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Hoval TopGas® comfort (10-22)

Wall-hanging gas condensing boiler

- With condensing boiler technology
- Heat exchanger made of corrosion resistant aluminium alloy with integrated forced flow copper coil, flue gas side: aluminium water side: copper
- Minimal water circulation necessary (see technical data)
- Integrated:
 - Pre-mixing burner with Venturi and surface burner
 - Automatic ignition and ionisation monitoring
 - Speed-controlled high-efficiency pump
 - Automatic quick aspirator
 - Safety valve 3 bar
 - Pressure gauge
 - One primary flow socket and one return flow socket for heating circuit and hot water production
 - Flue gas duct with corrosion free plastic device for draining condensation water
 - Condensate collecting tray for draining condensation water including siphon
 - Water pressure switch
 - Flue gas temperature limiter
 - Reverse switch, overflow valve, filling and draining cock, connection for expansion tank
- Factory setting for natural gas "H"
- Boiler fully cased with varnished white steel plates

Basic boiler control panel G04

- Control unit for gas burner BIC335 for ignition and monitoring of the burner
- Modulating burner control
- Main switch "I/O"
- Operation- and fault indication
- Regulation of hot water production by means of sensor or by thermostatic demand
- For connecting a maximum of 1 room control device or 1 remote control with room sensor
- Control (device) for an external gas valve

Incl. control, optionally in two different versions:

- RS-OT controller
- TopTronic® E controller

Optional

- Propane

Delivery

- Wall-hanging gas condensing boiler fully cased

RS-OT controller

- For 1 heating circuit without mixing operation
- Controlled by atmospheric conditions for gliding boiler water temperature
- With integrated overpluggable room temperature sensor
- Located in the boiler room, living room, or can optimally be installed in the boiler control panel.
- Outdoor sensor
- Immersion sensor (calorifier sensor)

Delivery

- Wall-hanging gas condensing boiler fully panelled
- Control separately packed, mounting on-site



Model range

TopGas® comfort Type		Output 50/30 °C kW
(10)	A	3.1-10
(16)	A	2.9-16
(22)	A	4.5-22

Energy efficiency class of the compound system with control.

TopTronic® E controller

(Can be built in) as supplement for basic boiler control panel G04.

TopTronic® E control module

- Colour touchscreen 4.3 inch
- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with online HovalConnect)
- Adaptation of the heating strategy based on the weather forecast (with online HovalConnect)

TopTronic® E basic module heat generator (TTE-WEZ)

- Control functions integrated for
 - 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 hot water loading circuit
 - bivalent and cascade management
- Rast-5 basic plug set
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- Cable set ZE1 for connecting the TopTronic® E control to the basic boiler control panel

Permissions boilers

TopGas® comfort (10-22):

CE product ID No.: CE-0085BR0482

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion heat accounting or
 - module expansion universal
- Can be networked with a total of up to 16 controller modules:
 - heating circuit/hot water module
 - solar module
 - buffer module
 - measuring module

No additional module expansions or controller modules can be installed in the boiler control panel!

The supplementary plug set must be ordered in order to use expanded controller functions.

Further information about the TopTronic® E see "Controls"

Delivery

- Wall-hanging gas condensing boiler fully panelled
- Control separately packed, mounting on-site

Mounted below/free standing calorifier TopVal (130,160)

- Water heater with smooth pipe heat exchanger made of enamelled steel, fixed build in
- As calorifier placed below for TopGas® comfort (10-22).
- Magnesium protection anode
- Thermal insulation using HCFC free PU foam, with foil mantle, white

Delivery

- Calorifier completely mounted

Calorifier CombiVal ERW (200), white

- Calorifier made of steel, enamelled inside
- Smooth pipe heat exchanger enamelled, built in
- As free-standing calorifier for TopGas® comfort (10-22)
- Magnesium protection anode integrated
- Flange for electrical heating inset
- Thermal insulation made of Polyurethane foamed on the calorifier, dismantable foil casing, white, completely mounted
- Pocket welded in including thermometer

On request

- Electrical heating inset

Delivery

- Calorifier completely mounted

**Heating armature groups
and wall distributors**
see "Various system components"

Wall-mounted gas condensing boilers



Hoval TopGas® comfort (10-22)

incl. RS-OT controller (can be built in)

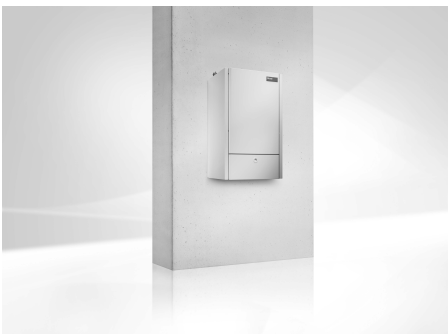
Heat exchanger made of corrosion-proof aluminium alloy with integrated copper meander with forced flow. With modulating, pre-mixing surface burner made of stainless steel. Including basic boiler control panel and control RS-OT. High-efficiency pump, fully cased incl. connection fittings.

TopGas® comfort		Output 50/30 °C kW
Type		
(10)	A	3.1-10.0
(16)	A	2.9-16.0
(22)	A	4.5-22.0

Energy efficiency class of the compound system with control

Part No.

7014 080
7014 081
7014 082



Hoval TopGas® comfort (10-22)

incl. TopTronic® E controller (mountable)

Design as above but with TopTronic® E controller.

TopGas® comfort		Output 50/30 °C kW
Type		
(10)	A	3.1-10.0
(16)	A	2.9-16.0
(22)	A	4.5-22.0

Energy efficiency class of the compound system with control

No additional module expansions or controller modules can be installed!

7014 084
7014 085
7014 086

Accessories



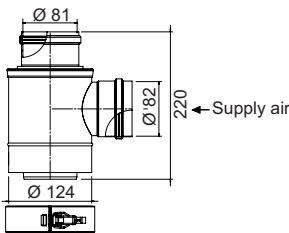
70612/6b gas filter Rp 3/4"
with instrument glands up/downstream
of the filter cartridge (dia.: 9 mm),
pore size of filter cartridge < 50 µm
Max. pressure differential 10 mbar
Max. inlet pressure 100 mbar

Part No.

2007 995

Modification set for propane
for TopGas® comfort (10-22)

6047 633



Separating piece C80/125 -> 2xE80PP
for ambient air independent operation
for separate conduction of flue gas and
combustion air.

2010 174



Visible console
for TopGas® comfort
for preinstallation of connections for
gas R 1/2"
heating flow and return connections G 3/4"
flat sealing

6015 444



Ball valve set - flow and return
Consisting of:
2 ball valves for flow and return
2 seals
Connection 3/4"

6017 173



Gas valve, passage DN 15, R 1/2"
with thermally releasing cut-off device

2012 075



Gas valve, corner version DN 15, R 1/2"
with thermally releasing cut-off device

2012 076



Sludge separator with magnet

Type: MB3 DN25 Rp 1"

With variable connection for vertical or horizontal pipelines

Removal of ferromagnetic and non-magnetic dirt and sludge particles from heating or cooling circuits with the medium water or water/glycol (50/50%)

Brass casing

Sludge separation up to a particle size of 5 µm

With unscrewable casing bottom part for cleaning and inspection work complete with sludge removal tap

Nominal diameter: DN 25

Pipe connection: Rp 1" (internal thread)

Installation length: 90 mm

Max. operating pressure: 6 bar

Max. flow temperature: 110 °C

Max. throughput: 2.0 m³/h

Max. flow speed: 1.0 m/s

Max. pressure drop: 3.8 kPa

Contents: 0.36 l

Weight: 2.3 kg

Additional sludge separators

see "Various system components"



Automatic quick release air vent ½"

with cut-off valve

Part No.

2062 165

2002 582

Free-standing calorifiers



Calorifier TopVal (130,160)
Calorifier placed below, with integrated heater battery made of steel, enamelled inside.

TopVal Type		Content litres
(130)	B	126
(160)	B	157

Part No.

6037 757
6037 758



Connection set
flexible piping between TopVal (130,160) and TopGas® comfort (10-22) with non-return flap in the primary flow to prevent single pipe circulation including sealing material.

2025 578

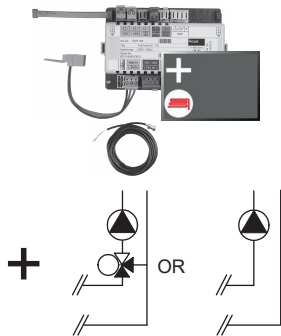


B **Calorifier CombiVal ERW (200), white**
made from steel, enamelled on the inside with built-in enamelled plain-tube heat exchanger and magnesium protection anode
Useful content 196 l
Operating/test pressure: 6/13 bar
Max. operating temperature 95 °C
Foil jacket white

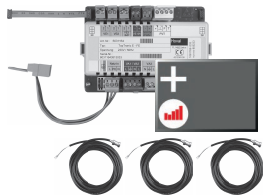
7015 961

Pressure expansion tanks, heating armature groups and wall distributors
see "Various system components"

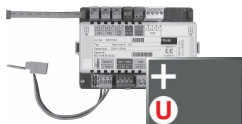
TopTronic® E module expansions
for TopTronic® E basic module heat generator



Notice
The supplementary plug set may have to be ordered to implement functions differing from the standard!



Notice
The flow rate sensor set must be ordered as well.



Notice
Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

TopTronic® E module expansion heating circuit TTE-FE HK
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:
- 1 heating circuit without mixer or
- 1 heating circuit with mixer

incl. fitting accessories
1 contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:
Boiler control, wall housing, control panel

TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:
- 1 heating/cooling circuit w/o mixer or
- 1 heating/cooling circuit with mixer
in each case incl. energy balancing

incl. fitting accessories
3 contact sensors ALF/2P/4/T L = 4.0 m

Can be installed in:
Boiler control, wall housing, control panel

Flow rate sensor sets
Plastic housing

Size	Connection	Flow rate l/min
DN 8	G 3/4"	0.9-15
DN 10	G 3/4"	1.8-32
DN 15	G 1"	3.5-50
DN 20	G 1 1/4"	5-85
DN 25	G 1 1/2"	9-150

Flow rate sensor sets
Brass housing

Size	Connection	Flow rate l/min
DN 10	G 1"	2-40
DN 32	G 1 1/2"	14-240

TopTronic® E module expansion Universal TTE-FE UNI
Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

incl. fitting accessories
Can be installed in:
Boiler control, wall housing, control panel

Further information
see "Controls" - "Hoval TopTronic® E module expansions" chapter

Part No.

6034 576

6037 062

6038 526
6038 507
6038 508
6038 509
6038 510

6042 949
6042 950

6034 575

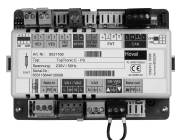
Accessories for TopTronic® E



Supplementary plug set

for basic module heat generator (TTE-WEZ)
for controller modules and module expansion TTE-FE HK

6034 499
6034 503



TopTronic® E controller modules

TTE-HK/WW TopTronic® E heating circuit/
hot water module
TTE-SOL TopTronic® E solar module
TTE-PS TopTronic® E buffer module
TTE-MWA TopTronic® E measuring module

6034 571
6037 058
6037 057
6034 574



TopTronic® E room control modules

TTE-RBM TopTronic® E room control modules
easy white
comfort white
comfort black

6037 071
6037 069
6037 070



Enhanced language package TopTronic® E

one SD card required per control module
Consisting of the following languages:
HU, CS, SL, RO, PL, TR, ES, HR, SR, JA, DA

6039 253



HovalConnect

HovalConnect LAN
HovalConnect WLAN

6049 496
6049 498

HovalConnect available from mid-2020

Up to that point, TopTronic® E online is delivered.

TopTronic® E interface modules

GLT module 0-10 V
HovalConnect Modbus
HovalConnect KNX

6034 578
6049 501
6049 593



TopTronic® E wall casing

WG-190 Wall casing small
WG-360 Wall casing medium
WG-360 BM Wall casing medium with
control module cut-out
WG-510 Wall casing large
WG-510 BM Wall casing large with
control module cut-out

6035 563
6035 564
6035 565
6035 566
6038 533



TopTronic® E sensors

AF/2P/K Outdoor sensor
TF/2P/5/6T Immersion sensor, L = 5.0 m
ALF/2P/4/T Contact sensor, L = 4.0 m
TF/1.1P/2.5S/6T Collector sensor, L = 2.5 m

2055 889
2055 888
2056 775
2056 776



System housing

System housing 182 mm
System housing 254 mm

6038 551
6038 552



Bivalent switch

2061 826

Further information
see "Controls"

Part No.


Flow temperature guard

for underfloor heating
(per heating circuit 1 guard)
15-95 °C, differential gap 6 K, capillary tube
max. 700 mm, setting (visible from the outside)
inside the housing cover.

Clamp-on thermostat RAK-TW1000.S
Thermostat with strap, without cable and plug

242 902


BMS module 0-10 V/
OT - OpenTherm
(building management system)

no control unit TopTronic® E or RS-OT
necessary

power supply via OT bus

Temp. control external with 0-10 V

0-1.0 V no request

1.0-9.5 V0-100 °C

Cannot be installed in boiler control
panel:

TopGas® classic (12-30)

Can be installed in boiler control
panel:

TopGas® classic (35-120),

TopGas® comfort

6016 725

Hoval TopGas® comfort (10-22)
without controller on request

Service


Commissioning


Commissioning by works service or Hoval
trained authorised serviceman/company
is condition for warranty.

For commissioning and other services
please contact your Hoval sales office.

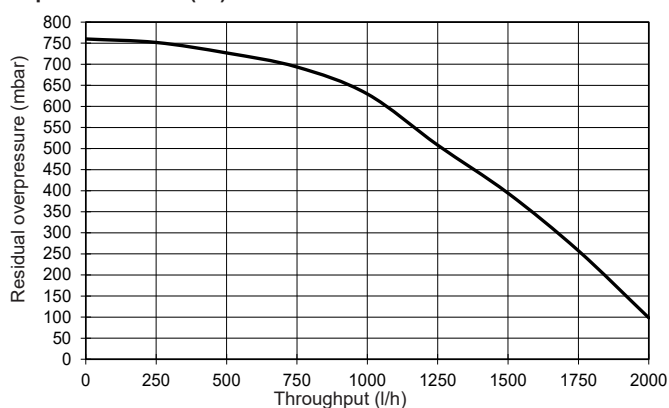
TopGas® comfort (10-22)

Type		(10)	(16)	(22)
• Nominal heat output at 80/60 °C, natural gas	kW	2.7-9.1	2.6-14.6	4.1-20.1
• Nominal heat output at 50/30 °C, natural gas	kW	3.1-10.0	2.9-16.0	4.5-22.0
• Nominal heat output at 80/60 °C, propane ²⁾	kW	4.8-9.1	5.8-14.6	7.7-20.1
• Nominal heat output at 50/30 °C, propane ²⁾	kW	5.3-10.0	6.3-16.0	8.4-22.0
• Nominal load with natural gas ¹⁾	kW	2.9-9.5	2.7-15.2	4.2-21.0
• Nominal load with propane ²⁾	kW	5.0-9.5	6.0-15.2	8.0-21.0
• Operating pressure heating min./max. (PMS)	bar	1/3	1/3	1/3
• Operating temperature max. (T _{max})	°C	85	85	85
• Boiler water content (V _(H2O))	l	1.4	1.7	2.0
• Flow resistance boiler		see diagram		
• Minimum circulation water quantity	l/h	180	180	180
• Boiler weight (without water capacity, incl. casing)	kg	61	65	69
• Boiler efficiency at 80/60 °C in full-load operation (NCV / GCV)	%	96.1/86.6	96.1/86.5	95.7/86.2
• Boiler efficiency at 30 % partial load (EN 15502) (NCV / GCV)	%	105.9/95.4	106.0/95.5	106.1/95.6
• Room heating energy efficiency				
- without control	ηs	%	89	90
- with control	ηs	%	91	92
- with control and room sensor	ηs	%	93	94
• NOx class (EN 15502)		6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx	mg/kWh	6.3	18.9
• Content of CO ₂ in the flue gas min./max. output	%	8.8/9.0	8.8/9.0	8.8/9.0
• Heat loss in standby mode	Watt	60	80	95
• Dimensions		see table of dimensions		
• Gas flow pressure minimum/maximum				
- Natural gas E/LL	mbar	17.4-50	17.4-50	17.4-50
- Propane	mbar	37-50	37-50	37-50
• Gas-connection value at 15 °C/1013 mbar:				
- Natural gas E (Wo = 15.0 kWh/m ³) NCV = 9.97 kWh/m ³	m ³ /h	0.29-0.95	0.27-1.52	0.42-2.11
- Natural gas LL (Wo = 12.4 kWh/m ³) NCV = 8.57 kWh/m ³	m ³ /h	0.34-1.11	0.32-1.77	0.49-2.45
- Propane ²⁾ (NCV = 25.9 kWh/m ³)	m ³ /h	0.19-0.37	0.23-0.59	0.31-0.81
• Operation voltage	V/Hz	230/50	230/50	230/50
• Electrical power consumption (incl. pump) min./max.	Watt	20/32	19/38	20/44
• Standby	Watt	7	7	7
• IP rating (integral protection)	IP	40	40	40
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40
• Sound power level				
- Heating noise (EN 15036 Part 1) (room air dependent)	dB(A)	46	51	54
• Condensate quantity (natural gas) at 50/30 °C	l/h	0.9	1.4	2.0
• pH value of the condensate	approx.	4.2	4.2	4.2
• Construction type		B23, C13(x), C33(x), C53(x), C63(x)		
• Value for chimney calculation				
- Temperature class		T 120	T 120	T 120
- Flue gas mass flow at nominal heat load (dry)	kg/h	14.4	23.1	31.9
- Flue gas mass flow at lowest nominal heat load (dry)	kg/h	4.4	4.1	6.3
- Flue gas temperature at nominal output and operation 80/60 °C	°C	65	71	68
- Flue gas temperature at nominal output and operation 50/30 °C	°C	51	54	52
- Flue gas temperature at lowest nominal heat load and operation 50/30 °C	°C	31	34	32
- Maximum permitted temperature of the combustion air	°C	50	50	50
- Volume flow rate combustion air	Nm ³ /h	11.7	18.7	26.2
- Maximum supply pressure for supply air and flue gas line	Pa	75	75	75
- Maximum draught/depression at flue gas outlet	Pa	- 50	- 50	- 50

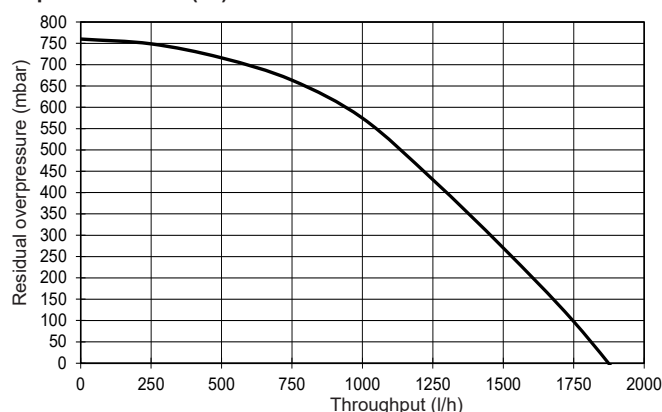
¹⁾ Data related to NCV. The boiler series is tested for EE/H-settings. With a factory setting of the Wobbe coefficient of 15.0 kWh/m³ operation at a Wobbe coefficient of 12.0 up to 15.7 kWh/m³ is possible without new settings.

²⁾ Data related to NCV. The TopGas® comfort can also be operated with propane.

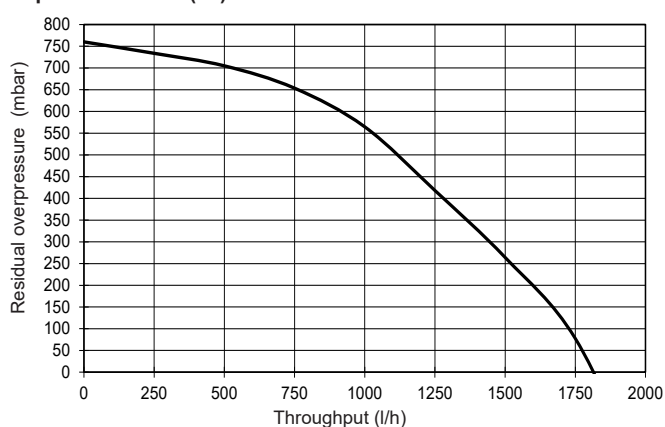
Residual overpressures of heating pump TopGas® comfort (10)



TopGas® comfort (16)



Residual overpressures of heating pump TopGas® comfort (22)



Calorifier TopVal (130,160) and CombiVal ERW (200)

Type		TopVal (130)	TopVal (160)	CombiVal ERW (200)
• Volume	dm ³	128	157	196
• Working pressure/test pressure	bar	6/13	6/13	10/13
• Maximum working temperature:	°C	95	95	95
• Fire protection class		B2	B2	B2
• Heat loss at 65 °C	W	53	56	49
• Weight	kg	53	56	56
• Dimensions				
	Diameter	mm	590	600
	Height	mm	1036	1464

Heater coils (integral)

• Heating surface	m ²	0.96	1.01	0.95
• Heating water	dm ³	6.7	7.1	6.4
• Flow resistance boiler ¹	z-value	22	22	7
• Working pressure/test pressure	bar	8/13	8/13	10/13
• Flow temperature maximum	°C	95	95	110

¹ Flow resistance boiler in mbar = flow rate (m³/h)² x z

Hot water output TopVal, CombiVal with TopGas® comfort, heating flow 80 °C

TopGas® comfort/ calorifier type	Hot water output		Number of flats ³
	dm ³ /10 min ¹ 45 °C	dm ³ /h ² 45 °C	
(10)/TopVal (130)	162	215	1
(16)/TopVal (130)	173	345	1
(22)/TopVal (130)	184	475	1
(10)/TopVal (160)	195	215	1
(16)/TopVal (160)	206	345	1-2
(22)/TopVal (160)	217	475	1-2
(10)/CombiVal ERW (200)	239	215	1-2
(16)/CombiVal ERW (200)	250	345	1-2
(22)/CombiVal ERW (200)	261	475	2

¹ Peak hot water output in 10 min.

² Continuous hot water output per hour.

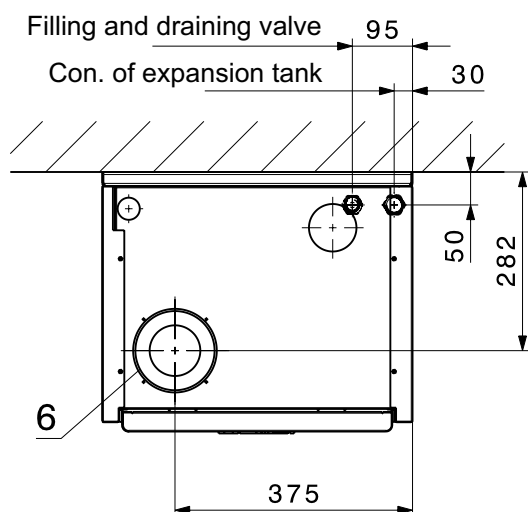
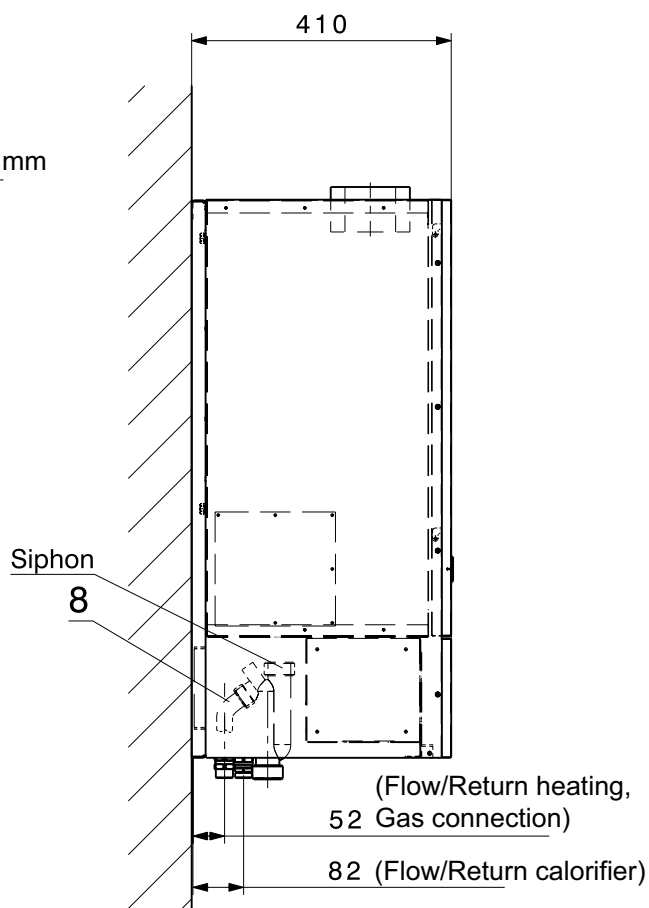
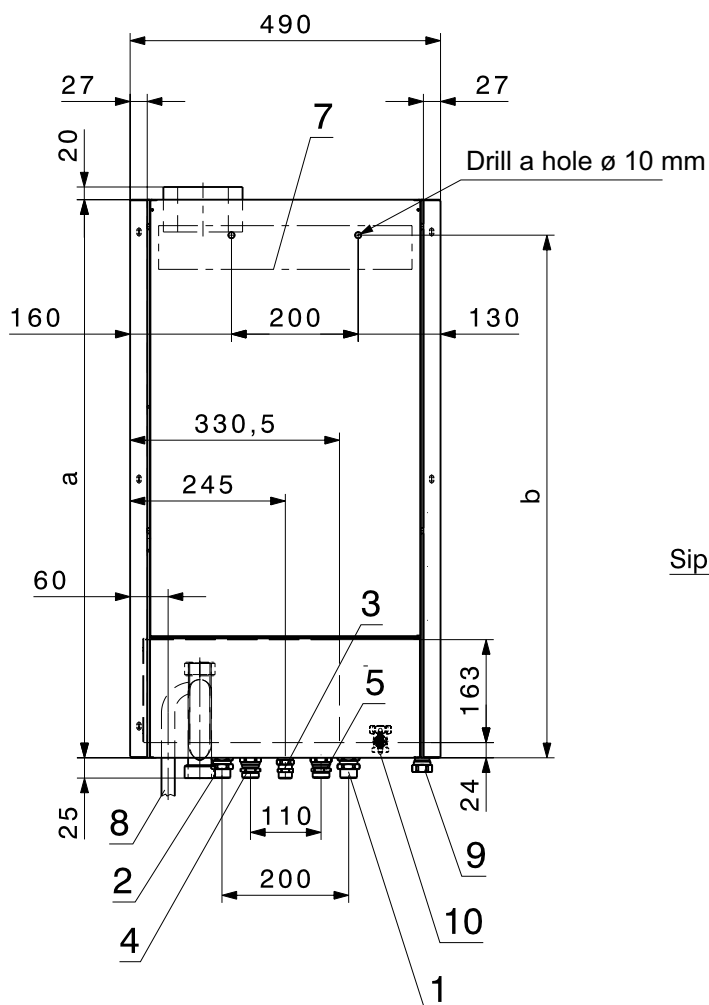
³ Normal flats (3-4 rooms with 4 people, 1 bath holding around 150 litres, 1 wash basin, 1 sink)

TopGas® comfort (10-22)

Minimal spaces

(Dimensions in mm)

- Sideways 50 mm
- Space to ceiling dependent on the flue gas system
- Front 500 mm



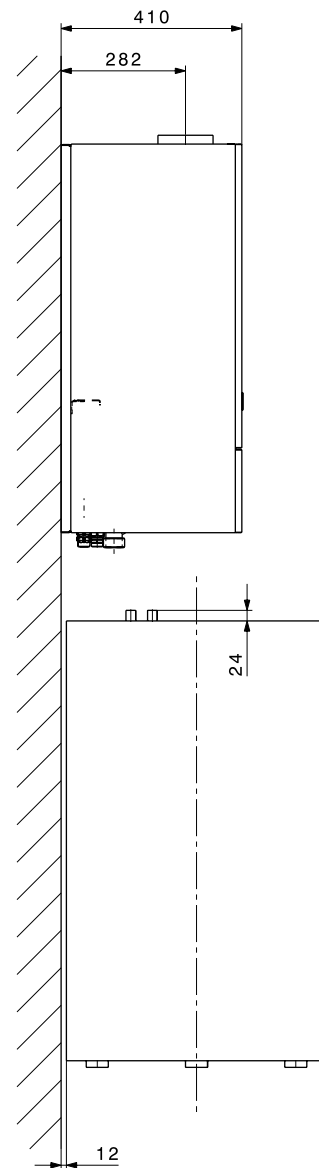
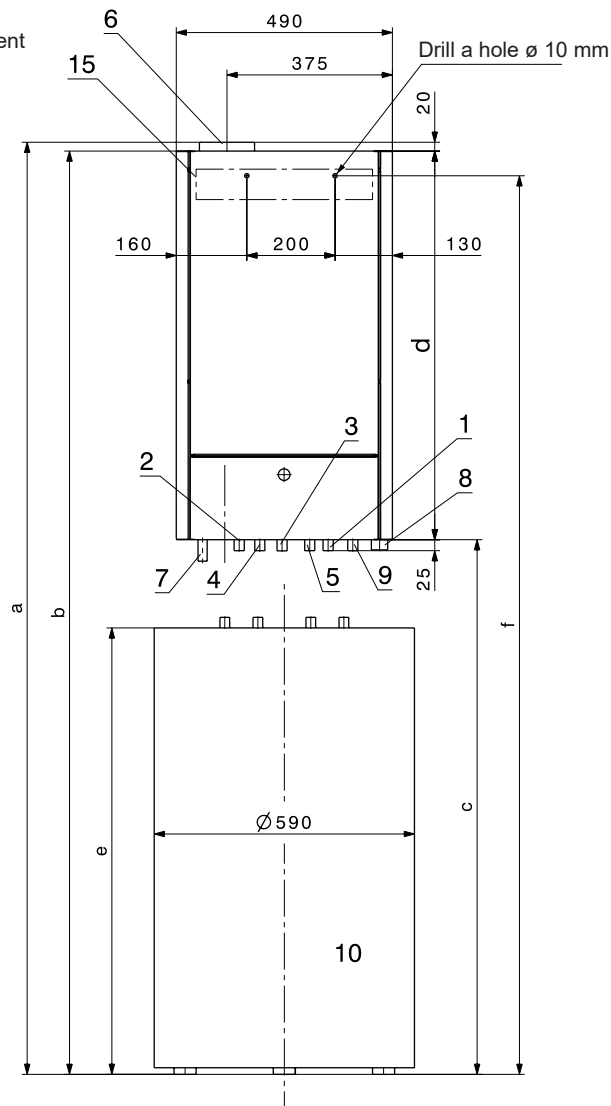
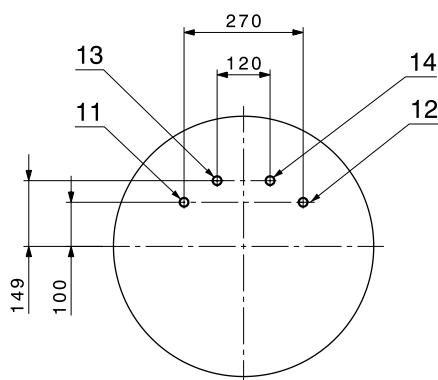
TopGas® comfort

type	a	b
(10)	820	764
(16)	880	824
(22)	940	884

- Return heating D22 with locking ring including barrel nipple G 3/4"
- Flow heating D22 with locking ring including barrel nipple G 3/4"
- Gas connection D15 with locking ring including barrel nipple G 1/2"
- Flow calorifier D18 with locking ring including barrel nipple G 3/4"
- Return calorifier D18 with locking ring including barrel nipple G 3/4"
- Concentrical flue gas/combustion air connection D80/125
- Wall rail
- Condensate drain D32 (hose D25/21)
- Connection of expansion tank G 3/4"
- Filling and draining valve

TopGas® comfort (10-22) with TopVal (130,160) placed below
Minimal spaces
(Dimensions in mm)

- Sideways 50 mm
- Space to ceiling dependent on the flue gas system
- Front 500 mm


View from above TopVal (130,160) without TopGas®


- Return D22 with locking ring including barrel nipple G 3/4"
- Flow D22 with locking ring including barrel nipple G 3/4"

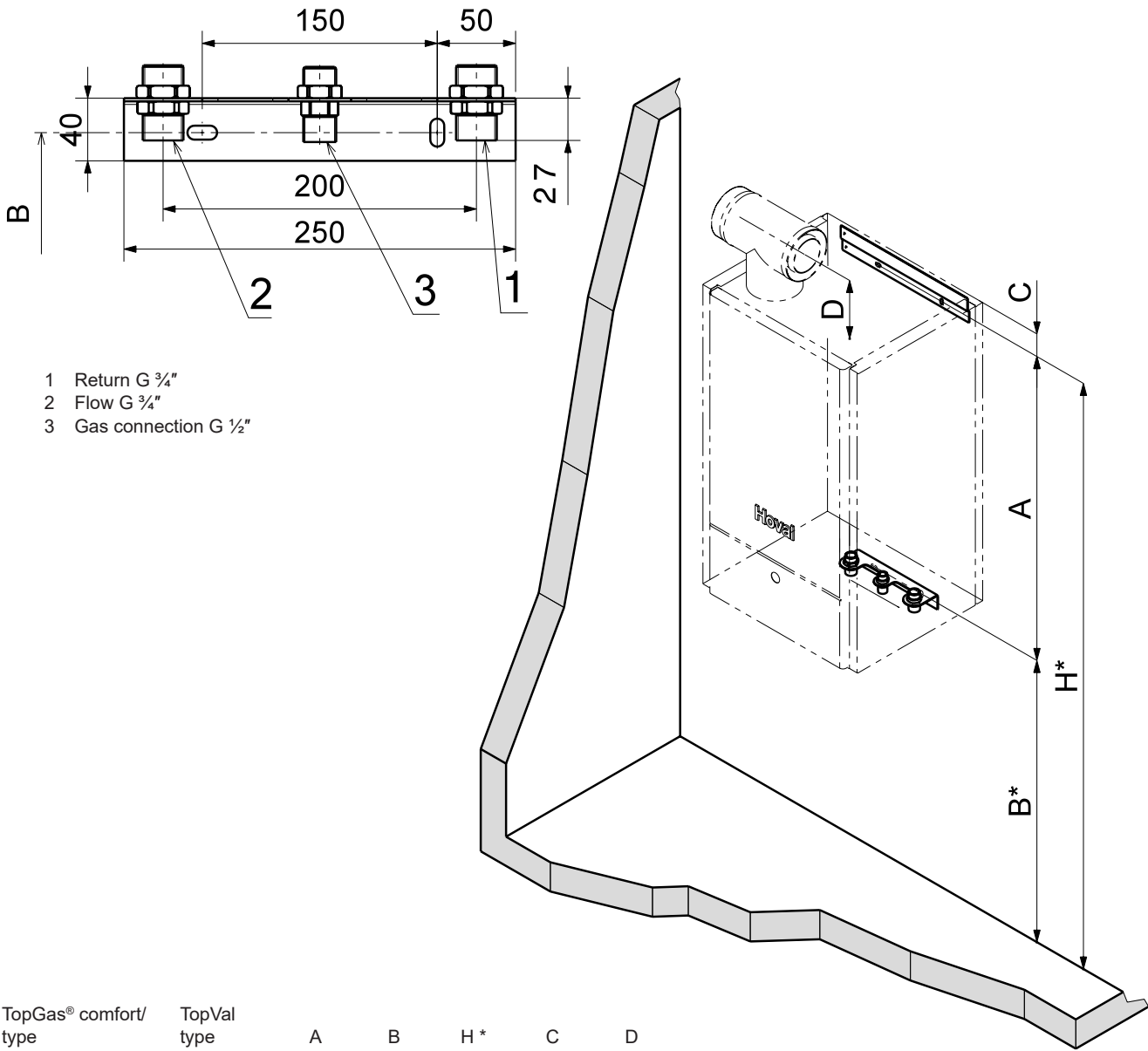
TopGas® comfort/ type	TopVal type	a	b	c	d	e	f
(10)	(130)	1885	1865	1045	820	845	1810
	(160)	2082	2032	1212	820	1012	1977
(16)	(130)	1945	1925	1045	880	845	1870
	(160)	2112	2092	1212	880	1012	2037
(22)	(130)	2005	1985	1045	940	845	1930
	(160)	2172	2152	1212	940	1012	2097

- Gas connection D15 with locking ring including barrel nipple G 1/2"
- Flow calorifier D18 with locking ring including barrel nipple G 3/4"
- Return calorifier D18 with locking ring including barrel nipple G 3/4"
- Concentric flue gas/combustion air connection D80/125
- Condensate drain D32 (hose D25/21)

- Connection of expansion tank G 3/4"
- Filling and draining valve
- Calorifier TopVal (130,160)
- Flow heating G 3/4" outer thread
- Return heating G 3/4" outer thread
- Hot water R 3/4" outer thread
- Cold water R 3/4" outer thread
- Wall rail

Measures for drill holes and visible console for preinstallation
(Dimensions in mm)

for
• TopGas® comfort with TopVal (130,160) placed below



TopGas® comfort/ type	TopVal type	A	B	H *	C	D
(10)	(130)	814	996	1810	55	120
	(160)	814	1163	1977	55	120
(16)	(130)	874	996	1870	55	120
	(160)	874	1163	2037	55	120
(22)	(130)	934	996	1930	55	120
	(160)	934	1163	2097	55	120

* Measures for drill hole

Standards and guidelines

The following standards and guidelines must be complied with:

- Hoval technical information and installation instructions
- hydraulic and technical control regulations of Hoval
- local building law
- fire protection regulations
- DIN EN 12828
- Safety-relevant requirements
- DIN EN 12831 Heaters
- Rules for the calculation of the heat requirements of buildings
- VDI 2035 Protection against damage by corrosion and boiler scale formation in heating and service water installations
- local fire brigade regulations

Water quality

Heating water:

- The European Standard EN 14868 and the Directive VDI 2035 must be observed.
- Hoval boilers and calorifiers are designed for heating plants without significant oxygen intake (plant type I according to EN 14868).
- Plants with
 - continuous oxygen intake (e.g. underfloor heating systems without diffusion proof plastic piping) or
 - intermittent oxygen intake (e.g. where frequent refilling is necessary)
 must be equipped with separate circuits.
- Treated heating water must be tested at least once yearly, according to the inhibitor manufacturer's instructions, more frequent testing may be necessary.
- A refilling is not necessary if the quality of the heating water in existing installations (e.g. exchange of boiler) conforms to VDI 2035. The Directive VDI 2035 applies equally to the replacement water.

- New and if applicable existing installations must be adequately cleaned and flushed before being recharged! The boiler may only be filled after the heating system has been flushed.
- Parts of the boiler which have contact with water are made of copper.
- On account of the danger of spot corrosion the chloride, nitrate and sulfate contents of the heating water must not exceed 200 mg/l in total.
- The pH value of the heating water should lie between 8.3 and 9.5 after 6 to 12 weeks of heating operation in order to avoid a handi-cap of the flow through deposits from corrosion products of other materials from the plant.

