VIESMANN

VITODENS 333

Compact gas fired condensing boiler
4.5 to 26.0 kW

Datasheet

Part nos. and prices: see price list

File in:
Vitotec folder, register 6

Vitodens 333

Type WS3A

Gas fired condensing boiler as compact boiler,
with modulating MatriX-compact gas burner,
for open or balanced flue operation.

With integral **calorifier** installed below the boiler, 86 litres capacity, for high **DHW convenience.**

For natural gas and LPG

VITODENS 333

The compact boiler Vitodens 333 combines the benefits of the Vitodens 300 condensing boiler with those of a powerful DHW loading cylinder with 86 litres capacity.
Innovative heating technology with an Inox-Radial heat exchanger and a MatriX-compact burner plus compact modular design safeguard high DHW convenience, which is generally only available with DHW cylinders twice as large.
The dimensions of Vitodens 333 have been matched to common patterns of kitchen and furniture makers, thereby enabling easy integration in living areas. A height of just under 140 cm lets it equally fit under the eaves and in niches. All electrical connections are easily accessible, whilst all hydraulic components are pre-assembled into a single unit. This allows the rapid installation of Vitodens 333. The new Vitotronic control unit has been located at the top of the boiler. This not only makes operating easier but also brings advantages for service and maintenance.

The MatriX-compact gas burner ensures environmentally responsible operation with extremely clean combustion. Together with the stainless steel heat exchanger and the DHW loading cylinder it also ensures that DHW at the required temperature is always available – in large quantities and at a constant temperature. An electronic loading control safeguards the utilisation of condensing technology over the entire DHW loading process.

Benefits at a glance

- Compact gas fired condensing boiler, 4.5 to 26.0 kW.
- Standard efficiency up to 109%.
- The stainless steel Inox-Radial heating surface ensures high operational reliability and a long service life.
- MatriX-compact gas burner, modulation range 1:4.
- Utilisation of condensing technology even for DHW heating over the entire DHW loading through electronic loading control.
- Compact dimensions and low height ensure flexibility in selecting the installation location.
- The emissions fall substantially below the limits set for the "Blue Angel" certificate of environmental excellence.
- Vitotronic control units for room temperature-dependent or weather-compensated mode, with integral diagnostic system and Optolink laptop interface; capable of communicating with Vitodata.
- Particularly easy to install, maintain and service, due to modular design generous wiring chamber.
- Low power consumption through governed AC fan and heating circuit pump.
- Automatic flue gas adaptation ensures permanently high efficiency.
- DHW performance factor (N_L) to 2.0 (boiler with 26 kW) for high DHW convenience.
- Space saving, because clearances at the boiler sides are no longer required.

Tested quality

CE designation in accordance with current EC Directives.

Meets the limits set for the "Blue Angel" certificate of environmental excellence to RAL UZ 61.

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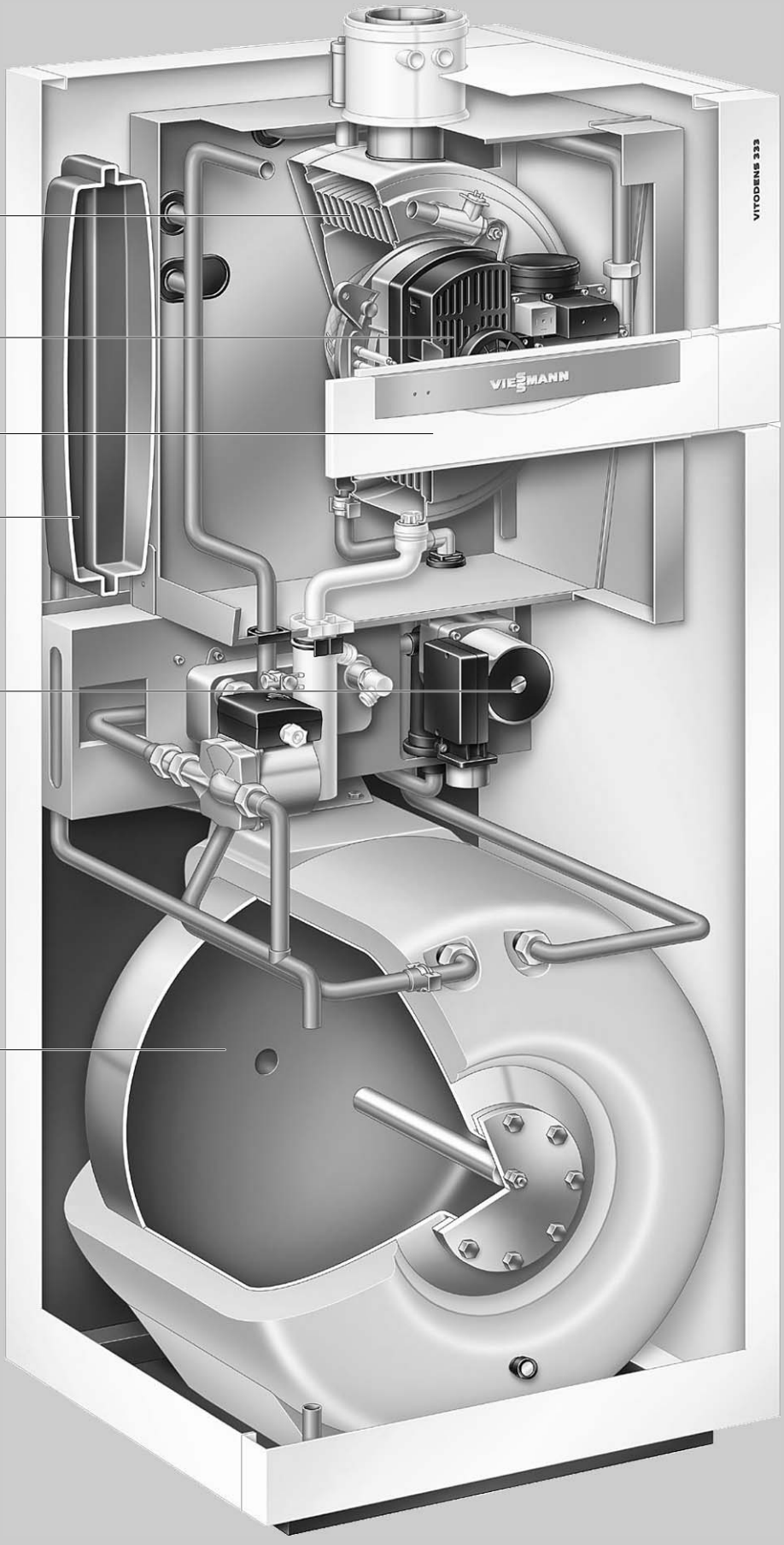
Inox-Radial heating surfaces in stainless steel – for high operational reliability, long service life and high output on the smallest footprint
Modulating MatriX compact burner – for extremely clean combustion
Digital boiler control unit
Integral diaphragm expansion vessel
Integral, variable speed heating circuit pump
DHW loading cylinder
VITODENS 333
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Specification

Gas fired boiler, series B and C,
Category I_{2ELL} (natural gas version)
Category $II_{2ELL\ 3P}$ (LPG version)

