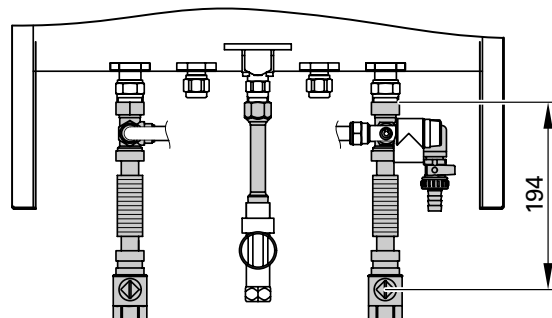
Open flue operation
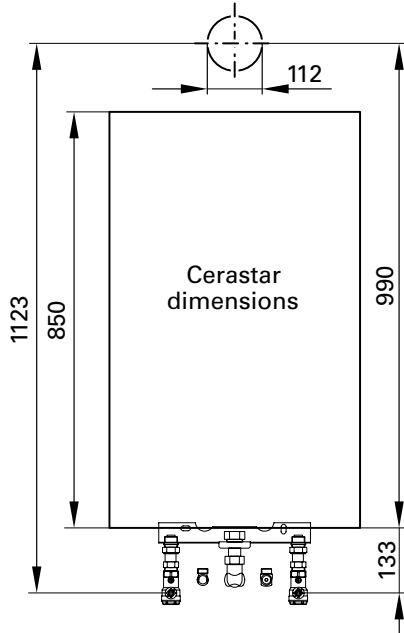
Balanced flue operation
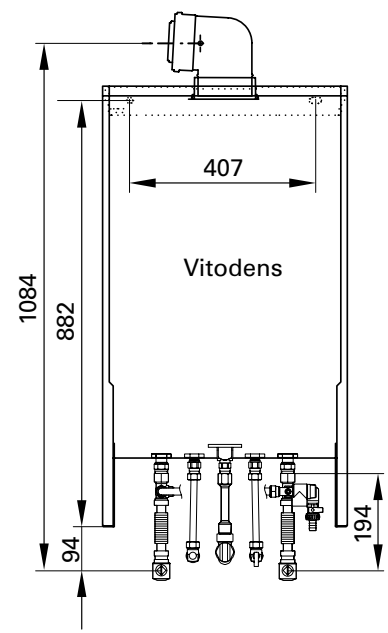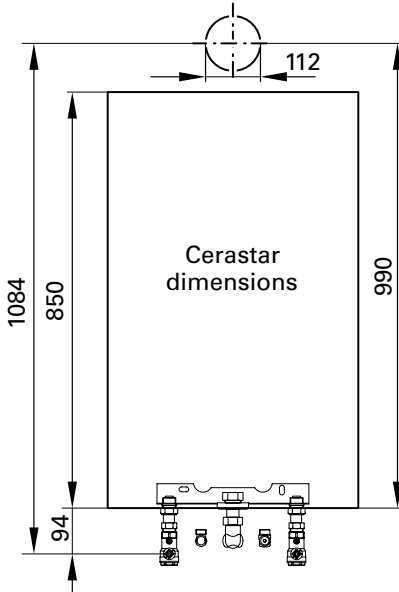
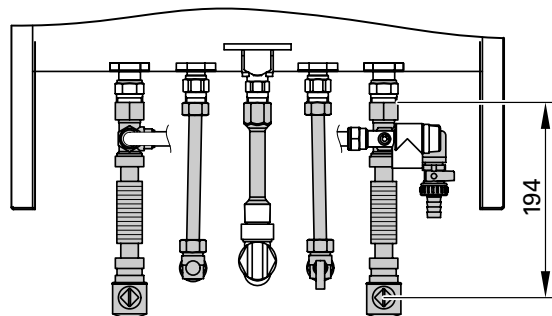Existing water connections have identical dimensions.

Installation on unfinished walls
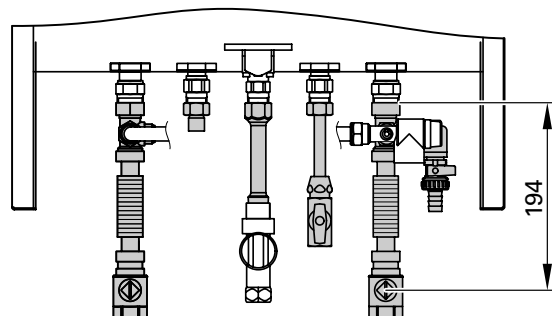**Gas-fired boiler**