Filling and replacement water:

- For a plant using Hoval boilers untreated domestic water is generally best suited as filling and replacement water. However, the quality of the untreated domestic water must at least fulfil the standard set in VDI 2035 or be desalinated and/or be treated with inhibitors. The stipulations of EN 14868 must be observed.
- In order to maintain a high level of boiler efficiency and to avoid overheating of the heating surfaces the values given in the table should not be exceeded (dependent on boiler performance ratings - for multi-boiler plants rating of smallest boiler applies - and on the water content of the plant).
- The total amount of filling and replacement water which is used throughout the total service life of the boiler must not exceed three times the water capacity of the plant.

Heating room

Gas boilers cannot be positioned in rooms in which halogen compounds can occur and into which combustion air can enter (e.g. wash-, dryer-, work rooms, hairdressers and so on). Halogen compounds can be caused by cleaning and degreasing solutions, dissolvents, glue and bleaching lyes.

Combustion air

The supply of combustion air must be guaranteed. There must be no possibility to close the air supply opening. An air pipe $D = 80$ for direct combustion air (air-exhaust system) can be directly connected to the boiler.

The minimum free cross-section for the combustion air can be assumed simplified as follows!

- **Room air-dependent operation:**
A minimum ventilation outlet of at least 150 cm^2 or $2 \times 75 \text{ cm}^2$ cross-section is necessary for a boiler output up to 50 kW. For each further kW of output 2 cm^2 more cross-section must be provided.
- Room air-independent operation with separate combustion air pipe to the boiler: 0.8 cm^2 per 1 kW of output. The pressure drop in the combustion air pipe must be considered for the calculation of the flue gas system.

Gas connection

Commissioning

- Start-up is to be carried out only by a specialist of Hoval.
- Burner setting values according to the installation instructions.

Manual gas shut-off valve and gas filter

Immediately in front of the boiler a manual gas shut-off device (valve) must be installed according to relevant regulations. Should the local regulations or conditions demand this, an approved gas filter must be installed in the gas supply pipe between the gas tap (thermally releasing) and the boiler in order to prevent malfunction due to foreign particles being carried along with the gas.

Type of gas

- The boiler is only to be operated with the type of gas stated on the rating plate.
- A gas pressure controller to reduce the boiler inlet pressure must be installed on site for propane.

Gas pressure

Necessary flow pressure at the boiler inlet:
natural gas min. 17.4 mbar, max. 50 mbar.
Propane min. 37 mbar, max. 50 mbar.

Mud collector

The fitting of a mud collector at the gas boiler return is recommendable.

Pump after-run time

- During the burner mode the circulating pump must always be in function and the minimum heating water circulation must be guaranteed.
- The circulating pump must continue to run for at least 2 minutes each time the burner is guarded off (is provided for by the boiler control unit).

Table 1: Maximum filling quantity without/with demineralisation

Available for boiler with $< 0.3 \text{ l/kW}$ water capacity

	Total hardness of the filling water up to...							
$[\text{mol/m}^3]^{1)}$	<0.1	0.5	1	1.5	2	2.5	3	>3.0
$^\circ\text{H}$	<1	5	10	15	20	25	30	>30
d°H	<0.56	2.8	5.6	8.4	11.2	14.0	16.8	>16.8
e°H	<0.71	3.6	7.1	10.7	14.2	17.8	21.3	>21.3
$\sim\text{mg/l}$	<10	50.0	100.0	150.0	200.0	250.0	300.0	>300
Conductance $^{2)}$	<20	100.0	200.0	300.0	400.0	500.0	600.0	>600
Boiler size of the individual boiler	maximum filling quantity without demineralisation							
up to 30 kW	NO DEMAND						50 l/kW	20 l/kW

¹⁾ Total of alkaline earths

²⁾ If the conductance in $\mu\text{S/cm}$ exceeds the tabular value an analysis of the water is necessary.

Heating boiler in the attic

The gas boiler TopGas® comfort is equipped with a safety mechanism to guard against water loss and can therefore be installed in upper stories.

Condensate drainage

- The allowance to lead the flue gas condensate into the canalisation must be obtained from the responsible authority.
- The condensate from the flue gas system can be discharged through the boiler. A condensate trap is not needed anymore with the flue gas system.
- The condensate must be openly lead into the canalisation (tunnel).
- Suitable materials for condensate drain:
 - stoneware pipes
 - pipes made from PVC
 - pipes made from polyethylene (PE)
 - pipes made from ABS or ASA

Flue gas system

- Gas boilers must be connected to a certified and approved flue gas system such as flue gas lines.
- Flue gas lines must be gas-, condensate- and over pressure-tight.
- The flue gas lines must be secured against unwanted loosening of the plug connections.
- The flue gas system must be connected with an angle, so that the resulting condensate of the flue gas system can flow back to the boiler and can be neutralised there before discharging into the canalisation.
- Gas boilers with condensation heat utilisation are to be connected to a flue gas line min. temperature class T120.
- A flue gas temperature limiter is integrated into the boiler.

Expansion tank

- An adequately dimensioned expansion tank must be provided.
- The expansion tank has to be installed at the connection of expansion tank (pump intake side) (see "Dimensions").
- Starting from 70 °C, a connecting container is necessary.

Noise level

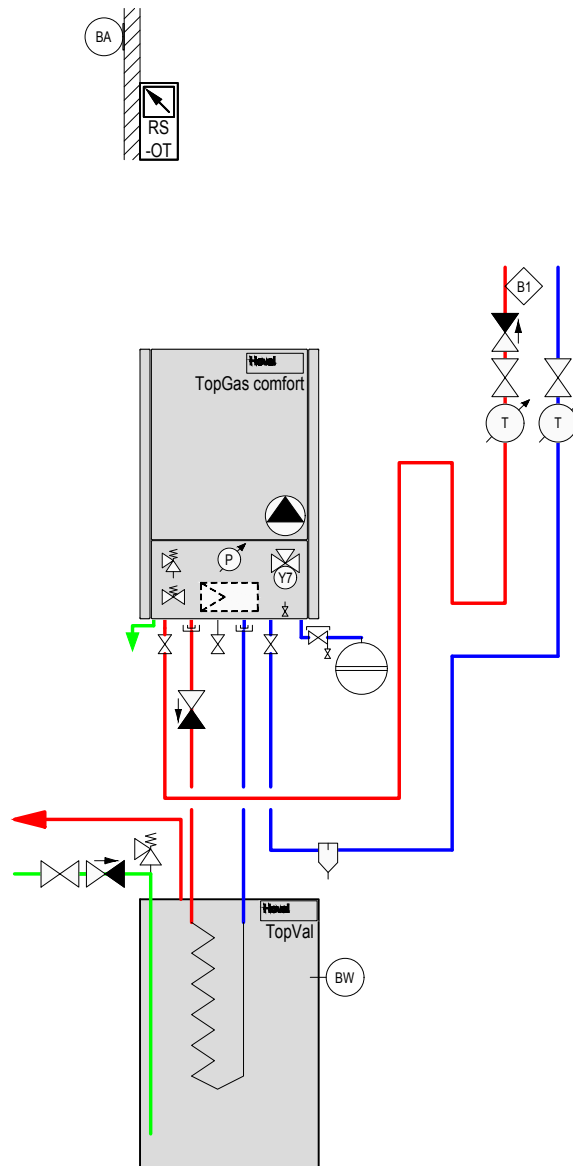
- The sound power level value is dependent on local and spacial circumstances.
- The sound pressure level is dependent on the installation conditions and can e.g. be 10 to 15 dB(A) lower than the sound power level at a distance of 1 m.
- DIN 4109 must be observed when installing in domestic living areas.

TopGas® comfort (10-22)

Gas boiler with

- floor-mounted calorifier TopVal (130,160)
- 1 direct circuit

Hydraulic schematic BDBE030



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

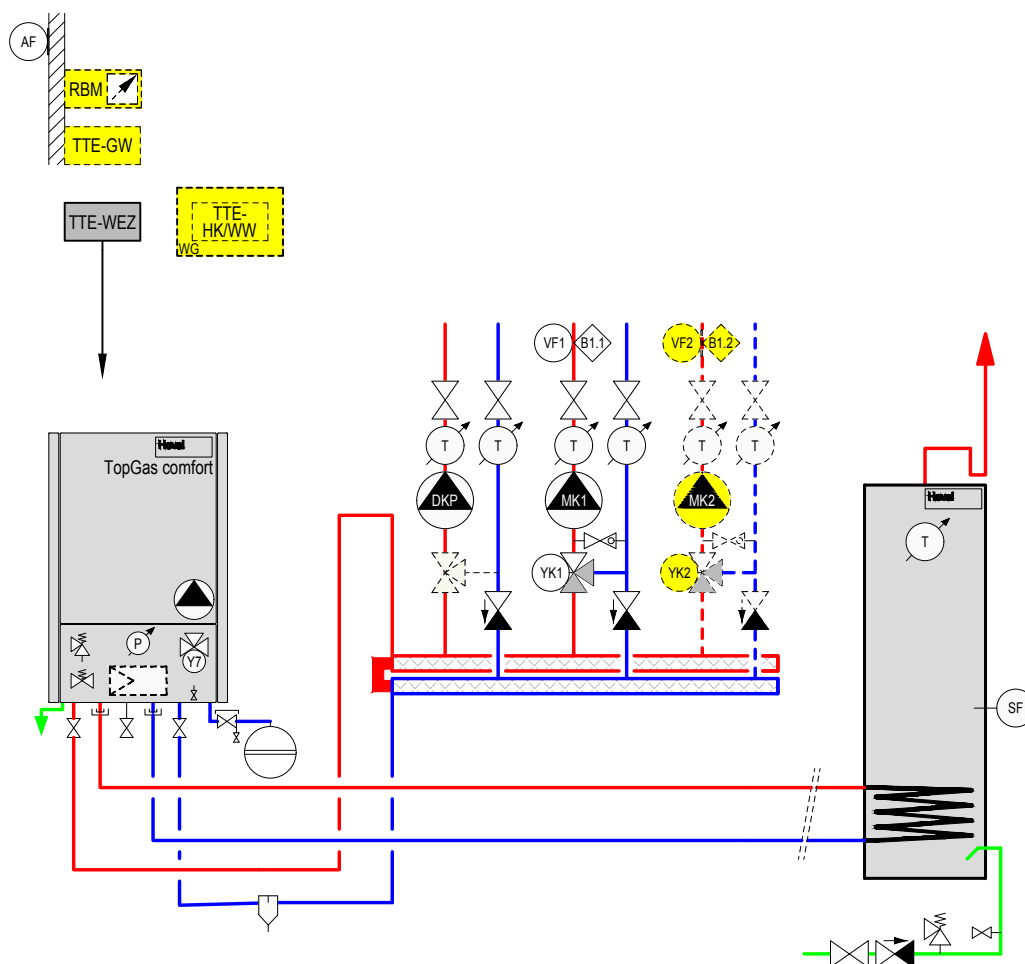
RS-OT	Room station (OpenTherm)
B1	Flow temperature guard (on demand)
BA	Outdoor sensor
BW	Calorifier sensor
Y7	Switching valve

TopGas® comfort (10-22)

Gas boiler with

- calorifier (e.g. CombiVal)
- 1 direct circuit + 1-... mixer circuit(s)

Hydraulic schematic BDBE040



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (can be built in)
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
Y7	Switching valve
DKP	Pump for heating circuit without mixer

Option

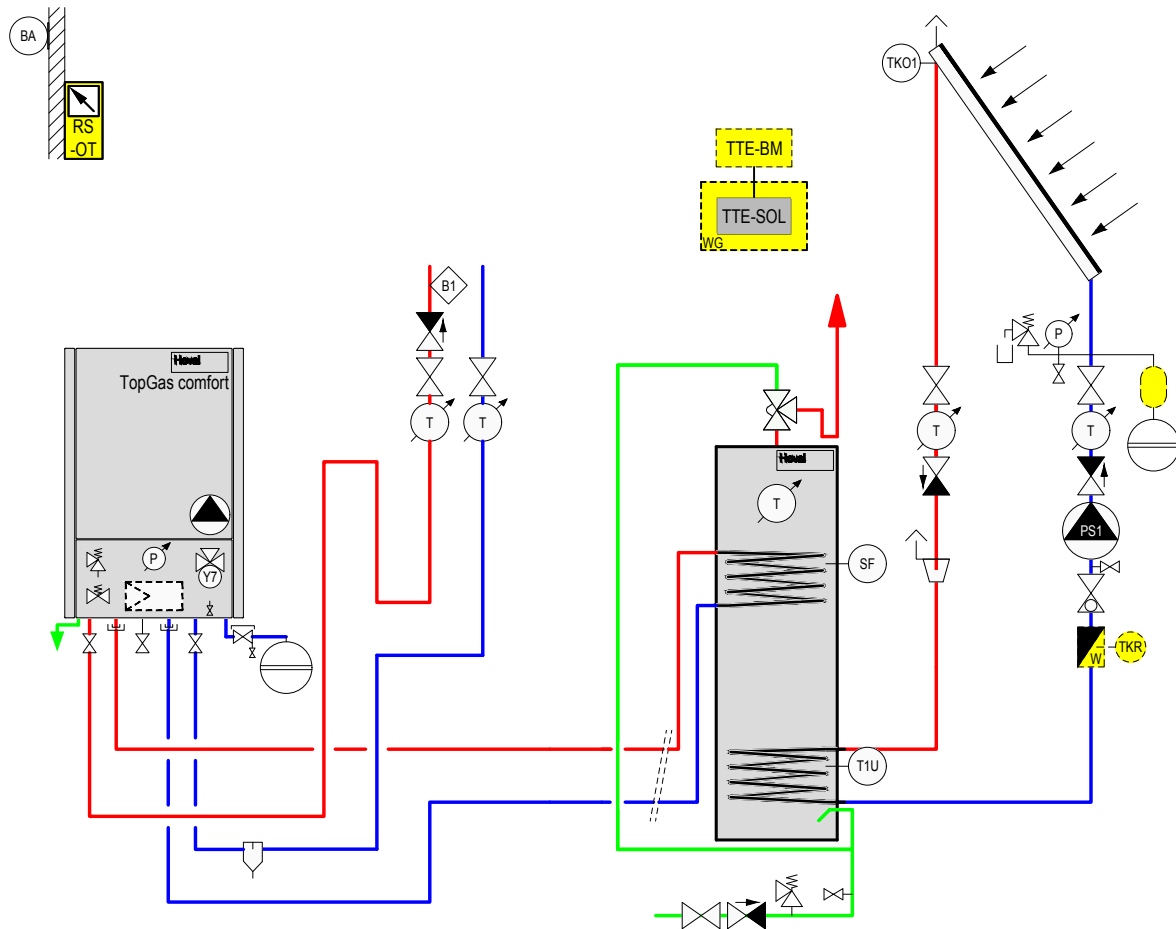
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway
TTE-HK/WW	TopTronic® E heating circuit/hot water module
WG	Wall casing
VF2	Flow temperature sensor 2
B1.2	Flow temperature monitor (if required)
MK2	Pump mixer circuit 2
YK2	Actuator mixer 2

TopGas® comfort (10-22)

Gas boiler with

- solar water heater
- 1 direct circuit
- solar collectors

Hydraulic schematic BDBE020/BAAE020



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

RS-OT	Room station (OpenTherm)
TTE-SOL	TopTronic® E solar module
B1	Flow temperature guard (if required)
BA	Outdoor sensor
SF	Calorifier sensor
TKO1	Collector sensor 1
T1U	Storage tank sensor
Y7	Switching valve
PS1	Solar circulation pump

<i>Option</i>	
TTE-BM	TopTronic® E control module
WG	Wall casing
TKR	Return sensor

**Hoval TopGas® combi
(21/18, 26/23, 32/28)**
Wall-hanging gas condensing boiler

- With condensing boiler technology
- Heat exchanger made of corrosion resistant aluminium alloy with integrated forced flow copper coil:
flue gas side: aluminium
water side: copper
- Hot water is produced with the aid of a second copper coil integrated in the boiler.
- Integrated:
 - high-efficiency pump
 - water pressure sensor
 - hand aspirator
 - flue gas temperature limiter
- Pre-mixing surface burner made of stainless steel
 - Modulating with gas/air group control
 - Automatic ignition
 - Ionisation guard
- Wall-hanging gas condensing boiler fully cased with white varnished steel plates

Basic boiler control panel G04

- Gas firing sequence controller with monitoring unit
- Modulating burner control
- Main switch "I/O"
- Operation and fault indication

Optional

- Gas valve

Delivery

- Wall-hanging gas condensing boiler fully cased
- Siphon and mounting material in package
- Wall-hanging gas condensing boiler

Heating controller set RS-OT

- For 1 heating circuit without mixing operation
- Weather-controlled regulation for continuously adjustable decreased boiler water temperature
- With room temperature sensor with switch-in facility
- Located in boiler room or living room
- Outdoor sensor
- Immersion sensor (calorifier sensor)

**Cannot be installed in
the boiler control panel!**

Only wall mounting possible!


Model range

TopGas® combi Type	Heat output 50/30 °C kW	Hot water output 45 °C dm³/10 min
(21/18) A	5.9-18.6	A 60
(26/23) A	7.6-23.4	A 80
(32/28) A	7.8-27.1	A 124

Energy efficiency class of the compound system with control.

Permissions boilers

Hoval TopGas® combi (21/18, 26/23, 32/28):
CE product ID No. 0063BQ3155

Notice:

TopGas® combi may only be operated where the water hardness is less than 15 d°H (German degrees of hardness).

Wall-hanging gas condensing boiler



Wall-hanging gas condensing boiler
TopGas® combi (21/18, 26/23, 32/28)

Heat exchanger made of corrosion-free aluminium alloy with integrated forced flow copper coil. Hot water is produced with the aid of a copper coil integrated in the boiler. With a modulating, pre-mixing surface burner made of stainless steel. Including basic boiler control and RS-OT controller, ready cased.

TopGas® combi		Heat output at 50/30 °C kW		Hot water output at 45 °C dm³/10 min
Type				
(21/18)		5.9-18.6		60
(26/23)		7.6-23.4		80
(32/28)		7.8-27.1		124

7014 106
7014 107
7014 108

Energy efficiency class of the
compound system with control



Wall-hanging gas condensing boiler as above but without controller.

TopGas® combi		Heat output at 50/30 °C kW		Hot water output at 45 °C dm³/10 min
Type				
(21/18)		5.9-18.6		60
(26/23)		7.6-23.4		80
(32/28)		7.8-27.1		124

7013 539
7013 540
7013 541

Hoval TopGas® combi may only be operated where the water hardness is less than 15 d°H (german degrees of hardness).

Accessories



Gas filter

with measurement nozzle before and behind the filter inset (diameter: 9 mm)
Pore width of the filter inset < 50 µm
Max. pressure difference 10 mbar
Max. inlet pressure 100 mbar

Type	Connection
------	------------

70612/6B	Rp 3/4"
----------	---------

Part No.

2007 995

Modification set for propane

for TopGas® combi (21/18),
TopGas® classic (24)
no external main gas valve possible!

2057 298

Modification set for propane

TopGas® combi (26/23, 32/28),
TopGas® classic (30)
No external main gas valve possible!

2057 299



Simple flue gas connecting piece E80

for separate conduction of flue gas and
combustion air

2029 057



Backflow check valve

for TopGas® classic (12-30),
TopGas® combi
for preventing the emergence
of flue gas from the boiler
for use with cascades or with
multi-use of flue gas lines

2063 018



Automatic quick release air vent 3/8"

with cut-off valve

2052 976



Visible console for preinstallation

for preinstallation of gas, heating flow
and return, cold and hot water
connections
Possible with all mounting frames or
directly on the wall!

2025 779



Connection set 3

for TopGas® classic
without calorifier
without/with mounting frame
Consisting of:
flow fitting, return flow fitting with
integrated bypass valve, safety valve
3 bar
Filling/drain valve, expansion
connection, 2 ball stop valves
Inner bore for heating flow/return
flow Rp 3/4"
Clamp ring screwing for gas connection

2001 257

Accessories



Extension set sanitary tube
for TopGas® combi
essential for installation of
connection set 3
2 pieces

6016 874



**Mounting frame MR50
without expansion tank**
For increasing the space to wall
in order to simplify installation
(e.g. flue gas duct directly on wall).
Not essential except for connection set above.
TopGas® combi (21/18)
TopGas® combi (26/23)
TopGas® combi (32/28)

2029 696
2029 701
2029 702



**Mounting frame MR110 with expansion tank
and corrugated pipe hose for connecting to
connection set 3. Connection for expansion
tank on-site when connection set below!**
Frame for fixing Hoval TopGas® combi with
expansion tank and connection hose.
Content 12 l/pre-pressure 0.75 bar
TopGas® combi (21/18)
TopGas® combi (26/23)
TopGas® combi (32/28)

6016 863
6016 864
6016 865



Screen
for TopGas® classic, TopGas® combi
to cover the connection range gas,
heating flow and return
for TopGas® classic (12-30),
TopGas® combi (21/18, 26/23, 32/28),
in connection with connection set 3
Combination with/without mounting
frame MR50/MR110 possible
Connection: possible at the bottom
and at the top

2029 787



Flow temperature guard
for underfloor heating (per heating circuit
1 guard) 15-95 °C, SD 6 K, capillary max.
700 mm. Setting (visible from the outside)
inside the housing cover.

Clamp-on thermostat *RAK-TW1000.S*
Thermostat with strap, without cable and plug

242 902



Gas valve, passage DN 15, R 1/2"
with thermally releasing cut-off device

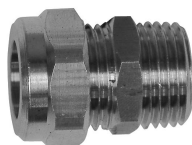
2012 075



Gas valve, corner version DN 15, R 1/2"
with thermally releasing cut-off device

2012 076

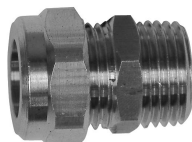
Accessories



Clamp ring screwing

(1/2" external thread x 15)

For gas cock when no connection set or finery panel is used for pre-installation.



Clamp ring screwing

(3/4" external thread x 22)

For flow/return when no connection set or finery panel is used for pre-installation.



Sludge separator with magnet

Type: MB3 DN25 Rp 1"

With variable connection for vertical or horizontal pipelines

Removal of ferromagnetic and non-magnetic dirt and sludge particles from heating or cooling circuits with the medium water or water/glycol (50/50%)

Brass casing

Sludge separation up to a particle size of 5 µm

With unscrewable casing bottom part for cleaning and inspection work complete with sludge removal tap

Nominal diameter: DN 25

Pipe connection: Rp 1" (internal thread)

Installation length: 90 mm

Max. operating pressure: 6 bar

Max. flow temperature: 110 °C

Max. throughput: 2.0 m³/h

Max. flow speed: 1.0 m/s

Max. pressure drop: 3.8 kPa

Contents: 0.36 l

Weight: 2.3 kg

Additional sludge separators

see "Various system components"



Automatic quick release air vent 1/2"

with cut-off valve

Service



Commissioning

Commissioning by works service or Hoval trained authorised serviceman/company is condition for warranty.

For commissioning and other services please contact your Hoval sales office.

Part No.

2001 824

2006 330

2062 165

2002 582

TopGas® combi (21/18, 26/23, 32/28)

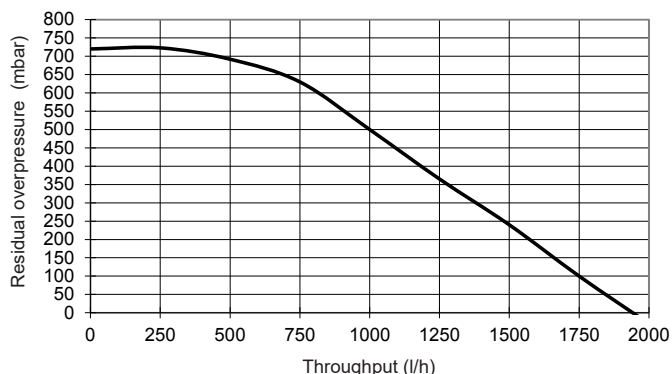
Type		(21/18)	(26/23)	(32/28)
• Nominal heat output at 80/60 °C, natural gas	kW	5.4-17.8	6.9-22.8	7.1-26.3
• Nominal heat output at 50/30 °C, natural gas	kW	5.9-18.6	7.6-23.4	7.8-27.1
• Nominal heat output at 80/60 °C, propane ²⁾	kW	5.7-17.8	7.3-22.8	7.3-26.3
• Nominal heat output at 50/30 °C, propane ²⁾	kW	6.3-18.6	8.0-23.4	8.0-27.4
• Nominal load with natural gas ¹⁾	kW	5.6-18.7	7.1-23.7	7.2-27.3
• Nominal heat input domestic water heating, natural gas ¹⁾	kW	5.6-22.1	7.1-28.0	7.5-32.7
• Nominal load with propane ²⁾	kW	5.9-18.7	7.5-23.7	7.5-27.3
• Operating pressure heating min./max. (PMS)	bar	1/3	1/3	1/3
• Operating temperature max. (T _{max})	°C	85	85	85
• Boiler water content (V _(H2O))	l	1.4	1.7	2.0
• Flow resistance boiler			see diagram	
• Minimum circulation water quantity	l/h	180	180	180
• Boiler weight (without water capacity, incl. casing)	kg	30	33	36
• Boiler efficiency at full load at 80/60 °C (NCV / GCV)		95.4/85.9	96.2/86.7	96.5/86.9
• Boiler efficiency at 30 % partial load (EN 15502) (NCV / GCV)	%	107.1/96.5	107.9/97.2	108.5/97.7
• Room heating energy efficiency				
- without control	ηs	%	91	93
- with control	ηs	%	93	95
- with control and room sensor	ηs	%	95	97
• Energy efficiency class domestic water heating	ηs	%	83 L	85 XL
• NOx class (EN 15502)		6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx	mg/kWh	27	34
• Content of CO ₂ in the flue gas minimum/maximum output	%	8.8/9.0	8.8/9.0	8.8/9.0
• Heat loss in standby mode	Watt	38	38	38
• Dimensions		see Dimensions		
• Gas flow pressure minimum/maximum				
- Natural gas E/LL	mbar	18-50	18-50	18-50
- Propane	mbar	25-50	25-50	25-50
• Gas-connection value at 15 °C/1013 mbar:				
- Natural gas E (Wo = 15.0 kWh/m ³) NCV = 9.97 kWh/m ³	m ³ /h	0.56-1.88	0.71-2.38	0.72-2.74
- Natural gas LL (Wo = 12.4 kWh/m ³) NCV = 8.57 kWh/m ³	m ³ /h	0.65-2.18	0.83-2.77	0.84-3.19
- Propane ²⁾ (NCV = 25.9 kWh/m ³)	m ³ /h	0.23-0.72	0.29-0.92	0.29-1.05
• Operating voltage	V/Hz	230/50	230/50	230/50
• Electrical power consumption (incl. pump) min./max.	Watt	15/35	15/35	15/35
• Standby	Watt	2	2	2
• IP rating (integral protection)	IP	44	44	44
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40
• Sound power level				
- Heating noise (EN 15036 Part 1) (room air dependent)	dB(A)	45	45	45
• Condensate quantity (Natural gas) at 50 / 30 °C	l/h	1.8	2.2	2.6
• pH-value of the condensate	approx.	4.2	4.2	4.2
• Construction type		B23, B33, C13(x), C33(x), C43(x), C53(x), C63(x), C83(x), C93(x)		
Flue gas system				
- Temperature class		T 120	T 120	T 120
- Flue gas mass flow at nominal heat load (dry)	kg/h	31.0	39.3	45.3
- Flue gas mass flow at lowest nominal heat load (dry)	kg/h	8.4	10.6	10.8
- Flue gas temperature at nominal output and operation 80/60 °C	°C	85	85	85
- Flue gas temperature at nominal output and operation 50/30 °C	°C	64	64	64
- Flue gas temperature at lowest nominal heat load and operation 50/30 °C	°C	32	32	32
- Maximum permitted temperature of the combustion air	°C	50	50	50
- Volume flow rate combustion air	Nm ³ /h	33.3	42.2	49.2
- Maximum supply pressure for supply air and flue gas line	Pa	75	75	75
- Maximum draught/depression at flue gas outlet	Pa	- 50	- 50	- 50

¹⁾ Data related to NCV. The boiler series is tested for EE/H-settings. With a factory setting of the Wobbe coefficient of 15.0 kWh/ m³ operation at a Wobbe coefficient of 12.0 up to 15.7 kWh/m³ is possible without new settings.

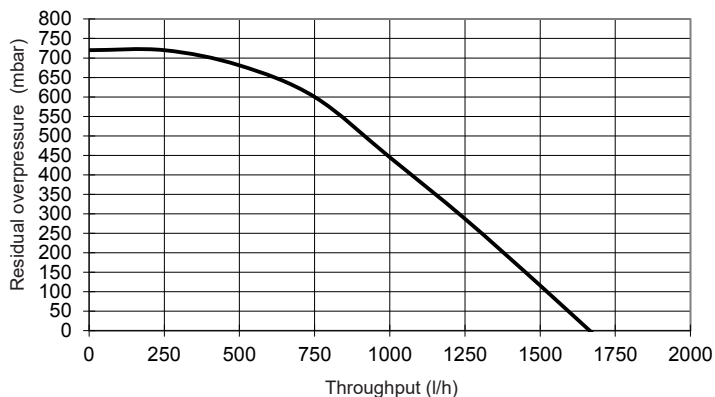
²⁾ Data related to NCV. TopGas® combi can also be operated with propane.

Maximum residual overpressure heating pump

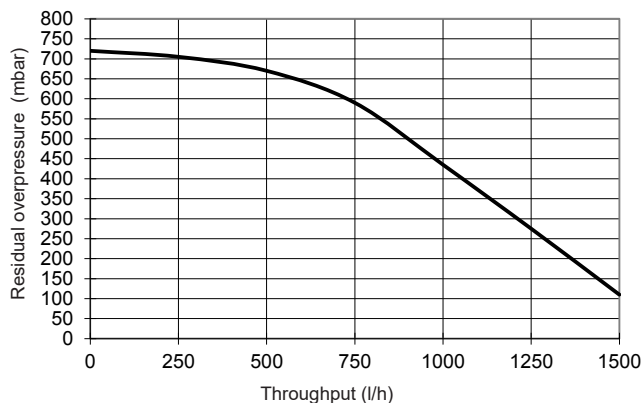
TopGas® combi (21/18)



TopGas® combi (26/23)



TopGas® combi (32/28)



Hot water output with TopGas® combi

TopGas® combi type	Hot water output				Max. flow rate through boiler dm ³ /10 min	Number of flats ³⁾	Stand-by deficiency qB (70 °C) Watt
	dm ³ /10 min ¹⁾ 40 °C	dm ³ /h ²⁾ 40 °C	dm ³ /10 min ¹⁾ 45 °C	dm ³ /h ²⁾ 45 °C			
(21/18) ⁴⁾	97	579	60	360	60	1	60
(26/23) ⁴⁾	126	759	80	480	80	1	80
(32/28) ⁴⁾	145	869	124	745	95	1	95

¹⁾ Hot water peak performance in 10 min.

Value can only be attained by addition of cold water to the boiler!

²⁾ Hot water output per hour.

Value can only be attained by addition of cold water to the boiler!

³⁾ Flat (3-4 rooms with 3-4 people, 1 bathtub with approx. 150 litres, 1 washbasin, 1 sink)

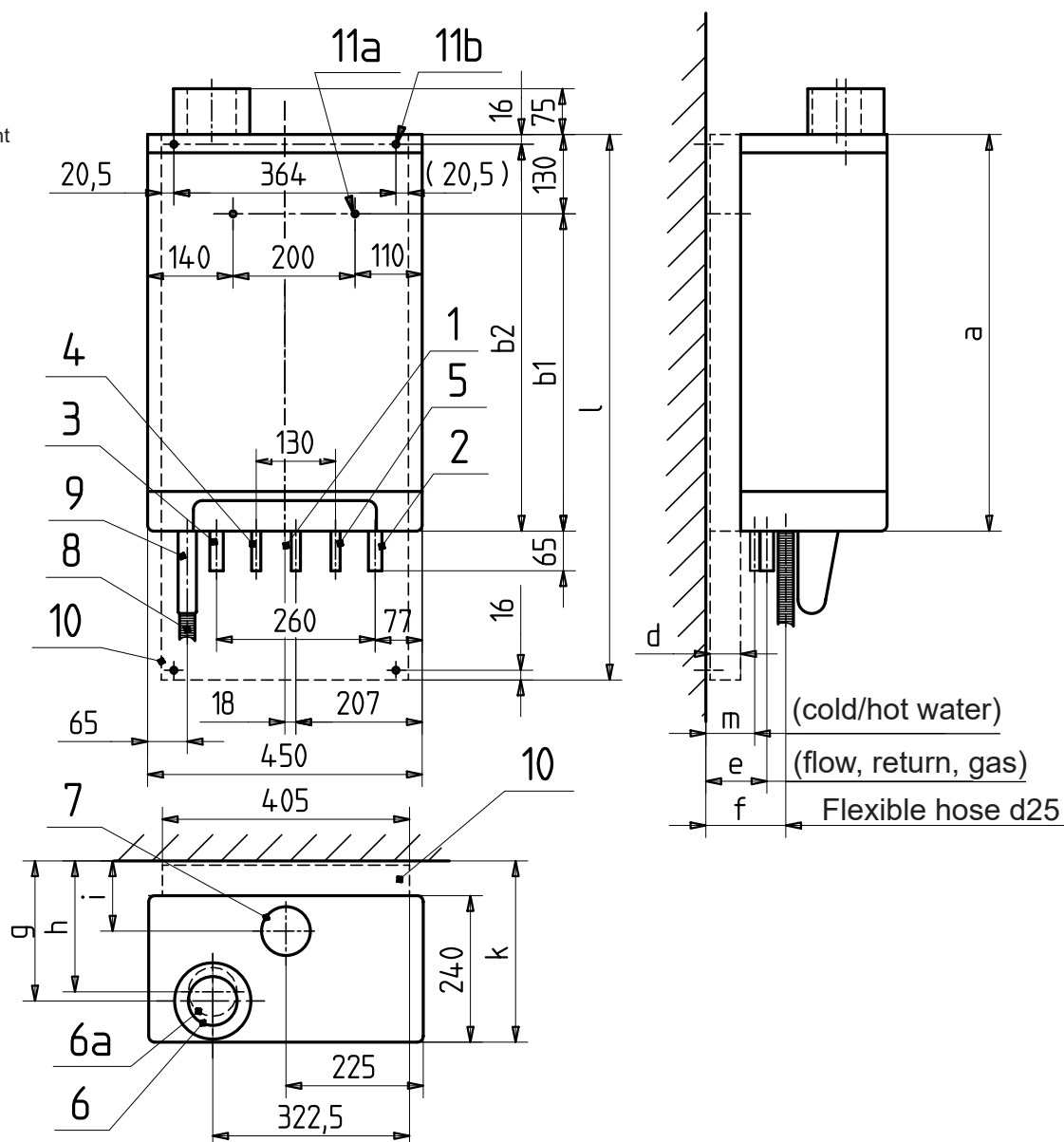
⁴⁾ Data indicated for hot water output valid at input pressure (domestic water/sanitary side) of 2 bar!

Notice:

TopGas® combi may only be operated where the water hardness is less than 15 d°H (German degrees of hardness).

TopGas® combi (21/18, 26/23, 32/28)
Minimum spaces
(Dimensions in mm)

- Sideways 50 mm
- Space to ceiling dependent on the flue gas system
- Front 500 mm


TopGas® combi
type

	a	b1	b2	d	e	f	g	h	i	k	l	m
(21/18)	590	460		0	50	75	185	170	65	247	—	30
(21/18) with mounting frame (MR50)	590		574	50	100	125	235	220	115	297	834	80
(21/18) with mounting frame with expansion tank (MR110)	590		574	110	160	185	295	280	175	357	834	140
(26/23)	650	520		0	50	75	185	170	65	247	—	30
(26/23) with mounting frame (MR50)	650		634	50	100	125	235	220	115	297	894	80
(26/23) with mounting frame with expansion tank (MR110)	650		634	110	160	185	295	280	175	357	894	140
(32/28)	710	580		0	50	75	185	170	65	247	—	30
(32/28) with mounting frame (MR50)	710		694	50	100	125	235	220	115	297	954	80
(32/28) with mounting frame with expansion tank (MR110)	710		694	110	160	185	295	280	175	357	954	140

- 1 Gas connection D15 for clamp ring screwing Rp ½"
- 2 Return Heating D22 for clamp ring screwing Rp ¾"
- 3 Flow Heating D22 for clamp ring screwing Rp ¾"
- 4 Hot water D15 for clamp ring screwing Rp ½"

- 5 Cold water D15 for clamp ring screwing Rp ½"
- 6 Concentric flue gas/combustion air connection C80/125 including measuring opening
- 6a Single combustion air connection E80 (optional)
- 7 External supply air D80

- 8 Condensate connection Ø 32 mm (hose D25/21)
- 9 Syphon
- 10 Mounting frame, width 50 mm or 110 mm with expansion tank optional, see Accessories
- 11a Drill hole D10 without mounting frame
- 11b Drill hole D10 with mounting frame

Standards and guidelines

The following standards and guidelines must be complied with:

- Hoval technical information and installation instructions
- hydraulic and technical control regulations of Hoval
- local building law
- fire protection regulations
- DIN EN 12828
- Safety-relevant requirements
- DIN EN 12831 Heaters
- Rules for the calculation of the heat requirements of buildings
- VDI 2035 Protection against damage by corrosion and boiler scale formation in heating and service water installations
- local fire brigade regulations

Water quality

Heating water:

- The European Standard EN 14868 and the Directive VDI 2035 must be observed.
- Hoval boilers and calorifiers are designed for heating plants without significant oxygen intake (plant type I according to EN 14868).
- Plants with
 - continuous oxygen intake (e.g. underfloor heating systems without diffusion proof plastic piping) or
 - intermittent oxygen intake (e.g. where frequent refilling is necessary)
 must be equipped with separate circuits.
- Treated heating water must be tested at least once yearly, according to the inhibitor manufacturer's instructions, more frequent testing may be necessary.
- A refilling is not necessary if the quality of the heating water in existing installations (e.g. exchange of boiler) conforms to VDI 2035. The Directive VDI 2035 applies equally to the replacement water.

- New and if applicable existing installations must be adequately cleaned and flushed before being recharged! The boiler may only be filled after the heating system has been flushed.
- Parts of the boiler which have contact with water are made of copper.
- On account of the danger of spot corrosion the chloride, nitrate and sulfate contents of the heating water must not exceed 200 mg/l in total.
- The pH value of the heating water should lie between 8.3 and 9.5 after 6 to 12 weeks of heating operation in order to avoid a handicap of the throughput deposits from corrosion products of other materials from the plant.

Filling and replacement water:

- For a plant using Hoval boilers untreated domestic water is generally best suited as filling and replacement water. However, the quality of the untreated domestic water must at least fulfil the standard set in VDI 2035 or be desalinated and/or be treated with inhibitors. The stipulations of EN 14868 must be observed.
- In order to maintain a high level of boiler efficiency and to avoid overheating of the heating surfaces the values given in the table should not be exceeded (dependent on boiler performance ratings - for multi-boiler plants rating of smallest boiler applies - and on the water content of the plant).
- The total amount of filling and replacement water which is used throughout the total service life of the boiler must not exceed three times the water capacity of the plant.