Rated output range[*1]			
– T_V/T_R = 50/30 °C	kW	4.5-12.0/16.0[*2, *3]	6.6-26.0
– T_V/T_R = 80/60 °C	kW	4.0-11.0	6.0-23.7
Rated thermal load	kW	4.2-16.7	6.3-24.7
Product ID		CE-0085 BO 0338	
Gas supply pressure			
Natural gas	mbar		20
LPG	mbar		50
Max. permiss. gas supply pressure[*4]	mbar		57.5
Max. power consumption (incl. circulation pump)	W		203
Weight	kg		130
Capacity heat exchanger	litres		5
Heating water volume flow at 200 mbar residual head	l/h		1050
Max. volume flow (limits for the use of a low loss header)	l/h		1400
Rated circulation water volume at ΔT = 20 K	l/h		1032
Permiss. operating pressure	bar		3
Diaphragm expansion vessel			
Capacity	litres		12
Inlet pressure	bar		0.75
Connections			
Boiler flow and return	G (female thread)		¾″
Hot and cold water	G (female thread)		¾″
DHW circulation	G (male thread)		1″
Dimensions			
Length	mm		588
Width	mm		600
Height	mm		1387
Gas connection	G (female thread)		¾″
DHW loading cylinder			
Capacity	litres		86
Permissible operating pressure (DHW side)	bar		10
Continuous DHW output	kW		24
for DHW temperature rise from 10 to 45 °C	l/h		590
Performance factor N_L[*5]			2.0
Max. draw-off rate at the stated DHW performance factor N_L when heating DHW from 10 to 45 °C	litres/min		19
Connection values relative to the max. load			
with gas with H_{uB}			
Natural gas E 9.45 kWh/m³ 34.01 MJ/m³	m³/h		2.65
Natural gas LL 8.13 kWh/m³ 29.25 MJ/m³	m³/h		3.08
LPG 12.79 kWh/m³ 46.04 MJ/m³	kg/h		1.94

*[*1]Details to EN 677.*
*[*2]Rated output for DHW heating.*
*[*3]Available from October 2004. Specification on request.*
*[*4]If the gas supply pressure is higher than the maximum permitted value, a separate gas governor must be installed upstream of the system.*
*[*5]At 70 °C average boiler water temperature and cylinder storage temperature Tcyl = 60 °C.*
The DHW performance factor N_L varies according to the cylinder storage temperature Tcyl.
Guide values: Tcyl = 60 °C → 1.0 × N_L Tcyl = 55 °C → 0.75 × N_L Tcyl = 50 °C → 0.55 × N_L Tcyl = 45 °C → 0.3 × N_L.

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Rated output range			
– T_V/T_R = 50/30 °C	kW	4.5-12.0/16.0	6.6-26.0
– T_V/T_R = 80/60 °C	kW	4.0-11.0	6.0-23.7
Flue gas values[*1]			
Flue gas value group to G 635/G 636			G_{52}/G_{51}
Temperature (at a return temperature of 30 °C)			
– at rated output	°C		45
– at partial load	°C		35
Temperature (at a return temperature of 60 °C)	°C		70
Mass flow rate			
– for natural gas			
– at rated output	kg/h		47.3
– at partial load	kg/h		11.8
– for LPG			
– at rated output	kg/h		48.4
– at partial load	kg/h		11.5
CO_2 content	%		
Available draught	Pa		100
	mbar		1.0
Standard efficiency at			
– T_V/T_R = 50/30 °C	%		109
– T_V/T_R = 80/60 °C	%		104
Average condensate volume for natural gas and			
– T_V/T_R = 50/30 °C	litres/day		11-13
– T_V/T_R = 80/60 °C	litres/day		8-10
Condensate connection	Hose coupling ∅ mm		20-24
Flue outlet	Internal ∅ mm		80
Ventilation pipe	External ∅ mm		125

[*1] *Calculation values for sizing the flue gas system to EN 13384.*
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 determine the application range of flue pipes with maximum permissible operating temperatures.

▶ *For specification of Viessmann modular components, see separate datasheets.*

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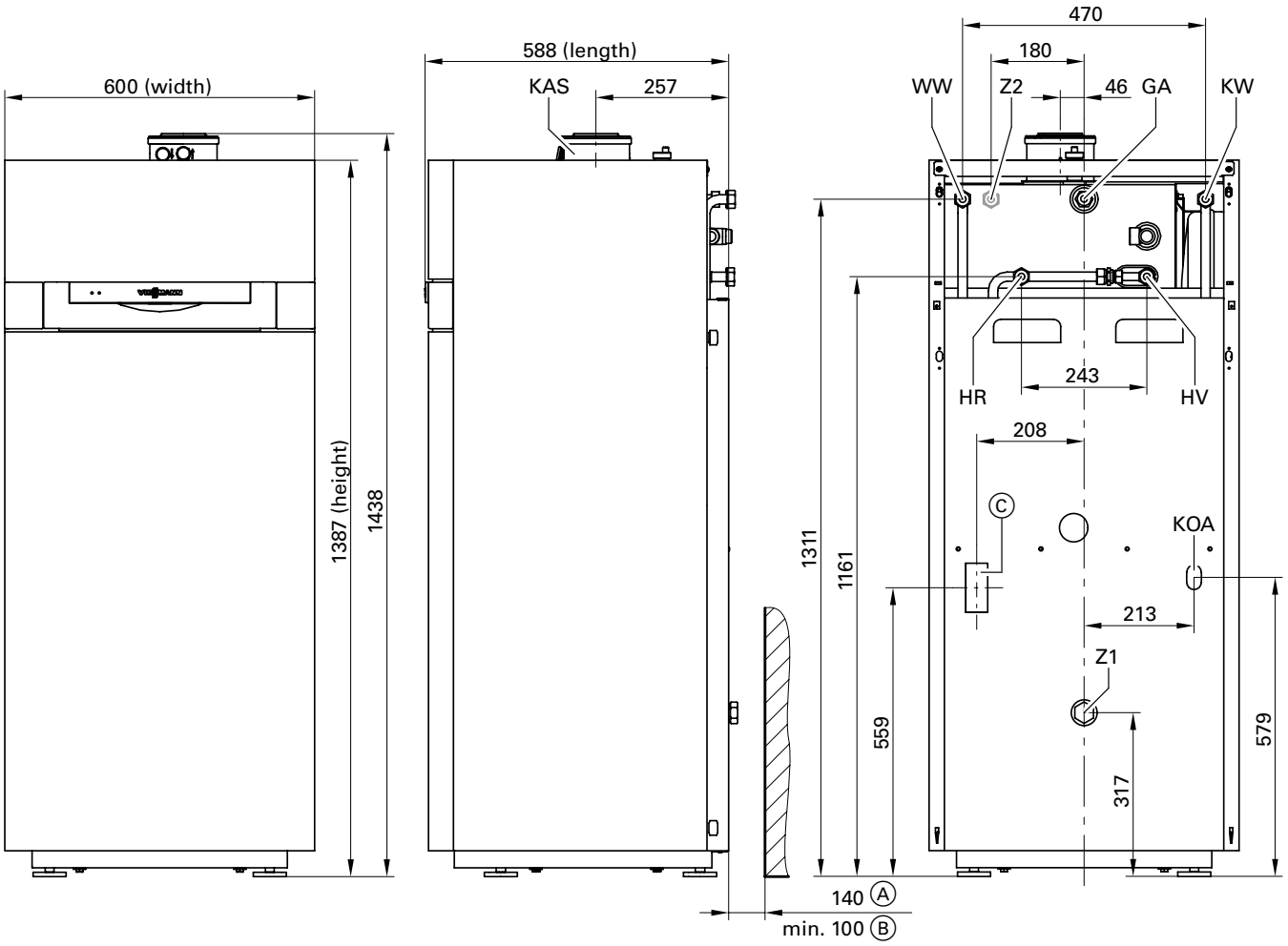

Key to symbols

GA	Gas connection
HR	Heating return
HV	Heating flow
KAS	Boiler adaptor
KOA	Condensate drain
KW	Cold water
WW	Hot water
Z1	DHW circulation (on site)
Z2	DHW circulation with DHW circulation pump connection set (accessory)

Ⓐ Wall clearance with connection set (accessory)
Ⓑ Wall clearance with on-site connection
Ⓒ Aperture for electrical supply cables

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Variable speed heating circuit pump

The pump speed and therefore the flow rate is relayed to the pump, and is set by the control unit subject to outside temperature and switching times for the central heating or reduced mode via an internal data BUS.