Installation on finished walls
Gas-fired boiler

Gas-fired combination boiler

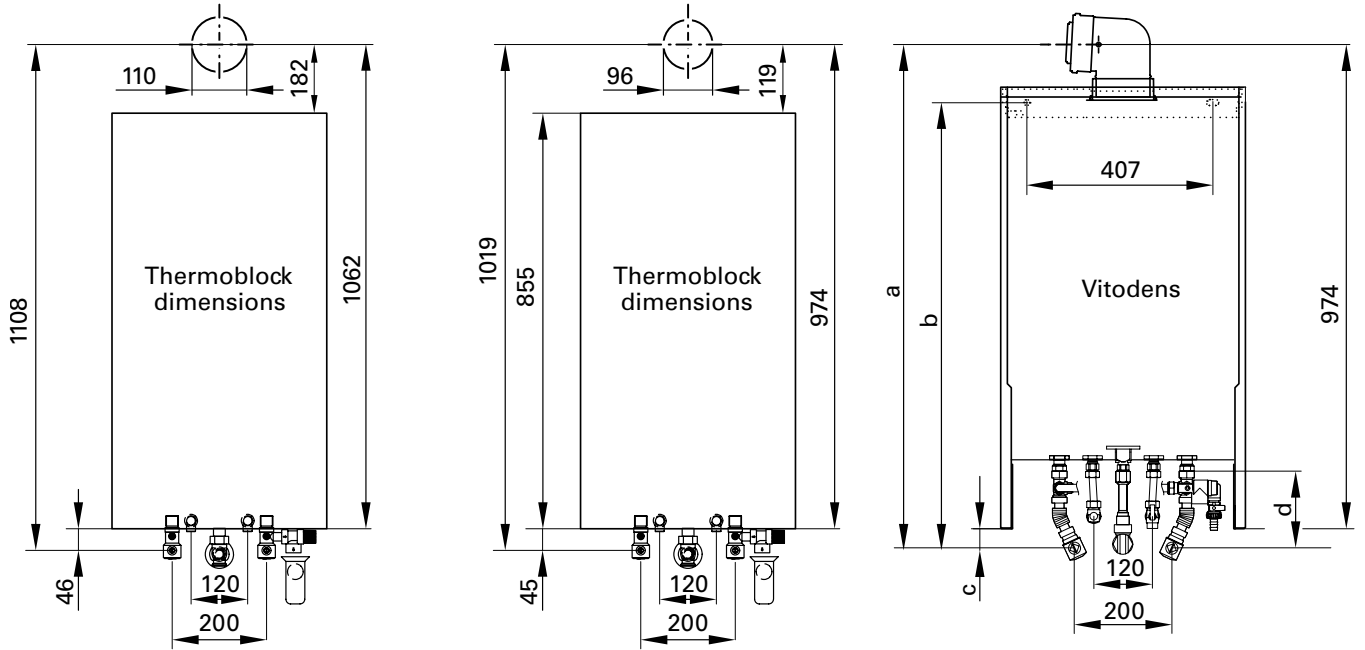**Gas-fired combination boiler**

Standard delivery (incl. mounting rail)

Replacing Thermoblock-VC/-VCW
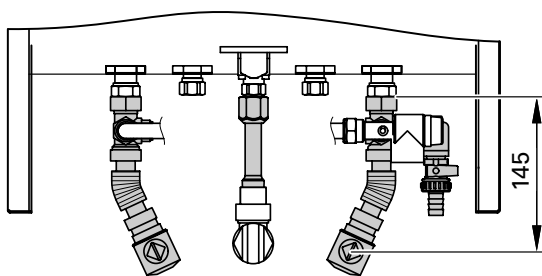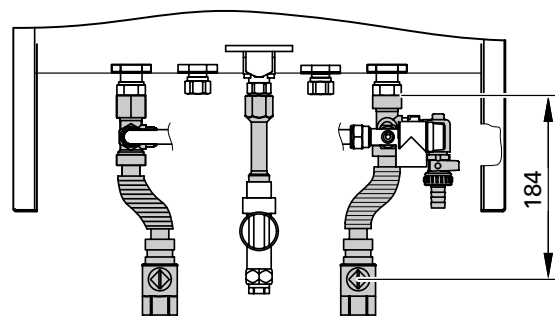
Open flue operation

Balanced flue operation

Existing water connections have identical dimensions.

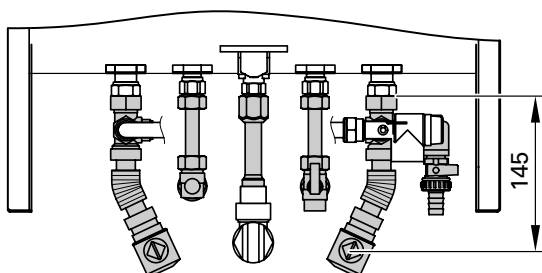| Dimension		Installation on unfinished walls	Installation on finished walls
a	mm	1019	1058
b	mm	927	966
c	mm	45	84
d	mm	145	184

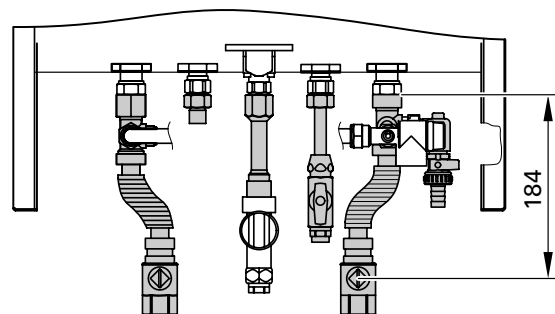**Installation on unfinished walls**
Gas-fired boiler

Installation on finished walls
Gas-fired boiler

Gas-fired combination boiler

Gas-fired combination boiler

▓ Standard delivery (incl. mounting rail)

Control unit for constant temperature mode

Control unit for constant temperature mode

Integrated in Vitodens
- Electronic boiler control unit for operating Vitodens at a constant boiler water temperature

- An A, M or F clock thermostat is required for room temperature dependent mode

- Integral diagnostic system
- Integral cylinder thermostat

Structure and functions

Construction

The control unit contains the following:
System ON/OFF switch, digital display, minimum temperature thermostat, temperature limiter (DIN reg. no. DIN TW 110898S, inside the LGM 29.XX burner control unit), electronics, operating mode selector, rotary selectors for boiler water and DHW temperature, burner fault lamp, emissions test switch, comfort switch (only gas-fired combination boilers) and integral diagnostic system.

Specification

Rated voltage:	230 V~
Rated frequency:	50 Hz
Rated current:	4 A
Safety class:	I
Protection level:	IP X4D to EN 60529
Function:	Type 1B to EN 60730-1

Permissible ambient temperature
- in operation: 0 to +40 ºC
Installation in living accommodation and boiler rooms (normal ambient conditions)
- in storage and transport: −20 to +65 ºC

Electronic temperature limiter setting
(heating mode): 82 ºC (changeover not possible)

Electronic thermostat setting
(DHW heating): 42 to 84 ºC

Thermostat setting: 100 ºC (changeover not possible)

Setting range for DHW temperature: 32 to 57 ºC

Summer mode
Operating mode "⊣"

The burner starts only when the cylinder needs reloading (controlled by the cylinder thermostat).

Boiler temperature sensor

The boiler temperature sensor is connected to the control unit and built into the boiler.
Permissible ambient temperature
- in operation: 0 to +130 ºC
- in storage and transport: −20 to + 70 ºC

Please note:
When using a low loss header, a temperature sensor for the common flow should be installed downstream of the low loss header (see Vitodens Technical Guide).

Frost protection

The frost protection function is active in all heating programs.
The burner is switched ON when the boiler water temperature reaches 5 ºC and will be switched OFF again, when the boiler water temperature reaches 55 ºC.
The circulation pump will be switched ON simultaneously with the burner and switched OFF after a delay.
To protect the system from frost, the circulation pump may be started, in addition to the burner, at certain intervals (up to 24 times per day) for periods of approx. 10 minutes.