Heating room

Gas boilers cannot be positioned in rooms in which halogen compounds can occur and into which combustion air can enter (e.g. wash-, dryer-, work room, hairdressers and so on). Halogen compounds can be caused by cleaning and degreasing solutions, dissolvents, glue and bleaching lyes.

Combustion air

The supply of combustion air must be guaranteed. There must be no possibility to close the air supply opening. An air pipe D=80 for direct combustion air (air-exhaust system) can be directly connected to the boiler. The minimum free cross-section for the combustion air can be assumed simplified as follows.

- **Room air-dependent operation:**
A minimal ventilation outlet of at least 150 cm² or 2 x 75 cm² cross-section is necessary for of boiler output up to 50 kW. For each further kW output 2 cm² more cross-section must be provided.
- **Room air-independent operation with separate combustion air pipe to the boiler:**
0.8 cm² per 1 kW of output. The pressure drop in the combustion air pipe must be considered for the calculation of the flue gas system.

Gas connection

Commissioning

- Start-up is to be carried out only by a specialist.
- Burner setting values according to the installation instructions.

Manual gas shut-off valve and gas filter

Immediately in front of the boiler a manual gas shut-off device (valve) must be installed according to relevant regulations. Should the local regulations or conditions demand this, an approved gas filter must be installed in the gas supply pipe between the gas tap (thermally releasing) and the boiler in order to prevent malfunction due to foreign particles being carried along with the gas.

Type of gas

- The boiler is only to be operated with the type of gas stated on the rating plate.
- A gas pressure controller to reduce the boiler inlet pressure must be installed on-site for propane).

Gas pressure

Necessary flow pressure at the boiler inlet:
natural gas min. 18 mbar, max. 50 mbar.
Propane min. 25 mbar, max. 50 mbar.

Mud collector

Installation of a sludge collector with magnetic ring in the gas boiler return is recommended.

Table 1: Maximum filling quantity without/with demineralisation

Available for boiler with < 0.3 l/kW water capacity

	Total hardness of the filling water up to...							
[mol/m ³] ¹⁾	<0.1	0.5	1	1.5	2	2.5	3	>3.0
f°H	<1	5	10	15	20	25	30	>30
d°H	<0.56	2.8	5.6	8.4	11.2	14.0	16.8	>16.8
e°H	<0.71	3.6	7.1	10.7	14.2	17.8	21.3	>21.3
~mg/l	<10	50.0	100.0	150.0	200.0	250.0	300.0	>300
Conductance ²⁾	<20	100.0	200.0	300.0	400.0	500.0	600.0	>600
Boiler size of the individual boiler	maximum filling quantity without demineralisation							
up to 28 kW	NO DEMAND				50 l/kW	20 l/kW		

¹⁾ Total of alkaline earths

²⁾ If the conductance in µS/cm exceeds the tabular value an analysis of the water is necessary.

Pump after-run time

- During burner operation, the circulating pump must be constantly in operation and the minimum heating water circulation quantity must be guaranteed.
- After each burner switch-off, the circulating pump must be in operation for at least 2 minutes (is guaranteed by the boiler control).

Minimum quantity of rotating water

- Depending on type of boiler, different minimum quantities of rotating water are demanded. See also technical data.
- During the burner mode the circulating pump must always be in function and the minimum heating water circulation must be guaranteed.

Boiler on the top storey of the building

If the gas boiler TopGas® classic is built in in a roof heating centre, an external water pressure switch must be provided.

Condensate drainage

- A permit for discharge of the flue gas condensate into the sewage system must be obtained from the relevant authority or sewer operator.
- The condensate from the flue gas line can be discharged via the boiler. A condensate trap is no longer needed in the flue gas system.
- The condensate must be conducted openly (funnel) into the sewage system.
- Suitable materials for condensate drain:
 - stoneware pipes
 - pipes made from PVC
 - pipes made from polyethylene (PE)
 - pipes made from ABS or ASA

Flue gas system

- Gas boilers must be connected to a certified and approved flue gas system such as flue gas lines.
- Flue gas lines must be gas-, condensate- and over pressure-tight.
- The flue gas lines must be secured against unwanted loosening of the plug connections.
- The flue gas system must be connected with an angle, so that the resulting condensate of the flue gas system can flow back to the boiler and can be neutralised there before discharging into the canalisation.

- Gas boilers with condensation heat utilisation are to be connected to a flue gas line min. temperature class T120.
- A flue gas temperature limiter is integrated into the boiler.

Expansion tank

- An adequately dimensioned expansion tank must be provided.
- The expansion tank has to be installed at the connection of expansion tank (pump intake side) (see "Dimensions").
- Starting from 70 °C a connecting container is necessary.

Noise level

- The sound power level value is dependent on local and spacial circumstances.
- The sound pressure level is dependent on the installation conditions and can e.g. be 10 to 15 dB(A) lower than the sound power level at a distance of 1 m.

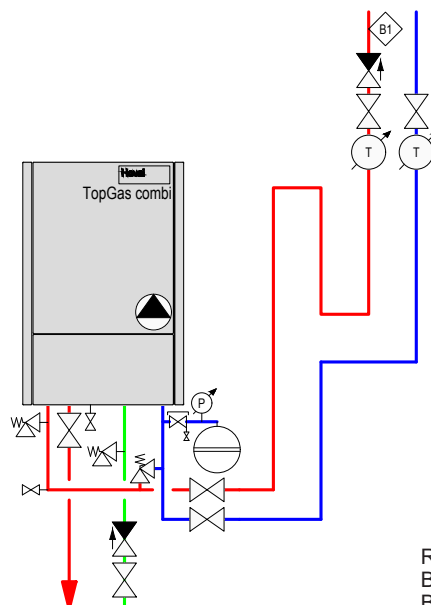
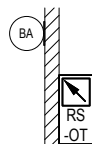
Examples

Hoval TopGas® combi

Gas boiler with

- integrated continuous flow calorifier
- 1 direct circuit

Hydraulic schematic BDCE010



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

RS-OT Room station (OpenTherm)
B1 Flow temperature guard (if required)
BA Outdoor sensor

Hoval TopGas® classic (12-30)

Wall-hanging gas condensing boiler

- With condensing boiler technology
- Heat exchanger made of corrosion resistant aluminium alloy with integrated forced flow copper coil;
 - flue gas side: aluminium
 - water side: copper
- Minimal water circulation necessary (see technical data).
- Integrated:
 - speed-controlled high-efficiency pump
 - water pressure sensor
 - hand aspirator
 - flue gas temperature limiter
- Pre-mixing surface burner made of stainless steel
 - Modulating with gas/air group control
 - Automatic ignition
 - Ionisation guard
- Wall-hanging gas condensing boiler fully cased with varnished white steel plates



Basic boiler control panel G04

- Gas firing sequence controller with monitoring unit
- Modulating burner control
- Main switch "0/1"
- Operation and fault indication
- Regulation of hot water production by means of sensor or by thermostatic demand.
- For connecting a maximum of 1 room control device or 1 remote control with room sensor.

Incl. control, optionally in two different versions:

- RS-OT controller
- TopTronic® E controller

Optional

- Free-standing calorifier TopVal (130, 160)
- Gas valve
- With mounting frame
- With mounting frame and expansion
- Connection set

Delivery

- Wall-hanging gas condensing boiler fully cased
- Mounting material
- Instruction package
- Appliance handbook

Controller RS-OT

- For 1 heating circuit without mixing operation
- Controlled by atmospheric conditions for gliding boiler water temperature
- With integrated overpluggable room temperature sensor
- Located in boiler/living room
- Outdoor sensor
- Immersion sensor (calorifier sensor)

Cannot be installed in the boiler control panel! Only wall mounting possible!

Delivery

- Wall-hanging gas condensing boiler fully panelled
- Control separately packed, mounting on-site

Model range

TopGas® classic Type		Output 40/30 °C kW
(12)	A	3.8-12.0
(18)	A	5.7-18.0
(24)	A	7.7-24.0
(30)	A	9.2-30.0

Energy efficiency class of the compound system with control

TopTronic® E controller

As supplement for basic boiler control panel G04.

Cannot be installed in the boiler control panel! Only wall mounting possible!

TopTronic® E control module

- Colour touchscreen 4.3 inch
- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with online HovalConnect)
- Adaptation of the heating strategy based on the weather forecast (with online HovalConnect)

TopTronic® E basic module heat generator (TTE-WEZ)

- Control functions integrated for
 - 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 hot water loading circuit
 - bivalent and cascade management
- Rast-5 basic plug set
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- Cable set ZE2 for connecting the TopTronic® E control to the basic boiler control panel

Permissions boilers

Hoval TopGas® classic (12-30):

CE product ID No. 0063BQ3155t

Wall casing with control module cut-out G-510 BM

- Suitable for installing
 - 1 basic module plus 1 module expansion or
 - 1 basic module plus 1 controller module or
 - 2 controller modules plus 1 module expansion or
 - 1 controller module plus 2 module expansions or
 - 3 controller modules

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion heat accounting or
 - module expansion universal
- Can be networked with a total of up to 16 controller modules:
 - heating circuit/hot water module
 - solar module
 - buffer module
 - measuring module

No additional module expansions or controller modules can be installed in the boiler control panel!

The supplementary plug set must be ordered in order to use expanded controller functions.

Further information about the TopTronic® E see "Controls"

Delivery

- Wall-hanging gas condensing boiler fully panelled
- Control and wall casing separately packed, mounting on-site

Mounted below/free-standing calorifier TopVal (130,160)

- Water heater with fixed, smooth pipe enamelled stainless steel heat exchanger.
- As calorifier placed below for TopGas® classic (12-30).
- Magnesium protection anode
- Thermal insulation using HCFC free PU foam, with foil mantle, white

Delivery

- Calorifier completely mounted

Calorifier

CombiVal ERW (200), white

- Calorifier made of steel, enamelled inside.
- Smooth pipe heat exchanger enamelled, built in.
- As free-standing calorifier for TopGas® classic (12-30).
- Magnesium protection anode integrated.
- Flange for electrical heating inset.
- Thermal insulation made of Polyurethane foamed on the calorifier, dismantable foil casing, white, completely mounted.
- Pocket welded in including thermometer

On request

- Electrical heating inset

Delivery

- Calorifier completely mounted

Wall-mounted gas condensing boilers



Hoval TopGas® classic (12-30)
incl. RS-OT controller

Heat exchanger made of corrosion-proof aluminium alloy with integrated copper meander with forced flow. With modulating, pre-mixing surface burner made of stainless steel. Including basic boiler control panel and control RS-OT, fully cased.

TopGas® classic		Output 40/30 °C kW
Type		
(12)	A	3.8-12.0
(18)	A	5.7-18.0
(24)	A	7.7-24.0
(30)	A	9.2-30.0

Energy efficiency class of the compound system with control

Cannot be installed in the boiler control panel! Only wall mounting possible!

Part No.
7014 088
7014 099
7014 100
7014 101
7014 102
7014 103
7014 104
7014 105
7013 515
7013 516
7013 517
7013 518



Hoval TopGas® classic (12-30)
incl. TopTronic® E controller

Version as above, but with TopTronic® E control in a separate wall housing.

TopGas® classic		Output 40/30 °C kW
Type		
(12)	A	3.8-12.0
(18)	A	5.7-18.0
(24)	A	7.7-24.0
(30)	A	9.2-30.0

Energy efficiency class of the compound system with control

Cannot be installed in the boiler control panel! Only wall mounting possible!



Hoval TopGas® classic (12-30)

Design as above but without controller.

TopGas® classic		Output 40/30 °C kW
Type		
(12)	A	3.8-12.0
(18)	A	5.7-18.0
(24)	A	7.7-24.0
(30)	A	9.2-30.0

Accessories



70612/6b gas filter Rp 3/4"

with instrument glands up/downstream
of the filter cartridge (dia.: 9 mm),
pore size of filter cartridge < 50 µm
Max. pressure differential 10 mbar
Max. inlet pressure 100 mbar

Modification set for propane

no external main gas valve possible!

TopGas® classic type	min. output kW (80/60 °C)
-------------------------	------------------------------

TopGas® classic (12)	3.5
----------------------	-----

TopGas® classic (18)	5.8
----------------------	-----

TopGas® classic (24)	7.4
----------------------	-----

TopGas® classic (30)	9.2
----------------------	-----

2007 995

2037 926

2057 295

2057 298

2057 299



Simple flue gas connecting piece E80

for separate conduction of flue gas and
combustion air

2029 057



Automatic quick release air vent 3/8"

with cut-off valve

2052 976



Visible console for preinstallation

for preinstallation of gas, heating flow
and return, cold and hot water
connections

Possible with all mounting frames or
directly on the wall!

2025 779



Connection set 3

for TopGas® classic

without calorifier

without/with mounting frame

Consisting of:

flow fitting, return flow fitting with

integrated bypass valve, safety valve

3 bar

Filling/drain valve, expansion

connection, 2 ball stop valves

Inner bore for heating flow/return

flow Rp 3/4"

Clamp ring screwing for gas connection

2001 257



Screen

for TopGas® classic, TopGas® combi

to cover the connection range gas,

heating flow and return

for TopGas® classic (12-30),

TopGas® combi (21/18, 26/23, 32/28),

in connection with connection set 3

Combination with/without mounting

frame MR50/MR110 possible

Connection: possible at the bottom

and at the top

2029 787



Mounting frame MR50 without expansion tank

For increasing the space to wall in order to
simplify installation (e.g. flue gas duct direct
on wall). Not essential.

TopGas® classic (12)

TopGas® classic (18)

TopGas® classic (24,30)

2029 696

2029 701

2029 702



Mounting frame MR110 with expansion tank and corrugated pipe tubing for connecting to connecting set 3, 4 or 10

Frame for fixation of the Hoval TopGas® classic with integrated expansion tank and connecting hose
content 12 l/pre-pressure 0.75 bar
TopGas® classic (12)
TopGas® classic (18)
TopGas® classic (24)

Part No.

6016 863
6016 864
6016 865



Connection set 10

for Hoval TopGas® and floor-mounted TopVal calorifier without/with mounting frame MR50/MR110
Consisting of:
Flow fitting, return fitting with integrated overflow valve
Safety valve approx. 3 bar
Filling/drain valve, expansion connection
3-way valve Rp 3/4"
2 shut-off ball valves heating flow/return, internal thread Rp 3/4"
Squeezing ring screw connection for gas connection

2025 577



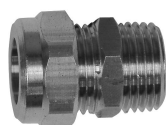
Gas valve, passage DN 15, R 1/2"
with thermally releasing cut-off device

2012 075



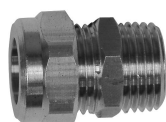
Gas valve, corner version DN 15, R 1/2"
with thermally releasing cut-off device

2012 076



Clamp ring screwing (1/2" external thread x 15)
For gas cock when no connection set or finery panel is used for pre-installation.

2001 824



Clamp ring screwing (3/4" external thread x 22)
For flow/return when no connection set or finery panel is used for pre-installation.

2006 330

Accessories



Sludge separator with magnet

Type: MB3 DN25 Rp 1"

With variable connection for vertical or horizontal pipelines

Removal of ferromagnetic and non-magnetic dirt and sludge particles from heating or cooling circuits with the medium water or water/glycol (50/50%)

Brass casing

Sludge separation up to a particle size of 5 µm

With unscrewable casing bottom part for cleaning and inspection work complete with sludge removal tap

Nominal diameter: DN 25

Pipe connection: Rp 1" (internal thread)

Installation length: 90 mm

Max. operating pressure: 6 bar

Max. flow temperature: 110 °C

Max. throughput: 2.0 m³/h

Max. flow speed: 1.0 m/s

Max. pressure drop: 3.8 kPa

Contents: 0.36 l

Weight: 2.3 kg

Additional sludge separators

see "Various system components"



Automatic quick release air vent 1/2"

with cut-off valve



3-way reversing valve VC 4012 3/4"

for calorifier

external thread 3/4"

230 V / 50 Hz

single wire control

running time 7 sec

incl. 1 m cable



Backflow check valve

for TopGas® classic (12-30),

TopGas® combi

for preventing the emergence

of flue gas from the boiler

for use with cascades or with

multi-use of flue gas lines

Heating armature groups and wall distributors

see "Various system components"

Part No.

2062 165

2002 582

6016 891



2063 018

Free-standing calorifier



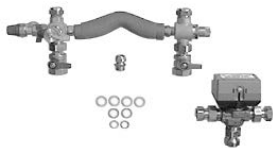
Calorifier TopVal (130,160)

Free-standing calorifier with heating register made of steel, built in, enamelled inside.

TopVal Type		Volume litres
(130)		126
(160)		157

Part No.

6037 757
6037 758



Connection set 4

for TopGas® and free standing calorifier CombiVal with/without mounting frame MR50/MR110
Consisting of:
flow fitting, return flow fitting with integrated bypass valve
Safety valve 3 bar
Filling/drain valve, expansion connection
3-way valve Rp 3/4"
2 ball stop valves
Inner bore for heating flow/return flow Rp 3/4"
Clamp ring screwing for gas connection

2025 576



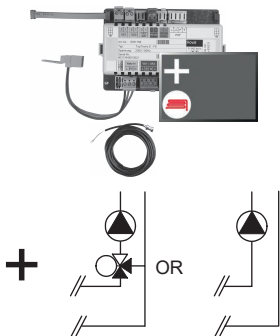
Calorifier CombiVal ERW (200), white

made from steel, enamelled on the inside with built-in enamelled plain-tube heat exchanger and magnesium protection anode
Useful content 196 l
Operating/test pressure: 6/13 bar
Max. operating temperature 95 °C
Foil jacket white

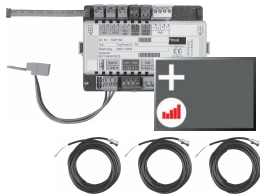
7015 961

Pressure expansion tanks, heating armature groups and wall distributors
see "Various system components"

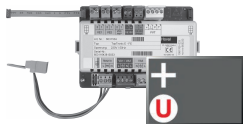
TopTronic® E module expansions
for TopTronic® E basic module heat generator



Notice
The supplementary plug set may have to be ordered to implement functions differing from the standard!



Notice
The flow rate sensor set must be ordered as well.



Notice
Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

TopTronic® E module expansion heating circuit TTE-FE HK
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating circuit without mixer or
- 1 heating circuit with mixer

incl. fitting accessories
1 contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:
Boiler control, wall housing, control panel

TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating/cooling circuit w/o mixer or
- 1 heating/cooling circuit with mixer

in each case incl. energy balancing

incl. fitting accessories
3 contact sensors ALF/2P/4/T L = 4.0 m

Can be installed in:
Boiler control, wall housing, control panel

Flow rate sensor sets
Plastic housing

Size	Connection	Flow rate l/min
DN 8	G ¾"	0.9-15
DN 10	G ¾"	1.8-32
DN 15	G 1"	3.5-50
DN 20	G 1¼"	5-85
DN 25	G 1½"	9-150

Flow rate sensor sets
Brass housing

Size	Connection	Flow rate l/min
DN 10	G 1"	2-40
DN 32	G 1½"	14-240

TopTronic® E module expansion Universal TTE-FE UNI
Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

incl. fitting accessories

Can be installed in:
Boiler control, wall housing, control panel

Further information
see "Controls" - "Hoval TopTronic® E module expansions" chapter

Part No.

6034 576

6037 062

6038 526
6038 507
6038 508
6038 509
6038 510

6042 949
6042 950

6034 575

Accessories for TopTronic® E



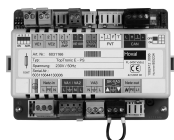
Supplementary plug set

for basic module heat generator (TTE-WEZ)

for controller modules and module expansion TTE-FE HK

6034 499

6034 503



TopTronic® E controller modules

TTE-HK/WW TopTronic® E heating circuit/
hot water module

6034 571

TTE-SOL TopTronic® E solar module

6037 058

TTE-PS TopTronic® E buffer module

6037 057

TTE-MWA TopTronic® E measuring module

6034 574



TopTronic® E room control modules

TTE-RBM TopTronic® E room control modules

easy white 6037 071

comfort white 6037 069

comfort black 6037 070



Enhanced language package TopTronic® E

one SD card required per control module

Consisting of the following languages:

HU, CS, SL, RO, PL, TR, ES, HR, SR, JA, DA

6039 253



HovalConnect

HovalConnect LAN

6049 496

HovalConnect WLAN

6049 498

HovalConnect available from mid-2020

Up to that point, TopTronic® E online is delivered.

TopTronic® E interface modules

GLT module 0-10 V

6034 578

HovalConnect Modbus

6049 501

HovalConnect KNX

6049 593



TopTronic® E wall casing

WG-190 Wall casing small

6035 563

WG-360 Wall casing medium

6035 564

WG-360 BM Wall casing medium with
control module cut-out

6035 565

WG-510 Wall casing large

6035 566

WG-510 BM Wall casing large with
control module cut-out

6038 533



TopTronic® E sensors

AF/2P/K Outdoor sensor

2055 889

TF/2P/5/6T Immersion sensor, L = 5.0 m

2055 888

ALF/2P/4/T Contact sensor, L = 4.0 m

2056 775

TF/1.1P/2.5S/6T Collector sensor, L = 2.5 m

2056 776



System housing

System housing 182 mm

6038 551

System housing 254 mm

6038 552



Bivalent switch

2061 826

Further information

see "Controls"



Flow temperature guard
for floor heating (per heating circuit 1 guard)
15-95 °C, differential gap 6 K, capillary tube
max. 700 mm, setting (from the outside visibly)
inside the housing cover.

Clamp-on thermostat *RAK-TW1000.S*
Thermostat with strap, without cable and plug

Part No.

242 902




**BMS module 0-10 V/
OT - OpenTherm
(building management system)**
no control unit TopTronic® E or RS-OT
necessary
power supply via OT bus
Temp. control external with 0-10 V
0-1.0 V no request
1.0-9.5 V0-100 °C
Cannot be installed in boiler control
panel:
TopGas® classic (12-30)
Can be installed in boiler control
panel:
TopGas® classic (35-120),
TopGas® comfort

6016 725

**TopGas® classic (12-30)
without controller** on request

Service



Commissioning 
Commissioning by works service or Hoval
trained authorised serviceman/company
is condition for warranty.

For commissioning and other services
please contact your Hoval sales office.

TopGas® classic (12-30)

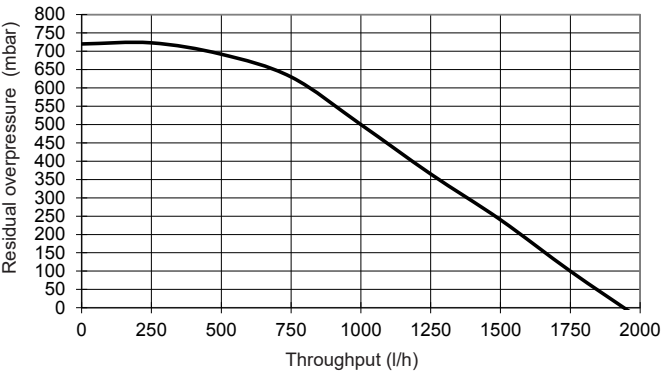
Type		(12)	(18)	(24)	(30)
• Nominal heat output at 80/60 °C, natural gas	kW	3.4-11.5	5.3-17.2	7.0-22.9	8.7-28.5
• Nominal heat output at 50/30 °C, natural gas	kW	3.8-12.0	5.7-18.0	7.7-24.0	9.2-30.0
• Nominal heat output at 80/60 °C, propane ²⁾	kW	3.5-11.5	5.8-17.3	7.4-22.9	9.2-28.5
• Nominal heat output at 50/30 °C, propane ²⁾	kW	3.4-12.0	6.3-18.0	8.0-24.0	9.6-30.0
• Nominal load with natural gas ¹⁾	kW	3.5-11.8	5.3-17.8	7.1-23.5	8.8-28.9
• Nominal load with propane ²⁾	kW	3.6-11.8	5.9-17.8	7.5-23.5	9.3-28.9
• Operating pressure heating min./max. (PMS)	bar	1/3	1/3	1/3	1/3
• Operating temperature max. (T _{max})	°C	85	85	85	85
• Boiler water content (V _(H2O))	l	1.4	1.7	2.0	2.0
• Flow resistance boiler		see diagram			
• Minimum circulation water quantity	l/h	180	180	180	180
• Boiler weight (without water capacity, incl. casing)	kg	32	35	38	40
• Boiler efficiency at 80/60 °C in full-load operation (NCV / GCV)	%	97.7/88.0	96.9/87.3	97.4/87.7	98.4/88.6
• Boiler efficiency at 30 % partial load (EN 15502) (NCV / GCV)	%	108.8/98.0	108.3/97.6	108.9/98.1	108.3/97.6
• Room heating energy efficiency					
- without control		92	92	93	93
- with control		94	94	95	95
- with control and room sensor		96	96	97	97
• NOx class (EN 15502)		6	6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	27	27	24	53
• Content of CO ₂ in the flue gas minimum/maximum output	%	8.8/9.0	8.8/9.0	8.8/9.0	8.8/9.0
• Heat loss in standby mode	Watt	38	38	38	38
• Dimensions		see table of dimensions			
• Gas flow pressure minimum/maximum					
- Natural gas E/LL	mbar	17.4-50	17.4-50	17.4-50	17.4-50
- Propane	mbar	25-50	25-50	25-50	25-50
• Gas-connection value at 15 °C/1013 mbar:					
- Natural gas E - (Wo = 15.0 kWh/m ³) NCV = 9.97 kWh/m ³	m ³ /h	0.35-1.18	0.53-1.79	0.71-2.36	0.88-2.90
- Natural gas LL- (Wo = 12.4 kWh/m ³) NCV = 8.57 kWh/m ³	m ³ /h	0.41-1.38	0.62-2.08	0.83-2.74	1.03-3.37
- Propane ²⁾ (NCV = 25.9 kWh/m ³)	m ³ /h	0.14-0.46	0.23-0.69	0.29-0.91	0.36-1.12
• Operation voltage	V/Hz	230/50	230/50	230/50	230/50
• Electrical power consumption (incl. pump) min./max.	Watt	15/40	15/40	15/45	15/40
• Stand-by	Watt	2	2	2	2
• IP rating (integral protection)	IP	44	44	44	44
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40
• Sound power level					
- Heating noise (EN 15036 Part 1) (room air dependent)	dB(A)	50	50	50	50
• Condensate quantity (natural gas) at 50/30 °C	l/h	1.1	1.6	2.1	2.7
• pH value of the condensate	approx.	4.2	4.2	4.2	4.2
• Construction type		B23, B33, C13(x), C33(x), C43(x), C53(x), C63(x), C83(x), C93(x)			
• Flue gas system					
- Temperature class		T 120	T120	T120	T120
- Flue gas mass flow at nominal heat load (dry)	kg/h	19.6	29.5	39.0	49.0
- Flue gas mass flow at lowest nominal heat load (dry)	kg/h	5.4	8.0	10.6	13.2
- Flue gas temperature at nominal output and operation 80/60 °C	°C	78	78	78	70
- Flue gas temperature at nominal output and operation 50/30 °C	°C	57	57	57	51
- Flue gas temperature at lowest nominal heat load and operation 50/30 °C	°C	32	32	32	32
- Maximum permitted temperature of the combustion air	°C	50	50	50	50
- Volume flow of combustion air	Nm ³ /h	14.5	21.9	28.9	35.6
- Maximum supply pressure for supply air and flue gas line	Pa	75	75	75	75
- Maximum draught/depression at flue gas outlet	Pa	- 50	- 50	- 50	- 50

¹⁾ Data related to NCV. The boiler series is tested for EE/H-settings. With a factory setting of the Wobbe coefficient of 15.0 kWh/m³ operation at a Wobbe coefficient of 12.0 up to 15.7 kWh/m³ is possible without new settings.

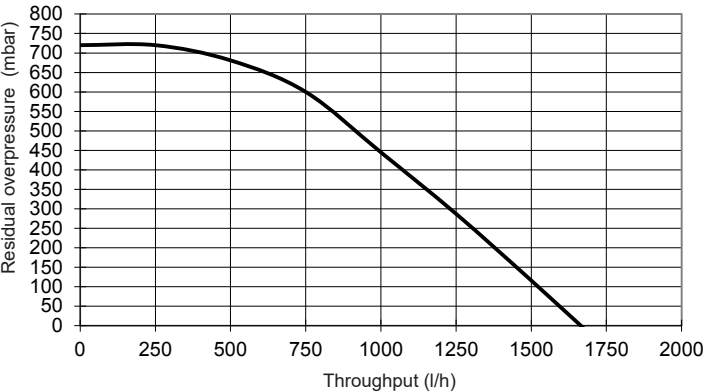
²⁾ Data related to NCV. The TopGas® classic can also be operated with propane.

Residual overpressures of heating pumps

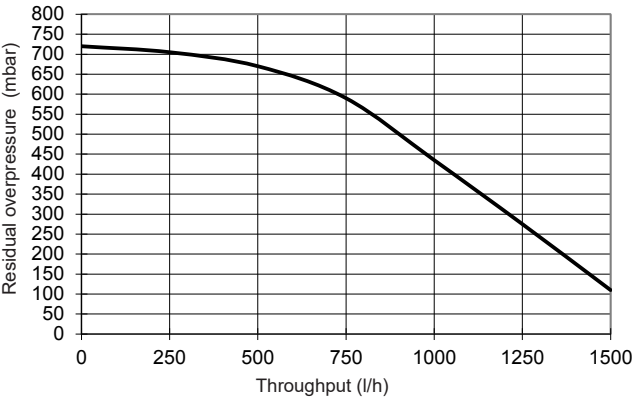
TopGas® classic (12)



TopGas® classic (18)

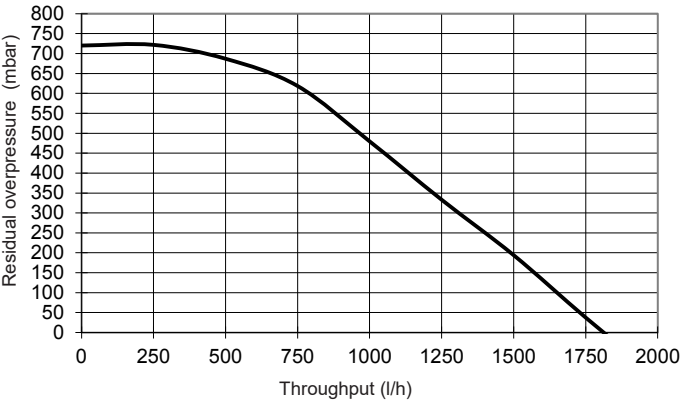


TopGas® classic (24, 30)

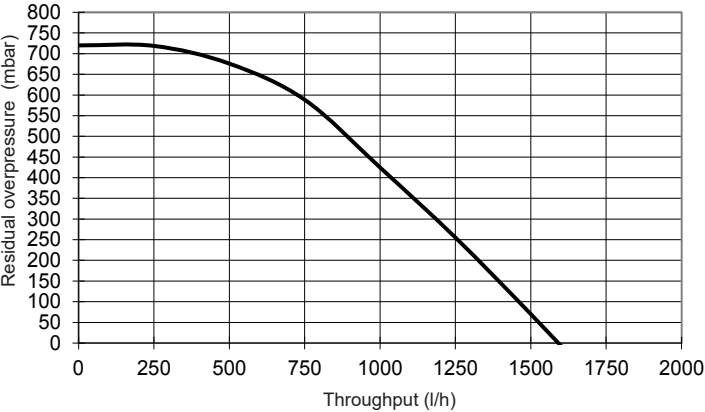


Residual overpressures of heating pumps TopGas® classic with connection set 4 or connection set 10
(reversing valve included in the set)

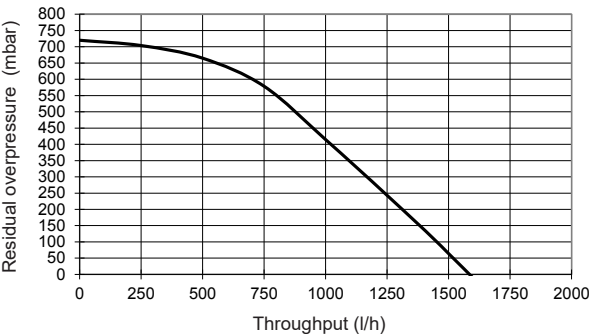
TopGas® classic (12)



TopGas® classic (18)



TopGas® classic (24, 30)



Calorifier TopVal (130,160) and CombiVal ERW (200)

Type		TopVal (130)	TopVal (160)	CombiVal ERW (200)
• Capacity	dm ³	128	157	196
• Operating pressure / test pressure	bar	6/13	6/13	10/13
• Max. operating temperature	°C	95	95	95
• Fire protection class		B2	B2	B2
• Heat loss at 65 °C	W	53	56	49
• Weight	kg	53	56	56
• Dimensions	Diameter	mm	590	600
	Height	mm	869	1464

Heating register (built-in)

• Heating surface	m ²	0.96	1.01	0.95
• Heating water	dm ³	6.7	7.1	6.4
• Flow resistance ¹⁾	z-value	22	22	7
• Operating pressure/test pressure	bar	8/13	8/13	10/13
• Working temperature maximal	°C	95	95	110

¹⁾ Flow resistance boiler in mbar = Volume flow (m³/h)² x z

Hot water output TopVal, CombiVal with TopGas® classic, heating flow 80 °C

Boiler Type	Calorifier Type		Hot water output		Number ³⁾ of flats
			dm ³ /10 min ¹⁾ 45 °C	dm ³ /h ²⁾ 45 °C	
classic	(12)	TopVal (130)	166	267	1
		(18)	179	411	1
		(24)	190	546	1
		(30)	198	610	1
classic	(12)	TopVal (160)	199	267	1
		(18)	212	411	1-2
		(24)	223	546	1-2
		(30)	232	610	1-2
classic	(12)	CombiVal ERW (200)	243	267	1-2
		(18)	256	411	1-2
		(24)	267	546	2
		(30)	276	610	2

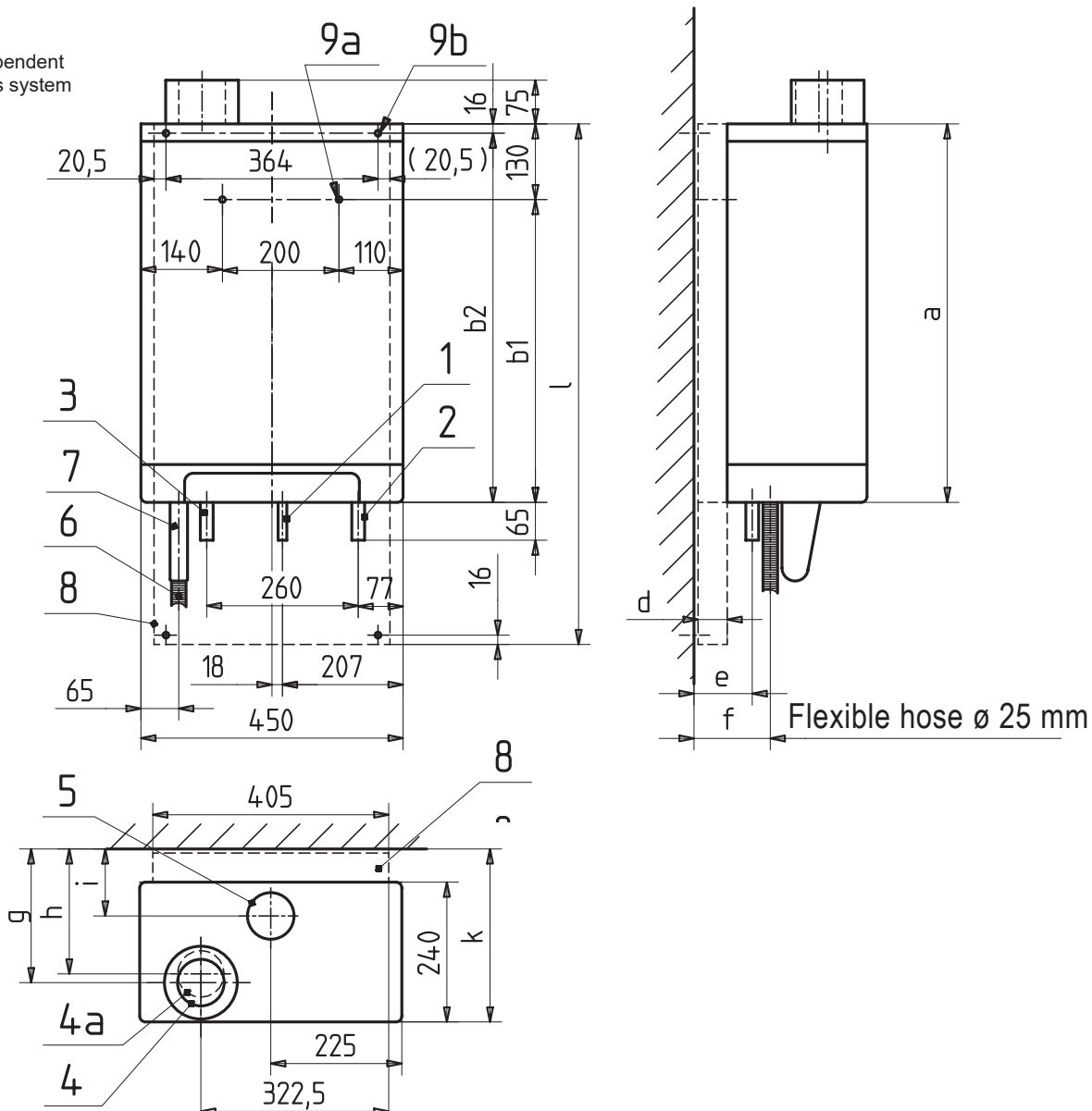
¹⁾ Hot water peak performance in 10 min.

²⁾ Hot water output per hour.