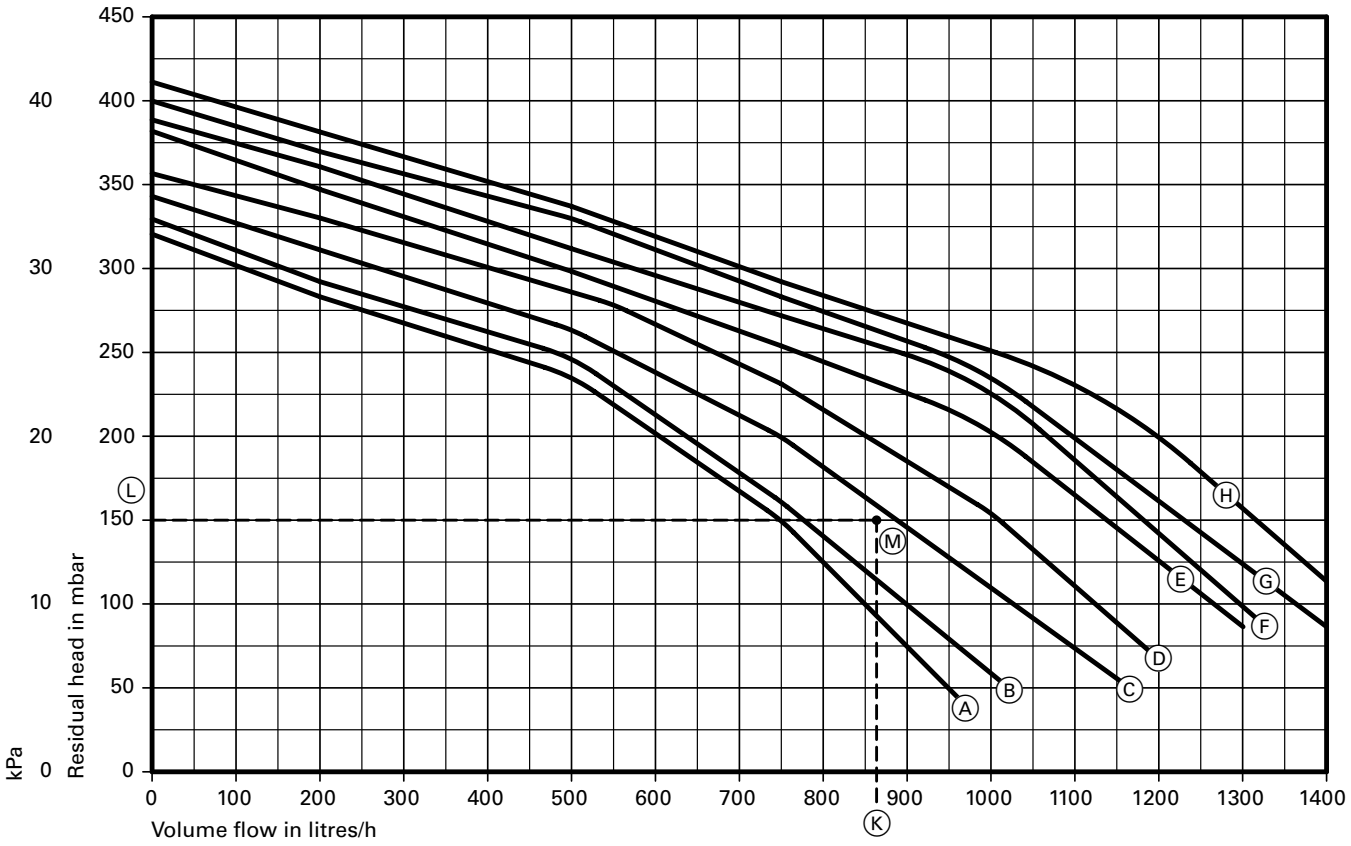
Individually match the minimum and maximum speed plus the speed during reduced mode to the existing heating system using the control unit codes.
In the delivered condition, the minimum pump capacity (code address E7) is set to 30%, and the maximum pump capacity (code address E6) to 50%.

Using the diagram, the flow rate can be adjusted to the respective system conditions.
Matching the flow rate of the circulation pump to the individual system conditions reduces the power consumption of the heating system.

Circulation pump VICUPE 60 BUS

Rated voltage	V ~	230
Rated current	A max.	0.45
	min.	0.21
Power consumption	W max.	100
	min.	50
	as delivered condition	85

Residual head of the integral circulation pump



Curve	Capacity Circulation pump	Setting Code address E6
Ⓐ	30%	E6:030
Ⓑ	40%	E6:040
Ⓒ	50%	E6:050
Ⓓ	60%	E6:060
Ⓔ	70%	E6:070
Ⓕ	80%	E6:080
Ⓖ	90%	E6:090
Ⓗ	100%	E6:100

Example
- Radiator heating system, Design temperatures 75/55 °C, heat demand 20 kW
  ≙ Volume flow 860 litres/h Ⓚ
- Pressure drop 150 mbar Ⓛ
- Design point Ⓜ

Optimum pump curve according to diagram:
Ⓒ = code address E6:050.

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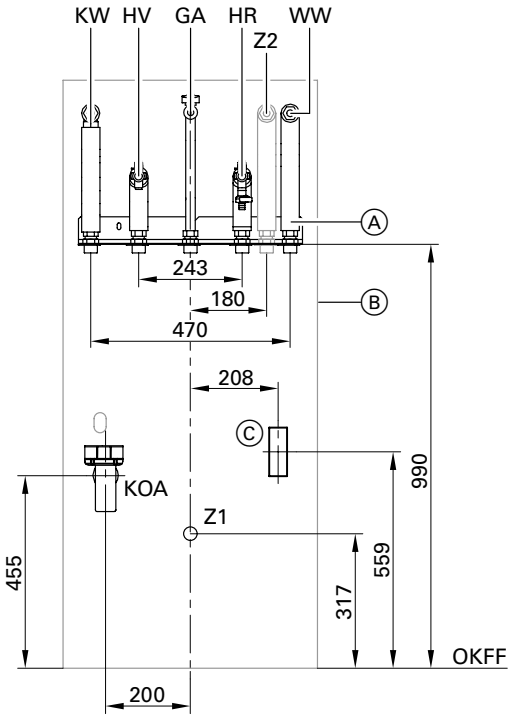
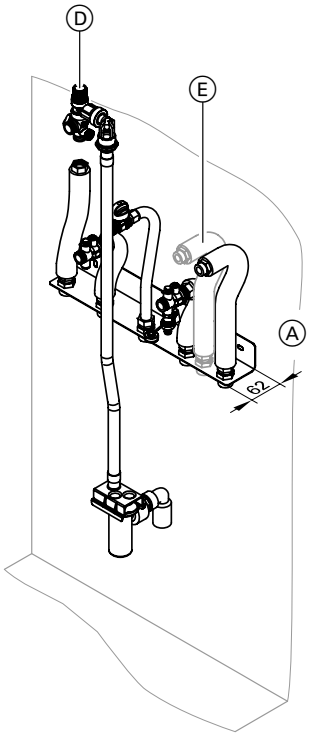
Pre-installation in unfinished buildings

With connection set (part no. 7179 419) for gas, primary and secondary connection of on-site pipes/lines from below
comprising:
- 2 shut-off ball valves (G ¾") with air vent valve, heating water
- Gas tap R ½" with integral thermal safety shut-off valve
- Filling tap
- Wall mounting bracket
- Flexible connection pipes, heating water and DHW plus gas
- Drain outlet set with drain pipes from the safety valves

Note
Ensure a clearance of 700 mm in front of Vitodens is maintained for service work. Maintenance clearance to the l.h. or r.h. side of Vitodens are **not** required.