Cylinder temperature sensor

Standard delivery for
- Connection set for wall-mounted cylinders (80 litres) (order separately)
- Connection set for DHW cylinders installed below the boiler (120 or 150 litres) (order separately)
- Connection set for DHW cylinders installed adjacent to the boiler (160, 200 or 300 litres) or other DHW cylinders (order separately)
Cable length approx. 3.75 m, wired ready to plug in
Protection: IP 32
Permissible ambient temperature
- in operation: 0 to +90 ºC
- in storage and transport: −20 to +70 ºC

Control unit for weather-compensated mode

Integrated in Vitodens
- Weather-compensated, digital boiler circuit control for Vitodens in modulating operating mode
- with standard programming unit

- Digital time switch for day and week programs, each with four programmable switching periods per day for reduced mode, enabling DHW heating or enabling the DHW circulation pump

- Frost protection of the heating system
- Integral diagnostic system
- Integral cylinder thermostat
- Screed drying program
- External switching and blocking

Structure and functions

Modular construction

The control unit comprises a basic unit, electronic modules and a programming unit.
The control unit contains the following: System ON/OFF switch, emissions test switch, comfort switch (only gas-fired combination boilers), electronic high limit thermostat, temperature limiter (DIN reg. no. DINTW 110898S, in the LGM29.XX burner control unit), micro computer, switching times adjustment options, temperatures in standard and reduced mode, DHW temperature, heating curve adjustment, temperature scanning, integral diagnostic system and fuses.

Boiler-specific functions

The control unit matches the boiler water temperature (= flow temperature of a directly connected heating circuit and/or a heating circuit with mixer combined with an extension kit for one heating circuit with mixer) automatically to the respective weather conditions. It offers a DHW thermostat with DHW priority (heating circuit pump OFF).

According to the Energy Savings Order [Germany], the temperature in each room must be individually controlled, e.g. through thermostatic radiator valves.

Specification

Rated voltage:	230 V~
Rated frequency:	50 Hz
Rated current:	4 A
Safety class:	I
Protection level:	IP X4D to EN 60529
Function:	Type 1B to EN 60730-1

Permissible ambient temperature
- in use: 0 to +40 °C
  Installation in living accommodation and boiler rooms (normal ambient conditions)
- in storage and transport: −20 to +65 °C

Electronic temperature limiter setting
(heating mode): 82 °C (changeover not possible)

Electronic thermostat setting
(DHW heating): 42 to 84 °C

Thermostat setting: 100 °C (changeover not possible)

Setting range for DHW temperature: 32 to 60 °C

Setting range for heating curves
- Heating curve slope: 0.2 to 2.6
- Heating curve level: −12 to +33 K

Standard programming unit

- Temperature and fault message display
- Coding using the programming unit.

Programming unit time switch

Digital time switch with day and week program, annual calendar and automatic summer/winter changeover.
Time, day and standard switching times are factory-set (individually programmable); a max. of four switching periods per day may be selected.
Shortest switching interval: 10 minutes
Power reserve: 5 years

Setting heating programs

The heating system frost protection[1] applies to all heating programs.
You can set the following heating programs with the program selection switch:
- Constant standby mode
- DHW heating only
- Standard mode/reduced mode or standard mode/standby
- Constant standard mode
- Continuous reduced mode.

[1]see frost protection.

Frost protection

The frost protection function is active in all heating programs.
Frost protection will be switched ON when the
- outside temperature falls below approx. +1 °C.
  During frost protection, the boiler circuit pump will be switched ON, and the boiler water is maintained at a lower temperature of approx. 20 °C.
- off, when the outside temperature rises above approx. +3 °C.

### Summer mode
Heating program "⌁"

The burner starts only when the DHW cylinder needs reloading (controlled by the cylinder thermostat).

Control unit for weather-compensated mode

Adjusting the heating curve (inclination and level)

The control unit controls the boiler water temperature (= flow temperature of the heating circuit without mixer) **and** the flow temperature of the heating circuit with mixer (in conjunction with the extension kit for one heating circuit with mixer) subject to outside temperature. The flow temperature required to reach a certain room temperature depends on the heating system and the thermal insulation of the building to be heated. Adjusting both heating curves matches the boiler water temperature and the flow temperature to these operating conditions.

Heating curves:
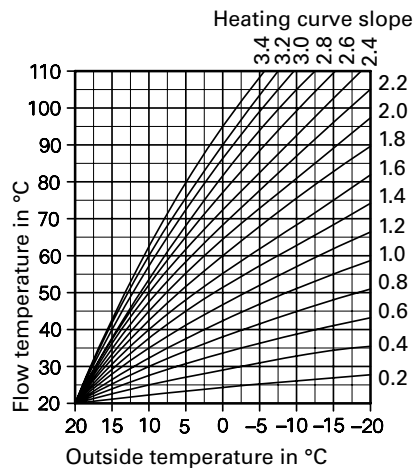
The upper boiler temperature is limited by the temperature limiter and the temperature set on the electronic maximum temperature limiter.
The flow temperature cannot exceed the boiler water temperature.

Boiler temperature sensor

The boiler temperature sensor is connected to the control unit for weather-compensated mode and is an integral part of the boiler.
Permissible ambient temperature
■ in operation: 0 to +130 °C
■ in storage
  and transport: −20 to + 70 °C

Please note:
When using a low loss header, a temperature sensor for the common flow should be installed downstream of the low loss header (see Vitodens Technical Guide).