³⁾ Flat (3-4 rooms with 3-4 people, 1 bathtub with approx. 150 litres, 1 washbasin, 1 sink)

(Dimensions in mm)

- Sideways 50 mm
- Space to ceiling dependent on the used flue gas system
- Front 500 mm



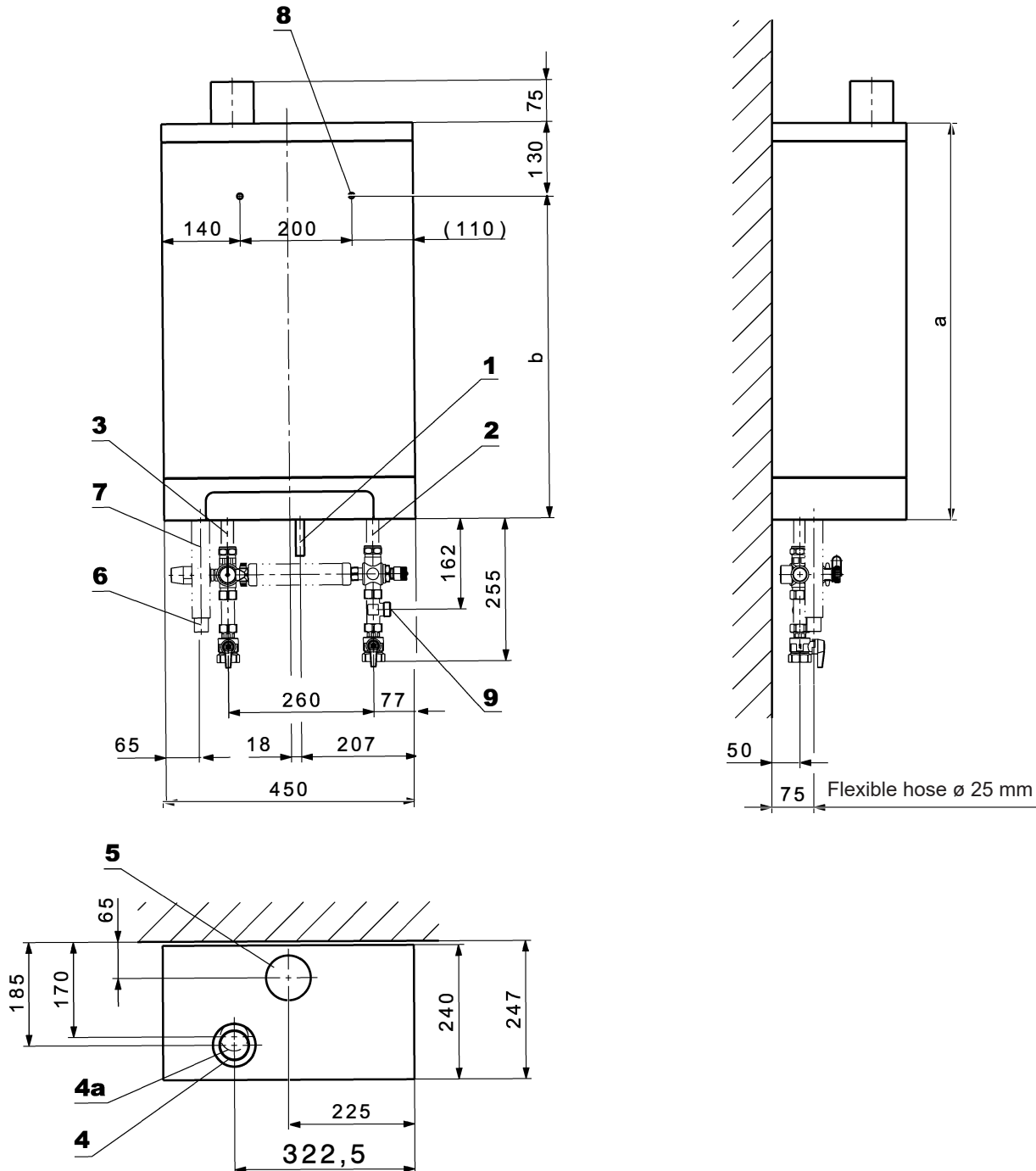
TopGas® classic type	a	b1	b2	d	e	f	g	h	i	k	l
(12)	590	460		0	50	75	185	170	65	247	–
(12) with mounting frame (MR50)	590		574	50	100	125	235	220	115	297	834
(12) with mounting frame with expansion tank (MR110)	590		574	110	160	185	295	280	175	357	834
(18)	650	520		0	50	75	185	170	65	247	–
(18) with mounting frame (MR50)	650		634	50	100	125	235	220	115	297	894
(18) with mounting frame with expansion tank (MR110)	650		634	110	160	185	295	280	175	357	894
(24,30)	710	580		0	50	75	185	170	65	247	–
(24,30) with mounting frame (MR50)	710		694	50	100	125	235	220	115	297	954
(24,30) with mounting frame with expansion tank (MR110)	710		694	110	160	185	295	280	175	357	954

- | | | | | | |
|---|---|----|--|----|---|
| 1 | Gas connection D15
(for clamp ring screwing) | 4 | Concentrical flue gas delivery air connection
C80/125 including measuring opening | 8 | Mounting frame, 50 mm or 110 mm
with expansion tank optionally,
see Accessories |
| 2 | Return heating D22
(for clamp ring screwing) | 4a | Single flue gas connection E80, (optional),
see Accessories | 9a | Drill hole D10 without mounting frame |
| 3 | Flow heating D22
(for clamp ring screwing) | 5 | External delivery air D80 | 9b | Drill hole D10 with mounting frame |
| | | 6 | Condensate drain Ø 32 mm (hose D25/21) | | |
| | | 7 | Siphon | | |

TopGas® classic (12-30) with connection set 3 without mounting frame
Minimal spaces

(Dimensions in mm)

- Sideways 50 mm
- Space to ceiling dependent on the used flue gas system
- Front 500 mm


TopGas® classic
type

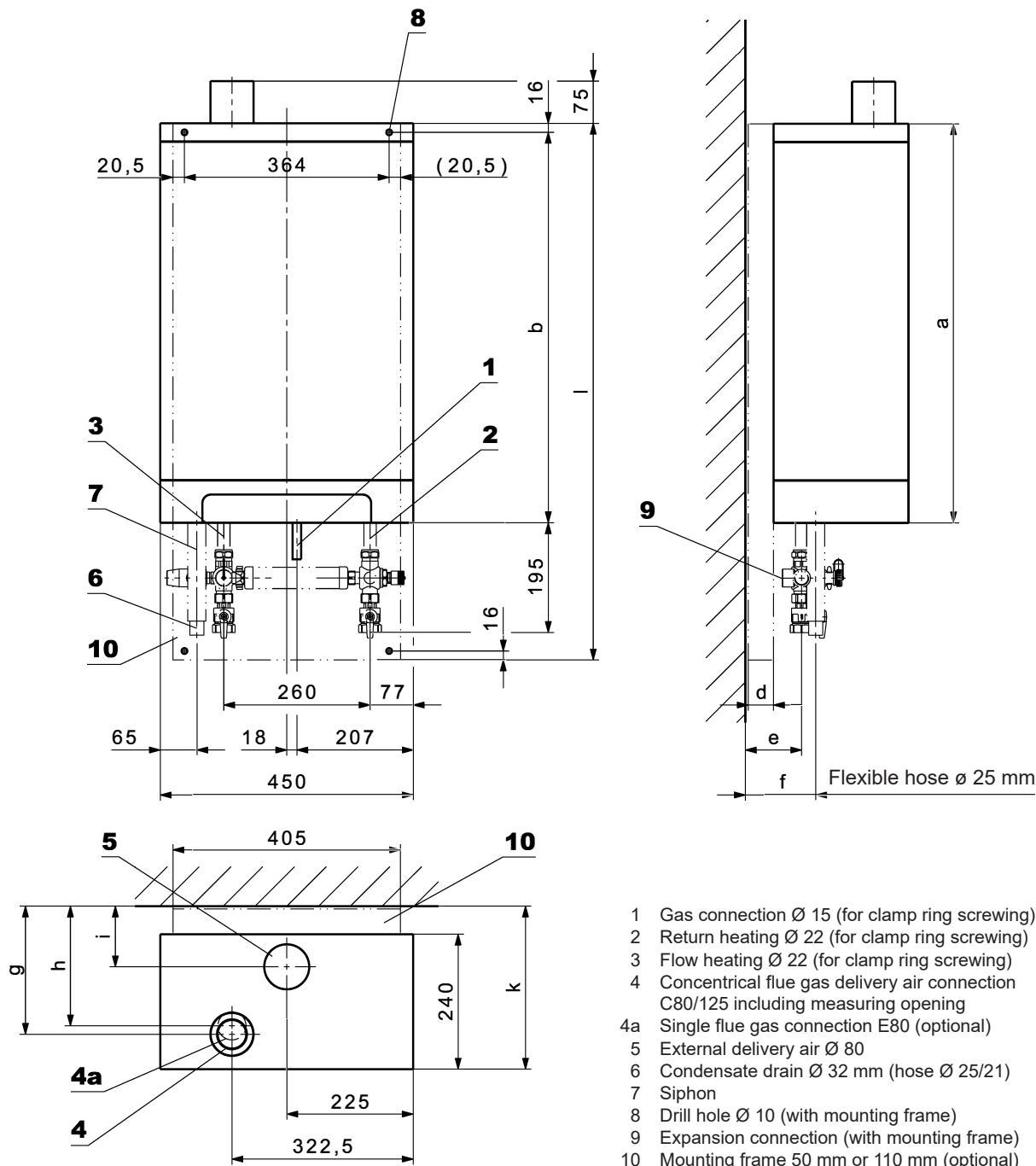
	a	b
(12)	590	460
(18)	650	520
(24,30)	710	580

- 1 Gas connection Ø 15 (for clamp ring screwing)
- 2 Return heating Ø 22 (for clamp ring screwing)
- 3 Flow heating Ø 22 (for clamp ring screwing)
- 4 Concentrical flue gas delivery air connection C80/125 including measuring opening
- 4a Single flue gas connection E80 (optional)
- 5 External delivery air Ø 80
- 6 Condensate drain Ø 32 mm (hose Ø 25/21)
- 7 Siphon
- 8 Drill hole Ø 10 (without mounting frame)
- 9 Expansion connection (without mounting frame)

TopGas® classic (12-30) with connection set 3 and mounting frame
Minimal spaces

(Dimensions in mm)

- Sideways 50 mm
- Space to ceiling dependent on the used flue gas system
- Front 500 mm

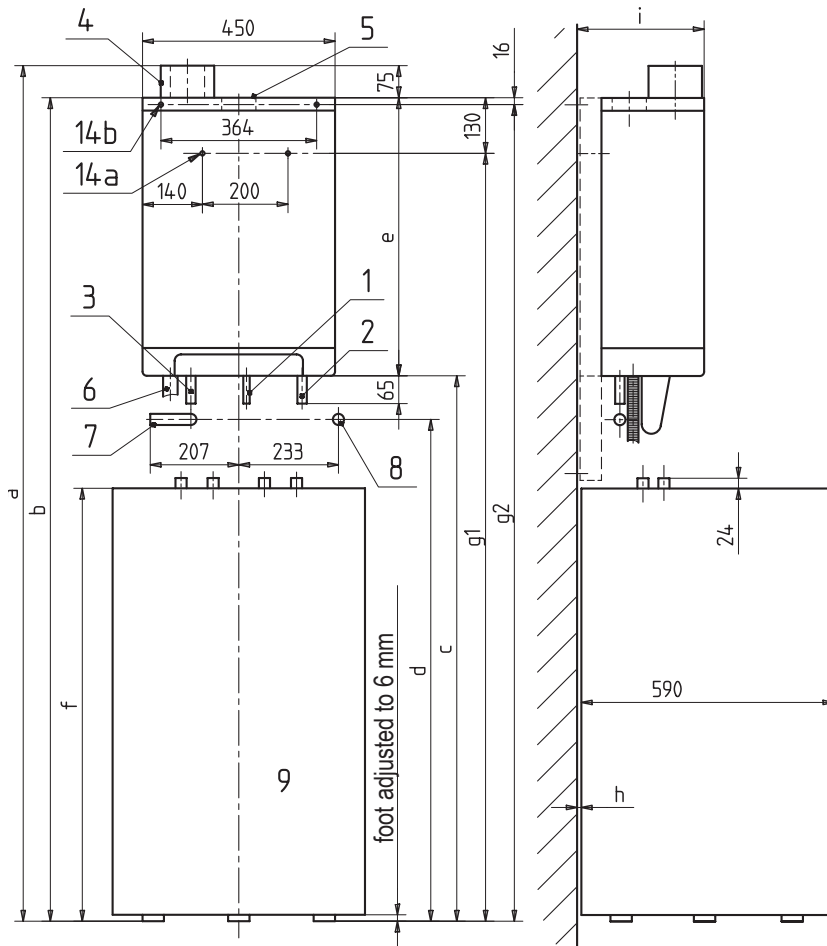

TopGas® classic
type

	a	b	d	e	f	g	h	i	k	l
(12) with mounting frame (MR50)	590	574	50	100	125	235	220	115	297	834
(12) with mounting frame with expansion tank (MR110)	590	574	110	160	185	295	280	175	357	834
(18) with mounting frame (MR50)	650	634	50	100	125	235	220	115	297	894
(18) with mounting frame with expansion tank (MR110)	650	634	110	160	185	295	280	175	357	894
(24,30) with mounting frame (MR50)	710	694	50	100	125	235	220	115	297	954
(24,30) with mounting frame with expansion tank (MR110)	710	694	110	160	185	295	280	175	357	954

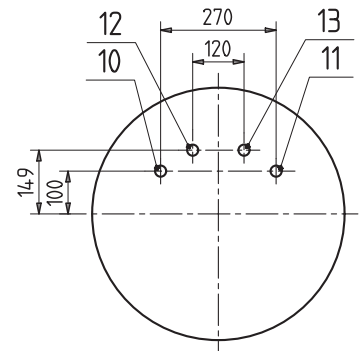
TopGas® classic (12-30) with calorifier TopVal (130,160) placed below
Minimal Spaces

(Dimensions in mm)

- Sideways 50 mm
- Space to ceiling dependent on the flue gas system
- Front 500 mm


CombiVal ERW (200)
see Calorifiers

View from the top without TopGas®



- 1 Gas connection D15
(for clamp ring screwing, on site)
- 2 Return heating D22
(for clamp ring screwing, on site)
- 3 Flow heating D22
(for clamp ring screwing, on site)
- 4 Concentric flue gas/combustion air connection
C80/125 including measurement vents
- 5 External delivery air D80
- 6 Condensate drain Ø 32 mm
- 7 Connection positions sideways heating flow Rp 3/4"
- 8 Connection positions behind heating return Rp 3/4"
- 9 Calorifier TopVal (130,160)
- 10 Flow heating G 3/4" outer thread
- 11 Return heating G 3/4" outer thread
- 12 Hot water R 3/4" outer thread
- 13 Cold water R 3/4" outer thread
- 14a Drill hole D10 without mounting frame
- 14b Drill hole D10 with mounting frame

TopGas® classic with TopVal 130

TopGas® classic
type

	a	b	c	d	e	f	g1	g2	h	i
(12)	1775	1700	1108	950	590	860	1570	—	10	247
(12) with mounting frame (MR50)	1775	1700	1108	950	590	860	—	1684	60	297
(12) with mounting frame with expansion tank (MR110)	1823	1748	1156	998	590	860	—	1732	10	357
(18)	1835	1760	1108	950	650	860	1630	—	10	247
(18) with mounting frame (MR50)	1835	1760	1108	950	650	860	—	1744	60	297
(18) with mounting frame with expansion tank (MR110)	1883	1808	1156	998	650	860	—	1792	10	357
(24,30)	1895	1820	1108	950	710	860	1690	—	10	247
(24,30) with mounting frame (MR50)	1895	1820	1108	950	710	860	—	1804	60	297
(24,30) with mounting frame with expansion tank (MR110)	1943	1868	1156	998	710	860	—	1852	10	357

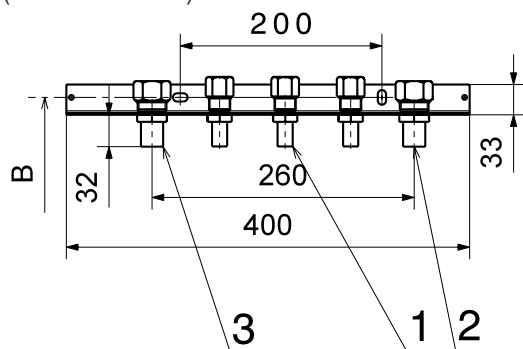
TopGas® classic with TopVal 160

TopGas® classic
type

	a	b	c	d	e	f	g1	g2	h	i
(12)	1942	1867	1275	1115	590	1027	1737	—	10	247
(12) with mounting frame (MR50)	1942	1867	1275	1115	590	1027	—	1851	60	297
(12) with mounting frame with expansion tank (MR110)	1990	1915	1323	1163	590	1027	—	1899	10	357
(18)	2002	1927	1275	1115	650	1027	1797	—	10	247
(18) with mounting frame (MR50)	2002	1927	1275	1115	650	1027	—	1911	60	297
(18) with mounting frame with expansion tank (MR110)	2050	1975	1323	1163	650	1027	—	1959	10	357
(24,30)	2062	1987	1275	1115	710	1027	1857	—	10	247
(24,30) with mounting frame (MR50)	2062	1987	1275	1115	710	1027	—	1971	60	297
(24,30) with mounting frame with expansion tank (MR110)	2110	2035	1323	1163	710	1027	—	2020	10	357

Measures for drill holes and visible console for preinstallation without mounting frame

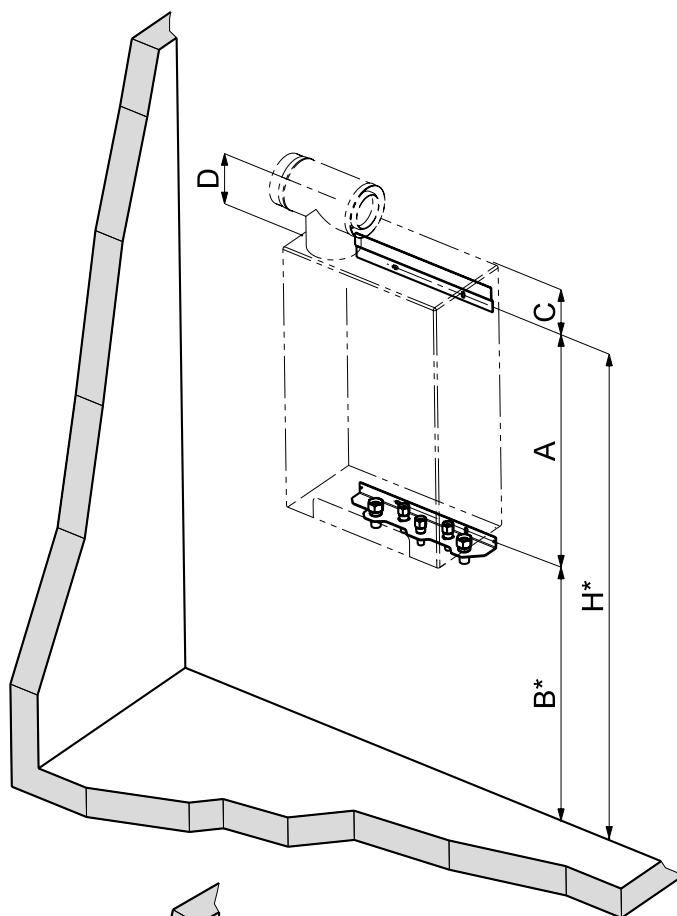
(Dimensions in mm)



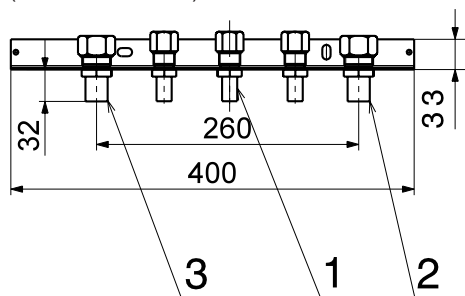
- 1 Gas connection D15 (for locking ring fitting, on site)
- 2 Return (for locking ring fitting, on site)
- 3 Flow (for locking ring fitting, on site)

TopGas® classic type	TopVal type	A	B*	H*	C	D
(12)	(130)	518	1052	1570	130	175
	(160)	518	1219	1737	130	175
(18)	(130)	578	1052	1630	130	175
	(160)	578	1219	1797	130	175
(24,30)	(130)	638	1052	1690	130	175
	(160)	638	1219	1857	130	175

* Measures for drill hole


Visible console for preinstallation with mounting frame

(Dimensions in mm)


With mounting frame MR50

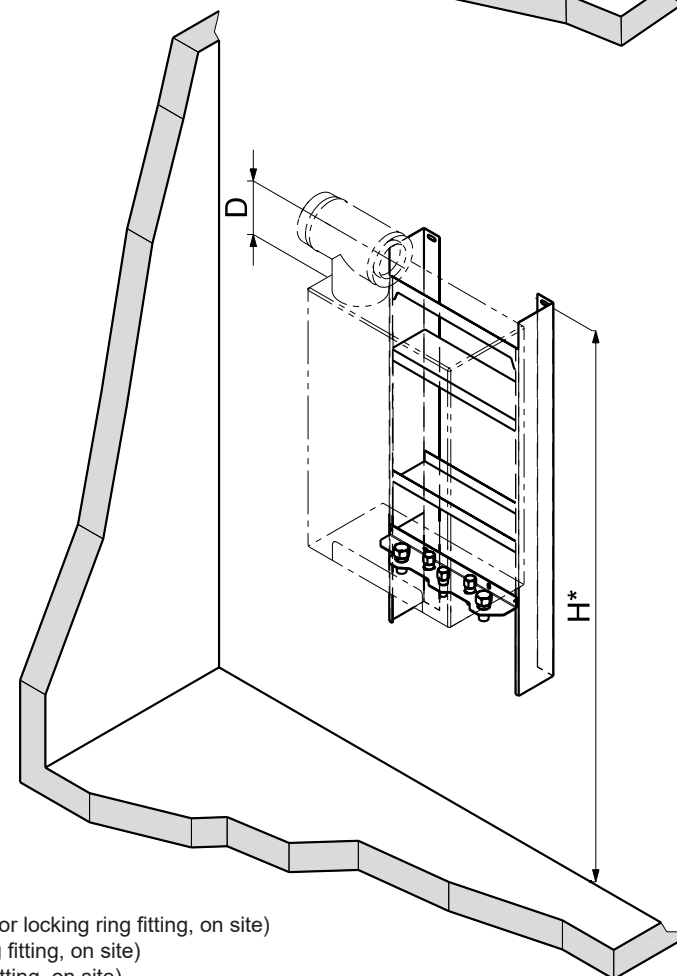
TopGas® classic type	TopVal type	H *	D
(12)	(130)	1684	175
	(160)	1851	175
(18)	(130)	1744	175
	(160)	1911	175
(24,30)	(130)	1804	175
	(160)	1971	175

With mounting frame MR110 with expansion tank

TopGas® classic type	TopVal type	H *	D
(12)	(130)	1732	175
	(160)	1899	175
(18)	(130)	1792	175
	(160)	1959	175
(24,30)	(130)	1852	175
	(160)	2020	175

* Measures for drill hole

- 1 Gas connection D15 (for locking ring fitting, on site)
- 2 Return (for locking ring fitting, on site)
- 3 Flow (for locking ring fitting, on site)



Standards and guidelines

The following standards and guidelines must be complied with:

- Hoval technical information and installation instructions
- hydraulic and technical control regulations of Hoval
- local building law
- fire protection regulations
- DIN EN 12828
- Safety-relevant requirements
- DIN EN 12831 Heaters
- Rules for the calculation of the heat requirements of buildings
- VDI 2035 Protection against damage by corrosion and boiler scale formation in heating and service water installations
- local fire brigade regulations

Water quality

Heating water:

- The European Standard EN 14868 and the Directive VDI 2035 must be observed.
- Hoval boilers and calorifiers are designed for heating plants without significant oxygen intake (plant type I according to EN 14868).
- Plants with
 - continuous oxygen intake (e.g. underfloor heating systems without diffusion proof plastic piping) or
 - intermittent oxygen intake (e.g. where frequent refilling is necessary)
 must be equipped with separate circuits.
- Treated heating water must be tested at least once yearly, according to the inhibitor manufacturer's instructions, more frequent testing may be necessary.
- A refilling is not necessary if the quality of the heating water in existing installations (e.g. exchange of boiler) conforms to VDI 2035. The Directive VDI 2035 applies equally to the replacement water.
- New and if applicable existing installations must be adequately cleaned and flushed before being recharged! The boiler may only be filled after the heating system has been flushed.

- Parts of the boiler which have contact with water are made of copper.
- On account of the danger of spot corrosion the chloride, nitrate and sulfate contents of the heating water must not exceed 200 mg/l in total.
- The pH value of the heating water should lie between 8.3 and 9.5 after 6 to 12 weeks of heating operation in order to avoid a handicap of the flow through deposits from corrosion products of other materials from the plant.

Filling and replacement water:

- For a plant using Hoval boilers untreated domestic water is generally best suited as filling and replacement water. However, the quality of the untreated domestic water must at least fulfil the standard set in VDI 2035 or be desalinated and/or be treated with inhibitors. The stipulations of EN 14868 must be observed.
- In order to maintain a high level of boiler efficiency and to avoid overheating of the heating surfaces the values given in the table should not be exceeded (dependent on boiler performance ratings - for multi-boiler plants rating of smallest boiler applies - and on the water content of the table).
- The total amount of filling and replacement water which is used throughout the total service life of the boiler must not exceed three times the water capacity of the plant.

Heating room

Gas boilers cannot be positioned in rooms in which halogen compounds can occur and into which combustion air can enter (e.g. wash-, dryer-, work rooms, hairdressers and so on). Halogen compounds can be caused by cleaning and degreasing solutions, dissolvents, glue and bleaching lyes.

Combustion air

The supply of combustion air must be guaranteed. There must be no possibility to close the air supply opening. An air pipe D = 80 for direct combustion air (air-exhaust system) can be directly connected to the boiler.

The minimum free cross-section for the combustion air can be assumed simplified as follows!

- **Room air-dependent operation:**
A minimal ventilation outlet of at least 150 cm² or 2 x 75 cm² cross-section is necessary for of boiler output up to 50 kW. For each further kW output 2 cm² more cross-section must be provided.
- **Room air-independent operation with separate combustion air pipe to the boiler:**
0.8 cm² per 1 kW of output. The pressure drop in the combustion air pipe must be considered for the calculation of the flue gas system.

Gas connection

Commissioning

- Stat-up is to be carried out only by a specialist.
- Burner setting values according to the installation instructions.

Manual gas shut-off valve and gas filter

Immediately in front of the boiler a manual gas shut-off device (valve) must be installed according to relevant regulations. Should the local regulations or conditions demand this, an approved gas filter must be installed in the gas supply pipe between the gas tap (thermally releasing) and the boiler in order to prevent malfunction due to foreign particles being carried along with the gas.

Type of gas

- The boiler is only to be operated with the type of gas stated on the rating plate.
- A gas pressure controller to reduce the boiler inlet pressure must be installed on site for propane.

Gas pressure

Necessary flow pressure at the boiler inlet:
natural gas min. 17.4 mbar, max. 50 mbar.
Propane min. 25 mbar, max. 50 mbar.

Mud collector

Installation of a sludge collector with magnetic ring in the gas boiler return is recommended.

Pump after-run time

- During burner operation, the circulating pump must be constantly in operation and the minimum heating water circulation quantity must be guaranteed.
- After each burner switch-off, the circulating pump must be in operation for at least 2 minutes (is guaranteed by the boiler control).

Table 1: Maximum filling quantity without/with demineralisation

Available for boiler with < 0.3 l/kW water capacity

	Total hardness of the filling water up to...							
[mol/m ³] ¹⁾	<0.1	0.5	1	1.5	2	2.5	3	>3.0
f°H	<1	5	10	15	20	25	30	>30
d°H	<0.56	2.8	5.6	8.4	11.2	14.0	16.8	>16.8
e°H	<0.71	3.6	7.1	10.7	14.2	17.8	21.3	>21.3
~mg/l	<10	50.0	100.0	150.0	200.0	250.0	300.0	>300
Conductance ²⁾	<20	100.0	200.0	300.0	400.0	500.0	600.0	>600
Boiler size of the individual boiler	maximum filling quantity without demineralisation							
up to 28 kW	NO DEMAND				50 l/kW	20 l/kW		

¹⁾ total of alkaline earths

²⁾ If the conductance in µS/cm exceeds the tabular value an analysis of the water is necessary.

Minimum quantity of rotating water

- Depending upon type of boiler different minimum quantities of rotating water are demanded. See also technical data.
- During the burner mode the circulating pump must always be in function and the minimum heating water circulation must be guaranteed.

Heating boiler in the attic

If the gas boiler TopGas® classic is built-in in a roof control room, an external water pressure guard must be provided.

Condensate drainage

- A permit for discharge of the flue gas condensate into the sewage system must be obtained from the relevant authority or sewer operator.
- The condensate from the flue gas line can be discharged via the boiler. A condensate trap is no longer needed in the flue gas system.
- The condensate must be conducted openly (funnel) into the sewage system.
- Suitable materials for condensate drain:
 - stoneware pipes
 - pipes made from PVC
 - pipes made from polyethylene (PE)
 - pipes made from ABS or ASA

Flue gas system

- Gas boilers must be connected to a certified and approved flue gas system such as flue gas lines.
- Flue gas lines must be gas-, condensate- and overpressure-tight.
- The flue gas lines must be secured against unwanted loosening of the plug connections.
- The flue gas system must be connected with an angle, so that the resulting condensate of the flue gas system can flow back to the boiler and can be neutralised there before discharging into the canalisation.
- Gas boilers with condensation heat utilisation are to be connected to a flue gas line min. temperature class T120.
- A flue gas temperature limiter is integrated into the boiler.

Expansion tank

- **An adequately dimensioned expansion tank must be provided.**
- The expansion tank has to be installed at the connection of expansion tank at the connection set 3, 4 or 10 (pump intake side) (see "Dimensions").
- Starting from 70 °C a connecting container is necessary.

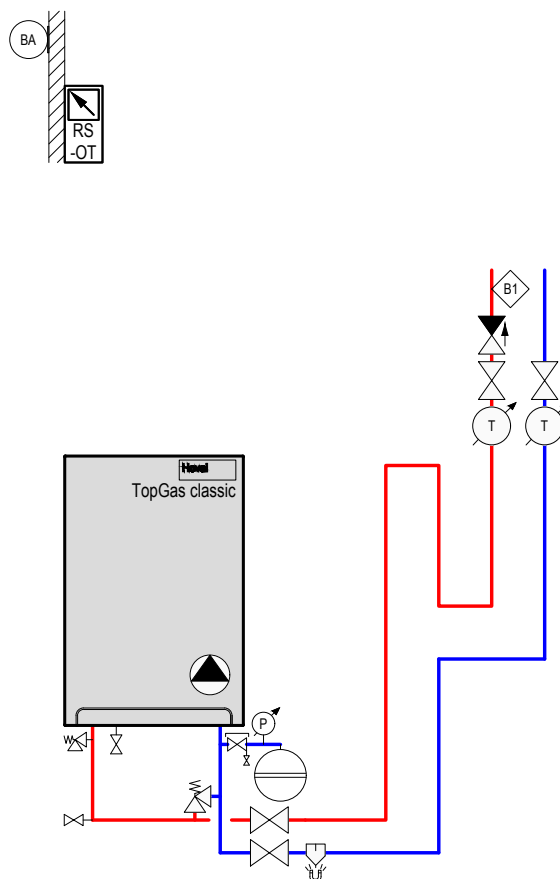
Noise level

- The sound **power** level value is dependent on local and spacial circumstances.
- The sound **pressure** level is dependent on the installation conditions and can e.g. be 10 to 15 dB(A) lower than the sound **power** level at a distance of 1 m.

TopGas® classic (12-30)

Gas boiler with
- 1 direct circuit

Hydraulic schematic BDAE010



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

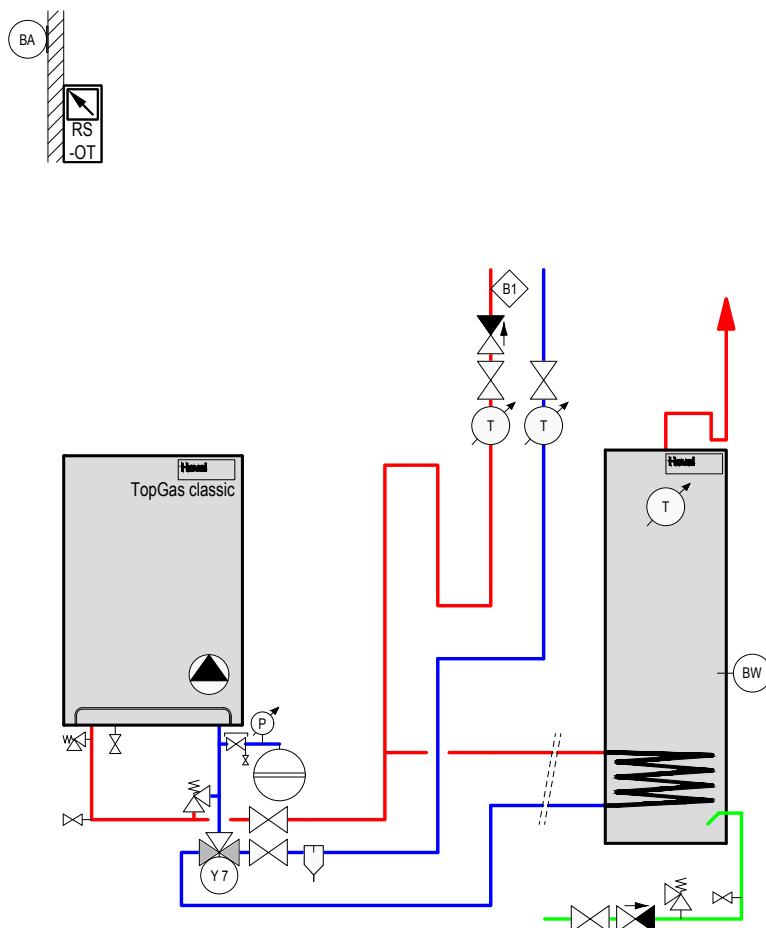
RS-OT Room station (OpenTherm)
B1 Flow temperature guard (if required)
BA Outdoor sensor

TopGas® classic (12-30)

Gas boiler with

- free-standing calorifier
- 1 direct circuit

Hydraulic schematic BDAE020



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

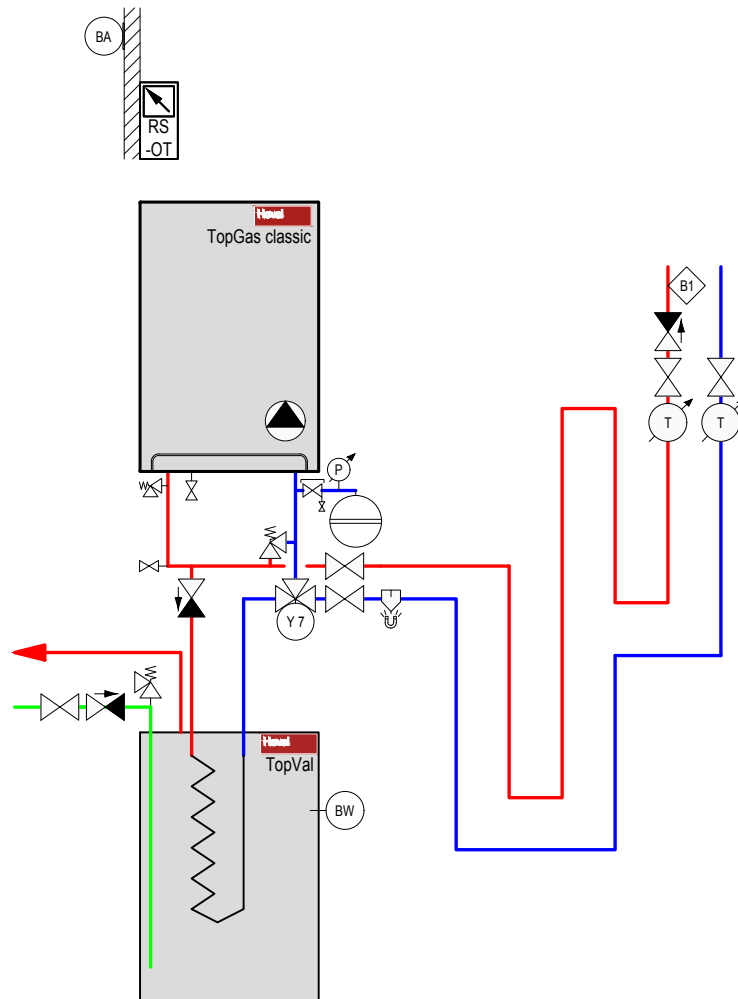
RS-OT	Room station (OpenTherm)
B1	Flow temperature guard (if required)
BA	Outdoor sensor
BW	Calorifier sensor
Y7	Switching valve

TopGas® classic (12-30)

Gas boiler with

- floor-mounted calorifier TopVal
- 1 direct circuit

Hydraulic schematic BDAE030



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

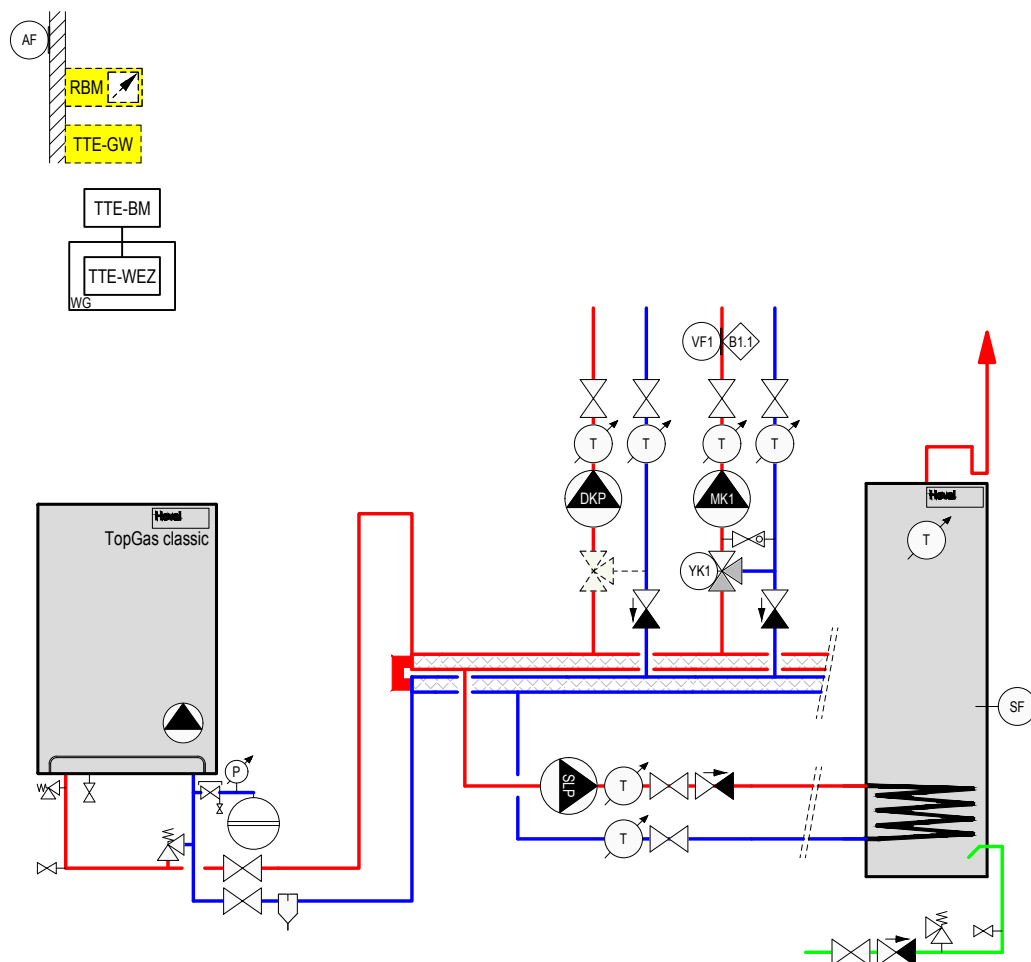
RS-OT	Room station (OpenTherm)
B1	Flow temperature guard (if required)
BA	Outdoor sensor
BW	Calorifier sensor
Y7	Switching valve

TopGas® classic (12-30)

Gas boiler with TopTronic® E controller in wall casing

- Free-standing calorifier
- 1 direct circuit
- 1-... mixer circuit(s)

Hydraulic schematic BDAE040



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

TTE-BM	TopTronic® E control module
TTE-WEZ	TopTronic® E basic module heat generator (in wall casing)
WG	Wall casing
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
DKP	Pump for heating circuit without mixer
SLP	Calorifier charging pump

Option

RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway

Hoval TopGas® classic (35-80)

Wall-hanging gas condensing boiler

- With condensing boiler technology
- Heat exchanger made of corrosion resistant aluminium-silicone cast alloy integrated into stainless steel heating water tank
- Built-in:
 - pressure gauge
 - water pressure guard for water shortage protection
 - flue gas temperature sensor with flue gas limiter function
 - automatic quick aspirator
- Pre-mixing surface burner made of stainless steel
 - Modulating with gas/air group control
 - Automatic ignition
 - Ionisation guard
 - Gas pressure guard
- Minimum water flow necessary (see technical data)
- Wall-hanging gas condensing boiler fully cased with coated white steel plates

Basic boiler control panel G04

- Control unit for gas burner with monitoring unit BIC 335
- Modulating burner control
- Main guard "I/O"
- Operation and fault indication
- Connection for external gas valve and fault indication

Option

- Propane
- Free-standing calorifier
- Boiler burner control in different designs

Delivery

- Wall-hanging gas condensing boiler fully cased

Heating controller set RS-OT

- For 1 heating circuit without mixing operation
Weather-controlled regulation for continuously adjustable decreased boiler water temperature
- With integrated overpluggable room temperature sensor, located in boiler room or living room. Can optionally be installed in the boiler control panel.
- Outdoor sensor
- Immersion sensor (calorifier sensor)

BMS-Module 0-10 V/OT

(OpenTherm)

(building management system)

For boiler control as part of a building management system.
External temperature control 0-10 V.
0-1.0 V no requirement
1.0-9.5 V 0-100 °C

Can be installed in the boiler control panel!