Key to symbols

GA Gas connection G ¾"
HR Heating return G ¾"
HV Heating flow G ¾"
KOA Condensate drain (funnel siphon)
OKFF Top edge finished floor
KW Cold water G ¾"
WW Hot water G ¾"
Z1 DHW circulation G 1" (without DHW circulation pump connection set)
Z2 DHW circulation G ¾" (with DHW circulation pump connection set)

Ⓐ Connection set
Ⓑ Vitodens 333 (external dimensions)
Ⓒ Area for electrical supply cables. Allow all cables to protrude approx. 2000 mm from the wall.
Ⓓ Safety assembly to DIN 1988, DN 15, as separate accessory
Ⓔ DHW circulation connection with DHW circulation pump (separate accessory)

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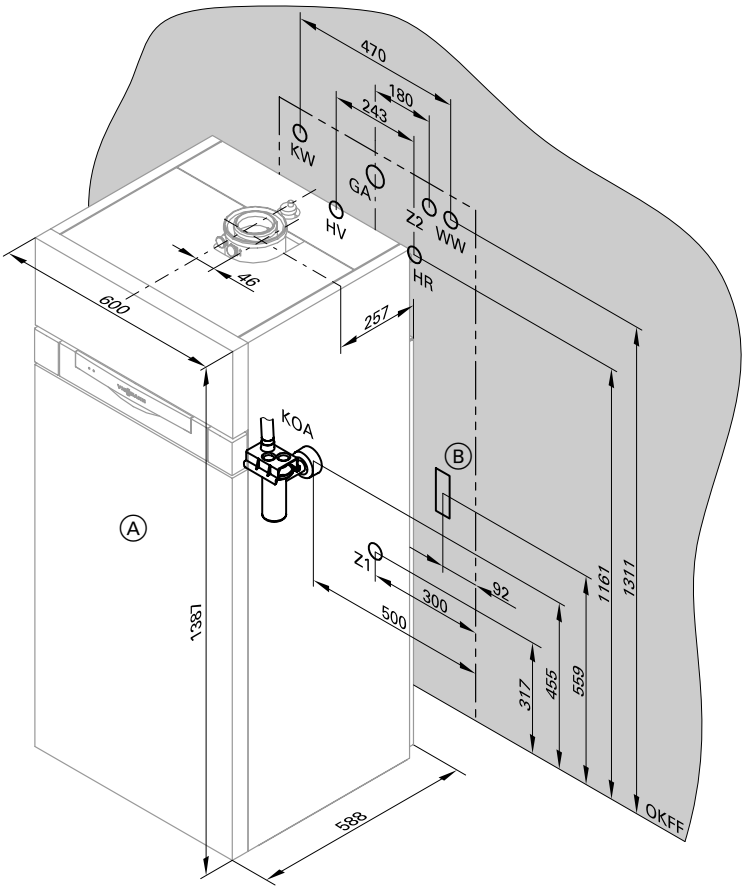
Pre-installation in unfinished buildings without connection set or with connection set for on-site connection (part no. 7179 420)



Key to symbols

GA Gas connection G ¾"
HR Heating return G ¾"
HV Heating flow G ¾"
KOA Condensate drain (funnel siphon)
KW Cold water G ¾"
OKFF Top edge finished floor
WW Hot water G ¾"
Z1 DHW circulation G 1" (without DHW circulation pump connection set)
Z2 DHW circulation G ¾" (with DHW circulation pump connection set)

Ⓐ Vitodens 333 (external dimensions)
Ⓑ Area for electrical supply cables. Allow all cables to protrude approx. 2000 mm from the wall.

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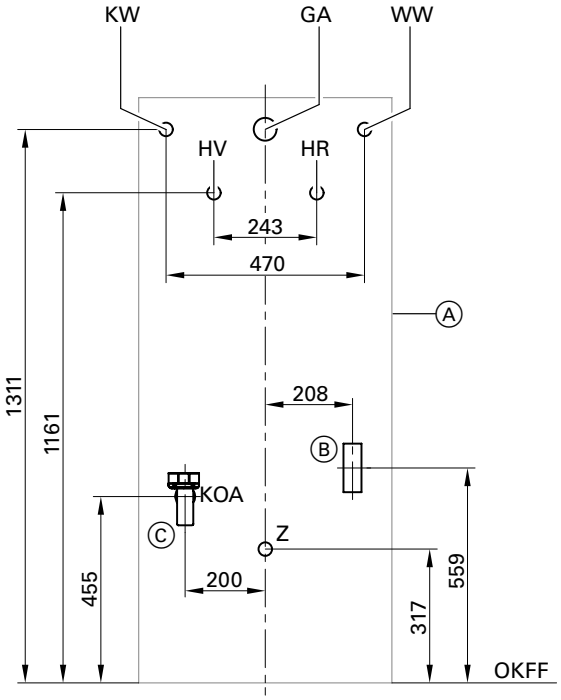
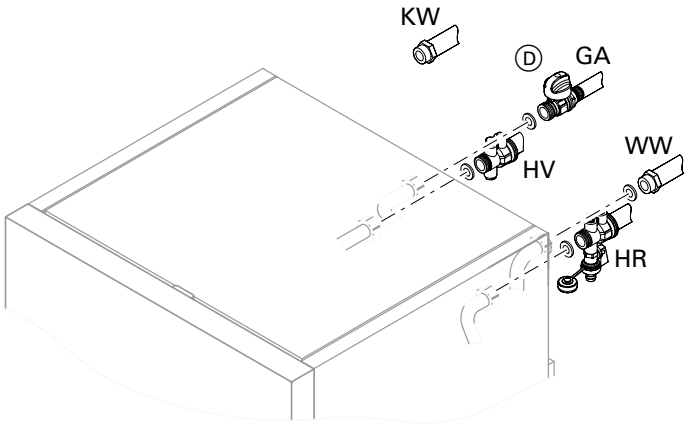
Pre-installation in unfinished buildings

With connection set (part no. 7179 420)
for on-site connection from above or below
comprising:
- 2 shut-off ball valves (G ¾") with air vent valve, heating water
- Gas tap R ½" with integral thermal safety shut-off valve
- Filling tap

Note
Ensure a clearance of 700 mm in front of Vitodens is maintained for service work. Maintenance clearance to the l.h. or r.h. side of Vitodens are **not** required.



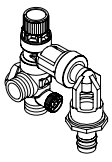


Key to symbols

GA	Gas connection R ½"
HR	Heating return G ¾"
HV	Heating flow G ¾"
KOA	Condensate drain
OKFF	Top edge finished floor
KW	Cold water G ¾"
WW	Hot water G ¾"
Z	DHW circulation G 1"

Ⓐ Vitodens 333 (external dimensions)
Ⓑ Area for electrical supply cables. Allow all cables to protrude approx. 2000 mm from the wall.
Ⓒ Drain outlet kit (accessory)
Ⓓ Connection set

Safety equipment to DIN 1988
DN 15, right angle version
comprising:
- Shut-off valve
- Non-return valve and test nipple
- Pressure gauge connector
- Diaphragm safety valve
  – 10 bar
  part no. 7180 386



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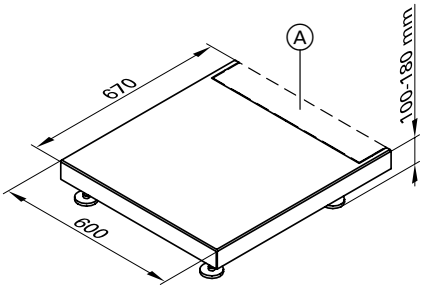
Pre-installation in unfinished buildings

Boiler plinth (part no. 7170 916)
- height adjustable, for screed floors 10 to 18 cm
- for installation of Vitodens 333 on the unfinished floor
- with knockout apertures for on-site pipes



Ⓐ Knockout apertures

Electrical connection

Observe the requirements of your local electricity supply company and VDE regulations (or local regulations) when making the mains power connection.
Protect the mains power cable with 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 terminals inside the boiler.

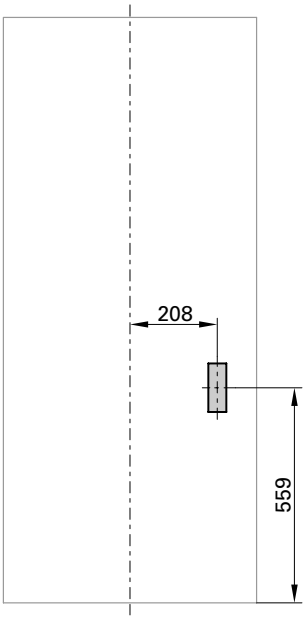
Cables inside the marked area (see fig.) protrude 2000 mm from the wall.

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
- External extension H1 or H2
- Outside temperature sensor
- Vitotronic 050 (LON)
- Extension kit for heating circuit with mixer (KM BUS)
- Central fault message (in conjunction with internal extension)
- Vitotrol 100, type UTD
- Vitotrol 200
- Vitotrol 300.