Outside temperature sensor
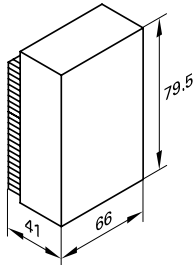
Place of installation:
■ North or north-westerly wall of the building
■ 2 to 2.5 m above ground level. For multi-storey buildings, approximately half way up the second floor.
Connection:
■ 2-wire cable, length max. 35 m when using a cross-section of 1.5 mm^2 (copper).
■ Do not run the cable immediately next to 230/400 V cables.
Protection: IP 43 to EN 60 529, ensure through appropriate design and installation
Permissible ambient temperature for operation, storage and transport: −40 to +70 °C

Cylinder temperature sensor

Standard delivery for
■ Connection set for wall-mounted DHW cylinders (80 litres) (order separately)
■ Connection set for DHW cylinders installed below the boiler (120 or 150 litres) (order separately)
■ Connection set for DHW cylinders installed adjacent to the boiler (160, 200 or 300 litres) or other DHW cylinders (order separately)
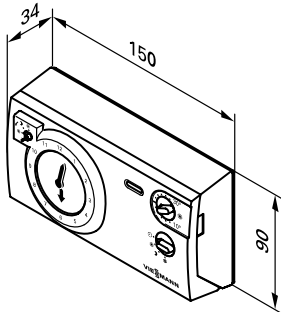Cable length approx. 3.75 m, wired ready to plug in
Protection: IP 32
Permissible ambient temperature
■ in operation: 0 to +90 °C
■ in storage
  and transport: −20 to +70 °C

Control unit accessories for constant temperature mode

A clock thermostat
with switched output (two-point output),
part no. 9544 556

Room thermostat with adjustable day
program.
Standard switching times are factory-set
(individually programmable), shortest
switching interval 15 minutes.
Install the A clock thermostat in the main
living room on an internal wall opposite
radiators, but not inside shelf units,
niches, immediately by a door or a heat
source (e.g. direct sunlight, fireplace, TV
set, etc.).
Control unit connection:
3-core with a cross-section of 0.75 mm^2.

Rated voltage:	24 V–
Rated breaking capacity of the zero-volt contact:	10 mA
	24 V~/–
Protection:	IP 20 to EN 60529

Permissible ambient
temperature
■ during operation: 0 to +40 ºC
■ in storage
  and transport: –20 to +65 ºC
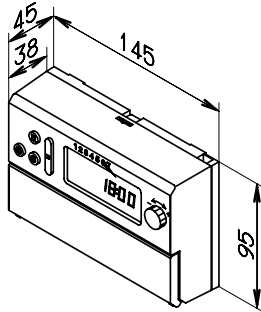Setting range for
set values for
standard mode
and reduced mode: 10 bis 30 ºC
Set room temperature
in standby mode: 6 ºC

F clock thermostat
with switched output (two-point output),
part no. 7450 023

Room thermostat with adjustable day and
week program.
Time, day and standard switching times
are factory-set (individually
programmable), max. four switching
periods per day may be selected.
Install the F clock thermostat in the main
living room on an internal wall opposite
radiators, but not inside shelf units,
niches, immediately by a door or a heat
source (e.g. direct sunlight, fireplace, TV
set, etc.).
Operation without mains power supply
(two 1.5 V round cells, run time approx.
2 years).
Control unit connection:
2-core with a cross-section of 0.75 mm^2.

Rated voltage:	3 V–
Zero-volt contact rating:	6(4) A 250 V~
Protection:	IP 20 to EN 60529

Permissible ambient
temperature
■ during operation: 0 to +40 ºC
■ in storage
  and transport: –20 to +65 ºC
Setting range for
set values for
standard mode
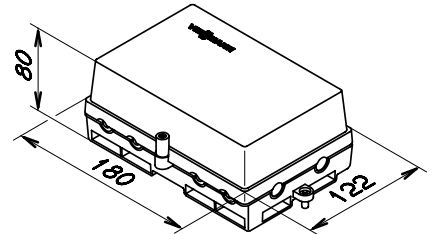and reduced mode: 5 to 35 ºC
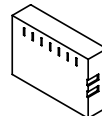Set room temperature
in standby mode: 5 ºC

Radio data transfer,
part no. 7450 021
comprising a radio transmission and
receiver module.
Only in conjunction with an F clock
thermostat.

Radio data receiver

Transmission module

For transferring control information by
radio signals.
Install the radio data receiver near
the control unit; the transmitter module
is plugged into the F clock thermostat
(minimum distance between the
radio data receiver and the clock
thermostat 1.5 m).
The radio data transmitter should not be
installed into safety areas 0 to 3.
The radio data transmission enables the
clock thermostat to be independently
installed as well as an economic and
simple installation through savings in
cabling to the F clock thermostat.
Transmission can extend over two floor
levels. Up to 10 radio data transfer units
(transmitters and receivers) can be used
simultaneously.
The range can be limited by metallic
materials in the building structure (e.g.
steel-reinforced concrete, steel doors).
Transmission faults can be caused by
sources of electromagnetic interference
(e.g. HV power lines, domestic
appliances).
Control unit connection:
2-core with a cross-section of 0.75 mm^2.

Rated voltage:	230 V~
Rated frequency:	50 Hz
Power consumption:	2.5 W
Zero-volt contact rating:	6(4) A 250 V~

Permissible ambient
temperature
■ in operation: 0 to +40 ºC
■ in storage
  and transport: –20 to +65 ºC

|	
Transmission frequency:	433.92 MHz
Protection:	IP 20 to EN 60529

Control unit accessories for constant temperature mode

M clock thermostat
with analog output (constant control),
part no. 7450 024
Contrary to the F clock thermostat, the
M clock thermostat corrects the boiler
water temperature via its analog output, if
the room temperature deviates from the
set value.
This leads to greater control accuracy for
the room temperature and reduced
burner switching frequency.
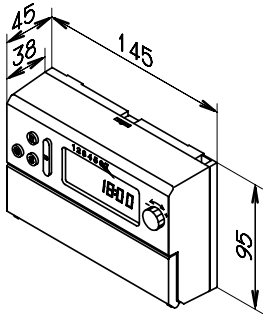
Room thermostat with adjustable day
and week program.
Time, day and standard switching times
are factory-set (individually
programmable), max. four switching
periods per day may be selected.
Install the M clock thermostat in the main
living room on an internal wall opposite
radiators, but not inside shelf units,
niches, immediately by a door or a heat
source (e.g. direct sunlight, fireplace, TV
set, etc.).
Operation without mains power supply
(two 1.5 V round cells, run time approx.
2 years).
Control unit connection:
2-core with a cross-section of 0.75 mm^2.