Heating controller set TopTronic® E ZE1

(Can be built in) as supplement for basic boiler control panel G04.

TopTronic® E control module

- Colour touchscreen 4.3 inch
- Simple, intuitive operating concept



Model range

TopGas® classic Type		Output 50/30 °C kW
(35)	A	7.4-34.9
(45)	A	9.1-44.3
(60)	A	12.8-60.3
(80)		14.8-79.1

Energy efficiency class of the compound system with control

- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with online HovalConnect)
- Adaptation of the heating strategy based on the weather forecast (with online HovalConnect)

TopTronic® E basic module heat generator (TTE-WEZ)

- Control functions integrated for
 - 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 hot water loading circuit
- bivalent and cascade management
- Rast-5 basic plug set
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- Cable set ZE1 for connecting the TopTronic® E control to the basic boiler control panel

No additional module expansions or controller modules can be installed in the boiler control panel!

Permissions boilers

TopGas® classic (35-80):

CE product ID No. CE-0085BQ0218

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion heat accounting or
 - module expansion universal
- Can be networked with a total of up to 16 controller modules:
 - heating circuit/hot water module
 - solar module
 - buffer module
 - measuring module

No additional module expansions or controller modules can be installed in the boiler control panel!

The supplementary plug set must be ordered in order to use expanded controller functions.

Further information about the TopTronic® E
see "Controls"

Delivery

- Heating controller set separately packed, mounting on site

Notice

Observe the notices on water quality, see "Engineering"!

Wall-hanging gas condensing boiler



Hoval TopGas® classic (35-80)

Heat exchanger made of aluminium alloy.
Modulating burner made of stainless steel and
basic boiler control panel, completely cased.

TopGas® classic		Output 50/30 °C kW
Type		
(35)	A	7.4-34.9
(45)	A	9.1-44.3
(60)	A	12.8-60.3
(80)		14.8-79.1

**Energy efficiency class of the
compound system with control**

Part No.

7014 580
7014 581
7014 582
7014 583

Accessories



Gas filter

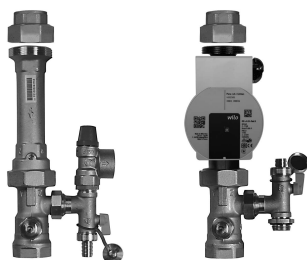
with measurement nozzle before and
behind the filter inset (diameter: 9 mm)
Pore width of the filter inset < 50 µm
Max. pressure difference 10 mbar
Max. inlet pressure 100 mbar

Type	Connection
70612/6B	Rp ¾"
70602/6B	Rp 1"

2007 995
2007 996

Conversion kit for propane for TopGas® classic (35-120)

6047 634



Connection set AS32-TG

consisting of:

Return:

- Shut-off valve with gland nut 2" and side outflow with boiler filling/drainage valve and fitting G ¾" (outside) for connection of an expansion tank.
- Speed-controlled high-efficiency pump, various versions

Flow:

- Fitting piece (180 mm) G2" with integrated non-return valve
- Shut-off valve with gland nut 2" and side outflow with safety valve DN 20 3 bar up to 100 kW incl. boiler filling/drainage valve

Connection set / pump Type	Speed control

AS32-TG/SPS-S 8 PM1	•
AS32-TG/SPS-I 9 PM1	•
AS32-TG/SPS-I 12 PM1	•

6049 483
6040 829
6043 800

Speed control legend

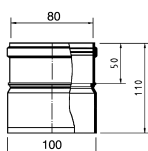
	PWM1	PWM control signal heating
	or PM1	



Connection set AS32-2/ H
for compact mounting
of all required fittings
of a direct circuit
consisting of:
2 thermometer ball valves
Wall bracket included separately
Connection T-piece DN 32
in the return flow for connecting the
sludge separator CS 32 bottom and
the expansion tank on the side
on connection set
installation option
for an overflow valve
incl. non-return valve

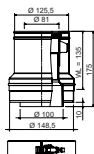
Part No.

6039 793



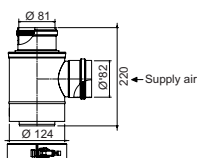
Reduction piece E100 PP -> E80 PP

2015 245



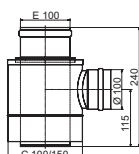
Concentric reduction piece
C100/150 -> C80/125 PP
white coated

2025 334



Separating piece C80/125 -> 2xE80PP
for ambient air independent operation
for separate conduction of flue gas and
combustion air.

2010 174



Separating piece C100/150 -> 2xE100PP
for UltraOil® (35,50),
TopGas® classic (35-120),
UltraGas® (50-100)
for separate conduction of flue gas and
combustion air (LAS-system)
Recommendation:
If the air inlet at the facade is near a
noise sensitive place (window of
bedroom, terrace etc.), we recommend
to use a sound absorber at the
direct combustion air inlet.

2015 244



Backflow check valve
for TopGas® classic (60-120)
to prevent the emergence
of flue gas from the boiler
in the use of cascades

6036 265

**Boiler controller with
heating controller set RS-OT**



Heating controller set RS-OT

(Not for mixing operation!)

For 1 heating circuit without
mixing operation

Flow temperature control controlled by
atmospheric conditions with outdoor
sensor, immersion sensor (calorifier
sensor) and overridable room
temperature sensor.

Can be implemented as a room
temperature control without
outdoor sensor.

TopGas® comfort (10-22)

TopGas® classic (35-120)

For integration into boiler control
panel:

Mounting set RS-OT must be ordered.

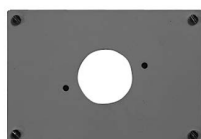
TopGas® comfort (10-22)

TopGas® classic (35-120)

Only wall mounting possible!

Part No.

6020 566



Mounting set RS-OT

Assembly set for mounting of heating
controller set RS-OT into boiler

6018 218



BMS module 0-10 V/

OT - OpenTherm

(building management system)

no control unit TopTronic® E or RS-OT
necessary

power supply via OT bus

Temp. control external with 0-10 V

0-1.0 V no request

1.0-9.5 V0-100 °C

Cannot be installed in boiler control
panel:

TopGas® classic (12-30)

Can be installed in boiler control

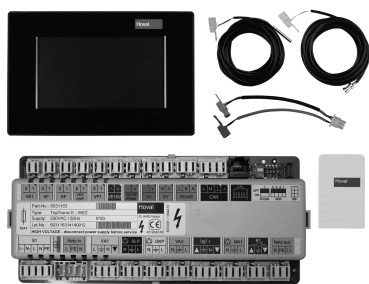
panel:

TopGas® classic (35-120),

TopGas® comfort

6016 725

**Boiler controller with
heating controller set TopTronic® E**



Heating controller set TopTronic® E ZE1
(Can be built in) as supplement
for basic boiler control panel G04.

- Installation of the TopTronic® E control module in the front of the control panel
- Installation of the TopTronic® E basic module heat generator in the controller

Notice

No additional module expansions or controller modules can be installed in the boiler control panel! This means an additional mixer circuit must be implemented using the TopTronic® E heating circuit/hot water module in an external wall casing.

- Can be optionally networked with a total of up to 16 controller modules (incl. solar module)

Consisting of:

- TopTronic® E control module
- TopTronic® E basic module heat generator
- Rast-5 basic plug set
- fitting accessories
- 1 outdoor sensor AF/2P/K
- 1 immersion sensor TF/2P/5/6T/S1,
L = 5.0 m with plug
- 1 contact sensor ALF/2P/4/T/S1,
L = 4.0 m with plug
- cable set ZE1

For RS-OT and TopTronic® E ZE1

Flow temperature guard

for underfloor heating
(per heating circuit 1 guard)
15-95 °C, differential gap 6 K, capillary tube
max. 700 mm, setting (visible from the outside)
inside the housing cover



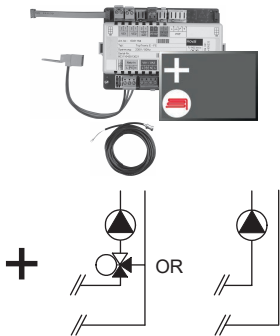
Clamp-on thermostat *RAK-TW1000.S*
Thermostat with strap, without cable and plug

Part No.

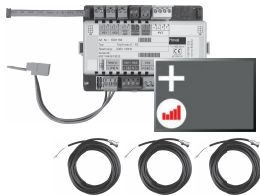
6037 312

242 902

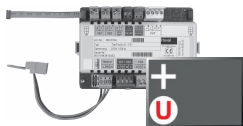
TopTronic® E module expansions
 for TopTronic® E basic module heat generator



Notice
 The supplementary plug set may have to be ordered to implement functions differing from the standard!



Notice
 The flow rate sensor set must be ordered as well.



Notice
 Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

TopTronic® E module expansion heating circuit TTE-FE HK

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:
 - 1 heating circuit without mixer or
 - 1 heating circuit with mixer

incl. fitting accessories
 1 contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:
 Boiler control, wall housing, control panel

TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:
 - 1 heating/cooling circuit w/o mixer or
 - 1 heating/cooling circuit with mixer
 in each case incl. energy balancing

incl. fitting accessories
 3 contact sensors ALF/2P/4/T L = 4.0 m

Can be installed in:
 Boiler control, wall housing, control panel

Flow rate sensor sets

Plastic housing		
Size	Connection	Flow rate l/min
DN 8	G 3/4"	0.9-15
DN 10	G 3/4"	1.8-32
DN 15	G 1"	3.5-50
DN 20	G 1 1/4"	5-85
DN 25	G 1 1/2"	9-150

Flow rate sensor sets

Brass housing		
Size	Connection	Flow rate l/min
DN 10	G 1"	2-40
DN 32	G 1 1/2"	14-240

TopTronic® E module expansion Universal TTE-FE UNI

Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

incl. fitting accessories

Can be installed in:
 Boiler control, wall housing, control panel

Further information
 see "Controls" - "Hoval TopTronic® E module expansions" chapter

Part No.

6034 576

6037 062

6038 526
 6038 507
 6038 508
 6038 509
 6038 510

6042 949
 6042 950

6034 575

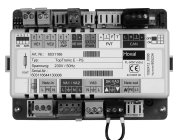
Accessories for TopTronic® E



Supplementary plug set

for basic module heat generator (TTE-WEZ)
for controller modules and module expansion
TTE-FE HK

6034 499
6034 503



TopTronic® E controller modules

TTE-HK/WW TopTronic® E heating circuit/
hot water module
TTE-SOL TopTronic® E solar module
TTE-PS TopTronic® E buffer module
TTE-MWA TopTronic® E measuring module

6034 571
6037 058
6037 057
6034 574



TopTronic® E room control modules

TTE-RBM TopTronic® E room control modules
easy white
comfort white
comfort black

6037 071
6037 069
6037 070



Enhanced language package TopTronic® E

one SD card required per control module
Consisting of the following languages:
HU, CS, SL, RO, PL, TR, ES, HR, SR, JA, DA

6039 253



HovalConnect

HovalConnect LAN
HovalConnect WLAN

6049 496
6049 498

HovalConnect available from mid-2020

Up to that point, TopTronic® E online is delivered.

TopTronic® E interface modules

GLT module 0-10 V
HovalConnect Modbus
HovalConnect KNX

6034 578
6049 501
6049 593



TopTronic® E wall casing

WG-190 Wall casing small
WG-360 Wall casing medium
WG-360 BM Wall casing medium with
control module cut-out
WG-510 Wall casing large
WG-510 BM Wall casing large with
control module cut-out

6035 563
6035 564
6035 565
6035 566
6038 533



TopTronic® E sensors

AF/2P/K Outdoor sensor
TF/2P/5/6T Immersion sensor, L = 5.0 m
ALF/2P/4/T Contact sensor, L = 4.0 m
TF/1.1P/2.5S/6T Collector sensor, L = 2.5 m

2055 889
2055 888
2056 775
2056 776



System housing

System housing 182 mm
System housing 254 mm

6038 551
6038 552



Bivalent switch

2061 826

Further information
see "Controls"

Accessories



Gas valve, passage DN 15, R 1/2"
with thermally releasing cut-off device

2012 075



Gas valve, passage DN 20, R 3/4"
with thermally releasing cut-off device

2012 077



Gas valve, corner version DN 15, R 1/2"
with thermally releasing cut-off device

2012 076



Gas valve, corner version DN 20, R 3/4"
with thermally releasing cut-off device

2012 078



Sludge separator with magnet
MB3/L DN25...DN50
With variable connection for vertical or horizontal pipelines
Fast and continuous removal of ferromagnetic and non-magnetic dirt and sludge particles.
Sludge separation up to a particle size of 5 µm.
Brass housing
Max. operating pressure: 6 bar
Max. flow temperature: 110 °C

Type	Connec- tion	Flow rate [m³/h] at 1 m/s flow speed
MBL DN 32 IT	Rp 1 1/4"	3.6
MBL DN 40 IT	Rp 1 1/2"	5.0

2062 166
2062 167

Additional sludge separators
see «Various system components»

Service



Commissioning

Commissioning by works service or Hoval trained authorised serviceman/company is condition for warranty.

For commissioning and other services please contact your Hoval sales office.

Part No.

TopGas® classic (35-80)

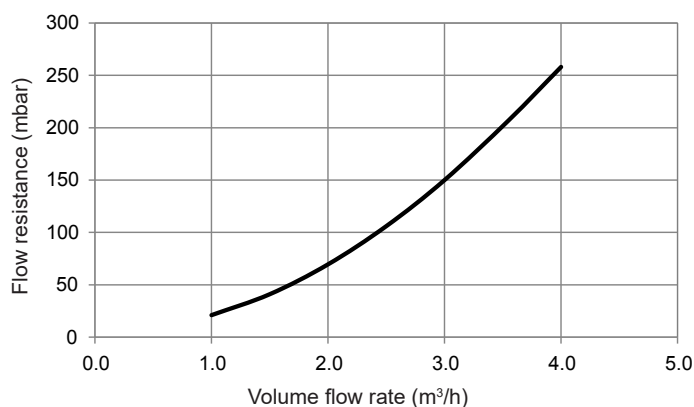
Type		(35)	(45)	(60)	(80)
• Nominal heat output at 80/60 °C, natural gas	kW	6.9-31.7	8.3-39.8	11.9-54.1	13.4-71.8
• Nominal heat output at 50/30 °C, natural gas	kW	7.4-34.9	9.1-44.3	12.8-60.3	14.8-79.1
• Nominal heat output at 80/60 °C, propane ²⁾	kW	9.5-32.5	10.4-41.5	14.1-56.6	18.4-73.7
• Nominal heat output at 50/30 °C, propane ²⁾	kW	10.5-36.3	11.45-45.8	15.5-61.1	20.3-79.9
• Nominal load with natural gas ¹⁾	kW	6.9-33.0	8.5-42.4	11.7-56.9	13.8-75.8
• Nominal load with propane ²⁾	kW	9.8-33.0	10.7-42.1	14.5-57.7	19.0-74.4
• Operating pressure heating min./max. (PMS)	bar	1/4	1/4	1/4	1/4
• Test pressure (PT)	bar	6	6	6	6
• Operating temperature max. (T _{max})	°C	85	85	85	85
• Boiler water content (V _(H2O))	l	4.0	4.0	5.4	5.4
• Flow resistance boiler	z-value	see diagram			
• Minimum circulation water quantity	l/h	300	350	470	550
• Boiler weight (without water capacity, incl. casing)	kg	96	96	116	116
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV)	%	97.6/88.1	95.7/86.3	97.0/87.5	96.3/86.8
• Boiler efficiency at 30 % partial load (EN 15502) (NCV/GCV)	%	107.4/96.6	107.3/96.8	107.3/96.8	107.8/97.3
• Room heating energy efficiency					
- without control	ηs	%	92	92	92
- with control	ηs	%	94	94	94
- with control and room sensor	ηs	%	96	96	96
• NOx class (EN 15502)		6	6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx	mg/kWh	23.9	27.4	23.4
• Content of CO ₂ in the flue gas minimum/maximum output	%	8.7/9.0	8.8/8.9	8.8/8.8	8.8/8.8
• Heat loss in standby mode	Watt	95	95	105	105
• Dimensions		See table of dimensions			
• Gas flow pressure minimum/maximum					
- Natural gas E/LL	mbar	17.4-50	17.4-50	17.4-50	17.4-50
- Propane	mbar	37-50	37-50	37-50	37-50
• Gas connection value at 15 °C/1013 mbar:					
- Natural gas E (Wo = 15.0 kWh/m ³) NCV = 9.97 kWh/m ³	m ³ /h	0.7-3.3	0.9-4.3	1.2-5.7	1.4-7.6
- Natural gas LL (Wo = 12.4 kWh/m ³) NCV = 8.57 kWh/m ³	m ³ /h	0.8-3.9	1.0-4.9	1.4-6.6	1.6-8.8
- Propane ²⁾ (NCV = 25.9 kWh/m ³)	m ³ /h	0.4-1.3	0.4-1.6	0.6-2.2	0.7-2.9
• Operation voltage	V/Hz	230/50	230/50	230/50	230/50
• Electrical power consumption min./max.	Watt	24/74	24/78	23/78	23/116
• Stand-by	Watt	6	6	6	6
• IP rating (integral protection)	IP	40D	40D	40D	40D
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40
• Sound power level					
- Heating noise (EN 15036 Part 1) (room air dependent)	dB(A)	61	61	63	63
• Condensate quantity (natural gas) at 50/30 °C	l/h	3.7	4.3	5.4	7.1
• pH value of the condensate		4-6	4-6	4-6	4-6
• Construction type		B23, C13(x), C33(x), C53(x), C63(x), C93(x)			
• Flue gas system					
- Temperature class		T120	T120	T120	T 120
- Flue gas mass flow at nominal heat load (dry)	kg/h	52.5	66.4	88.4	124
- Flue gas mass flow at lowest nominal heat load (dry)	kg/h	10.5	13	17.8	20.9
- Flue gas temperature at nominal output and operation 80/60 °C	°C	57.7	59.4	58.9	62.7
- Flue gas temperature at nominal output and operation 50/30 °C	°C	36.7	40.5	38.6	43.9
- Flue gas temp. at lowest nominal heat load and operation 50/30 °C	°C	28.8	28.9	29.4	30
- Maximum permitted temperature of the combustion air	°C	50	50	50	50
- Volume flow rate combustion air	Nm ³ /h	42.9	54.2	72.4	102
- Maximum supply pressure for supply air and flue gas line	Pa	120	120	140	140
- Maximum draught/depression at flue gas outlet	Pa	-50	-50	-50	-50

¹⁾ Data related to NCV. The boiler series is tested for EE/H-settings. With a factory setting of the Wobbe coefficient of 15.0 kWh/m³ operation at a Wobbe coefficient of 12.0 up to 15.7 kWh/m³ is possible without new settings.

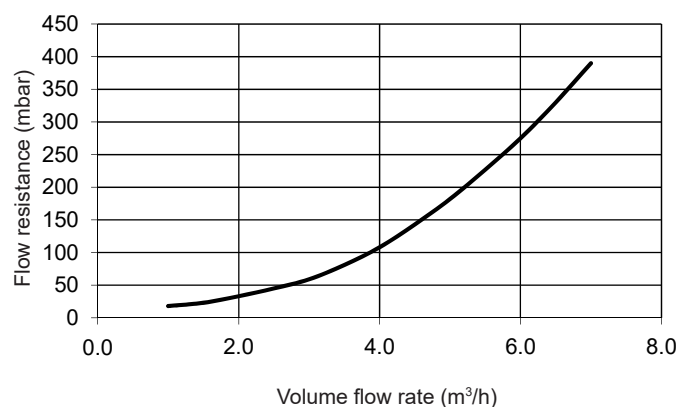
²⁾ Data related to NCV. TopGas® classic can also be operated with propane.

Flow resistance on the heating water side

TopGas® classic (35,45)

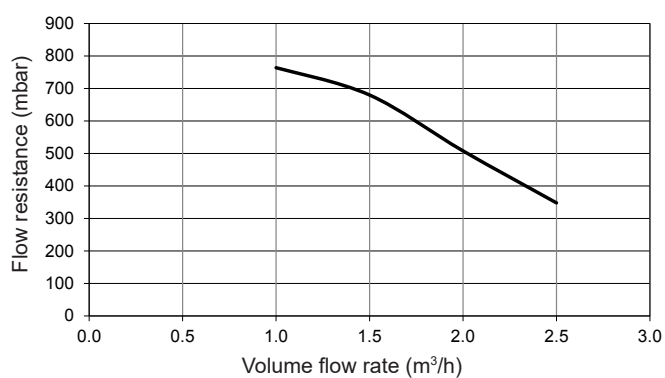


TopGas® classic (60,80)



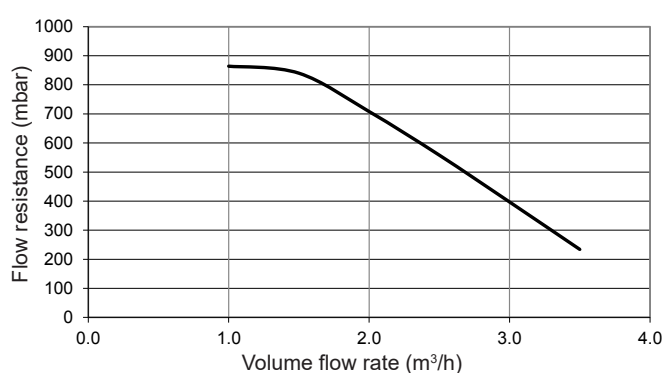
**Maximum residual overpressure
with connection set AS32-TG/SPS-S 8 PM1**

TopGas® classic (35,45)

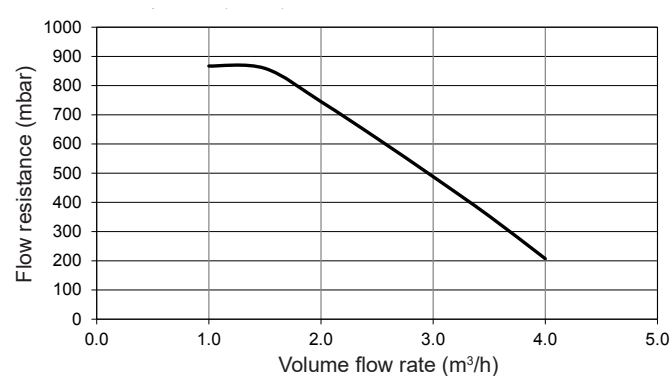


**Maximum residual overpressure
with connection set AS32-TG/SPS-I 9PM1**

TopGas® classic (35,45)

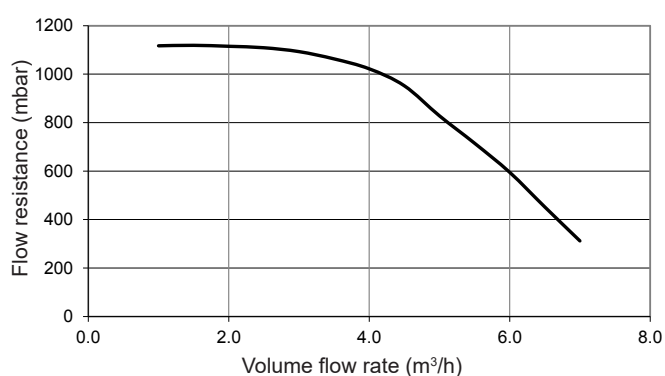


TopGas® classic (60,80)



**Maximum residual overpressure
with connection set AS32-TG/SPS-I 12PM1**

TopGas® classic (60,80)

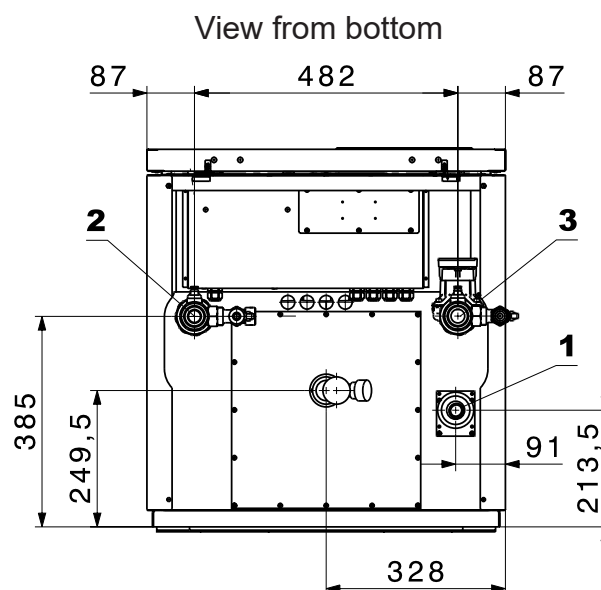
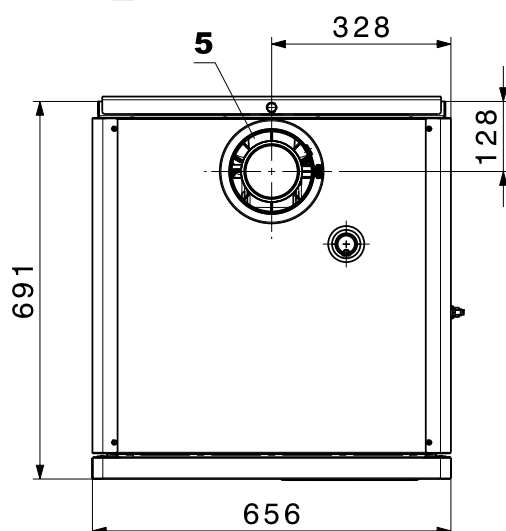
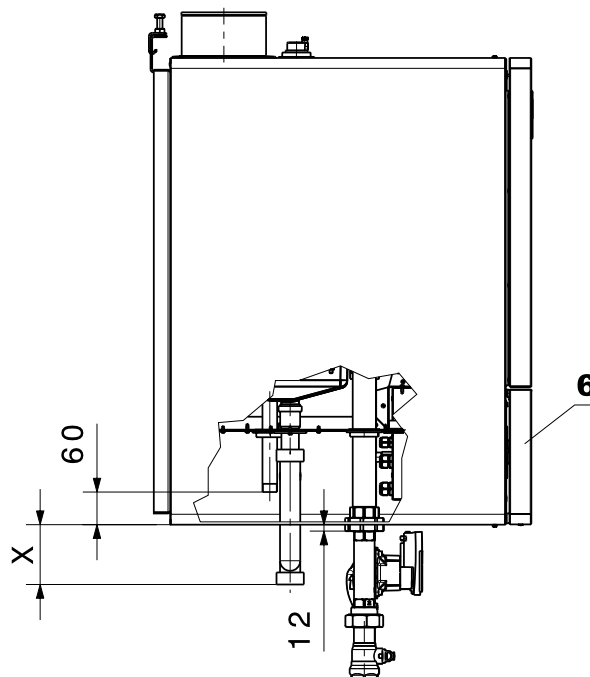
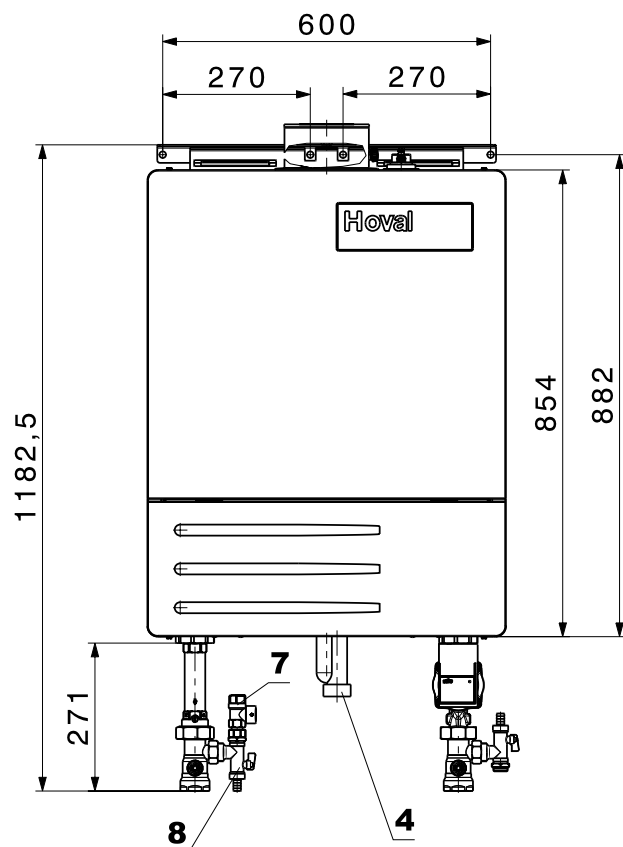


TopGas® classic (35-80)

Minimum spaces

(Dimensions in mm)

- Sideways 50 mm
- Space to ceiling dependent on the used flue gas system
- Front 500 mm



- | | | |
|---|---|----------|
| 1 | Gas connection | R 3/4" |
| 2 | Heating flow | R 1 1/4" |
| 3 | Heating return | R 1 1/4" |
| 4 | Condensate drain | DN 40 |
| 5 | LAS flue gas/supply air connection C100/150 | |
| 6 | Cover control panel | |
| 7 | Safety valve | |
| 8 | KFE ball valve | |

Standards and guidelines

The following standards and guidelines must be complied with:

- Hoval technical information and installation instructions
- hydraulic and technical control regulations of Hoval
- local building law
- fire protection regulations
- DIN EN 12828
Safety-relevant requirements
- DIN EN 12831 Heaters
Rules for the calculation of the heat requirements of buildings
- VDI 2035 Protection against damage by corrosion and boiler scale formation in hot water installations
- Local fire brigade regulations

Water quality

Heating water:

- The European Standard EN 14868 and the Directive VDI 2035 must be observed.
- Hoval boilers and calorifiers are designed for heating plants without significant oxygen intake (plant type I according to EN 14868).
- The following systems must be equipped with separate circuits:
- Systems with a specific water content of over 50 l/kW for the boiler (in cascades, for the smallest boiler)
- Plants with
 - continuous oxygen intake (e.g. underfloor heating systems without diffusion proof plastic piping or open expansion tank) or
 - intermittent oxygen intake (e.g. where frequent refilling is necessary)
- Older systems with formation of sludge in which increased concentrations of the metals which come into contact with the water are found in the existing heating water.
- Systems operated with softened water.
- Treated heating water must be tested at least once yearly, according to the inhibitor manufacturer's instructions, more frequent testing may be necessary.

- A refilling is not necessary if the quality of the heating water in existing installations (e.g. exchange of boiler) conforms to VDI 2035. The Directive VDI 2035 applies equally to the replacement water.
- New and if applicable existing installations must be adequately cleaned and flushed before being recharged! The boiler may only be filled after the heating system has been flushed.
- Parts of the boiler which have contact with water are made of aluminium.
- On account of the danger of spot corrosion the chloride, nitrate and sulfate contents of the heating water must not exceed 200 mg/l in total.
- The pH value of the heating water should lie between 8.0 and 8.5 after 6 to 12 weeks of heating operation.

Filling and replacement water:

- For a plant using Hoval boilers untreated domestic water is generally best suited as filling and replacement water. However, the quality of the untreated domestic water must at least fulfil the standard set in VDI 2035 or be desalinated and/or be treated with inhibitors. The stipulations of EN 14868 must be observed.
- In order to maintain a high level of boiler efficiency and to avoid overheating of the heating surfaces the values given in the table should not be exceeded (dependent on boiler performance ratings - for multi-boiler plants rating of smallest boiler applies - and on the water content of the plant).
- The total amount of filling and replacement water which is used throughout the total service life of the boiler must not exceed three times the water capacity of the plant.
- Boilers with aluminium: generally inhibitors may be filled in only by a specialised company.
- If a reduction in water hardness is necessary we recommend a complete desalination (softening is not appropriate). Residual tap water might remain in the plant as a result of the preceding flushing process, entailing an increase in the sum of alkaline-earths to approx. 0.5 mol/m³. During the filling procedure the conductance of the filling water should be supervised. This should be to approx. 100 µS/cm.

- After filling the conductance of the plant water should be between 50 and 200 µS/cm. The pH value will adjust itself thereby from initially 6.5-7.5 after some weeks been in use on 8.0-8.5. If this should not be the case, then specialised company for the water treatment is to be assigned. This company must as soon as the adjustment of the correct pH value has been completed by inhibitors, which are suitable for aluminium materials also regularly check the inhibitor concentration and the pH value.

Frost protection agent

The boiler must not be operated with frost protection agent in the heating water. Separate circuits are required in frost-protected systems.

Heating room

Gas boilers cannot be positioned in rooms in which halogen compounds can occur and into which combustion air can enter (e.g. wash-, dryer-, work room, hairdressers). Halogen compounds can be caused by cleaning and degreasing solutions, dissolvents, glue and bleaching lyes.

Combustion air supply

The supply of combustion air must be guaranteed. There must be no possibility to close the air supply opening. An air pipe D = 80 for direct combustion air (air-exhaust system) can be directly connected to the boiler.

The minimum free cross-section for the combustion air can be assumed simplified as follows:

- Room air-dependent operation:
Minimum free cross-section of the opening into the open: 150 cm² or twice 75 cm² and additionally 2 cm² necessary for each kW of output over 50 kW for vent in to the open.
- Room air-independent operation with separate combustion air pipe to the boiler:
0.8 cm² per 1 kW of output. The pressure drop in the combustion air pipe must be considered for the calculation of the flue gas system.

Table 1: Maximum filling quantity without/with demineralisation

Available for boiler with < 0.3 l/kW water capacity

	Total hardness of the filling water up to...							
	<0.1	0.5	1	1.5	2	2.5	3	>3.0
[mol/m ³] ¹⁾	<1	5	10	15	20	25	30	>30
f°H	<0.56	2.8	5.6	8.4	11.2	14.0	16.8	>16.8
d°H	<0.71	3.6	7.1	10.7	14.2	17.8	21.3	>21.3
e°H	<10	50.0	100.0	150.0	200.0	250.0	300.0	>300
~mg/l	<20	100.0	200.0	300.0	400.0	500.0	600.0	>600
Conductance ²⁾								
Boiler size of the individual boiler	maximum filling quantity without demineralisation							
30 to 50 kW	NO DEMAND	50 l/kW	50 l/kW	20 l/kW	20 l/kW	20 l/kW		
50 to 200 kW		50 l/kW	20 l/kW	20 l/kW			always desalinate	

¹⁾ Total of alkaline earths

²⁾ If the conductance in µS/cm exceeds the tabular value an analysis of the water is necessary.

Gas connection

Commissioning

- Start-up is to be carried out only by a specialist.
- Burner setting values according to the installation instructions.

Manual gas shut-off cock and gas filter

Immediately in front of the boiler a manual gas shut-off device (valve) must be installed according to relevant regulations. Should the local regulations or conditions demand this, an approved gas filter must be installed in the gas supply pipe between the gas valve (thermal released) and the boiler in order to prevent malfunction due to foreign particles being carried along with the gas.

Type of gas

- The boiler is only to be operated with the type of gas stated on the rating plate.

Gas pressure natural gas

- In boilers with a nominal heat load in excess of 70 kW, install a pressure regulator in accordance with EN88-1 in the gas supply line directly before the boiler.
- Necessary flow pressure at the boiler inlet: natural gas min. 17.4 mbar, max. 50 mbar

Propane gas pressure

- For propane, a gas pressure regulator must be provided on site for reducing the pilot pressure on the boiler
- Required flow pressure at the boiler entry: Propane min. 37 mbar, max. 50 mbar

Mud collector

Installation of a sludge collector with magnetic ring in the gas boiler return is recommended.

Pump after-run time

- During burner operation, the circulating pump must be constantly in operation and the minimum heating water circulation quantity must be guaranteed.
- After each burner switch-off, the circulating pump must be in operation for at least 2 minutes (is guaranteed by the boiler control).

Minimum water flow

- Depending upon type of boiler, different minimum quantities of rotating water are demanded. See also technical data.
- During the burner mode the circulating pump must always be in function and the minimum heating water circulating must be guaranteed.

Heating boiler in the attic

A water pressure guard is built in in the gas boiler, which automatically turns the gas boiler off in case of water shortage. Notice: Mounting of an expansion tank in the boiler flow and pump in the boiler return. See also paragraph "expansion tank"!

Condensate drainage

- A permit for discharge of the flue gas condensate into the sewage system must be obtained from the relevant authority or sewer operator.
- The condensate from the flue gas line can be discharged via the boiler. A condensate trap is no longer needed in the flue gas system.
- The condensate must be conducted openly (funnel) into the sewage system.
- Suitable materials for condensate drain:
 - stoneware pipes
 - pipes made from PVC
 - pipes made from polyethylene (PE)
 - pipes made from ABS or ASA

Flue gas system

- Gas boilers must be connected to a certified and approved flue gas system such as flue gas lines.
- Flue gas lines must be gas-, condensate- and over pressure-tight.
- The flue gas lines must be secured against unwanted loosening of the plug connections.
- The flue gas system must be connected with an angle, so that the resulting condensate of the flue gas system can flow back to the boiler and can be neutralised there before discharging into the canalisation.
- Gas boilers with condensation heat utilisation are to be connected to a flue gas line min. temperature class T120.
- A flue gas temperature limiter is integrated into the boiler.