3-core cable for
- Vitotrol 100, type UTA
- Mains connection – accessories



Interlock switch

Install an interlock for open flue operation if an extraction device (e.g. cooker hood) is fitted in the room providing the boiler ventilation.

For this, the internal extension H2 (accessory) can be used. This switches the extract fans OFF via the adaptor when the burner is started.

Vitotronic 100, type HC1, for constant temperature operation

Integrated in Vitodens
- Electronic boiler control unit for operating Vitodens at a constant boiler water temperature
- A Vitotrol 100, type UTA or UTD is required for room temperature-dependent operation (according to EnEV [Germany])
- Integrated diagnostic system
- Integral cylinder thermostat

Structure and functions

Construction

The control unit comprises a basic unit, electronic modules and a programming unit.
The control unit contains the following:
System ON/OFF switch, digital display, control thermostat, temperature limiter, keys for
- Operating mode
- Boiler water and DHW temperature
- Emissions test function,

burner fault indication, burner fault reset, integral diagnostic system and fuses.

Control characteristics
PI characteristics with modulating output.

Specification

Rated voltage:	230 V~
Rated frequency:	50 Hz
Rated current:	6 A
Safety class:	I
Protection:	IP X4D to EN 60529, safeguard through design/installation
Function:	Type 1B to EN 60730-1
Permissible ambient temperature	
■ during operation:	0 to +40 °C Use in living space and boiler rooms (standard ambient conditions)
■ during storage and transport:	–20 to +65 °C
Electronic control thermostat setting:	74 °C (change not possible)
Electronic temp. limiter setting (heating mode):	81 °C (change not possible)
Temperature limiter setting:	100 °C (change not possible)
Setting range for DHW temperature:	10 to 60 °C

Summer mode
Heating program

The burner starts only when the DHW cylinder needs reloading.

Boiler temperature sensor

The boiler temperature sensor is connected to the control unit and built into the boiler.

Permiss. ambient temperature	
■ in operation:	0 to +130 °C
■ during storage and transport:	–20 to + 70 °C

Frost protection

The frost protection function is active in all heating programs.
The burner is switched ON when the boiler water temperature reaches 5 °C and will be switched OFF again, when the boiler water temperature reaches 15 °C.
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 at certain intervals (up to 24 times per day) for periods of approx. 10 minutes.

Cylinder temperature sensor and loading temperature sensor

The sensors are connected to the control unit and built into the boiler.

Protection:	IP 32
Permissible ambient temperature	
■ in operation:	0 to +90 °C
■ during storage and transport:	–20 to +70 °C

Programming unit

- Display
- Display of temperatures and faults
- Coding display

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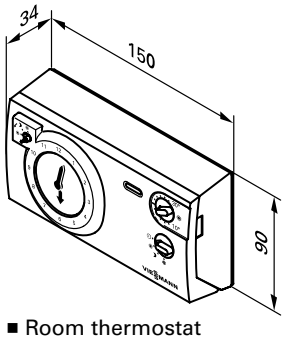
Vitotronic 100 accessories

Vitotrol 100 (type UTA),
part no. 7170 149

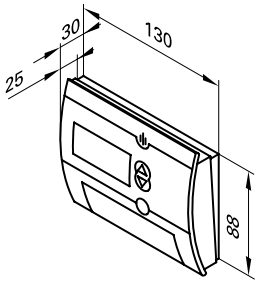


- Room thermostat
- With switching output (two-point output)
- With adjustable day program
- Standard switching times are factory-set (individually programmable).
- Shortest switching gap 15 minutes

Install Vitotrol 100 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 cable with a cross-section of 1.5 mm^2 (without green-yellow conductor)

Rated voltage:	230 V~/50 Hz
Rated breaking capacity of the contact:	6(1) A 250 V~
Protection:	IP 20
Permissible ambient temperature	
■ during operation:	0 to +40 °C
■ during storage and transport:	–20 to +65 °C
Setting range for set values for standard and reduced mode:	10 to 30 °C
Set room temperature in standby mode:	6 °C

Vitotrol 100 (type UTD),
part no. 7179 059



- Room thermostat
- With switching output (two-point output)
- With digital time switch
- With rotary selector for adjusting
  - Permanent comfort
  - Permanent setback
  - Frost
  - 2 permanently set programs
  - One individually adjustable program and
  - Holiday program
- With keys for party and economy mode

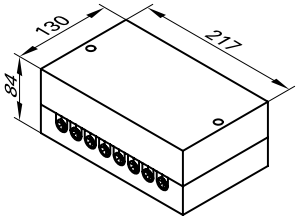
Install Vitotrol 100 in the main living room on an internal wall opposite radiators, but not inside shelf units, niches, immediately by a door or a heat source (e.g. direct sunlight, fireplace, TV set, etc.).
Operation without mains power supply (two 1.5 V round alkaline cells, type LR6 (AA), which run for approx. 1.5 years).
Control unit connection:
2-core with a cross-section of 0.75 mm^2.

Rated voltage:	3 V–
Rated breaking capacity of the zero volt contact	
■ max.:	6(1) A 230 V~
■ min.:	1 mA 5 V–
Protection:	IP 20 to EN 60529, safeguard through design/installation
Effect:	RS type 1B according to EN 60730-1
Permissible ambient temperature	
■ in use:	0 to +50 °C
■ during storage and transport:	–10 to +60 °C
Setting range for	
■ Comfort temperature:	10 to 30 °C
■ Setback temperature:	10 to 30 °C
■ Frost protection temperature:	6 to 10 °C
Power backup during battery replacement:	10 minutes

Internal extension H2,
part no. 7179 144
Electronic PCB for installation into the control unit.
An interlock for extractors can be connected with the extension.
Where that function is selected, no external safety solenoid valve can be connected.

Nominal breaking capacity of the relay output: 6(3) A 250 V~
Rated voltage: 230 V~
Rated frequency: 50 Hz

External extension H1,
part no. 7179 058
Function extension inside the equipment for wall mounting.
Using the extension enables the following functions to be achieved:

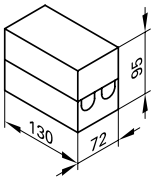


Function	Rated breaking capacity of the relay output
■ Connection of a central fault messaging facility	0.4(0.2) A 250 V~
■ Connection of a heating circuit pump (stepped) for a directly connected heating circuit	2(1) A 250 V~ in total max. 4 A~
■ Minimum boiler water temperature demand ■ External operating mode changeover ■ External blocking ■ Set boiler water temperature default via an 0 – 10 V input	

Rated voltage: 230 V~
Rated frequency: 50 Hz
Rated current: 4 A
Power consumption: 4 W
Safety class: I
Protection: IP 32

Permissible ambient temperature
■ during operation: 0 to +40 °C
Use in living space and boiler rooms (standard ambient conditions)
■ during storage and transport: –20 to +65 °C

External extension H2,
part no. 7179 265
Function extension inside the equipment for wall mounting.
Using the extension enables the following functions to be achieved:
■ Minimum boiler water temperature demand
■ External operating mode changeover
■ External blocking



Rated voltage: 230 V~
Rated frequency: 50 Hz
Rated current: 2 A
Power consumption: 3 W
Safety class: I
Protection: IP 32

Permissible ambient temperature
■ during operation: 0 to +40 °C
Use in living space and boiler rooms (standard ambient conditions)
■ during storage and transport: –20 to +65 °C

Vitotronic 200, type HO1, for weather-compensated mode

Integrated in Vitodens
- Weather-compensated, digital boiler circuit control for Vitodens in modulating operating mode
- With programming unit
- Digital time switch for day and week programming with four programmable intervals each per day for reduced mode and enabling DHW loading
- Heating system frost protection
- Integrated diagnostic system
- Integral cylinder thermostat
- Screed drying program
- External starting and blocking (option with accessories)

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, electronic max. temperature limiter, temperature controller, Optolink laptop interface, keys for
- Program selection
- Holiday program
- Party and economy mode
- Temperature at reduced mode
- Domestic hot water temperature
- Emissions test function

and a rotary selector for temperature selection in standard mode.
Demand-dependent heating circuit pump and burner shutdown, adjustment of a variable heating limit, anti-seizing pump protection, integral diagnostic system, maintenance display and screed function.