Rated voltage:	3 V–
Protection:	IP 20 to EN 60529
Permissible ambient temperature	
■ in operation:	0 to +40 °C
■ in storage and transport:	–20 to +65 °C
Setting range for set values for standard mode and reduced mode:	5 to 35 °C
Set room temperature in standby mode:	5 °C
Terminal voltage at the output:	< 15 V
Maximum permissible current:	30 mA
Resistance:	255 to 335 Ω

Radio clock module,
part no. 7450 022

For receiving the DCF 77 time signal.
Radio controlled setting of time and date.
The radio clock module is plugged into
the F or M clock thermostat.

Adaptor (connection extension),
part no. 7404 582

Using the adaptor, one of the following
functions can be achieved:
Up to 2 adaptors may be connected.
■ Connection of an external safety
  solenoid valve (LPG).
■ Interlocking external exhaust fans.
  Install an interlock if an exhaust device
  (cooker hood, extractor fan, etc.) is
  connected with the room providing
  combustion air for Vitodens 100.
■ Connection of a heating circuit pump
  (stepped); only for gas-fired boilers.
■ Connection of a central fault message.

Control unit accessory for weather-compensated mode

Extension kit for one heating circuit with mixer,
part no. 7450 058

Mixer regulator
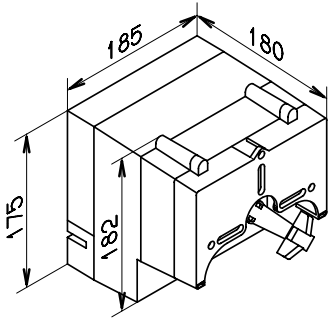
The mixer regulator is mounted directly on the Viessmann mixer DN 20 to 50 and R ½" to 1¼".
The mixer regulator is a motorised control unit. The rotational direction may be reversed.
With connection plug for heating circuit pump, flow temperature sensor (contact sensor), mains and BUS connection.

Rated voltage:	230 V~
Rated frequency:	50 Hz
Rated current:	4(2) A
Power consumption:	7.5 VA
Safety class:	▣
Test class:	II
Protection:	IP 32 to EN 60529

Permissible ambient temperature
- in operation: 0 to +40 ºC
- in storage and transport: −20 to +65 ºC

Relay output rating for heating circuit pump [20]: 4(2) A 230 V~

Motor:
Torque:	3 Nm
Run time for 90º ∢:	2 minutes
Dead zone of the PI controller at a slope of 1.4:	±1.2 K

Flow temperature sensor (contact sensor)
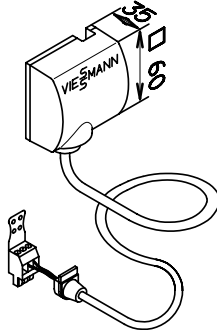
Secured with a tie.
Cable length approx. 2 m, wired ready to plug in
Protection: IP 32
Permissible ambient temperature
- in operation: 0 to +100 ºC
- in storage and transport: −20 to + 70 ºC

Expansion module, Viessmann 2-wire BUS,
part no. 7144 549
for connection of one heating circuit control unit Vitotronic 050, Vitocom 200, Vitocom 300 or Solartrol.
Comprising one printed circuit board.

Immersion thermostat
As temperature limiter for limiting the max. temp. of underfloor heating systems,
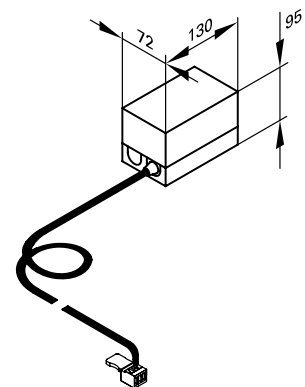part no. 7151 728
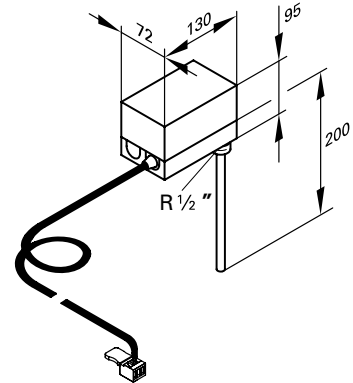
The temperature limiter is installed into the heating flow and switches the heating circuit pump OFF if flow temp. is too high. With connection cable (approx. 4 m long) and system plug.

Setting range:	0 to 80 ºC
Switching differential:	max. 11 K
Breaking capacity:	6(1.5) A 250 V~
Setting scale:	inside casing
Stainless steel sensor well:	R ½" × 200 mm
DIN reg. no:	DIN TR 77798
	or
	DIN TR 96898
	or
	DIN TR 110302

or

Contact thermostat
As temperature limiter for limiting the max. temp. of underfloor heating systems,
part no. 7151 729
(only in conjunction with metallic pipes)

The temperature limiter is installed into the heating flow and switches the heating circuit pump OFF if flow temp. is too high. With connection cable (approx. 4 m long) and system plug.

Setting range:	0 to 80 ºC
Switching differential:	max. 14 K
Breaking capacity:	6(1.5) A 250 V~
Setting scale:	inside casing
DIN reg. no:	DIN TR 77798
	or
	DIN TR 96898
	or
	DIN TR 110302

Control unit accessory for weather-compensated mode

Note on room temperature hook-up (RS function) for remote control

Because of the inertia of underfloor heating systems, the RS function must not control an underfloor heating circuit.

Wall mounting base with dummy cover,
part no. 7148 913
(if the programming unit of the control unit should be used as remote control)
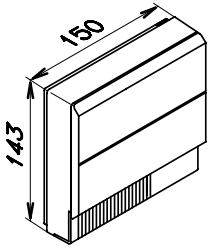
All programming unit functions may be used.
WS function: Installation at any point in the building.
RS function: Install the remote control unit in the main living room on an internal wall opposite radiators, but not inside shelf units, niches, immediately by a door or a heat source (e.g. direct sunlight, fireplace, TV set, etc.).
Connection:
■ 2-wire cable, length max. 30 m when using a cross-section of 1.5 mm^2 (copper).
■ Do not run the cable immediately next to 230/400 V cables.
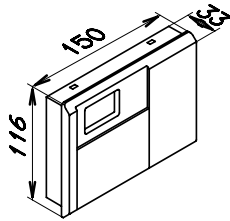Permissible ambient temperature
■ in operation: 0 to +40 ºC
■ in storage
  and transport: –20 to +65 ºC

Radio clock module,
part no. 7450 022

For receiving the DCF 77 time signal.
Radio controlled setting of time and date.
The radio clock module is plugged into the wall mounting base.