Expansion tank

- An adequately dimensioned expansion tank must be provided.
- The expansion tank must be connected to the existing expansion connection (on the pump suction side, see dimensional drawing).
- Starting from 70 °C a connecting container is necessary.

Noise level

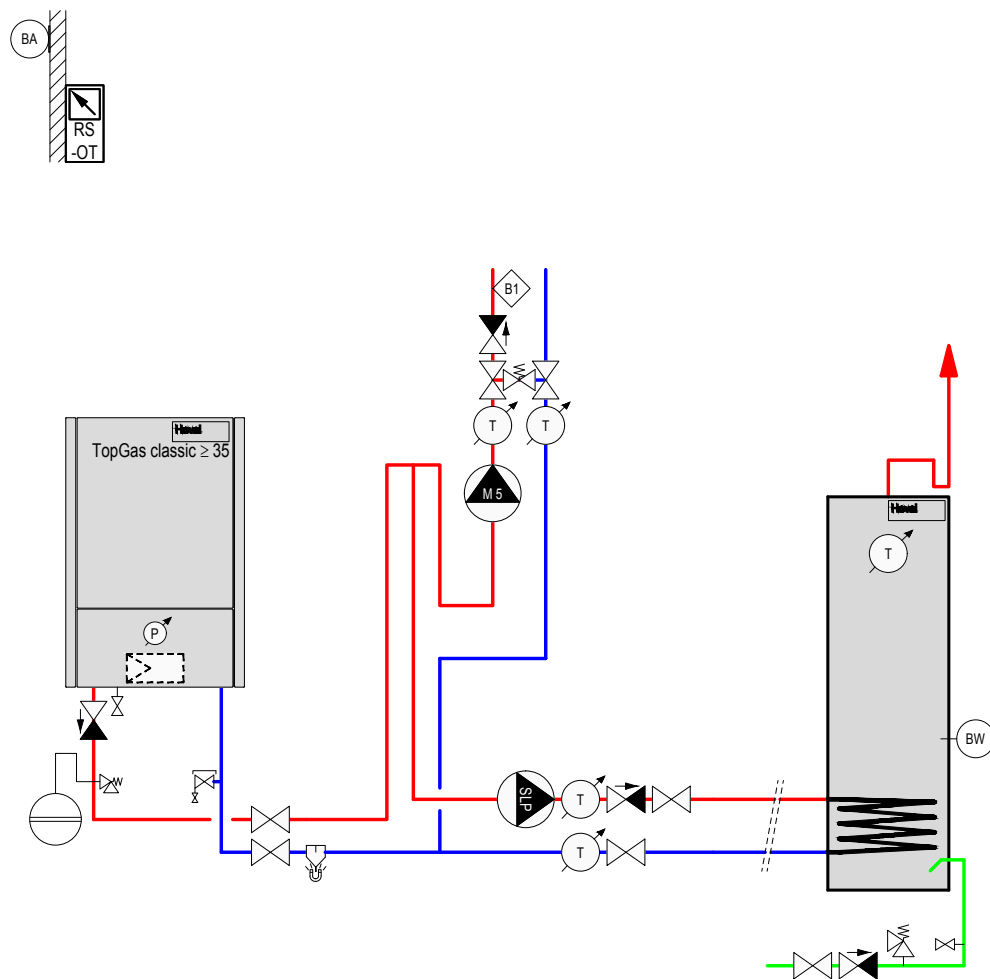
- The sound **power** level value is dependent on local and spacial circumstances.
- The sound **pressure** level is dependent on the installation conditions and can e.g. be 10 to 15 dB(A) lower than the sound **power** level at a distance of 1 m.

TopGas® classic (35-80)

Gas boiler with

- free-standing calorifier
- 1 direct circuit

Hydraulic schematic BDDE020



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

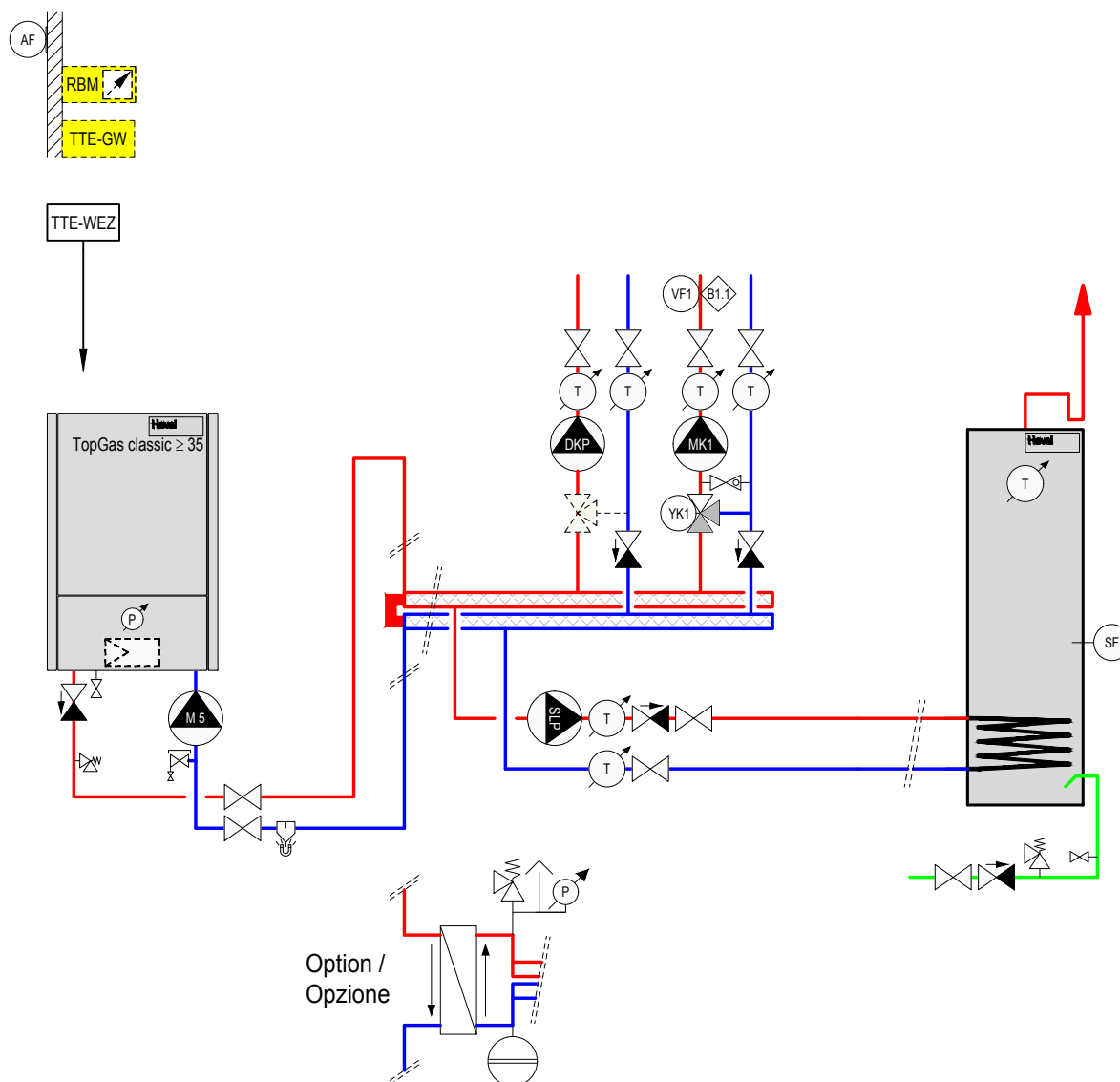
RS-OT	Room station (OpenTherm)
B1	Flow temperature monitor (if required)
BA	Outdoor sensor
BW	Calorifier sensor
SLP	Calorifier charging pump
M5	Boiler circuit pump

TopGas® classic (35-80)

Gas boiler with

- free-standing calorifier
- 1 direct circuit + 1-... mixer circuit(s)

Hydraulic schematics BDDE030



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (built-in)
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
DKP	Pump for heating circuit without mixer
SLP	Calorifier charging pump
M5	Boiler circuit pump

Option	
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E gateway

Hoval TopGas® classic (100,120)

Wall-hanging gas condensing boiler

- With condensing boiler technology
- Heat exchanger made of corrosion resistant aluminium alloy
- Built in:
 - pressure gauge
 - water pressure guard for water shortage protection
 - flue gas temperature sensor with flue gas temperature limiting function
 - automatic quick aspirator
- Pre-mixing surface burner made of stainless steel
 - Modulating with gas/air group control
 - Automatic ignition
 - Ionisation guard
 - Gas pressure monitor
- Minimal water circulation necessary (see technical data)
- Wall-hanging gas condensing boiler fully cased with coated white steel plates



Basic boiler control panel G04

- Control unit for gas burner with monitoring unit BIC 335
- Modulating burner control
- Main guard "I/O"
- Operation and fault indication
- Connection for external gas valve and fault indication

Optional

- For propane
- Free-standing calorifier
- Different designs of control panels

Delivery

- Wall-hanging gas condensing boiler fully cased

Heating controller set RS-OT

- For 1 heating circuit without mixing operation
- Weather-controlled regulation for continuously adjustable decreased boiler water temperature
- With integrated overpluggable room temperature sensor
- Located in boiler room or living room
- Outdoor sensor
- Immersion sensor (calorifier sensor)

BMS module 0-10 V/OT (OpenTherm) (building management system)

For boiler control as part of a building management system.

External **temperature control** 0-10 V.
0-1.0 V no requirement
1.0-9.5 V 0-100 °C

Can be installed in the boiler control panel!

Model range

TopGas® classic type	Output 50/30 °C kW
(100)	20.7-100.0
(120)	22.9-120.5

Heating controller set TopTronic® E ZE1

(Can be built in) as supplement for basic boiler control panel G04.

TopTronic® E control module

- Colour touchscreen 4.3 inch
- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with HovalConnect option)
- Adaptation of the heating strategy based on the weather forecast (with HovalConnect option)

TopTronic® E basic module heat generator (TTE-WEZ)

- Control functions integrated for
 - 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 hot water loading circuit
- bivalent and cascade management
- Rast-5 basic plug set
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- Cable set ZE1 for connecting the TopTronic® E control to the basic boiler control panel

Permissions boilers

TopGas® classic (100,120)
CE product ID No. CE-0085BQ0218

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion heat accounting or
 - module expansion universal
- Can be networked with a total of up to 16 controller modules:
 - heating circuit/hot water module
 - solar module
 - buffer module
 - measuring module

No additional module expansions or controller modules can be installed in the boiler control panel!

The supplementary plug set must be ordered in order to use expanded controller functions.

Further information about the TopTronic® E
see "Controls"

Delivery

- Heating controller set separately packed, mounting on site

Wall-hanging gas condensing boiler



Hoval TopGas® classic (100,120)
Heat exchanger made of aluminium alloy
Modulating burner made of stainless steel
and basic boiler control panel, fully cased.

TopGas® classic type	Output at 50/30 °C kW
(100)	20.7 - 100.0
(120)	22.9 - 120.5

Part No.

7014 584
7014 585

Accessories



Gas filter
with measurement nozzle before and
behind the filter inset (diameter: 9 mm)
Pore width of the filter inset < 50 µm
Max. pressure difference 10 mbar
Max. inlet pressure 100 mbar

Type	Connection
70612/6B	Rp ¾"
70602/6B	Rp 1"

2007 995
2007 996

Conversion kit for propane
for TopGas® classic (35-120)

6047 634



Connection set AS 40-TG
consisting of:
Return:

- Shut-off valve with connecting nut 2" and boiler fill and drain valve with coupling G ¾" (external) for connecting an expansion tank
- Speed-controlled high-efficiency pump, various versions

Flow:

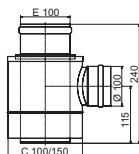
- Fitting piece (180 mm) G2" with integrated non-return valve
- Shut-off valve with integrate non-return valve and side output with safety valve DN 25, 3 bar up to 120 kW incl. boiler fill and drain valve

Connection set / pump Type	Speed control
AS 40-TG/SPS-I 9 PM1	•
AS 40-TG/SPS-I 12 PM1	•

Speed control legend

PWM1 PWM control signal heating or PM1

6043 801
6043 802



Separating piece C100/150 -> 2xE100PP

for UltraOij® (35,50),
TopGas® classic (35-120),
UltraGas® (50-100)

for separate conduction of flue gas and
combustion air (LAS-system)

Recommendation:

If the air inlet at the facade is near a
noise sensitive place (window of
bedroom, terrace etc.), we recommend
to use a sound absorber at the
direct combustion air inlet.



Backflow check valve

for TopGas® classic (60-120)
to prevent the emergence
of flue gas from the boiler
in the use of cascades

Boiler controller with heating controller set RS-OT



Heating controller set RS-OT

(Not for mixing operation!)

For 1 heating circuit without
mixing operation

Flow temperature control controlled by
atmospheric conditions with outdoor
sensor, immersion sensor (calorifier
sensor) and overridable room
temperature sensor.

Can be implemented as a room
temperature control without
outdoor sensor.

TopGas® comfort (10-22)

TopGas® classic (35-120)

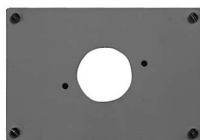
For integration into boiler control
panel:

Mounting set RS-OT must be ordered.

TopGas® comfort (10-22)

TopGas® classic (35-120)

Only wall mounting possible!



Mounting set RS-OT

Assembly set for mounting of heating
controller set RS-OT into boiler



BMS module 0-10 V/

OT - OpenTherm

(building management system)

no control unit TopTronic® E or RS-OT
necessary

power supply via OT bus

Temp. control external with 0-10 V

0-1.0 V no request

1.0-9.5 V0-100 °C

Cannot be installed in boiler control
panel:

TopGas® classic (12-30)

Can be installed in boiler control
panel:

TopGas® classic (35-120),

TopGas® comfort

Part No.

2015 244

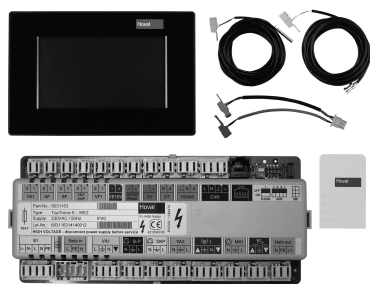
6036 265

6020 566

6018 218

6016 725

Boiler controller with heating controller set TopTronic® E



Heating controller set TopTronic® E ZE1

(Can be built in) as supplement for basic boiler control panel G04.

- Installation of the TopTronic® E control module in the front of the control panel
- Installation of the TopTronic® E basic module heat generator in the controller

Notice

No additional module expansions or controller modules can be installed in the boiler control panel! This means an additional mixer circuit must be implemented using the TopTronic® E heating circuit/hot water module in an external wall casing.

- Can be optionally networked with a total of up to 16 controller modules (incl. solar module)

Consisting of:

- TopTronic® E control module
- TopTronic® E basic module heat generator
- Rast-5 basic plug set
- fitting accessories
- 1 outdoor sensor AF/2P/K
- 1 immersion sensor TF/2P/5/6T/S1, L = 5.0 m with plug
- 1 contact sensor ALF/2P/4/T/S1, L = 4.0 m with plug
- cable set ZE1

For RS-OT and TopTronic® E ZE1

Flow temperature guard

for floor heating (per heating circuit 1 guard)
15-95 °C, differential gap 6 K, capillary tube max. 700 mm, setting (visible from the outside) inside the housing cover.



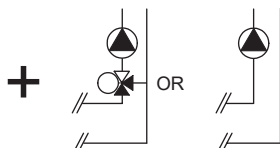
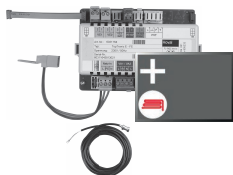
Clamp-on thermostat RAK-TW1000.S
Thermostat with strap, without cable and plug

Part No.

6037 312

242 902

TopTronic® E module expansions for TopTronic® E basic module heat generator



TopTronic® E module expansion heating circuit TTE-FE HK

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating circuit without mixer or
- 1 heating circuit with mixer

incl. fitting accessories

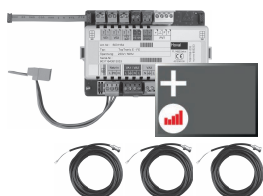
1x contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:

Wall housing, control panel

Notice

The supplementary plug set may have to be ordered to implement functions differing from the standard!



TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating/cooling circuit w/o mixer or
 - 1 heating/cooling circuit with mixer
- in each case incl. energy balancing

incl. fitting accessories

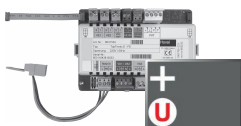
3x contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:

Wall housing, control panel

Notice

Suitable flow rate sensors (pulse sensors) must be provided on site.



TopTronic® E module expansion Universal TTE-FE UNI

Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

incl. fitting accessories

Can be installed in:

Wall housing, control panel

Further information

see "Controls" - "Hoval TopTronic® E module expansions" chapter

Notice

Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

Part No.

6034 576

6037 062

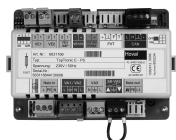
6034 575

Accessories for TopTronic® E



Supplementary plug set

for basic module heat generator (TTE-WEZ)
for controller modules and module expansion
TTE-FE HK



TopTronic® E controller modules

TTE-HK/WW TopTronic® E heating circuit/
hot water module
TTE-SOL TopTronic® E solar module
TTE-PS TopTronic® E buffer module
TTE-MWA TopTronic® E measuring module



TopTronic® E room control modules

TTE-RBM TopTronic® E room control modules
easy white
comfort white
comfort black



Enhanced language package TopTronic® E

one SD card required per control module
Consisting of the following languages:
HU, CS, SL, RO, PL, TR, ES, HR, SR, JA, DA



HovalConnect

HovalConnect LAN
HovalConnect WLAN

HovalConnect available from mid-2020

Up to that point, TopTronic® E online is delivered.



TopTronic® E interface modules

GLT module 0-10 V
HovalConnect Modbus
HovalConnect KNX

TopTronic® E wall casing

WG-190 Wall casing small
WG-360 Wall casing medium
WG-360 BM Wall casing medium with
control module cut-out
WG-510 Wall casing large
WG-510 BM Wall casing large with
control module cut-out



TopTronic® E sensors

AF/2P/K Outdoor sensor
TF/2P/5/6T Immersion sensor, L = 5.0 m
ALF/2P/4/T Contact sensor, L = 4.0 m
TF/1.1P/2.5S/6T Collector sensor, L = 2.5 m



System housing

System housing 182 mm
System housing 254 mm



Bivalent switch

Part No.

6034 499
6034 503

6034 571
6037 058
6037 057
6034 574

6037 071
6037 069
6037 070

6039 253

6049 496
6049 498

6034 578
6049 501
6049 593

6035 563
6035 564
6035 565
6035 566
6038 533

2055 889
2055 888
2056 775
2056 776

6038 551
6038 552

2061 826

Further information
see "Controls"

Accessories



Gas valve, passage DN 20, R 1/4"
with thermally releasing cut-off device

2012 077



Gas valve, corner version DN 20, R 1/4"
with thermally releasing cut-off device

2012 078



Sludge separator with magnet MBL DN40 IT

With variable connection for vertical or horizontal pipelines

Performance-enhancing magnetic assistance from removable, external magnet.

Fast and continuous removal of ferromagnetic and non-magnetic dirt and sludge particles from heating or cooling circuits with the medium water or water/glycol (50/50%)
Brass casing

2062 167

Sludge separation up to a particle size of 5 micrometres - separation and sludge removal without interrupting operation by the spiral pipe insert
With unscrewable casing bottom part for cleaning and inspection work complete with sludge removal tap.

Nominal diameter: DN40
Pipe connection: Rp 1 1/2" (internal thread)
Installation length: 128 mm
Max. operating pressure: 10 bar
Max. flow temperature: 110 °C
Max. throughput: 5.0 m³/h
Max. flow speed: 1.0 m/s
Max. pressure drop: 5.8 kPa
Contents: 0.75 l
Weight: 3.7 kg
Type: MBL DN 40 IT



Automatic quick release air vent 1/2"
with cut-off valve

2002 582

Service



Commissioning

Commissioning by works service or Hoval trained authorised serviceman/company is condition for warranty.

For commissioning and other services please contact your Hoval sales office.

TopGas® classic (100,120)

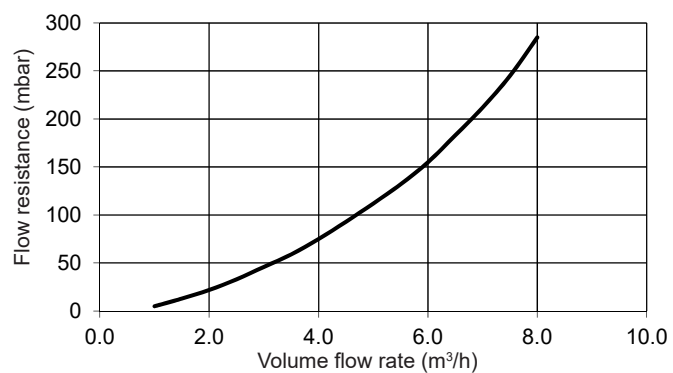
Type		(100)	(120)
• Nominal heat output at 80/60 °C, natural gas	kW	18.6-91.2	20.7-109.7
• Nominal heat output at 50/30 °C, natural gas	kW	20.7-100.0	22.9-120.5
• Nominal heat output at 80/60 °C, propane ²⁾	kW	22.9-90.4	23.7-107.6
• Nominal heat output at 50/30 °C, propane ²⁾	kW	25.3-100.0	26.1-120.0
• Nominal load with natural gas ¹⁾	kW	19.2-93.7	21.1-114.0
• Nominal load with propane ²⁾	kW	23.7-93.0	24.6-111.5
• Operating pressure heating min./max. (PMS)	bar	1/4	1/4
• Test pressure (PT)	bar	6	6
• Operating temperature max. (T _{max})	°C	85	85
• Boiler water content (V _(H2O))	l	7.0	7.0
• Boiler flow resistance	z-value	see diagram	
• Minimum water flow	l/h	800	800
• Boiler weight (without water content, incl. casing)	kg	130	130
• Boiler efficiency at 80/60 °C in full-load operation (NCV / GCV)	%	97.8/88.2	98.6/88.9
• Boiler efficiency at 30 % partial load (EN 15502) (NCV / GCV)	%	107.6/97.0	106.1/95.8
• Room heating energy efficiency			
- without control	ηs %	92	91
- with control	ηs %	94	93
- with control and room sensor	ηs %	96	95
• NOx class (EN 15502)		6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	28.0	31.0
• CO ₂ content in flue gas max./min. output	%	8.8/8.8	9.2/8.8
• Heat loss in standby mode	Watt	115	115
• Dimensions		see table of dimensions	
• Gas flow pressure min./max.			
- Natural gas E/LL	mbar	17.4-50	17.4-50
- Liquid gas	mbar	37-50	37-50
• Gas connection values at 15 °C/1013 mbar:			
- Natural gas E - (Wo = 15.0 kWh/m ³) NCV = 9.97 kWh/m ³	m ³ /h	1.9-9.4	2.1-11.4
- Natural gas LL- (Wo = 12.4 kWh/m ³) NCV = 8.57 kWh/m ³	m ³ /h	2.2-10.9	2.5-13.3
- Propane ²⁾ (NCV = 25.9 kWh/m ³)	m ³ /h	0.9-3.6	0.9-4.3
• Operation voltage	V/Hz	230/50	230/50
• Electrical power consumption min./max.	Watt	22/150	22/214
• Stand-by	Watt	6	6
• IP rating (integral protection)	IP	40D	40D
• Permitted ambient temperature during operation	°C	5-40	5-40
• Sound power level			
Heating noise (EN 15036 Part 1) (room air dependent)	dB(A)	63	63
• Condensate quantity (natural gas) at 50/30 °C	l/h	8.9	10.3
• pH value of the condensate		4-6	4-6
• Construction type		B23, C13(x), C33(x), C53(x), C63(x), C93(x)	
• Flue gas system			
- Temperature class		T120	T120
- Flue gas mass flow at nominal heat load (dry)	kg/h	152	187
- Flue gas mass flow at lowest nominal heat load (dry)	kg/h	29.2	32
- Flue gas temperature at nominal output and operation 80/60 °C	°C	63	67
- Flue gas temperature at nominal output and operation 50/30 °C	°C	43	46
- Flue gas temperature at lowest heat load and operation 50/30 °C	°C	30	30
- Maximum permitted temperature of the combustion air	°C	50	50
- Volume flow rate combustion air	Nm ³ /h	125	153
- Maximum supply pressure for supply air and flue gas line	Pa	140	140
- Maximum draught/depression at flue gas outlet	Pa	-50	-50

¹⁾ Data related to NCV. The boiler series is tested for EE/H-settings. With a factory setting of the Wobbe coefficient of 15.0 kWh/m³ operation at a Wobbe coefficient of 12.0 up to 15.7 kWh/m³ is possible without new settings.

²⁾ Data related to NCV. TopGas® classic is also suitable for propane/butane (liquid gas) mixtures.

Flow resistance on the heating water side

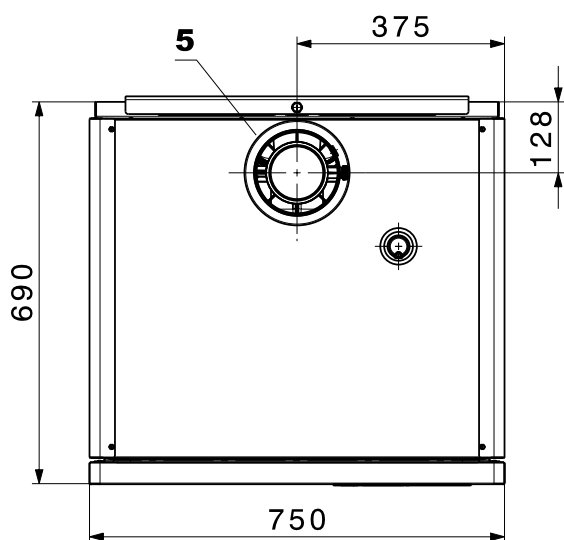
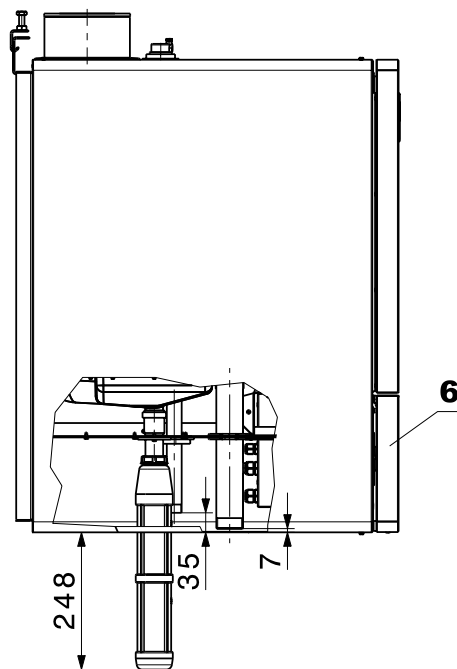
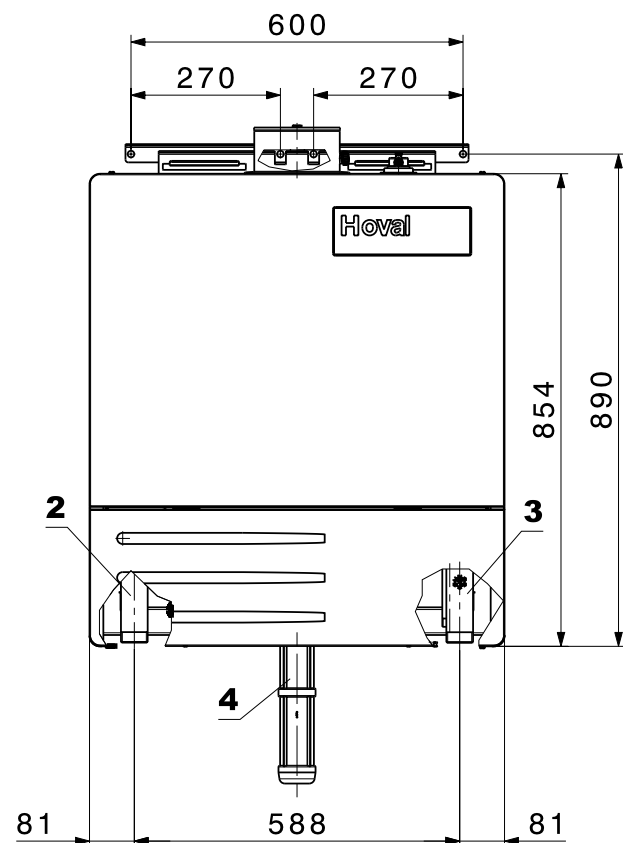
TopGas® classic (100,120)



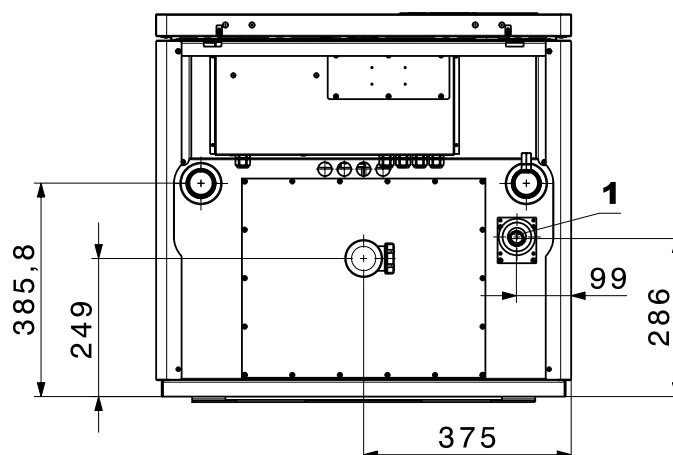
TopGas® classic (100,120)
Minimum spaces

(Dimensions in mm)

- Sideways 50 mm
- Space to ceiling dependent on the flue gas system
- Front 500 mm



View from bottom



- | | | |
|---|------------------------------------|----------|
| 1 | Gas connection | R ¾" |
| 2 | Heating flow | R 1½" |
| 3 | Heating return | R 1½" |
| 4 | Condensate drain | DN 40 |
| 5 | LAS flue gas/supply air connection | C100/150 |
| 6 | Cover control panel | |

Standards and guidelines

The following standards and guidelines must be complied with:

- Hoval technical information and installation instructions
- hydraulic and technical control regulations of Hoval
- local building law
- fire protection regulations
- DIN EN 12828 Safety-relevant requirements
- DIN EN 12831 Heaters Rules for the calculation of the heat requirements of buildings
- VDI 2035 Protection against damage by corrosion and boiler scale formation in heating and service water installations
- local fire brigade regulations
- EN 12828 Heating systems in buildings
- The authorisation for the drainage into the canalisation of the flue gas condensate has to be given by the local authorities.

Water quality

Heating water:

- The European Standard EN 14868 and the Directive VDI 2035 must be observed.
- Hoval boilers and calorifiers are designed for heating plants without significant oxygen intake (plant type I according to EN 14868).

The following systems must be equipped with **separate circuits**:

- Plants with
 - **continuous** oxygen intake (e.g. under-floor heating systems without diffusion proof plastic piping) or
 - **intermittent** oxygen intake (e.g. where frequent refilling is necessary)
- Treated heating water must be tested at least once yearly, according to the inhibitor manufacturer's instructions, more frequent testing may be necessary.
- A refilling is not recommended if the quality of the heating water in existing installations (e.g. exchange of boiler) conforms to VDI 2035. The Directive VDI 2035 applies equally to the replacement water.
- New and if applicable existing installations must be adequately cleaned and flushed before being recharged! The boiler may only be filled after the heating system has been flushed.

- Parts of the boiler which have contact with water are made of aluminium.
- On account of the danger of spot corrosion the chloride, nitrate and sulfate contents of the heating water must not exceed 200 mg/l in total.
- The pH value of the heating water should lie between 8.0 and 8.5 after 6 to 12 weeks of heating operation.

Filling and replacement water:

- For a plant using Hoval boilers untreated domestic water is generally best suited as filling and replacement water. However, the quality of the untreated domestic water must at least fulfil the standard set in VDI 2035 or be desalinated and/or be treated with inhibitors. The stipulations of EN 14868 must be observed.
- In order to maintain a high level of boiler efficiency and to avoid overheating of the heating surfaces the values given in table 1 should not be exceeded (dependent on boiler performance ratings - for multi-boiler plants rating of smallest boiler applies - and on the water content of the plant).
- The total amount of filling and replacement water which is used throughout the total service life of the boiler must not exceed three times the water capacity of the plant.

Frost protection agent

- see separate engineering sheet "Use of frost protection agent".

Space requirements

See "Dimensions"

Heating room

- Gas boilers cannot be positioned in rooms in which halogen compounds can occur and into which combustion air can enter (e.g. wash-, dryer-, work room, hairdressers and so on).
- Halogen compounds can be caused by cleaning and degreasing solutions, disinfectants, glue and bleaching lyes.

Combustion air supply

The supply of combustion air must be guaranteed. There must be no possibility to close the air supply opening. For direct combustion air to boiler (LAS system) mount the connection for direct combustion air inlet.

The minimum free cross-section for the combustion air can be assumed simplified as follows. Considering nominal output!

- **Room air-dependent operation:** Minimum free cross-section of the opening into the open: 150 cm² or twice 75 cm² and additionally 2 cm² necessary for each kW of output over 50 kW for vent in to the open.
- **Room air-independent operation with separate combustion air pipe to the boiler:** 0.8 cm² per 1 kW of output. The pressure drop in the combustion air pipe must be considered for the calculation of the flue gas system.

Gas connection

Commissioning

- Start-up is to be carried out only by a specialist.
- Burner setting values according to the installation instructions.

Manual gas shut-off valve and gas filter

Immediately in front of the boiler, a manual gas shut-off device (valve) must be installed according to relevant regulations. Should the local regulations or conditions demand this, an approved gas filter must be installed in the gas supply pipe between the gas valve and the boiler in order to prevent malfunction due to foreign particles being carried along with the gas.

Construction of recommended gas connection



Legend:

gas ball valve

gas hose/compensator

gas filter

pressure gauge with test burner and push-button valve

Type of gas

- The boiler is only to be operated with the type of gas stated on the rating plate.
- A gas pressure controller to reduce the boiler inlet pressure must be installed on site for propane.

Gas pressure natural gas

Necessary flow pressure at the boiler inlet:

For TopGas® (100,120)

- min. 17.4 mbar, max. 50 mbar

Gas pressure propane

Necessary flow pressure at the boiler inlet:

For TopGas® (100,120)

- min. 37 mbar, max. 50 mbar

Table 1: Maximum filling quantity without/with demineralisation

	Total hardness of the filling water up to...							
	<0.1	0.5	1	1.5	2	2.5	3	>3.0
[mol/m³] ¹⁾	<1	5	10	15	20	25	30	>30
f°H	<0.56	2.8	5.6	8.4	11.2	14.0	16.8	>16.8
d°H	<0.71	3.6	7.1	10.7	14.2	17.8	21.3	>21.3
~mg/l	<10	50.0	100.0	150.0	200.0	250.0	300.0	>300
Conductance ²⁾	<20	100.0	200.0	300.0	400.0	500.0	600.0	>600
boiler size of the individual boiler	maximum filling quantity without demineralisation							
up to 50 kW	NO DEMAND							20 l/kW
50 to 200 kW		50 l/kW	20 l/kW	20 l/kW	20 l/kW	20 l/kW	20 l/kW	ALWAYS DESALINATE

¹⁾ Total of alkaline earths

²⁾ If the conductance in µS/cm exceeds the tabular value an analysis of the water is necessary.

Heating pump

- The heating pump must be installed in the flow so that the pump works in a state of overpressure (prevention of cavitation).

Pump after-run time

- The circulating pump must continue to run for at least 2 minutes each time the burner is switched off (the pump after-run time is included in the boiler control with the TopTronic® E regulation).

Heating boiler in the attic

- A water pressure guard is built in in the boiler, which automatically turns the gas burner off in case of water shortage.

Condensate drain

- The condensate from the flue gas system can be discharged through the boiler. A condensate trap is not needed anymore with the flue gas system.
- The condensate drainage without neutralisation is allowed, if you are using for the drain only plastic tubes or stoneware (possibly obtain special exemption from the relevant authority).
- A siphon must be installed at the condensate outlet on the gas boiler (included in the boiler scope of delivery).
- The condensate must be openly lead into the canalisation (funnel).

Expansion tank

- An adequately dimensioned pressure expansion tank must be provided.
- The expansion tank has to be installed in principle at the boiler return.
- At the heating flow a safety valve must be installed. An automatic exhaustor is built in the boiler.

Noise level

- The sound **power** level value is independent on local and spacial circumstances.
- The sound **pressure** level is dependent on the installation conditions and can e.g. be 5 to 10 dB(A) lower than the sound power level at a distance of 1 m.

Recommendation:

If the air inlet at the facade is near a noise sensitive place (window of bedroom, terrace etc.), we recommend to use a sound absorber at the direct combustion air inlet.

Chimney dimensions

Basic rules:

- Height over sea level max. 1000 m.
- Introduction to a vertical section: 90°
- Combustion air:
In the case of room air-independent operation (accessories optional) the air pipe should be of the same dimension as the flue gas line.