Functions

Vitotronic regulates the boiler water temperature in modulating mode.
The control unit regulates the boiler water temperature (=flow temperature of the directly connected heating circuit) and the flow temperature of one heating circuit with mixer (in conjunction with the extension kit for one heating circuit with mixer) subject to outside temperature.
It offers cylinder temperature regulation with priority control (heating circuit pumps OFF, mixer closed).
An additional DHW heating function (short-term heating to a higher temperature) is an option.

Control characteristics

PI characteristics with modulating output.

Specification

Rated voltage:	230 V~
Rated frequency:	50 Hz
Rated current:	6 A
Safety class:	I
Protection:	IP X 4 D to EN 60529
Permissible ambient temperature	
■ during operation:	0 to +40 °C use in living space and boiler rooms (standard ambient conditions)
■ during storage and transport:	–20 to +65 °C
Electronic control thermostat setting:	74 °C (change not possible)
Electronic temperature limiter setting (heating mode):	81 °C (change not possible)
Temperature limiter setting:	100 °C (change not possible)
Setting range for DHW temperature:	10 to 57 °C
Heating curve setting range	
■ Slope:	0.2 to 3.5
■ Level:	–13 to 40 K

Programming unit

- With digital time switch
- Illuminated display with plain text support
- Display of temperatures and faults
- Coding display
- All settings and the most important codes in plain text

Frost protection

The frost protection function is active in all heating programs.
Frost protection will be
- started, 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. 15 °C.
- stopped, if the outside temperature exceeds approx. +3 °C.

Summer mode

Heating program

The burner starts only when the DHW cylinder needs reloading.

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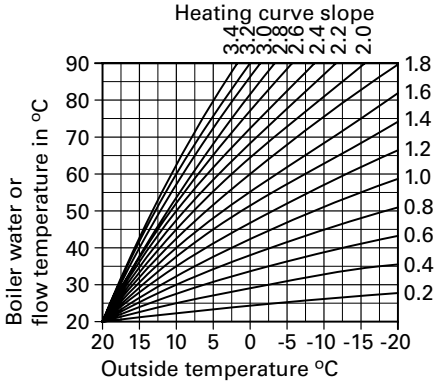
Heating curve adjustment (slope and level)

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:



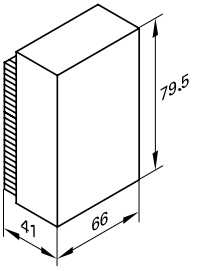
The upper boiler temperature is limited by the temperature limiter and the temperature set on the electronic maximum temperature limiter.
The flow temperature cannot exceed the boiler water temperature.

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.
Permiss. ambient temperature
- in operation: 0 to +130 °C
- during storage and transport: –20 to + 70 °C

Note
When using a hydraulic de-coupler (low loss header), connect a temperature sensor for use in the low loss header (see Vitodens Technical Guide).

Outside temperature sensor



Installation location:
- North or north-westerly wall of the building
- 2 to 2.5 m above the ground; for multi-storey buildings at approx. the upper half of 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
Permissible ambient temperature for operation, storage and transport: –40 to +70 °C

Cylinder temperature sensor and loading temperature sensor

The sensors are connected to the control unit and built into the boiler.
Protection: IP 32
Permissible ambient temperature
- in operation: 0 to +90 °C
- during storage and transport: –20 to +70 °C

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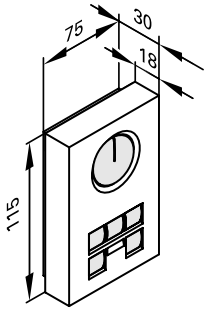
Accessories for Vitotronic 200

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

Because of the inertia of underfloor heating systems, the RS function must not affect an underfloor heating circuit. For boilers with a lower temperature limit, the RS function must not affect the heating circuit without mixer.

Note on Vitotrol 200 and 300
If required, Vitotrol 200 and Vitotrol 300 can also be used together in one heating system (one for each heating circuit).

Vitotrol 200 (KM BUS user), part no. 7450 017



The Vitotrol 200 remote control adjusts the heating program and the required set room temperature for one heating circuit in standard mode, from any room in the house.
Vitotrol 200 is equipped with illuminated heating program selection keys and a party or economy key.
The fault display shows faults on the control unit.
A remote control unit can be connected for each heating circuit.

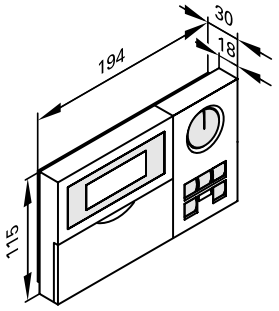
WS function: Installation at any point in the building.
RS function: Install the remote control unit in the main living room on an internal wall opposite radiators, but not inside shelf units, niches, immediately by a door or a heat source (e.g. direct sunlight, fireplace, TV set, etc.).
The integral room temperature sensor records the actual room temperature and effects any necessary correction of the flow temperature as well as a rapid heat-up at the start of the heating operation (if suitably encoded).
Connection:
- 2-core lead, maximum cable length 50 m (even if connecting several remote control units).
- Never route this lead immediately next to 230/400 V cables.
- A LV connector is part of the standard delivery

Power supply via KM BUS.

Rated current:	10 mA
Power consumption:	0.2 W
Safety class:	III
Protection:	IP 30 to EN 60 529. Safeguard through design/ installation.
Permissible ambient temperature	
■ in operation:	0 to +40 °C
■ during storage and transport:	–20 to +65 °C
Room temperature setting range:	10 to 30 °C, adjustable from 3 to 23 °C or 17 to 37 °C

The set room temperature for reduced mode is adjusted on the control unit.

Vitotrol 300 (KM BUS user), part no. 7179 060



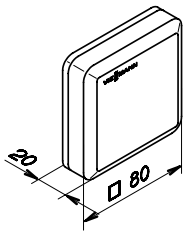
The Vitotrol 300 remote control adjusts the required set room temperature for one heating circuit in standard and reduced mode, the heating program and the switching times for central heating, DHW heating and the DHW circulation pump.
Vitotrol 300 provides an illuminated display as well as illuminated heating program selection keys, a party or economy key, automatic summer/winter changeover, keys for holiday program, weekday and time.
A remote control unit can be connected for each heating circuit.

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.).
The integral room temperature sensor records the actual room temperature and effects any necessary correction of the flow temperature as well as a rapid heat-up at the start of the heating operation (if suitably encoded).
Connection:
- 2-core lead, maximum cable length 50 m (even if connecting several remote control units).
- Never route this lead immediately next to 230/400 V cables.
- A LV connector is part of the standard delivery

Power supply via KM BUS.

Rated current:	10 mA
Power consumption:	0.5 W
Safety class:	III
Protection:	IP 30 to EN 60 529. Safeguard through design/ installation.
Permissible ambient temperature	
■ in operation:	0 to +40 °C
■ during storage and transport:	–20 to +65 °C
Set room temperature setting range	
■ in standard mode:	10 to 30 °C, adjustable from 3 to 23 °C or 17 to 37 °C
■ in reduced mode:	3 to 37 °C

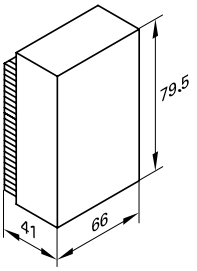
Room temperature sensor,
part no. 7408 012



Separate room temperature sensor as supplement to Vitotrol 200 or 300; to be used if Vitotrol 200 or 300 cannot be installed inside the main living room or in a suitable position where the unit can be installed to record or adjust the temperature.
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.).
Connect the room temperature sensor to Vitotrol 200 or 300.
Connection:
- 2-core cable with a cross-section of 1.5 mm^2, copper.
- Cable length from the remote control 30 m.
- Never route this lead immediately next to 230/400 V cables.