Display unit,
part no. 7450 160

For insertion into the control unit for weather-compensated mode, if the programming unit of the control unit is used as remote control.
Boiler water temperature and fault message display.

Temperature sensor for low loss header,
part no. 7819 601

As flow temperature sensor for the common flow when using a low loss header.
Secured with a tie.
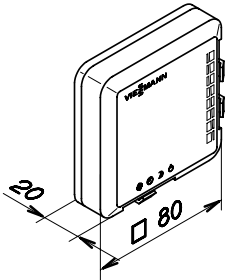Cable length approx. 3.75 m, wired ready to plug in
Protection: IP 32
Permissible ambient temperature
■ in operation: 0 to +90 ºC
■ in storage
  and transport: –20 to +70 ºC

WS remote control unit,
part no. 7450 027

From any room in your home, the remote control sets the required temperature for one heating circuit in standard mode (day temperature) or reduced mode (night temperature).
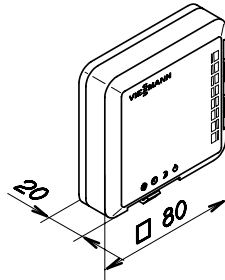Only one remote control unit can be connected. If a heating circuit with mixer is installed, the remote control unit will control that heating circuit.
Connection:
■ 3-core cable (excl. green/yellow core), length max. 30 m when using a cross-section of 1.5 mm^2 (copper).
■ Do not run the cable immediately next to 230/400 V cables.

Safety class:	III
Protection:	IP 30

Permissible ambient temperature
■ in operation: 0 to +40 °C
■ in storage and transport: –20 to +65 °C

Setting range for
Set room temperature
■ Locking switch "☀":   14 to 26 °C
■ Locking switch "☽":   7 to 23 °C
Set room temperature
at selector setting "⏻":   3 to 5 °C

RS remote control unit,
part no. 7450 028

From the main living room (control room) in your home, the remote control sets the required temperature for one heating circuit during standard mode (day temperature) and reduced mode (night temperature).
The integral room temperature sensor records the actual room temperature and effects any necessary flow temperature corrections.
Only one remote control unit can be connected. If a heating circuit with mixer is installed, the remote control unit will control that heating circuit.
Install the remote control unit in the main living room on an internal wall opposite radiators, but not inside shelf units, niches, immediately by a door or a heat source (e.g. direct sunlight, fireplace, TV set, etc.).
Connection:
■ 3-core cable (excl. green/yellow core), length max. 30 m when using a cross-section of 1.5 mm^2 (copper).
■ Do not run the cable immediately next to 230/400 V cables.

Safety class:	III
Protection:	IP 30

Permissible ambient temperature
■ in operation: 0 to +40 °C
■ in storage and transport: –20 to +65 °C
Room temperature setting range
■ Locking switch "☀":   14 to 26 °C
■ Locking switch "☽":   7 to 23 °C
Set room temperature
at selector setting "⏻":   3 to 5 °C

Room temperature sensor,
part no. 7408 012
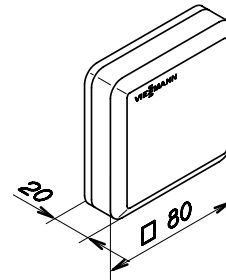
Separate room temperature sensor as supplement to the RS remote control device; to be used if the RS remote control device cannot be installed inside the main living room or in a suitable position, where the actual temperature can be reliably measured or controlled.
Install the room temperature sensor in the main living room on an internal wall opposite radiators, but not inside shelf units, niches, immediately by a door or a heat source (e.g. direct sunlight, fireplace, TV set, etc.).
The room temperature sensor should be connected to the RS remote control unit.
Connection:
■ 2-core cable with a cross-section of 1.5 mm^2 (copper).
■ The cable run between the control unit, the remote control unit and the room temperature sensor must not exceed 30 m.
■ Do not run the cable immediately next to 230/400 V cables.

Safety class:	III
Protection:	IP 30

Permissible ambient temperature
■ in operation: 0 to +40 °C
■ in storage and transport: –20 to +65 °C

Adaptor (connection extension),
part no. 7404 582

Using the adaptor, one of the following functions can be achieved:
Up to 2 adaptors may be connected.
■ Connection of an external safety solenoid valve (LPG).
■ Interlocking external exhaust fans. Install an interlock if an exhaust device (cooker hood, extractor fan, etc.) is connected with the room providing combustion air for Vitodens 100.
■ Connection of a DHW circulation pump.
■ Connection of a heating circuit pump (stepped).
■ Connection of a central fault message.

Vitodens 100 accessories

Neutralising system
incl. neutralising granulate
Part no. 7252 666
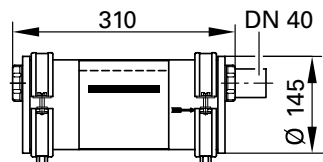
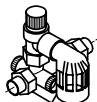**Neutralising granulate**
(2 × 1.3 kg)
Part no. 9524 670

Safety equipment to DIN 1988
DN 15 (for DHW cylinders with up to
200 litres capacity)
comprising:
- Shut-off valve
- Non-return valve and test nipple
- Pressure gauge connector
- Diaphragm safety valve 10 bar
Part no. 7219 722

The safety assembly is part of the
standard delivery for the connection set
for Vitocell-W 100 with 120 and 150 litres
capacity for installation on unfinished
walls.