Flue gas system

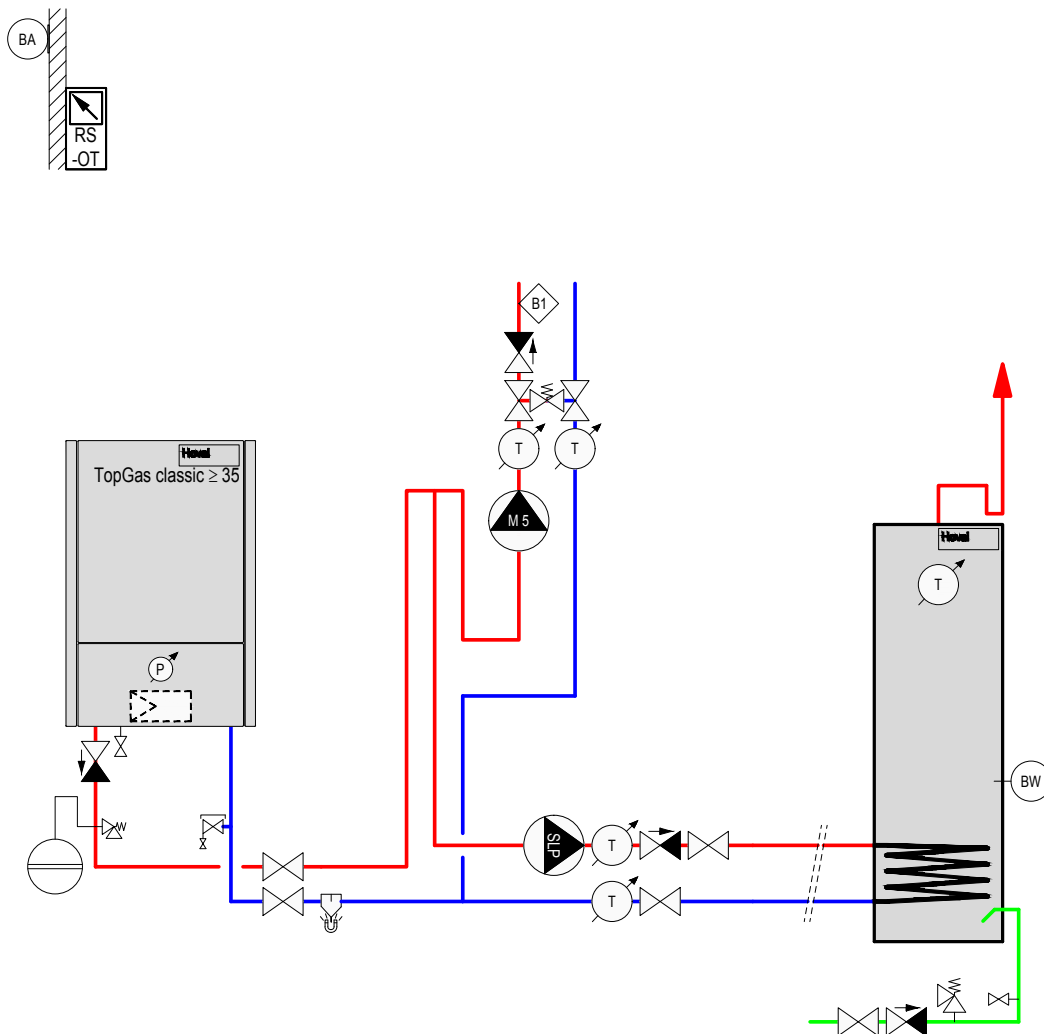
- Gas boilers must be connected to a certified and approved flue gas system such as flue gas lines.
- Flue gas lines must be gas-, condensate- and overpressure-tight.
- The flue gas lines must be secured against unwanted loosening of the plug connections.
- The flue gas system must be connected with an angle, so that the resulting condensate of the flue gas system can flow back to the boiler and can be neutralised there before discharging into the canalisation.
- Gas boilers with condensation heat utilisation are to be connected to a flue gas line min. temperature class T120.
- A flue gas temperature limiter is integrated into the boiler.

TopGas® classic (100,120)

Gas boiler with

- free-standing calorifier
- 1 direct circuit

Hydraulic schematic BDDE020



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

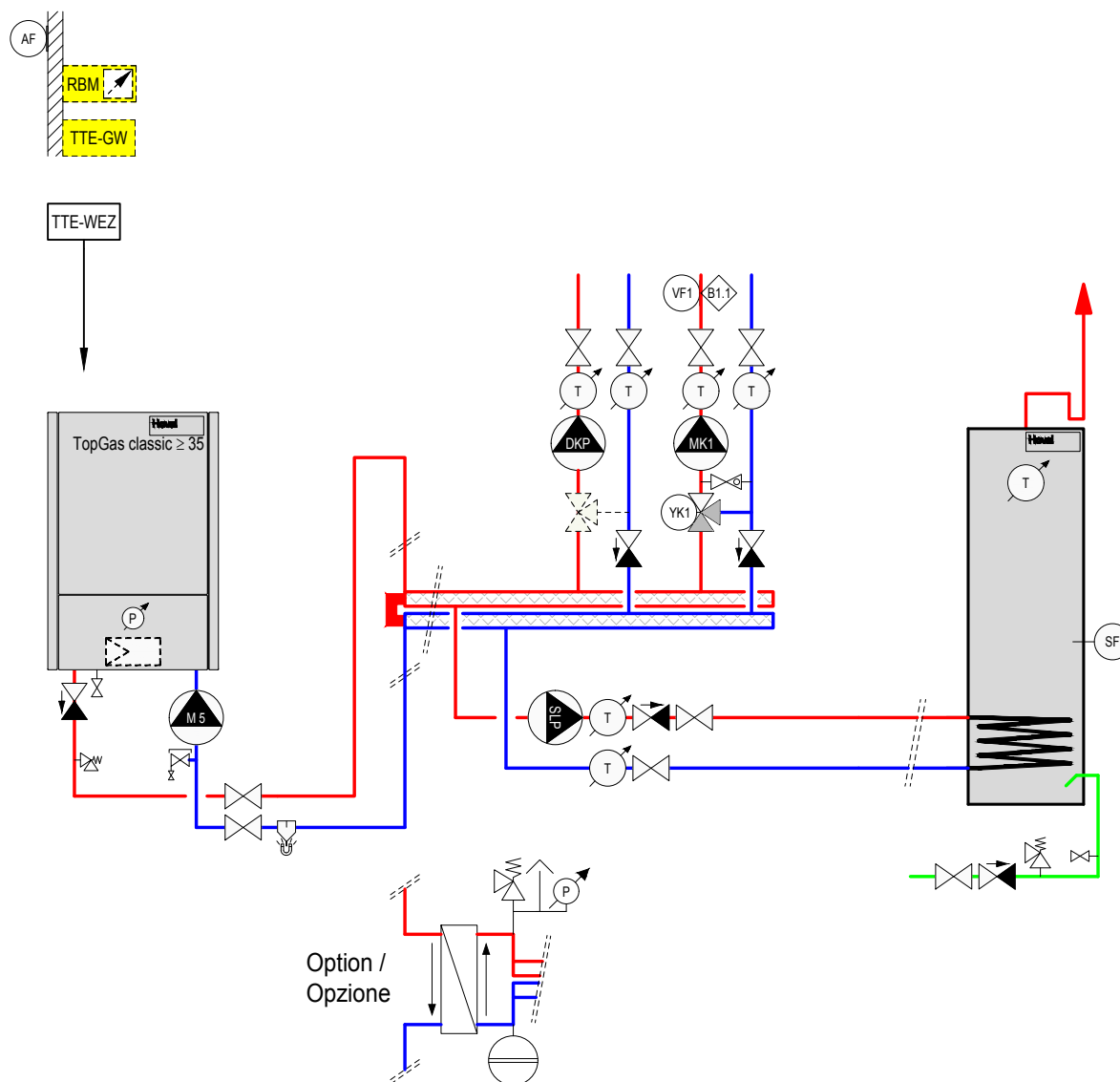
RS-OT	Room station (OpenTherm)
B1	Flow temperature guard (if required)
BA	Outdoor sensor
BW	Calorifier sensor
SLP	Calorifier charging pump
M5	Boiler circuit pump

TopGas® classic (100,120)

Gas boiler with

- free-standing calorifier
- 1 direct circuit
- 1 direct circuit + 1-... mixer circuit(s)

Hydraulic schematic BDDE030



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (installed)
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
DKP	Pump for heating circuit without mixer
SLP	Calorifier charging pump
M5	Boiler circuit pump

Option

RBM	TopTronic® E room control module
TTE-GW	TopTronic® E gateway

Hoval UltraGas® (15-100)

Floor-standing gas condensing boiler

- Floor-standing gas condensing boiler, combustion chamber made of stainless steel
- Maximal flue gas condensation through downstream heating surface made of **aluFer®** stainless steel bounded pipe; flue gas side: aluminium water side: stainless steel
- Thermal insulation with mineral wool mat
- Water pressure sensor (minimal and maximal limiter integrated)
- Flue gas temperature sensor with flue gas limiter function
- Pre-mix burner
 - with blower and venturi
 - modulating operation
 - automatic ignition
 - ionisation guard
 - gas pressure monitor
- Gas boiler fully cased with steel plate, red powder-coated
- Heating connections to left and right for:
 - flow
 - return - high temperature
 - return - low temperature
- **UltraGas® (15-50):**
Flue gas connection backwards to the top
- **UltraGas® (70, 100):**
Concentric flue gas/combustion air connection, vertically upwards, horizontally to rear as option, see accessories and dimension sheet
- TopTronic® E controller installed
- Possibility of connecting an external gas solenoid valve with error output

TopTronic® E controller

Control panel

- Colour touchscreen 4.3 inch
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp

TopTronic® E control module

- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with online HovalConnect)
- Adaptation of the heating strategy based on the weather forecast (with online HovalConnect)

TopTronic® E basic module heat generator (TTE-WEZ)

- Control functions integrated for
 - 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 hot water loading circuit
 - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- Rast-5 basic plug set



Model range

UltraGas® Type		Output 40/30 °C kW
(15)	A	3.3-15.5
(20)	A	4.3-20.3
(27)	A	5.0-27.1
(35)	A	5.8-35.7
(50)	A	8.3-49.9
(70)	A	13.6-69.9
(100)		20.9-100.0

Energy efficiency class of the compound system with control.

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion heat accounting or
 - module expansion universal
- Can be networked with a total of up to 16 controller modules:
 - heating circuit/hot water module
 - solar module
 - buffer module
 - measuring module

Number of modules that can be additionally installed in the heat generator:

- 1 module expansion and 1 controller module **or**
- 2 controller modules

The supplementary plug set must be ordered in order to use expanded controller functions.

Further information about the TopTronic® E
see "Controls"

Permissions boilers

UltraGas® (15-100)

CE product ID No. CE-0085AQ0620

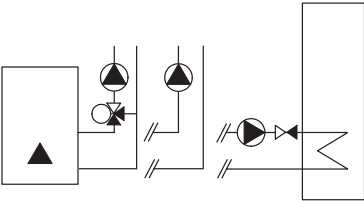
Optional

- For propane
- Free-standing calorifier see Calorifiers
- Flue gas systems

Delivery

- Floor-standing gas condensing boiler fully cased

Floor-standing gas condensing boiler



Hoval UltraGas® (15-100)

Floor-standing gas condensing boiler
with built-in Hoval TopTronic® E control

- Control functions integrated for
- 1 heating circuit with mixer
 - 1 heating circuit without mixer
 - 1 hot water loading circuit
 - bivalent and cascade management
- Can be optionally expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion heat accounting or
 - module expansion universal
 - Can be optionally networked with a total of up to 16 controller modules (incl. solar module)

Boiler made of steel with TopTronic® E control, combustion chamber made of stainless steel. Secondary heating surfaces made of **aluFer®** stainless steel composite pipe. Premix burner with blower. Modulating burner.

Delivery
Gas boiler fully panelled

Floor-standing gas condensing boiler
with TopTronic® E

UltraGas®		Output
Type		40/30 °C kW
(15)	A ➡	3.3-15.5
(20)	A ➡	4.0-20.3
(27)	A ➡	5.0-27.1
(35)	A ➡	5.8-35.7
(50)	A ➡	8.3-49.9
(70)	A ➡	13.6-69.9
(100)		20.9-100.0

Part No.

- 7013 300
- 7013 301
- 7013 302
- 7013 303
- 7013 304
- 7011 990
- 7011 991

Energy efficiency class of the
compound system with control

Accessories



Gas filter
with measurement nozzle before and
behind the filter inset (diameter: 9 mm)
Pore width of the filter inset < 50 µm
Max. pressure difference 10 mbar
Max. inlet pressure 100 mbar

Type	Connection
70612/6B	Rp ¾"
70602/6B	Rp 1"

Part No.

2007 995
2007 996

Modification set for propane
for UltraGas® (15-70)

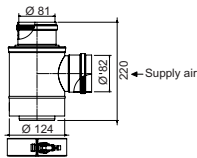
6047 605

Modification set for propane
for UltraGas® (100)

6047 609

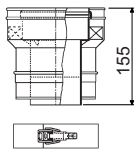
for Hoval UltraGas® (15-35)

Necessary accessories for
ambient air independent operation



Separating piece C80/125 -> 2xE80PP
for ambient air independent operation
for separate conduction of flue gas and
combustion air.

2010 174



Adapter piece C80/125 -> C100/150 PP

2018 533

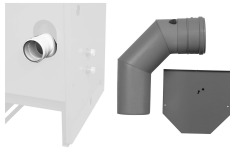
In the UltraGas®, ventilation of the installa-
tion or boiler room must be guaranteed for
operation INdependent from the room air.

For ambient air independent operation with
separate combustion air duct (not concentric).



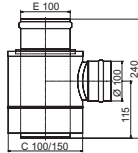
**Connection set for ambient air
independent operation without
sound absorber**
for UltraOi® (16-35),
UltraGas® (15-50), MultiJet® (20,25)
Consisting of:
corrugated pipe Ø 50 mm for
combustion air supply to burner.
Concentric boiler connection piece
E80 -> C80/125PP for flue gas
and supply air.
Necessary if no Hoval
LAS flue gas system is used.

6027 510



Horizontal flue gas connection E100PP

for UltraOil® (50), UltraGas® (70,100)
for the conversion of the vertical
flue gas connection (series delivery)
to a horizontal to rear routed
flue gas connection.



Separating piece C100/150 -> 2xE100PP

for UltraOil® (35,50),
TopGas® classic (35-120),
UltraGas® (50-100)
for separate conduction of flue gas and
combustion air (LAS-system)

Recommendation:

If the air inlet at the facade is near a noise sensitive place (window of bedroom, terrace etc.), we recommend to use a sound absorber at the direct combustion air inlet.



Suction tube for combustion air

only necessary with horizontal and concentric flue gas connection (separate ducting of combustion air and flue gas).

Connection "Horizontal flue gas connection E 100PP" essential, \varnothing 75 mm

The boiler room must be ventilated.

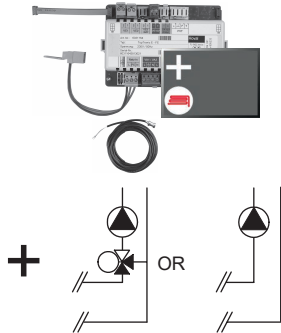
Part No.

6016 933

2015 244

6017 288

TopTronic® E module expansions
for TopTronic® E basic module heat generator



Notice
The supplementary plug set may have to be ordered to implement functions differing from the standard!

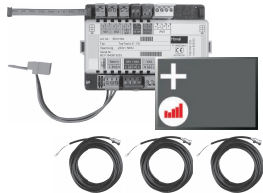
TopTronic® E module expansion heating circuit TTE-FE HK
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating circuit without mixer or
- 1 heating circuit with mixer

incl. fitting accessories
1x contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:
Boiler control, wall housing, control panel

6034 576



Notice
The flow rate sensor set must be ordered as well.

TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating/cooling circuit w/o mixer or
- 1 heating/cooling circuit with mixer

in each case incl. energy balancing

incl. fitting accessories
3x contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:
Boiler control, wall housing, control panel

6037 062



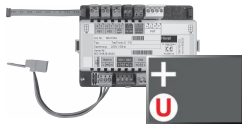
Flow rate sensor sets		
Plastic housing		
Size	Connection	Flow rate l/min
DN 8	G 3/4"	0.9-15
DN 10	G 3/4"	1.8-32
DN 15	G 1"	3.5-50
DN 20	G 1 1/4"	5-85
DN 25	G 1 1/2"	9-150

6038 526
6038 507
6038 508
6038 509
6038 510



Flow rate sensor sets		
Brass housing		
Size	Connection	Flow rate l/min
DN 10	G 1"	2-40
DN 32	G 1 1/2"	14-240

6042 949
6042 950



Notice
Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

TopTronic® E module expansion Universal TTE-FE UNI
Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions.

incl. fitting accessories

Can be installed in:
Boiler control, wall housing, control panel

6034 575

Further information
see "Controls" - "Hoval TopTronic® E module expansions" chapter

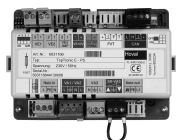
Accessories for TopTronic® E



Supplementary plug set

for basic module heat generator (TTE-WEZ)
for controller modules and module expansion
TTE-FE HK

6034 499
6034 503



TopTronic® E controller modules

TTE-HK/WW TopTronic® E heating circuit/
hot water module
TTE-SOL TopTronic® E solar module
TTE-PS TopTronic® E buffer module
TTE-MWA TopTronic® E measuring module

6034 571
6037 058
6037 057
6034 574



TopTronic® E room control modules

TTE-RBM TopTronic® E room control modules
easy white
comfort white
comfort black

6037 071
6037 069
6037 070



Enhanced language package TopTronic® E

one SD card required per control module
Consisting of the following languages:
HU, CS, SL, RO, PL, TR, ES, HR, SR, JA, DA

6039 253



HovalConnect

HovalConnect LAN
HovalConnect WLAN

6049 496
6049 498

HovalConnect available from mid-2020

Up to that point, TopTronic® E online is delivered.

TopTronic® E interface modules

GLT module 0-10 V
HovalConnect Modbus
HovalConnect KNX

6034 578
6049 501
6049 593



TopTronic® E wall casing

WG-190 Wall casing small
WG-360 Wall casing medium
WG-360 BM Wall casing medium with
control module cut-out
WG-510 Wall casing large
WG-510 BM Wall casing large with
control module cut-out

6035 563
6035 564
6035 565
6035 566
6038 533



TopTronic® E sensors

AF/2P/K Outdoor sensor
TF/2P/5/6T Immersion sensor, L = 5.0 m
ALF/2P/4/T Contact sensor, L = 4.0 m
TF/1.1P/2.5S/6T Collector sensor, L = 2.5 m

2055 889
2055 888
2056 775
2056 776



System housing

System housing 182 mm
System housing 254 mm

6038 551
6038 552



Bivalent switch

2061 826

Further information

see "Controls"

Accessories

Part No.



Flow temperature guard
for under floor heating (1 guard per heating circuit) 15-95 °C, differential gap 6 K, capillary tube max. 700 mm, setting (visible from the outside) inside the housing cover.

Clamp-on thermostat *RAK-TW1000.S*
Thermostat with strap,
enclosed cable and plug

242 902



Set clamp-on thermostat *RAK-TW1000.S*
Thermostat with strap,
with cable (4 m) and plug

6033 745

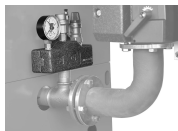


Immersion thermostat *RAK-TW1000.S SB 150*
Thermostat with immersion sleeve ½" - depth
of immersion 150 mm, brass nickel-plated

6010 082

CO monitor
For safety shut-off of the
boiler on leakage of
carbon monoxide
incl. connection cable

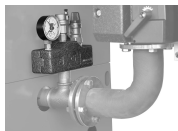
6043 277



Installation example

for UltraGas® (15-50)
Safety set SG15-1"
Suitable up to max. 50 kW
complete with safety valve (3 bar)
Pressure gauge and automatic air vent
with cut off valve
Connection: 1" internal thread

641 184



Installation example

for UltraGas® (70,100)
Safety set SG20-1"
Range of application to 100 kW
complete with safety valve (3 bar)
Pressure gauge and autom.
aspirator with shut-off valve.
Connection: DN20 1" internal thread

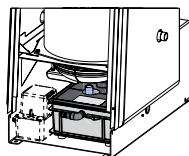
6014 390



Boiler socket
for MultiJet® (20,25),
UltraOil® (16-35), UltraGas® (15-50)
to elevate the condensate drainage
made of steel
height 150 mm
anthracite painted

6025 418

Condensate drain for Hoval UltraGas® (15-90)



Condensate pump

for transporting condensation water into a higher drainage duct.
Including connection line,
completely wired,
cable and plug for connection
to the boiler controller
max. transport height: 3.5 m
Delivery rate up to 294 l/h
combinable with neutralisation box
can be mounted in boiler socket

Neutralisation box

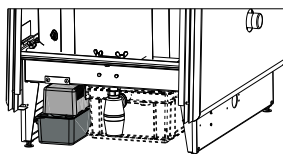
for transporting condensation water into a lower lying drainage duct
incl. condensate neutralisation
incl. neutralisation granulate 3 kg
combinable with condensate pump
can be mounted in boiler socket

Neutralization PC G100

for UltraGas® (15-100)
TopGas® classic, TopGas® comfort
TopGas® combi
Neutralization device with
condensation drain line in lower
mounted outflow line. Equipped with
a neutralization cartridge
Certified to DVGW VP114
Can be installed underneath
the boiler
One neutralization device is
required per boiler type.



Condensate drain for Hoval UltraGas® (70,100)



Condensate pump

for UltraGas® (70,100), UltraOil® (50)
for transporting condensation water into a higher drainage duct
Including connection line
completely wired
cable and plug for connection
to the boiler controller
Max. transport height: 3.5 m
combinable with neutralisation box
can be mounted in boiler socket

Neutralization PC G100

for UltraGas® (15-100)
TopGas® classic, TopGas® comfort
TopGas® combi
Neutralization device with
condensation drain line in lower
mounted outflow line. Equipped with
a neutralization cartridge
Certified to DVGW VP114
Can be installed underneath
the boiler
One neutralization device is
required per boiler type.

Neutralisation granulate

for neutralisation box
Refill set volume 3 kg
Life time of one filling:
approx. 2-4 years; depending on amount
of condensate



Part No.

6034 771

6024 764

6051 513

2028 906

6034 772

6051 513

2028 906

Boiler connection set



Connection set AS25-S/NT/HT
for mounting a
heating regulating armature HA25 for
MultiJet® (12,16), UltraOil® (16,20),
UltraGas® (15,27)
Rigid flow pipe and flexible
return pipe
Suitable for left or right connection
Low/high temperature
Connection set completely insulated
For mounting a heating
regulating armature HA20 an
adapter set DN 20 - DN 25 is required.

6017 055



Connection set AS32-S/NT/HT
for mounting a
heating regulating armature HA32
for UltraGas® (35,50)
Rigid flow pipe and flexible
return pipe with fastening material
Suitable for left or right connection
Low/high temperature
Connection set completely insulated
For mounting a heating
regulating armature HA25 an
adapter set DN 25 - DN 32 is required.

6014 846



Connection set AS40-S/NT/HT
for mounting a
heating regulating armature HA40
for UltraOil® (50), UltraGas® (70,100)
Rigid flow pipe and flexible
return pipe with screw flange R 1 1/2"
Suitable for left or right connection
Low/high temperature
Connection set completely insulated
For mounting a heating
regulating armature HA32 an
adapter set DN 32 - DN 40 is required.

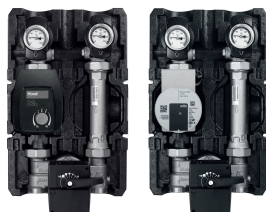
6014 848



Connection set AS 25-LG
for mounting a
Compact charging group LG-2
for MultiJet® (12-25),
UltraOil® (16-35), UltraGas® (15-27)
Suitable for left or right connection
Low-temperature return
Connection set completely insulated
made of flexible pipes

6034 818

Heating armature groups



Heating armature group HA-3BM-R

with 3-way motor mixer and heat-insulating box.
Installation right (flow left)

HA group/pump Speed control EEI



DN 20 (¾")

HA20-3BM-R/HSP 4	•		•	•	0.18	6051 715
HA20-3BM-R/HSP 6	•		•	•	0.20	6051 716
HA20-3BM-R/SPS-S 7	•	•	•		0.20	6049 541
HA20-3BM-R/SPS-S 8	•	•	•		0.20	6049 542

DN 25 (1")

HA25-3BM-R/HSP 6	•		•	•	0.20	6051 717
HA25-3BM-R/SPS-S 7	•	•	•		0.20	6049 545
HA25-3BM-R/SPS-S 8	•	•	•		0.20	6049 546
HA25-3BM-R/SPS-I 8 PM1	•		•	•	0.23	6046 612
HA25-3BM-R					without pump	6046 642

Pumps for HA25-3BM-R

see "Circulating pumps".

Pump installation dimensions 1½" x 180 mm

DN 32 (1¼")

HA32-3BM-R/SPS-S 7	•	•	•		0.20	6049 549
HA32-3BM-R/SPS-S 8	•	•	•		0.20	6049 550
HA32-3BM-R/SPS-I 8 PM1	•		•	•	0.23	6046 618
HA32-3BM-R/SPS-I 12 PM1	•		•	•	0.23	6046 619
HA32-3BM-R					without pump	6046 643

Pumps for HA32-3BM-R

see "Circulating pumps".

Pump installation dimensions 2" x 180 mm

DN 40 (1½")

HA40-3M-R/SPS-I 8 PM1	•		•	•	0.23	6040 903
HA40-3M-R/SPS-I 12 PM1	•		•	•	0.23	6040 904
HA40-3M-R					without pump	6014 867

Pumps for HA40-3M

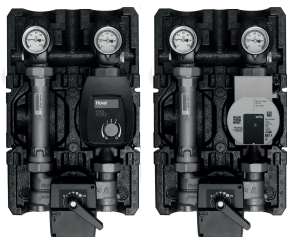
see "Circulating pumps".

Pump installation dimensions DN 40/PN 6 x 250 mm

Speed control legend

	Δp-v	Variable differential pressure
	ENF	Vent function 10 min.
		PWM control signal heating
	Δp-c	Constant differential pressure
		Constant rotational Speed

Heating armature groups



Heating armature group HA-3BM-L
with 3-way motor mixer and heat-insulating box.
Installation left (flow right)

HA group/pump Speed control EEI



DN 20 (¾")

HA20-3BM-L/HSP 4	•		•	•	0.18	6051 718
HA20-3BM-L/HSP 6	•		•	•	0.20	6051 719
HA20-3BM-L/SPS-S 7	•	•	•		0.20	6049 543
HA20-3BM-L/SPS-S 8	•	•	•		0.20	6049 544

DN 25 (1")

HA25-3BM-L/HSP 6	•		•	•	0.20	6051 720
HA25-3BM-L/SPS-S 7	•	•	•		0.20	6049 547
HA25-3BM-L/SPS-S 8	•	•	•		0.20	6049 548
HA25-3BM-L/SPS-I 8 PM1	•		•	•	0.23	6046 624
HA25-3BM-L					without pump	6046 644

Pumps for HA25-3BM-L

see "Circulating pumps".

Pump installation dimensions 1½" x 180 mm

DN 32 (1¼")

HA32-3BM-L/SPS-S 7	•	•	•		0.20	6049 551
HA32-3BM-L/SPS-S 8	•	•	•		0.20	6049 552
HA32-3BM-L/SPS-I 8 PM1	•		•	•	0.23	6046 630
HA32-3BM-L/SPS-I 12 PM1	•		•	•	0.23	6046 631
HA32-3BM-L					without pump	6046 645

Pumps for HA32-3BM-L

see "Circulating pumps".

Pump installation dimensions 2" x 180 mm

Part No.

Speed control legend

	Δp-v	Variable differential pressure
	ENF	Vent function 10 min.
		PWM control signal heating
	Δp-c	Constant differential pressure
		Constant rotational Speed



Adapter set DN32-DN25
for the installation of the HA group
DN32 to a connection set DN25.

6007 191



Adapter fitting DN32-DN40
for the installation of the HA group
DN32 to a wall distributor DN40 or a
connection set AS40-S/NT/ HT.

6014 863



Adapter set DN 20-DN 25
for the installation of the HA group
DN 20 to a wall distributor DN 25 or
a connection set DN 25.
Installation height 120 mm

6013 693



Adapter fitting DN25-DN32
for the installation of the HA group
DN25 to a wall distributor DN32.

6006 954



Loading group LG-2
Heating armature group HA-2
For the connection of a side calorifier or
as heating circuit without mixer, with heat-
insulating box. Installation right (flow left).

Charging/HA group/pump Speed control EEI

					≤
--	--	--	--	--	---

DN 20 (¾")					
LG/HA20-2/HSP 4	•		•	•	0.18
LG/HA20-2/HSP 6	•		•	•	0.20
LG/HA20-2/SPS-S 7	•	•	•		0.20
LG/HA20-2/SPS-S 8	•	•	•		0.20
					6051 743
					6051 744
					6040 906
					6040 907

DN 25 (1")					
LG/HA25-2/HSP 6	•		•	•	0.20
LG/HA25-2/SPS-S 7	•	•	•		0.20
LG/HA25-2/SPS-S 8	•	•	•		0.20
LG/HA25-2/SPS-I 8 PM1	•		•	•	0.23
LG/HA25-2	without pump				0.20
					6051 745
					6049 553
					6049 554
					6046 636
					6046 646

Pumps for LG/HA25-2
see "Circulating pumps".
Pump installation dimensions 1½" x 180 mm

DN 32 (1¼")					
LG/HA32-2/SPS-S 8	•	•	•		0.21
LG/HA32-2/SPS-I 8 PM1	•		•	•	0.23
LG/HA32-2	without pump				0.20
					6049 555
					6046 641
					6046 647

Pumps for LG/ HA32-2
see "Circulating pumps".
Pump installation dimensions 2" x 180 mm

Speed control legend

	Δp-v	Variable differential pressure
	ENF	Vent function 10 min.
		PWM control signal heating
	Δp-c	Constant differential pressure
		Constant rotational Speed

**Pressure expansion tanks, heating
armature groups and wall distributors**
see "Various system components"

System modules
see "Controls"



Wall brackets
for mounting a Hoval
armature group on the wall.

Type	Axle spacing mm	Connection		Wall clear- ance mm
		top	bottom	
DN 20	90	Rp 1"	R 1"	70,85,100
DN 25	125	Rp 1½"	R 1"	87-162
DN 32	125	Rp 2"	R 1½"	142,167

6019 209
6019 210
6025 295

Service



Commissioning

Commissioning by works service or Hoval
trained authorised serviceman/company
is condition for warranty.

For commissioning and other services
please contact your Hoval sales office.

UltraGas® (15-27)

Type		(15)	(20)	(27)
• Nominal heat output at 80/60 °C, natural gas	kW	3.0-14.3	3.8-18.7	4.5-25.0
• Nominal heat output at 40/30 °C, natural gas	kW	3.3-15.5	4.3-20.3	5.0-27.1
• Nominal heat output at 50/30 °C, natural gas ⁵⁾	kW	3.0-15.2	4.0-20.2	5.0-26.9
• Nominal heat output at 80/60 °C, propane ²⁾	kW	4.5-13.8	4.9-18.6	6.6-24.3
• Nominal heat output at 40/30 °C, propane ²⁾	kW	5.0-15.3	5.5-20.7	7.3-27.0
• Nominal heat output at 50/30 °C, propane ⁵⁾	kW	4.8-15.3	5.2-20.7	7.3-27.0
• Nominal load with natural gas ¹⁾	kW	2.9-14.5	3.8-18.9	4.7-25.4
• Nominal load with propane ²⁾	kW	4.7-14.3	5.1-19.3	6.8-25.2
• Operating pressure heating min./max. (PMS)	bar	1/3	1/3	1/3
• Operating temperature max. (T _{max})	°C	85	85	85
• Boiler water content (V _(H2O))	l	57	55	51
• Flow resistance boiler ³⁾	z value	3.5	3.5	3.5
• Minimum circulation water quantity	l/h	-	-	-
• Boiler weight (without water content, incl. casing)	kg	176	179	186
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV)	%	97.5/87.8	97.0/88.1	97.9/88.2
• Boiler efficiency at 30 % partial load (NCV/GCV)	%	107.9/97.2	108.0/97.3	108.0/97.3
• Room heating energy efficiency				
- without control	ηs	%	91	92
- with control	ηs	%	93	94
- with control and room sensor	ηs	%	95	96
• NOx class (EN 15502)		6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx	mg/kWh	33	32
• Content of CO ₂ in the flue gas minimum/maximum output		%	8.8/9.0	8.8/9.0
• Heat loss in standby mode		Watt	160	160
• Dimensions		See table of dimensions		
• Gas flow pressure minimum/maximum				
- Natural gas E/LL	mbar	17.4-50	17.4-50	17.4-50
- Propane	mbar	37-50	37-50	37-50
• Gas connection value at 15 °C/1013 mbar:				
- Natural gas E (Wo = 15.0 kWh/m ³) NCV = 9.97 kWh/m ³	m ³ /h	0.29-1.45	0.38-1.90	0.47-2.55
- Natural gas LL (Wo = 12.4 kWh/m ³) NCV = 8.57 kWh/m ³	m ³ /h	0.34-1.69	0.44-2.21	0.55-2.96
- Propane (NCV = 25.9 kWh/m ³)	m ³ /h	0.18-0.55	0.20-0.75	0.26-0.97
• Operation voltage	V/Hz	230/50	230/50	230/50
• Electrical power consumption min./max.	Watt	20/44	22/62	20/56
• Stand-by	Watt	9	9	9
• IP rating (integral protection)	IP	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40
• Sound power level				
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	57	62	66
- Exhaust noise is radiated from the mouth (DIN 45635 part 47) (room air dependent/room air independent)	dB(A)	43	49	55
- Sound pressure level (depending on installation conditions) ⁴⁾	dB(A)	50	56	59
• Condensate quantity (natural gas) at 40/30 °C	l/h	1.3	1.8	2.4
• pH value of the condensate	approx.	4.2	4.2	4.2
• Construction type		B23P, C53, C63		
• Flue gas system				
Temperature class		T120	T120	T120
- Flue gas mass flow at nominal heat load (dry)	kg/h	23	31	42
- Flue gas mass flow at lowest nominal heat load (dry)	kg/h	4.7	6.0	7.1
- Flue gas temperature at nominal output and operation 80/60 °C	°C	62	63	64
- Flue gas temperature at nominal output and operation 40/30 °C	°C	45	45	45
- Flue gas temperature at lowest nominal heat load and operation 40/30 °C	°C	31	31	31
- Maximum permitted temperature of the combustion air	°C	50	50	50
- Volume flow rate combustion air	Nm ³ /h	17	23	31
- Maximum supply pressure for supply air and flue gas line	Pa	100	100	100
- Maximum draught/depression at flue gas outlet	Pa	-50	-50	-50

¹⁾ Data related to NCV. The boiler series is tested for EE/H-settings. With a factory setting of the Wobbe coefficient of 15.0 kWh/m³ operation at a Wobbe coefficient of 12.0 up to 15.7 kWh/m³ is possible without new settings (readjustment might be necessary).

²⁾ Data related to NCV.

³⁾ Flow resistance boiler in mbar = Volume flow (m³/h)² x z factor; or see diagram

⁴⁾ See also notices at "Engineering".

⁵⁾ Factory measurements

UltraGas® (35-100)

Type		(35)	(50)	(70)	(100)
• Nominal heat output at 80/60 °C, natural gas	kW	5.2-33.0	7.5-46.0	12.1-64.5	19.0-92.0
• Nominal heat output at 40/30 °C, natural gas	kW	5.8-35.7	8.3-49.9	13.6-69.9	20.9-100.0
• Nominal heat output at 50/30 °C, natural gas ⁵⁾	kW	5.8-34.3	8.0-48.8	13.5-69.0	20.9-99.0
• Nominal heat output at 80/60 °C, propane ²⁾	kW	6.9-32.2	9.9-45.5	15.4-63.3	23.0-92.0
• Nominal heat output at 40/30 °C, propane ²⁾	kW	7.7-35.7	10.9-49.9	17.1-69.9	25.3-100.0
• Nominal heat output at 50/30 °C, propane ⁵⁾	kW	7.6-34.3	10.9-49.9	17.1-69.0	25.0-99.0
• Nominal load with natural gas ¹⁾	kW	5.4-33.3	7.7-46.9	12.5-65.5	19.6-94.1
• Nominal load with propane ²⁾	kW	7.2-33.4	10.2-47.2	16.0-65.5	23.8-94.1
• Operating pressure heating min./max. (PMS)	bar	1/3	1/3	1/4	1/4
• Operating temperature max. (T _{max})	°C	85	85	85	85
• Boiler water content (V _(H2O))	l	81	75	157	144
• Flow resistance boiler ³⁾	z value	1.1	1.1	1.5	1.5
• Minimum circulation water quantity	l/h	-	-	-	-
• Boiler weight (without water content. incl. casing)	kg	205	217	302	331
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV)	%	97.9/88.2	98.0/88.3	98.0/88.3	97.6/87.9
• Boiler efficiency at 30 % partial load (NCV/GCV)	%	108.1/97.4	108.1/97.4	108.1/97.4	108.1/97.4
• Room heating energy efficiency					
- without control	ηs	%	92	92	92
- with control	ηs	%	94	94	94
- with control and room sensor	ηs	%	96	96	96
• NOx class (EN 15502)		6	6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx	mg/kWh	26	28	29
• Content of CO ₂ in the flue gas minimum/maximum output	%	8.8/9.0	8.8/9.0	8.8/9.0	8.8/9.0
• Heat loss in standby mode	Watt	220	220	290	290
• Dimensions	See table of dimensions				
• Gas flow pressure minimum/maximum					
- Natural gas E/LL	mbar	17.4-50	17.4-50	17.4-50	17.4-50
- Propane	mbar	37-50	37-50	37-50	37-50
• Gas connection value at 15 °C/1013 mbar:					
- Natural gas E (Wo = 15.0 kWh/m ³) NCV = 9.97 kWh/m ³	m ³ /h	0.54-3.34	0.77-4.70	1.25-6.57	1.97-9.44
- Natural gas LL (Wo = 12.4 kWh/m ³) NCV = 8.57 kWh/m ³	m ³ /h	0.63-3.89	0.90-5.47	1.46-7.64	2.29-10.98
- Propane (NCV = 25.9 kWh/m ³)	m ³ /h	0.28-1.29	0.39-1.82	0.62-2.53	0.92-3.63
• Operation voltage	V/Hz	230/50	230/50	230/50	230/50
• Electrical power consumption min./max.	Watt	24/95	26/119	25/91	21/230
• Stand-by	Watt	9	9	9	9
• IP rating (integral protection)	IP	20	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40
• Sound power level					
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	62	60	64	67
- Exhaust noise is radiated from the mouth (DIN 45635 part 47) (room air dependent/room air independent)	dB(A)	55	58	55	59
- Sound pressure level (depending on installation conditions) ⁴⁾	dB(A)	55	53	57	59
• Condensate quantity (natural gas) at 40/30 °C	l/h	3.1	4.4	6.2	8.9
• pH value of the condensate	approx.	4.2	4.2	4.2	4.2
• Construction type	B23P, C53, C63				
• Flue gas system					
- Temperature class		T120	T120	T120	T120
- Flue gas mass flow at nominal heat load (dry)	kg/h	55.0	78.0	109.0	157.0
- Flue gas mass flow at lowest nominal heat load (dry)	kg/h	8.1	11.6	18.8	29.5
- Flue gas temperature at nominal output and operation 80/60 °C	°C	65	68	63	65
- Flue gas temperature at nominal output and operation 40/30 °C	°C	46	46	43	44
- Flue gas temperature at lowest nominal heat load and operation 40/30 °C	°C	31	31	31	32
- Maximum permitted temperature of the combustion air	°C	50	50	50	50
- Volume flow rate combustion air	Nm ³ /h	41	58	81	117
- Maximum supply pressure for supply air and flue gas line	Pa	120	120	130	130
- Maximum draught/depression at flue gas outlet	Pa	-50	-50	-50	-50

¹⁾ Data related to NCV. The boiler series is tested for EE/H-settings. With a factory setting of the Wobbe coefficient of 15.0 kWh/m³ operation at a Wobbe coefficient of 12.0 up to 15.7 kWh/m³ is possible without new settings (readjustment might be necessary).

²⁾ Data related to NCV.