Safety class:	III
Protection:	IP 30 to EN 60529, safeguard through design/ installation
Permissible ambient temperature	
■ in operation:	0 to +40 °C
■ during storage and transport:	–20 to +65 °C

Radio clock receiver,
part no. 7450 563



For receiving the DCF 77 time signal (Location: Mainflingen near Frankfurt/ Main [Germany]).
Radio controlled setting of time and date.
Install the radio clock receiver on an outside wall in the direction of the transmitter. The reception may be reduced by metallic elements in the building structure, e.g. steel reinforced concrete, neighbouring buildings and sources of electro-magnetic interference, e.g. HV and public transport lines.
Connection:
- 2-core lead with a max. length of 35 m when using a cross-section of 1.5 mm^2 copper.
- Never route this lead immediately next to 230/400 V cables.

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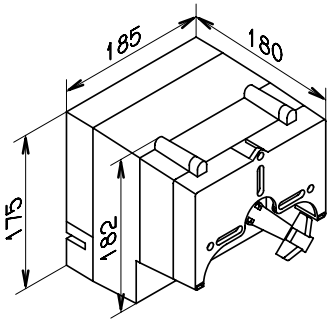
Extension kit for one heating circuit with mixer,
part no. 7178 995

Mixer control



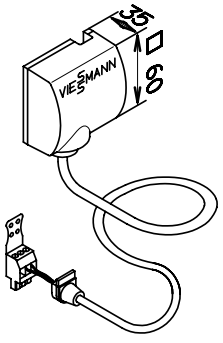
The mixer regulator is mounted directly on Viessmann mixer DN 20 to 50 and R ½" to 1¼".
The mixer regulator is a motorised control unit. Rotational direction may be reversed.
With connection plug for heating circuit pump, flow temperature sensor (contact sensor), mains and BUS connection.

Rated voltage:	230 V~
Rated frequency:	50 Hz
Rated current:	4(2) A
Power consumption:	6.5 W
Safety class:	⧈
Test class:	II
Protection:	IP 32 D to EN 60529
Permissible ambient temperature	
■ in operation:	0 to +40 °C
■ during storage and transport:	–20 to +65 °C
Relay output braking capacity for heating circuit pump [20]:	4(2) A 230 V~

Motor:

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

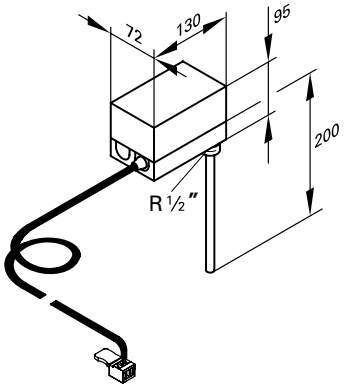
Flow temperature sensor (contact sensor)



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 °C
■ during storage and transport:	–20 to + 70 °C

Immersion thermostat
As temperature limiter for limiting the max. temp. of underfloor heating systems, part no. 7151 728

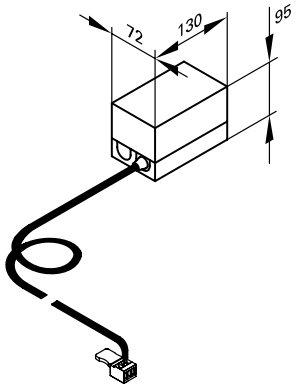


The temperature limiter is installed into the heating flow and switches heating circuit pump OFF if flow temperature is too high.
With connecting cable (approx. 4 m long) and system plug.

Setting range:	30 to 80 °C
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 77703 or DIN TR 96803 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)



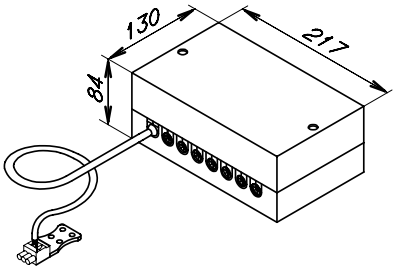
The temperature limiter is installed into the heating flow and switches heating circuit pump OFF if flow temperature is too high.
With connecting cable (approx. 4 m long) and system plug.

Setting range:	30 to 80 °C
Switching differential:	max. 14 K
Breaking capacity:	6(1.5) A 250 V~
Setting scale:	inside casing
DIN reg. no:	DIN TR 77703 or DIN TR 96803 or DIN TR 110302

Communication module, LON,
part no. 7179 113

For connection of one heating circuit control unit Vitotronic 050 or Vitocom 300, comprising one PCB.

KM BUS distributor,
part no. 7415 028



Including a 3.0 m long cable and LV plug-in connector.
For the connection of 2 to 9 devices to the KM BUS (e.g. extension kit for one heating circuit with mixer, Vitotrol, Vitocom 100 etc.).

Immersion temperature sensor,
part no. 7179 488
To record the low loss header temperature.
Cable length approx. 3.75 m, wired ready to plug in

Protection:	IP 32
Permiss. ambient temperature	
■ in operation:	0 to +90 °C
■ during storage and transport:	–20 to +70 °C

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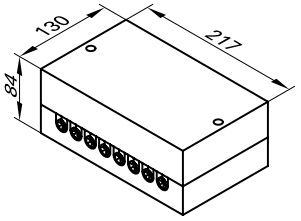
Internal extension H2,
part no. 7179 144
Electronic PCB for installation into the control unit.
An interlock for extractors can be connected with the extension.
Where that function is selected, no external safety solenoid valve can be connected.

Nominal breaking capacity of the relay output: 6(3) A 250 V~
Rated voltage: 230 V~
Rated frequency: 50 Hz

External extension H1,
part no. 7179 058
Function extension inside the equipment for wall mounting.
Using the extension enables the following functions to be achieved:

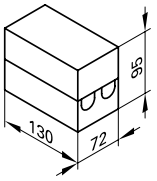


Function	Rated breaking capacity of the relay output
■ Connection of a central fault messaging facility	0.4(0.2) A 250 V~
■ Connection of a DHW circulation pump ■ Connection of a heating circuit pump (stepped) for a directly connected heating circuit	2(1) A 250 V~ in total max. 4 A~
■ Minimum boiler water temperature demand ■ External operating mode changeover ■ External blocking ■ Set boiler water temperature default via an 0 – 10 V input	

Rated voltage: 230 V~
Rated frequency: 50 Hz
Rated current: 4 A
Power consumption: 4 W
Safety class: I
Protection: IP 32

Permissible ambient temperature
■ during operation: 0 to +40 °C
Use in living space and boiler rooms (standard ambient conditions)
■ during storage and transport: –20 to +65 °C

External extension H2,
part no. 7179 265
Function extension inside the equipment for wall mounting.
Using the extension enables the following functions to be achieved:



Function	Rated breaking capacity of the relay output
■ Connection of a DHW circulation pump	2(1) A 250 V~ in total max. 4 A~
■ Minimum boiler water temperature demand ■ External operating mode changeover ■ External blocking	

Rated voltage: 230 V~
Rated frequency: 50 Hz
Rated current: 2 A
Power consumption: 3 W
Safety class: I
Protection: IP 32

Permissible ambient temperature
■ during operation: 0 to +40 °C
Use in living space and boiler rooms (standard ambient conditions)
■ during storage and transport: –20 to +65 °C

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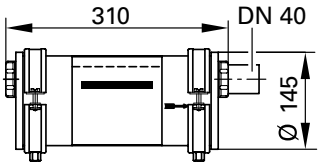
Vitodens 333 accessories

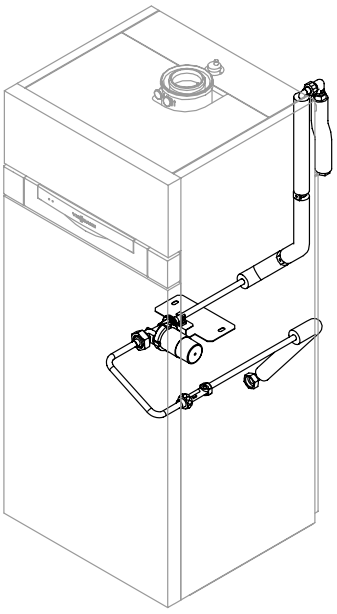
Neutralising system
incl. neutralising granulate
Part no. 7252 666



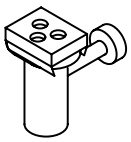
Neutralising granulate
(2 × 1.3 kg)
Part no. 9524 670

DHW circulation pump connection set
for integration into Vitodens 333, comprising:
- Circulation pump
- Flow regulating valve
- Pipe assembly including thermal insulation
- External extension H2 for connection to Vitotronic.