Installation accessories for Vitodens 100

Connection between Vitodens 100 and the DHW cylinder

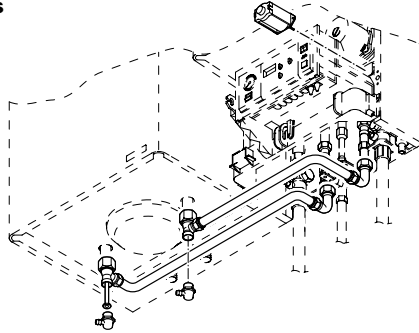**Connection set for wall-mounted DHW cylinders Vitocell-W 100**
comprising:
■ Cylinder temperature sensor
■ Drive for three-way valve, ready to plug in
■ Primary connection pipes with air vent valves
Installation on finished walls
DHW cylinder installed either on the
l.h. or the r.h. side of Vitodens 100
Part no. 7147 056

Connection set for DHW cylinder Vitocell-W 100 installed below the boiler incl. all connection pipes
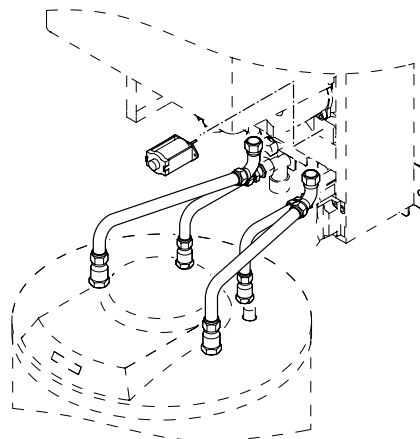
comprising:
■ Cylinder temperature sensor
■ Drive for three-way valve (ready to plug in)
■ Heating water connection pipes
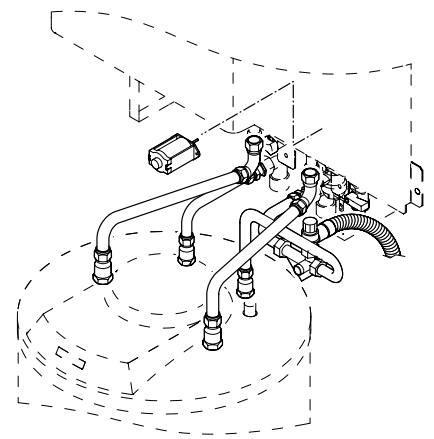■ Secondary side connections
– Installation on finished walls
   part no. 7147 061
– Installation on unfinished walls
   part no. 7147 059

Installation on finished walls
(excl. safety assembly)

Installation on unfinished walls
(incl. safety assembly)

Connection set for Vitocell-W 100 and 300 DHW cylinders installed adjacent to boiler
comprising:
■ Cylinder temperature sensor
■ Drive for three-way valve (ready to plug in)
■ Compression fittings (Rp ¾")
DHW cylinder installed either on the **l.h. or the r.h. side** of Vitodens
– with compression fittings
   part no. 7147 616
– with solder fittings
   part no. 7147 615
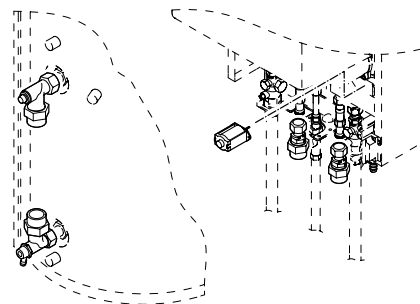
Safety equipment to DIN 1988
DN 15 (for DHW cylinders with up to 200 litres capacity)
comprising:
■ Shut-off valve
■ Non-return valve and test nipple
■ Pressure gauge connector
■ Diaphragm safety valve 10 bar
Part no. 7219 722

As delivered condition
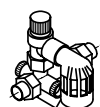
Accessories required subject to installation method (order separately)

Gas-fired condensing boiler with Alu-Sil condensation heat exchanger, modulating linear radiant burner for natural gas and LPG to DVGW Code of practice G260, aqua-plate with multi plug-in system, 2-stage heating circuit pump and integral diaphragm expansion vessel.
Fully plumbed and wired.
Colour of the epoxy-coated casing: white.

For combination boilers:
Standby plate heat exchanger for DHW heating.

Packed separately:
Control unit for constant temperature mode
or
Control unit for weather-compensated mode with standard programming unit.

Natural gas version

Vitodens 100 is factory-set for natural gas E.
A conversion kit is supplied to order for natural gas LL.
Conversion to LPG is not possible.

LPG version

Vitodens 100 is factory-set for LPG and may be converted to natural gas.

Vitoplus installation directly on a wall
Installation template with:
■ Fixing components
■ Fittings
■ Gas stop cock R ½″ incl. thermal safety shut-off valve.

For installation on finished or unfinished walls with compression or solder fittings.
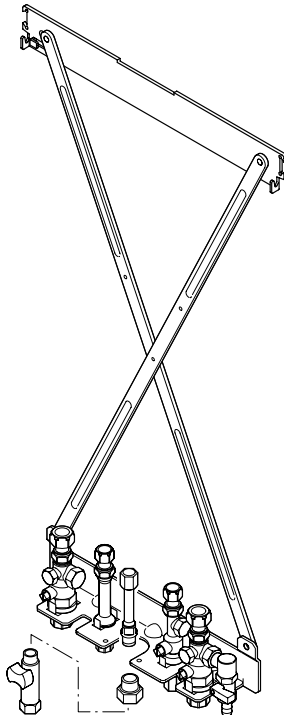
or with
self-supporting mounting frame
Mounting frame (depth 110 mm) with:
■ Fittings
■ Fasteners
■ Boiler fill and drain cock
■ Gas angle stop cock R ½″ incl. thermal safety shut-off valve.

For installation with compression or solder fittings.
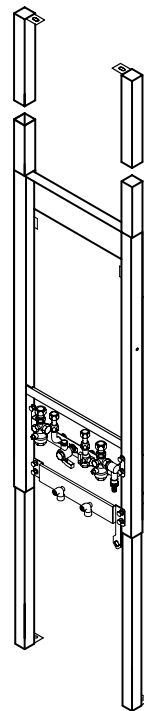
Design notes

Positioning

- Do not use where air is polluted with halogenated hydrocarbons (e.g. as in aerosols, paints, solvents and cleaning agents)
- Avoid very dusty conditions
- Avoid high levels of humidity
- Prevent freezing and ensure good ventilation

Otherwise, the system may suffer faults and damage.