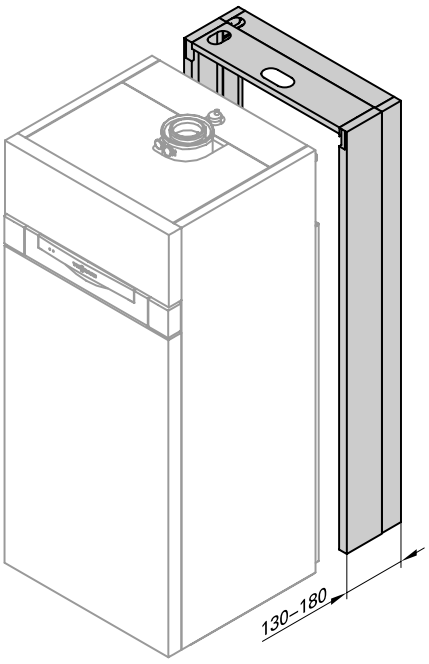
Part no. 7179 422



Drain outlet kit
Drain outlet kit with siphon and bezel for the connection of the safety valve and condensate drain lines.
Part no. 7176 014



Wall terminal bezels
Decorative bezels for water connections.
Part no. 7181 968



Additional shut-off valve in the gas supply line in conjunction with connection set, complete.
- Straight-through gas valve R ½" with integral thermal safety shut-off valve
- Reducer R ¾" – R ½"

Part no. Z002 579

As delivered condition

Gas fired condensing boiler with Inox-Radial heating surface, modulating MatriX-compact gas burner for natural gas and LPG to DVGW Code of Practice G260, aqua-plate with multi-connect system, diaphragm expansion vessel, variable speed heating circuit pump and integral DHW loading cylinder.
Fully plumbed and wired.

Colour of the epoxy-coated casing: white.

Packed separately:
Vitotronic 100 for constant temperature mode
or
Vitotronic 200 for weather-compensated mode.

Vitodens 333 is factory-set for natural gas E.
A conversion kit is supplied to order for natural gas LL and LPG.

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Design information

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 333 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 333 cannot be used in
- dual mode heating systems (e.g. in conjunction with solid fuel boilers),
- hard water areas ($>$ 20 °dH).

Vitodens 333 in balanced flue operation

As device type C_{13x}, C_{33x}, C_{43x}, C_{53x} or C_{63x} to TRGI '86/96, Vitodens 333 **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 living areas, 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 333 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 333 near the chimney stack/duct.

Flue gas systems

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

Viessmann balanced flue systems for **balanced** flue operation
- vertical roof outlet,
- 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 7.2-1104 can be used for connection to a LAS 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,
- horizontal roof outlet,
- separate ventilation and flue gas pipes,
- outside panel outlet as dual pipe design

are tested and CE-designated together with Vitodens 333 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 333, these are flue pipes type B (max. permiss. flue gas temperature 120 °C).

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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 °C.
  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 °C.
- 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

Boilers for hot water heating systems and with a safety temperature of max. 110 °C are equipped with a type-tested safety valve in accordance with EN 12828 and in accordance with their type approval.

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 non-impermeable. We supply separate heat exchangers for this purpose.

Connect underfloor heating systems and heating circuits with very large water content (> 15 litres/kW) 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 EN 12828, special low water level protection can be omitted for boilers up to 300 kW, as long as heating can be reliably prevented when the water level is too low.
Viessmann Vitodens 333 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 systems reach unacceptably high temperatures.

DHW cylinder warranty

Our warranty for DHW cylinders requires that the water to be heated meets the drinking water quality standards of current Drinking Water Regulations, and that any existing water treatment system functions correctly.

Notification

After 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 333 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 333 in rooms below ground level.

Technical guide

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

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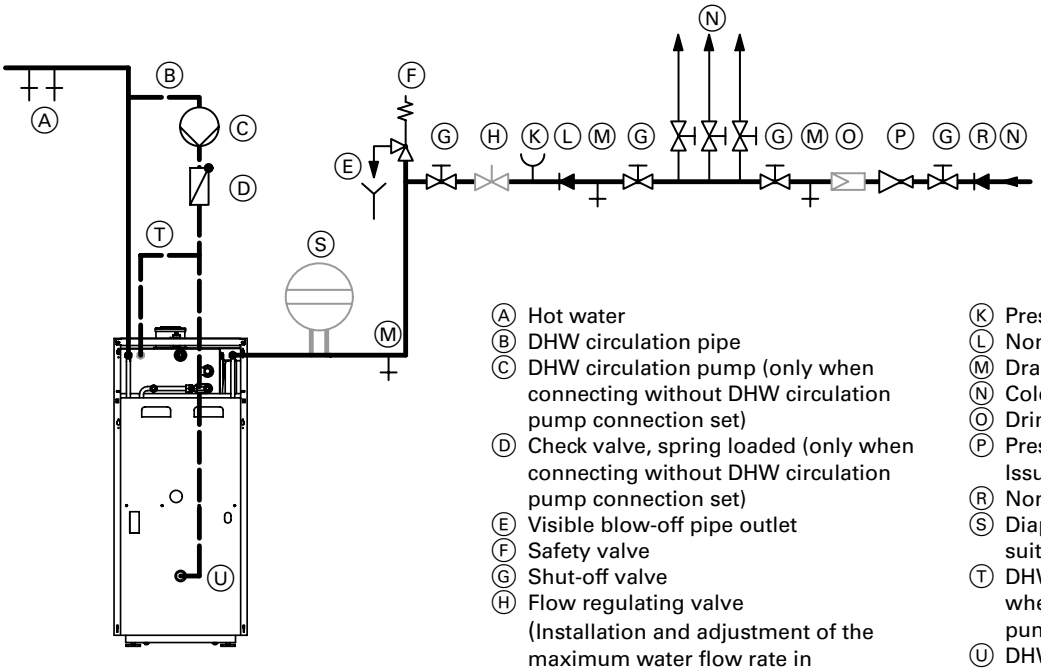
DHW connection (connection to DIN 1988)



Ⓐ Hot water
Ⓑ DHW circulation pipe
Ⓒ DHW circulation pump (only when connecting without DHW circulation pump connection set)
Ⓓ Check valve, spring loaded (only when connecting without DHW circulation pump connection set)
Ⓔ Visible blow-off pipe outlet
Ⓕ Safety valve
Ⓖ Shut-off valve
Ⓗ Flow regulating valve
(Installation and adjustment of the maximum water flow rate in accordance with the peak draw-off rate of the DHW cylinder (see page 4) is recommended)
Ⓚ Pressure gauge connection
Ⓛ Non-return valve
Ⓜ Drain
Ⓝ Cold water
Ⓞ Drinking water filter*1
Ⓟ Pressure reducer to DIN 1988-2 Issue Dec. 1988
Ⓡ Non-return valve/pipe separator
Ⓢ Diaphragm expansion vessel, suitable for drinking water
Ⓣ DHW circulation connection when using the DHW circulation pump connection set
Ⓤ DHW circulation connection without DHW circulation pump

The safety valve must be installed.
Recommendation: Install the safety valve higher than the top edge of the cylinder. This protects the valve against contamination, scaling and high temperatures. In addition, the DHW cylinder does not then need to be drained when working on the safety valve.

**1According to DIN 1988-2, a drinking water filter should be installed in systems with metal pipework. DIN 1988 and Viessmann also recommend the installation of a drinking water filter when using plastic pipes, to prevent contamination entering the DHW system.*

Subject to technical modifications.

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