In rooms where **air contamination through halogenated hydrocarbons** can occur, such as hairdressing salons, printing shops, chemical cleaners, laboratories, etc., Vitodens 100 may only be installed if adequate measures can be taken to provide a supply of uncontaminated combustion air.
If in doubt, please contact us.

If these instructions are not observed, any consequential loss directly related to any of these causes will be excluded from our warranty.

Vitodens 100 in balanced flue operation

As device type C_{13x}, C_{33x}, C_{43x}, C_{53x} or C_{63x} to TRGI '86/96, Vitodens 100 can be installed for **balanced flue** operation, **irrespective** of size and ventilation of the boiler room.
It may, for example, be installed in rooms with personnel traffic or in accommodation rooms, in ancillary rooms without ventilation, in cupboards and niches without maintaining minimum clearances to combustible components as well as in attic rooms (pitched attics and long pane rooms of a roof), where the balanced flue air supply/exhaust pipe can be directly routed through the roof.

Vitodens 100 in open flue operation (type B_{23} and B_{33})

Installation is only permissible if a direct ventilation aperture (which cannot be closed) with a clear cross-section of at least 150 cm^2 is provided (to TRGI '86/96). Installation in living areas or other accommodation is **not** possible (exception: operation in areas with interconnected room air supply). Secure Vitodens 100 near the chimney stack/duct.

Flue gas systems

[In Germany], the plain flue pipe must be approved by the Deutschen Institut für Bautechnik (DIBt) (**open flue** operation).

Viessmann balanced flue systems (BF systems) for **balanced flue** mode
- vertical roof outlet,
- external wall terminal,
- horizontal roof outlet,
- separate ventilation and flue gas pipes,
- outside panel outlet as dual pipe design
are tested and CE designated together with Vitodens as one structural unit in accordance with DVGW.
Balanced flue system components in accordance with approval certificate Z 7.2 1004 can be used for connection to a new or existing LAS chimney.
For detailed descriptions of the flue gas system, see Vitodens Technical Guide.

Flue gas temperature protection

Viessmann balanced flue systems for **balanced** flue operation
- vertical roof outlet,
- external wall terminal,
- horizontal roof outlet,
- separate ventilation and flue gas pipes,
- outside panel outlet as dual pipe design
are tested and CE-designated together with Vitodens 100 as one structural unit, in accordance with DVGW.
If a different flue pipe is used on site, ensure connection in accordance with the Directive for approval of flue gas systems with low temperature flue gas. For Vitodens 100, these are flue pipes type B (max. permiss. flue gas temperature 120 °C).

Flue gas temperature protection is not required, as the maximum permissible flue gas temperature will not be exceeded under any operating conditions or during faults.

Design notes

Selection of rated output

Select the boiler according to the required heat demand, including DHW demand. The rated output of condensing boilers may be higher than the calculated heat demand of the building in question.

The standard efficiency of condensing boilers remains constant over a wide range of boiler loads. It remains almost unchanged even if the heat output is twice as high as the heat demand.

System design

- The boiler water temperature is limited to 75 ºC.
  To minimise distribution losses, we recommend that you size the heat distribution system and the DHW heating system for a max. flow temperature of 70 ºC.
- Depending on local regulations, the installation of a condensing boiler may need to be notified or authorised.
- If possible, install no mixing devices in heating circuits, because the utilisation of condensing technology demands low return temperatures. Use only three-way mixers if mixers are required, e.g. for multi-circuit or underfloor heating systems.

Safety equipment

According to DIN 4751-2, these boilers must be equipped with a type-tested safety valve
- for hot water heating systems up to 100 ºC flow temperature and
- for hot water heating systems up to 120 ºC flow temperature
as according to their type approval, with a type-tested safety valve.
This valve should be identified in accordance with TRD 721, i.e. with
- "H" up to 3.0 bar permissible operating pressure and a max. output of 2700 kW output,
- "D/G/H" for all other operating conditions.

Underfloor heating

For underfloor heating, we recommend the use of impermeable pipes to prevent the infusion of oxygen through the pipe walls. Provide system separation in underfloor heating systems for plastic pipes (DIN 4726) which are not impermeable to oxygen. We supply separate heat exchangers for this purpose.

Connect underfloor heating systems and heating circuits with very large water content to the boiler via a three-way mixer, even when using condensing boilers. See Technical Guide on control of underfloor heating systems or Vitodens Technical Guide.

Install a temperature limiter into the underfloor heating circuit to limit the maximum temperature.
Observe DIN 18560-2.

Plastic pipe systems for radiators

We also recommend the installation of a temperature limiter to limit the maximum temperature for plastic heating pipework in heating circuits with radiators.

Low water indicator

According to DIN 4751-2, a special low water level protection can be omitted for boilers up to 350 kW, as long as heating can be reliably prevented when the water level is too low.
Viessmann Vitodens 100 are equipped with a low water indicator (boil-dry protection). Tests have verified that the burner will be automatically switched OFF in the event of water shortage due to a leak in the heating system, before the boiler or flue gas system reaches unacceptably high temperatures.

Notification

Within four weeks of the initial commissioning, the operator may need to notify the local chimney sweep accordingly (check local regulations).

Condensate and neutralisation

See "Vitodens Technical Guide".

Additional requirements when installing boilers with liquid gas operation in rooms below ground level

According to TRF 1996 volume 2 – valid since 1 September 1997 – an external safety solenoid valve is no longer required when installing Vitodens 100 boilers below ground level.
However, the high safety standard derived from the use of an external safety solenoid valve has proved to be valuable. We therefore recommend the continued installation of an external safety solenoid valve when installing Vitodens 100 in rooms below ground level.

Technical guide

For further details regarding the design and sizing, see "Vitodens Technical Guide".

Printed on environmentally friendly, chlorine-free bleached paper.

Subject to technical modifications.

Viessmann Werke GmbH & Co
D-35107 Allendorf
Tel: +49 6452 70-0
Fax: +49 6452 70-27 80
www.viessmann.de

Viessmann Limited
Hortonwood 30, Telford
Shropshire, TF1 7YP, GB
Tel: +44 1952 675000
Fax: +44 1952 675040
E-mail: info-uk@viessmann.com

5822 149 GB