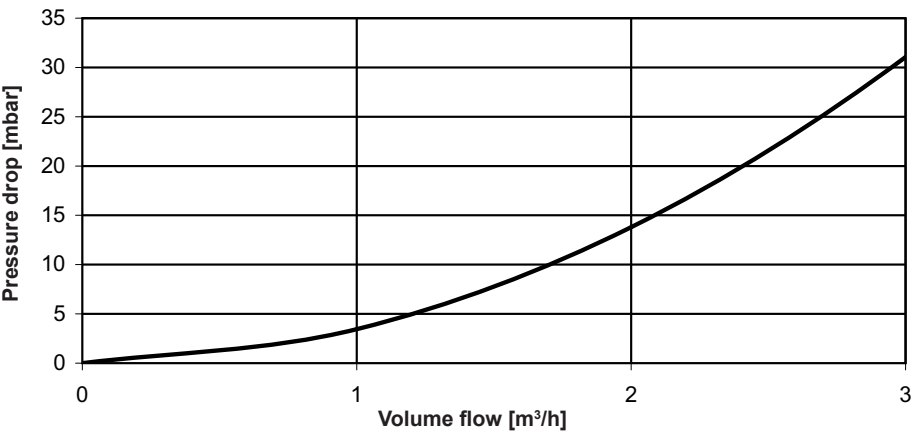
³⁾ Flow resistance boiler in mbar = Volume flow (m³/h)² x z factor; or see diagrams

⁴⁾ See also notices at "Engineering".

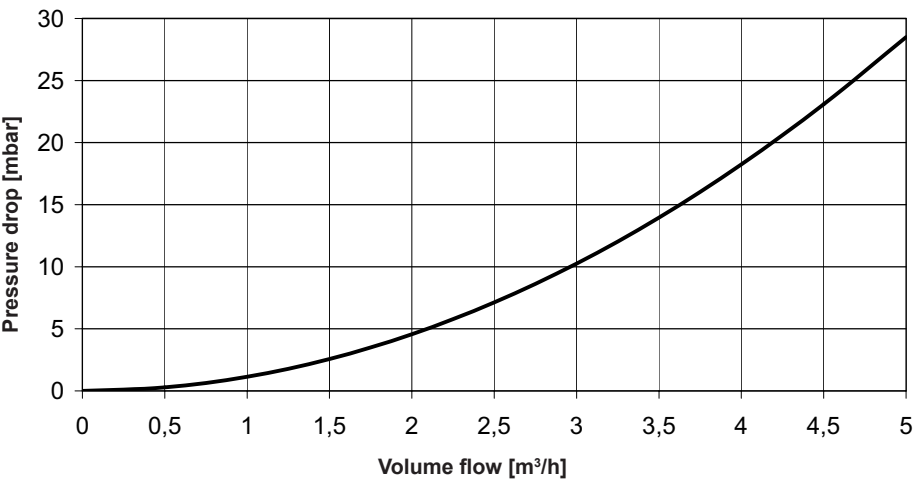
⁵⁾ Factory measurements

Flow resistance on the heating water side

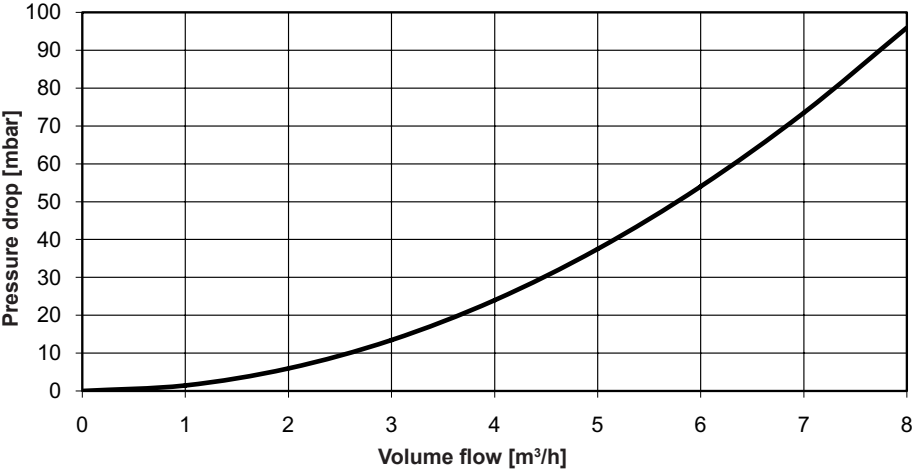
UltraGas® (15-27)



UltraGas® (35,50)



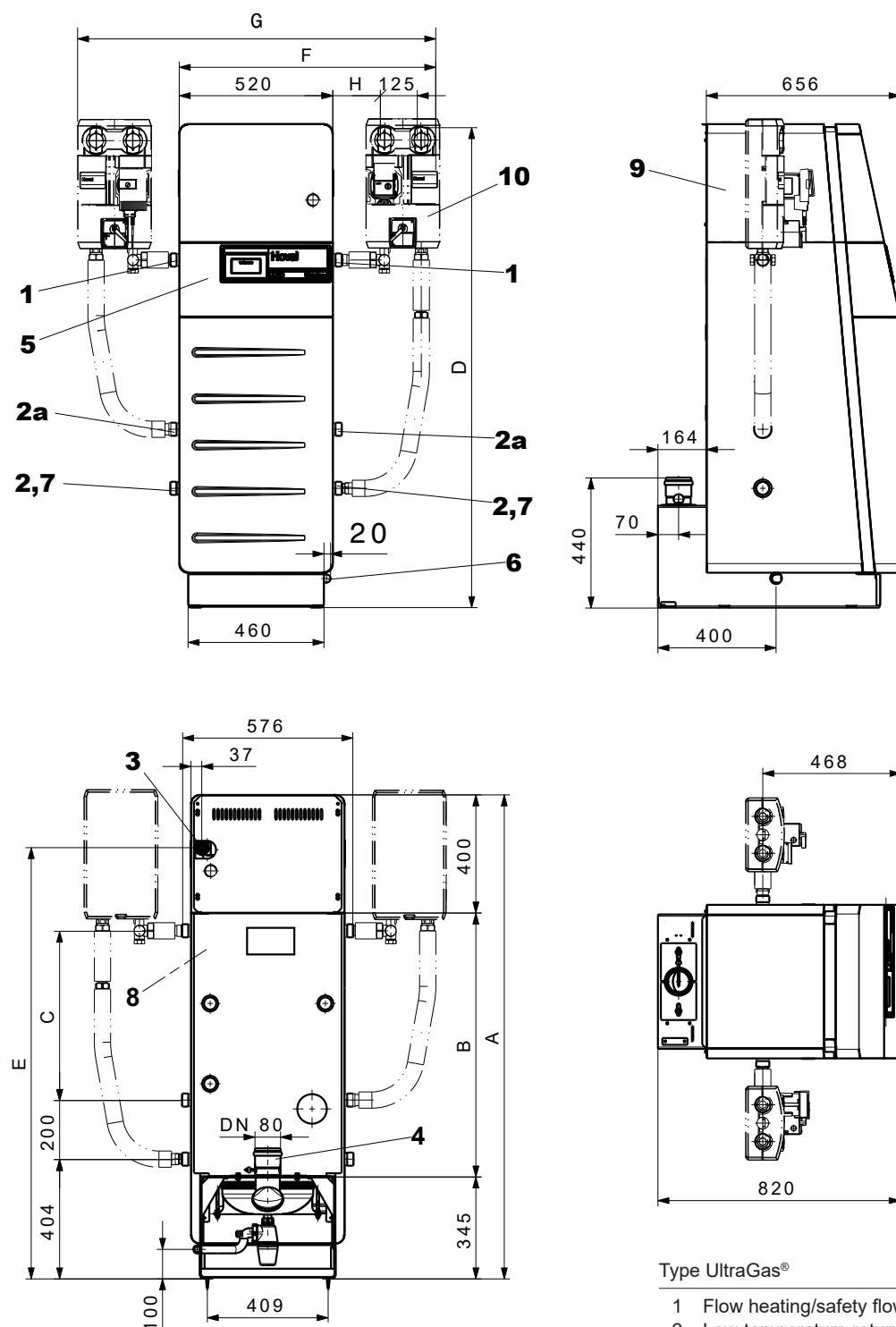
UltraGas® (70,100)



UltraGas® (15-27) with connection set AS25-S/NT/HT and armature group HA25

UltraGas® (35,50) with connection set AS32-S/NT/HT and armature group HA32

(Dimensions in mm)

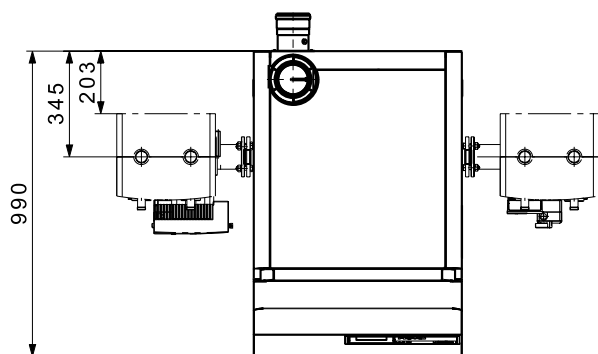
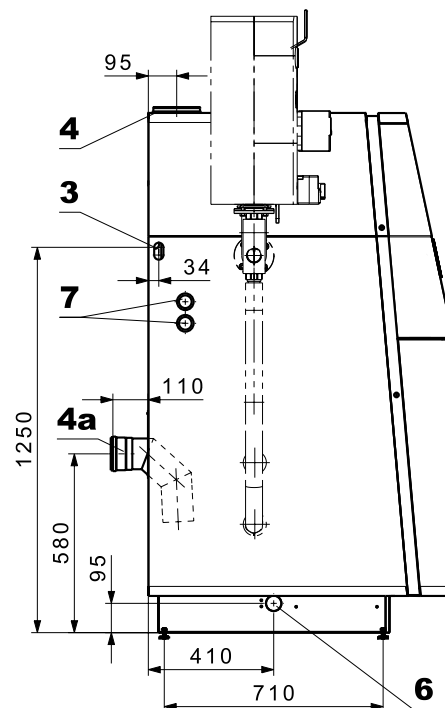
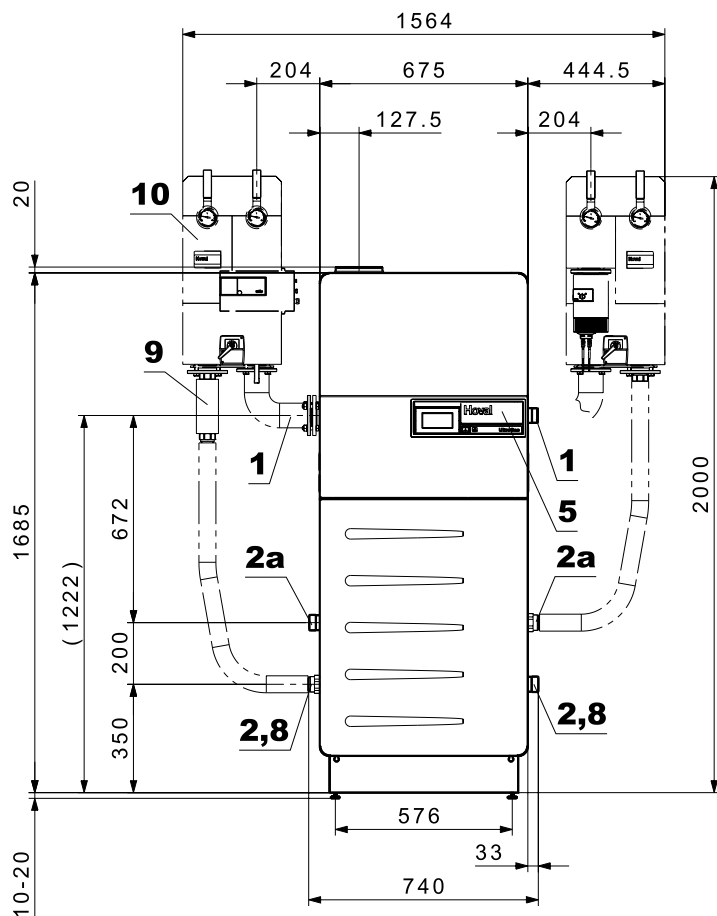


Type UltraGas® (15-27) (35,50)

1	Flow heating/safety flow	R 1"	R 1 1/4"
2	Low-temperature return	R 1"	R 1 1/4"
2a	High-temperature return	R 1"	R 1 1/4"
3	Gas connection	Rp 3/4"	Rp 3/4"
4	Flue gas outlet	DN 80	DN 80
5	Control panel		
6	Condensate drain (left or right) incl. siphon (DN 25) and 2 m PVC passage tube inner Ø 19 x 4 mm		
7	Drain		
8	Electric cable entry point		
9	Absorber hood		
10	Heating armature group or loading group (option)		

Type	A	B	C	D	E	F	G	H
UltraGas® (15-27)	1400	655	333	1330	1220	852	1184	144
UltraGas® (35,50)	1640	895	573	1620	1460	930	1340	222

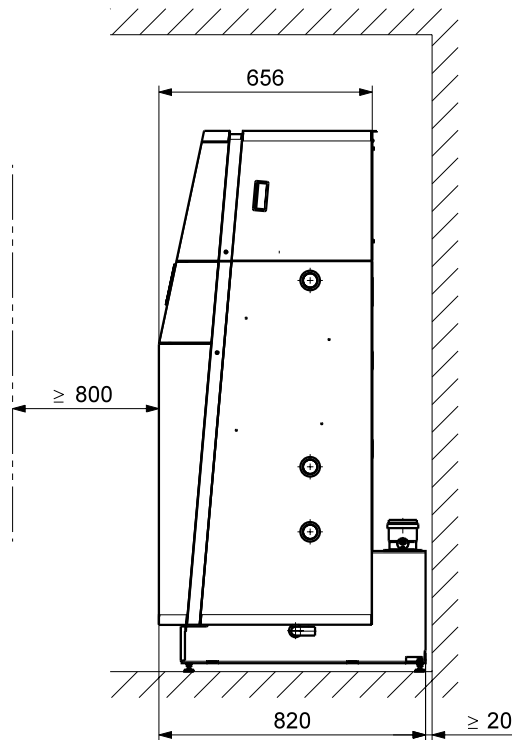
Hoval UltraGas® (70,100) with connection set AS40-S/NT/HT and armature group HA40 (Dimensions in mm)



Type UltraGas®	(70)	(100)
1. Flow heating/safety flow	R 1½"	R 1½"
2. Low-temperature return	R 1½"	R 1½"
2a. High-temperature return	R 1½"	R 1½"
3. Duct for the gas pipe left or right	R ¾"	R ¾"
4. LAS flue gas/supply air connection	C100/150	C100/150
4a. Combustion air connection to the back (option)	E 100	E 100
5. Control panel		
6. Condensate drain (left or right) incl. siphon (DN25) and 2 m PVC passage tube inner Ø 19 x 4 mm		
7. Electrical connection left or right		
8. Drain		
9. Connection set (option)		
10. Heating armature group or loading group (option)		

Space requirement (Dimensions in mm)

UltraGas® (15-50)



Door of the boiler inclusive burner swivelling to the top and to the left or to the front.

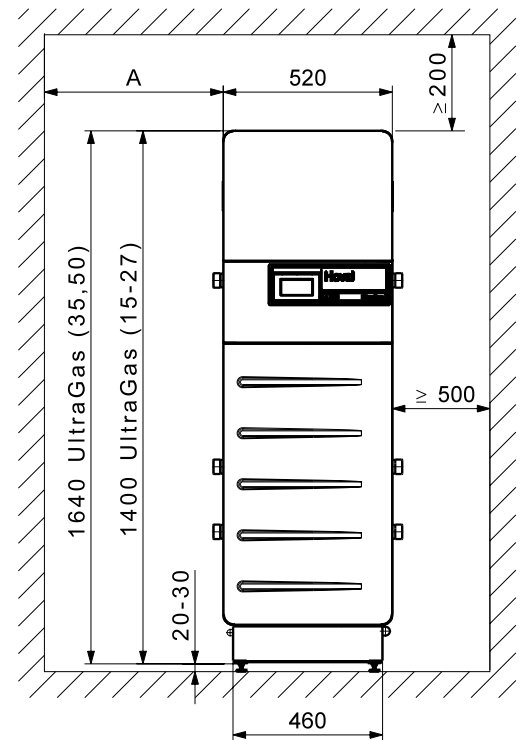
A = minimal 150 mm *

Burner service position in the front - boiler cleaning from the right

A = optimal 300 mm *

Burner service position left - boiler cleaning from the front

Boiler can be placed with the right side directly against the wall however, a minimum gap of 160 mm is required.

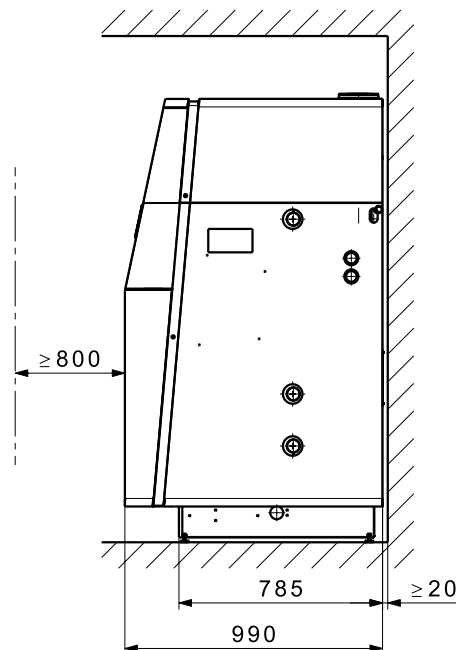


* without armature group,

500 mm with armature group

- The cleaning opening must be well accessible.
- Boiler rear side must be accessible.

UltraGas® (70,100)



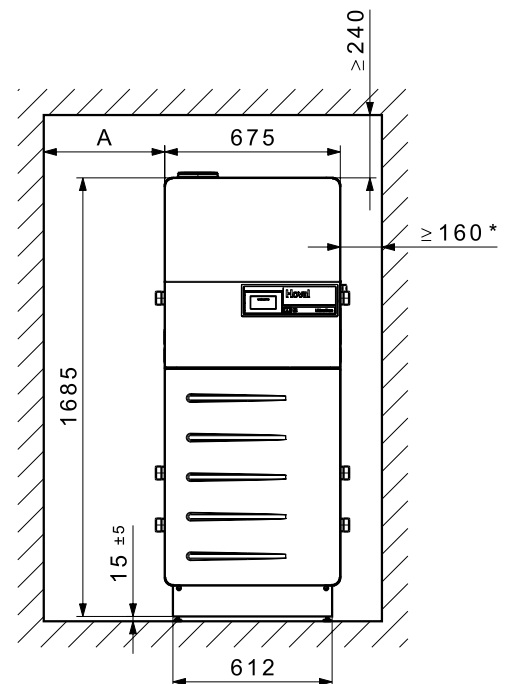
Door of the boiler inclusive burner swivelling to the top and to the left or to the front.

A = minimal 150 mm *

Burner service position in the front - boiler cleaning from the right

A = optimal 300 mm *

Burner service position left - boiler cleaning from the front



* without armature group,

500 mm with armature group

Standards and guidelines

The following standards and guidelines must be complied with:

- Hoval technical information and installation instructions
- hydraulic and technical control regulations of Hoval
- local building law
- fire protection regulations
- DIN EN 12828
- Safety-relevant requirements
- DIN EN 12831 Heaters
- Rules for the calculation of the heat requirements of buildings
- VDI 2035 Protection against damage by corrosion and boiler scale formation in heating and service water installations
- local fire brigade regulations

Water quality

Heating water:

- The European Standard EN 14868 and the Directive VDI 2035 must be observed.
- Hoval boilers and calorifiers are designed for heating plants without significant oxygen intake (plant type I according to EN 14868).
- Plants with
 - continuous oxygen intake (e.g. underfloor heating systems without diffusion proof plastic piping) or
 - intermittent oxygen intake (e.g. where frequent refilling is necessary)
 must be equipped with **separate circuits**.
- Treated heating water must be tested at least once yearly, according to the inhibitor manufacturer's instructions, more frequent testing may be necessary.
- A refilling is not necessary if the quality of the heating water in existing installations (e.g. exchange of boiler) conforms to VDI 2035. The Directive VDI 2035 applies equally to the replacement water.
- New and if applicable existing installations must be adequately cleaned and flushed before being recharged! The boiler may only be filled after the heating system has been flushed.

- Parts of the boiler/the calorifier which have contact with water are made of ferrous materials and stainless steel.
- On account of the danger of stress cracking corrosion in the parts made of stainless steel the chloride, nitrate and sulfate contents of the heating water must not exceed 50 mg/l in total.
- The pH value of the heating water should lie between 8.3 and 9.5 after 6 to 12 weeks of heating operation.
- The electrical conductivity of the heating water must not exceed the value of 200 µS/cm. Higher values are permissible when using conditioning agents.

Filling and replacement water:

- For a plant using Hoval boilers untreated domestic water is generally best suited as filling and replacement water. However, the quality of the untreated domestic water must at least fulfil the standard set in VDI 2035 or be desalinated and/or be treated with inhibitors. The stipulations of EN 14868 must be observed.
- In order to maintain a high level of boiler efficiency and to avoid overheating of the heating surfaces the values given in table 1 should not be exceeded (dependent on boiler performance ratings - for multi-boiler plants rating of smallest boiler applies - and on the water content of the plant).
- The total amount of filling and replacement water which is used throughout the total service life of the boiler must not exceed three times the water capacity of the plant.

Frost protection agent

- see separate engineering sheet "Use of frost protection agent".

Heating room

- Gas boilers cannot be positioned in rooms in which halogen compounds can occur and into which combustion air can enter (e.g. wash-, dryer-, work room, hairdressers and so on).
- Halogen compounds can be caused by cleaning and degreasing solutions, disinfectants, glue and bleaching lyes.

Combustion air supply

The supply of combustion air must be guaranteed. There must be no possibility to close the air supply opening. For direct combustion air to boiler (LAS system) mount the connection for direct combustion air inlet. It is very important to ensure that the combustion air is free from halogen compounds. These are present, for example, in spray cans, varnishes, glues, solvents and cleansing agents.

- In the UltraGas®, ventilation of the installation room must be guaranteed for operation independent from the room air.
- *Room air-dependent operation:*
Minimum free cross-section of the opening into the open: 150 cm² or twice 75 cm² and additionally 2 cm² necessary for each kW of output over 50 kW for vent into the open.

Gas connection

Manual gas shut-off tap and gas filter

Immediately in front of the boiler a manual gas shut-off device (tap) must be installed according to relevant regulations. Should the local regulations or conditions demand this, an approved gas filter must be installed in the gas supply pipe between the gas tap (thermally releasing) and the boiler in order to prevent malfunction due to foreign particles being carried along with the gas.

Commissioning

- Start-up is to be carried out only by a specialist of Hoval and the gas supplier.
- Burner setting values according to the installation instructions.

Shut-off valve

- A shut-off valve must be installed upstream of every gas boiler.

Construction of a recommended gas connection



Legend:



Gas ball valve



Gas hose/compensator



Gas filter



Pressure gauge with test burner and push button cock

Table 1: Maximum filling quantity without/with demineralisation

	Total hardness of the filling water up to...						
[mol/m³] ¹⁾	<0.1	0.5	1	1.5	2	2.5	3
f°H	<1	5	10	15	20	25	30
d°H	<0.56	2.8	5.6	8.4	11.2	14.0	16.8
e°H	<0.71	3.6	7.1	10.7	14.2	17.8	21.3
~mg/l	<10	50.0	100.0	150.0	200.0	250.0	300.0
Conductance ²⁾	<20	100.0	200.0	300.0	400.0	500.0	600.0
Boiler size of the individual boiler	maximum filling quantity without demineralisation						
up to 50 kW	NO DEMAND						20 l/kW
50 to 200 kW	50 l/kW	20 l/kW	20 l/kW	always desalinate			

¹⁾ Total of alkaline earths

²⁾ If the conductance in µS/cm exceeds the tabular value an analysis of the water is necessary.

Type of gas

- The boiler is only to be operated with the type of gas stated on the rating plate.

Gas pressure natural gas

- Necessary flow pressure at the boiler inlet: UltraGas® (15-100)
min. 17.4 mbar, max. 50 mbar

Gas pressure propane

- A gas pressure controller to reduce the boiler inlet pressure must be installed on-site for propane.
- Necessary flow pressure at the boiler inlet: UltraGas® (15-100)
min. 37 mbar, max. 50 mbar

Gas pressure regulator

- In boilers with a heat input in excess of 70 kW, install a pressure regulator in accordance with EN88-1 in the gas supply line directly before the boiler.

Closed heating system

The boiler is only approved for use in closed heating systems.

Minimum circulation water quantity

No minimum water circulation volume is required.

Calorifier connection

If a calorifier is connected, all heating groups must be provided with a mixer.

Boiler base

The boiler should be placed on a sufficiently high base (boiler base see accessories) to protect it against floor humidity and for the siphon for condensate drain.

Installation instructions

Please observe the installation instructions supplied with every boiler.

Space requirements

See "Dimensions"

Heating pump

- The heating pump must be installed in the flow so that the pump works in a state of overpressure (prevention of cavitation).

Heating boiler in the attic

- If the gas boiler is positioned on the top floor, the installation of a low water protection, which automatically turns the gas burner off in case of water shortage, is recommended.

Condensate drain

- A permit for discharge of the flue gas condensate into the sewage system must be obtained from the relevant authority or sewer operator.
- The condensate from the flue gas line can be discharged via the boiler. A condensate trap is no longer needed in the flue gas system.
- The condensate must be conducted openly (funnel) into the sewage system.
- Suitable materials for condensate drain:
 - stoneware pipes
 - pipes made from PVC
 - pipes made from polyethylene (PE)
 - pipes made from ABS or ASA

Expansion tank

- An adequately dimensioned expansion tank must be provided.
- The expansion tank has to be installed in principle at the boiler return.
- At the heating flow a safety valve must be installed. An automatic exhaustor is built in the boiler.

Noise damping

The following measures are possible for sound insulation:

- Make boiler room walls, ceiling and floor as solid as possible.
- If there are living areas above or below the boiler room, connect pipes flexibly using expansion joints.
- Connect circulating pumps to the piping network using expansion joints

Noise level

- The acoustic **power** level value is independent on the local and spacial circumstances.
- The acoustic **pressure** level is dependent on the installation conditions and can for instance be 5 to 10 dB(A) lower than the acoustic **power** level at a distance of 1 m.

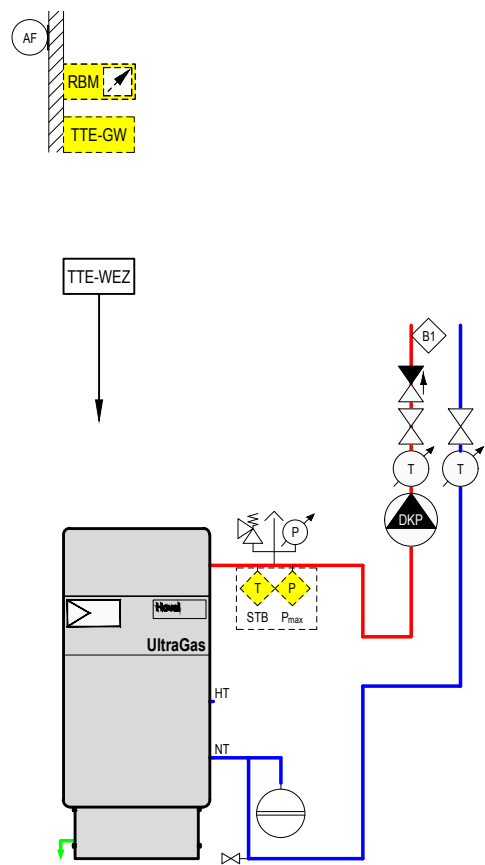
Recommendation:

If the air inlet at the facade is near a noise sensitive place (window of bedroom, terrace etc.), we recommend to use a sound absorber at the direct combustion air inlet.

Flue gas system

- Gas boilers must be connected to a certified and approved flue gas system such as flue gas lines.
- Flue gas lines must be gas-, condensate- and over pressure-tight.
- The flue gas lines must be secured against unwanted loosening of the plug connections.
- The flue gas system must be connected with an angle, so that the resulting condensate of the flue gas system can flow back to the boiler and can be neutralised there before discharging into the canalisation.
- Gas boilers with condensation heat utilisation are to be connected to a flue gas line min. temperature class T120.
- A flue gas temperature limiter is integrated into the boiler.

UltraGas® (15-100)
Gas boiler with
- 1 direct circuit



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

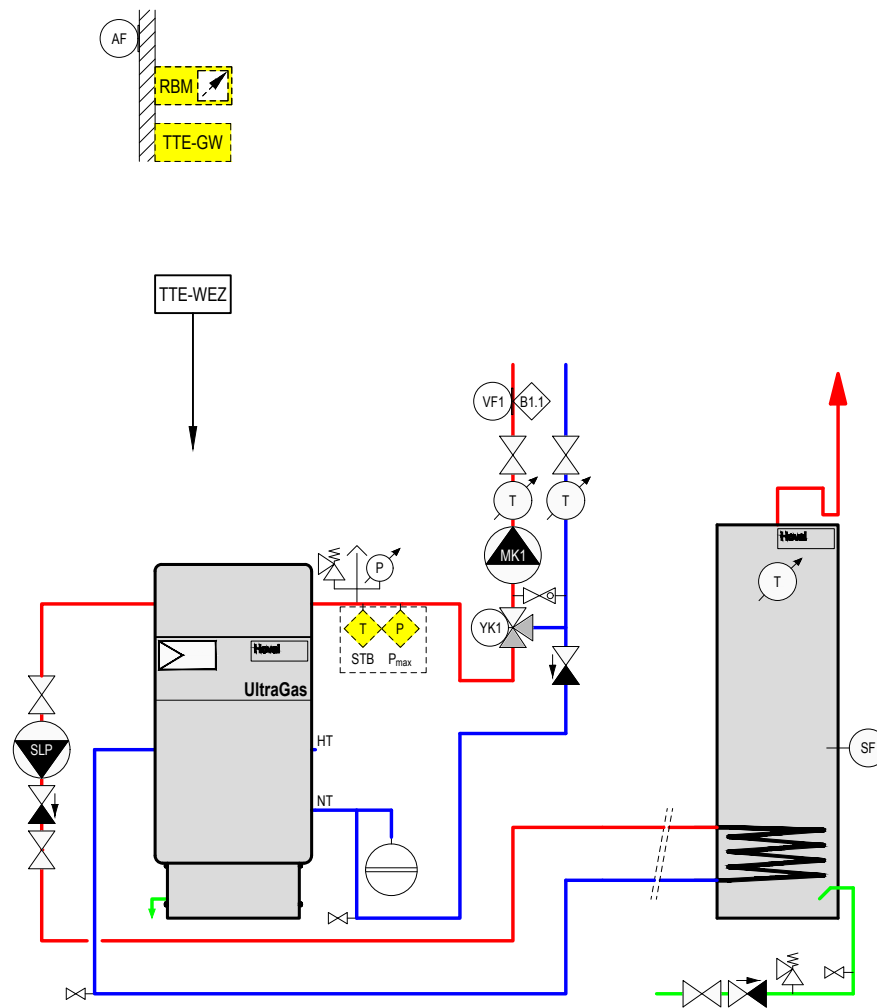
TTE-WEZ	TopTronic® E basic module heat generator (installed)
B1	Flow temperature guard (if required)
AF	Outdoor sensor
DKP	Pump for heating circuit without mixer
<i>Option</i>	
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway

UltraGas® (15-100)

Gas boiler with

- calorifier
- 1 mixer circuit

Hydraulic schematic BDEE20



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (installed)
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
SLP	Calorifier charging pump

Option

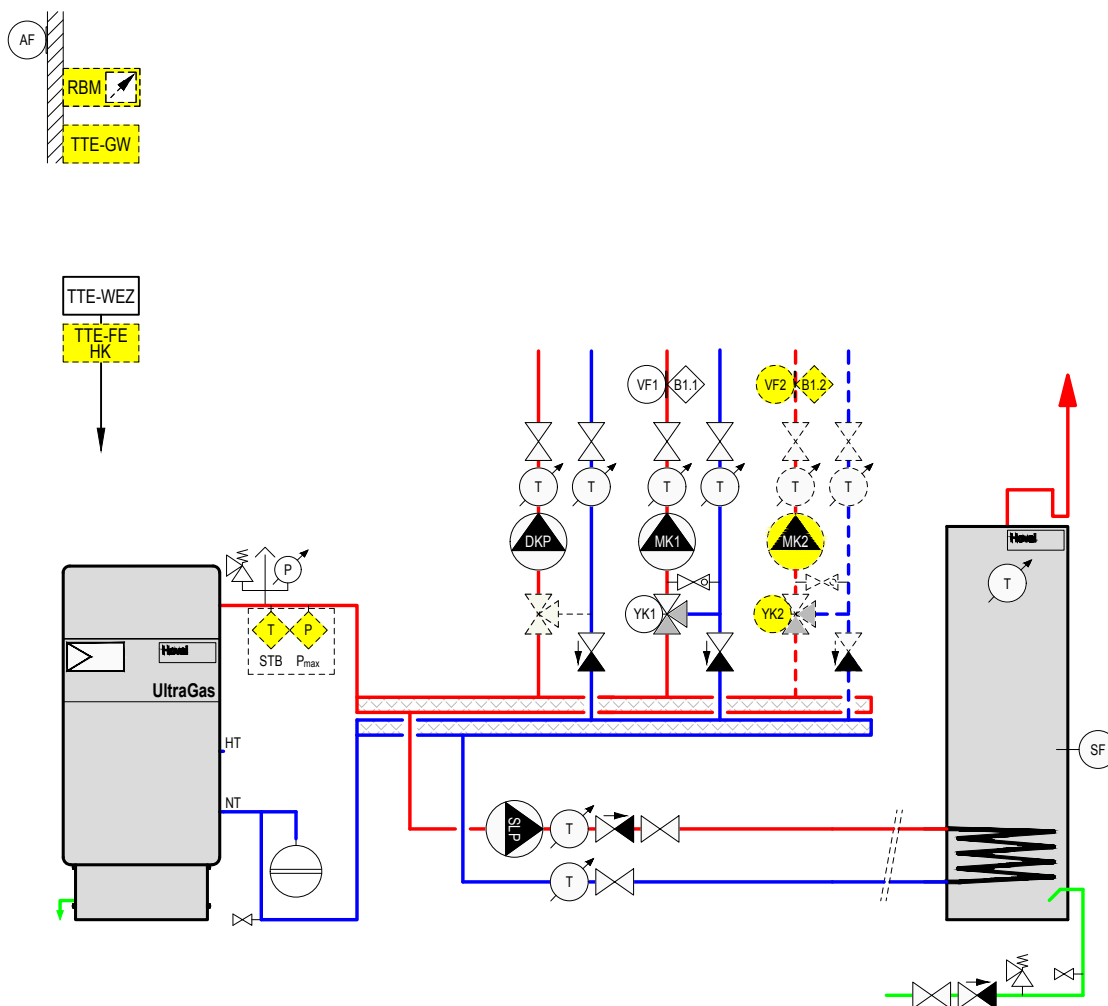
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway

UltraGas® (15-100)

Gas boiler with

- calorifier
- 1 direct circuit and 1-... mixer circuit(s)

Hydraulic schematic BDEE030



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (installed)
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
DKP	Pump for heating circuit without mixer
SLP	Calorifier charging pump

Option

RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway

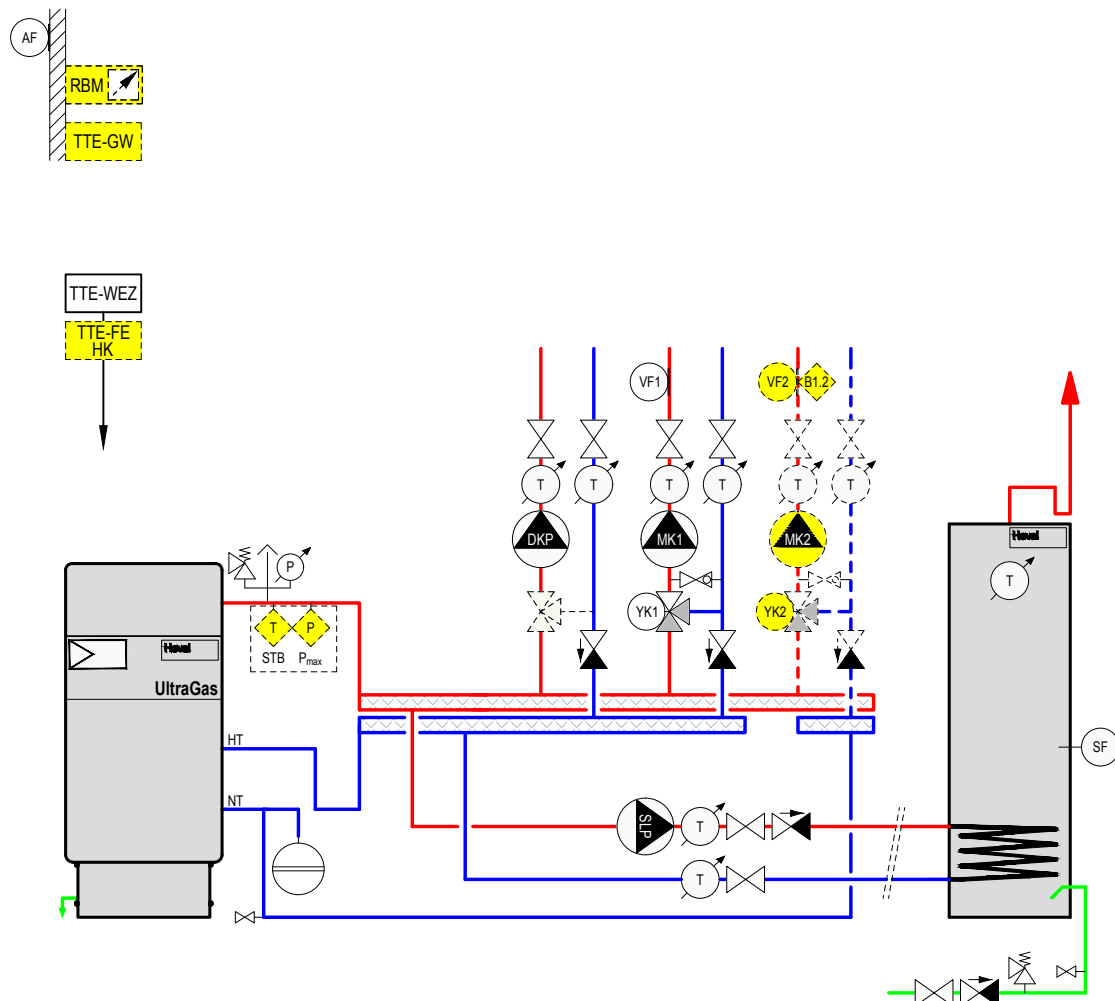
TTE-FE HK	TopTronic® E module expansion heating circuit
VF2	Flow temperature sensor 2
B1.2	Flow temperature guard (if required)
MK2	Pump mixer circuit 2
YK2	Actuator mixer 2

UltraGas® (15-100)

Gas boiler with

- calorifier
- 1 direct circuit and 1-... mixer circuit(s)
(HT/LT separation)

Hydraulic schematic BDEE050



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (installed)
VF1	Flow temperature sensor 1
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
DKP	Pump for heating circuit without mixer
SLP	Calorifier charging pump

Option

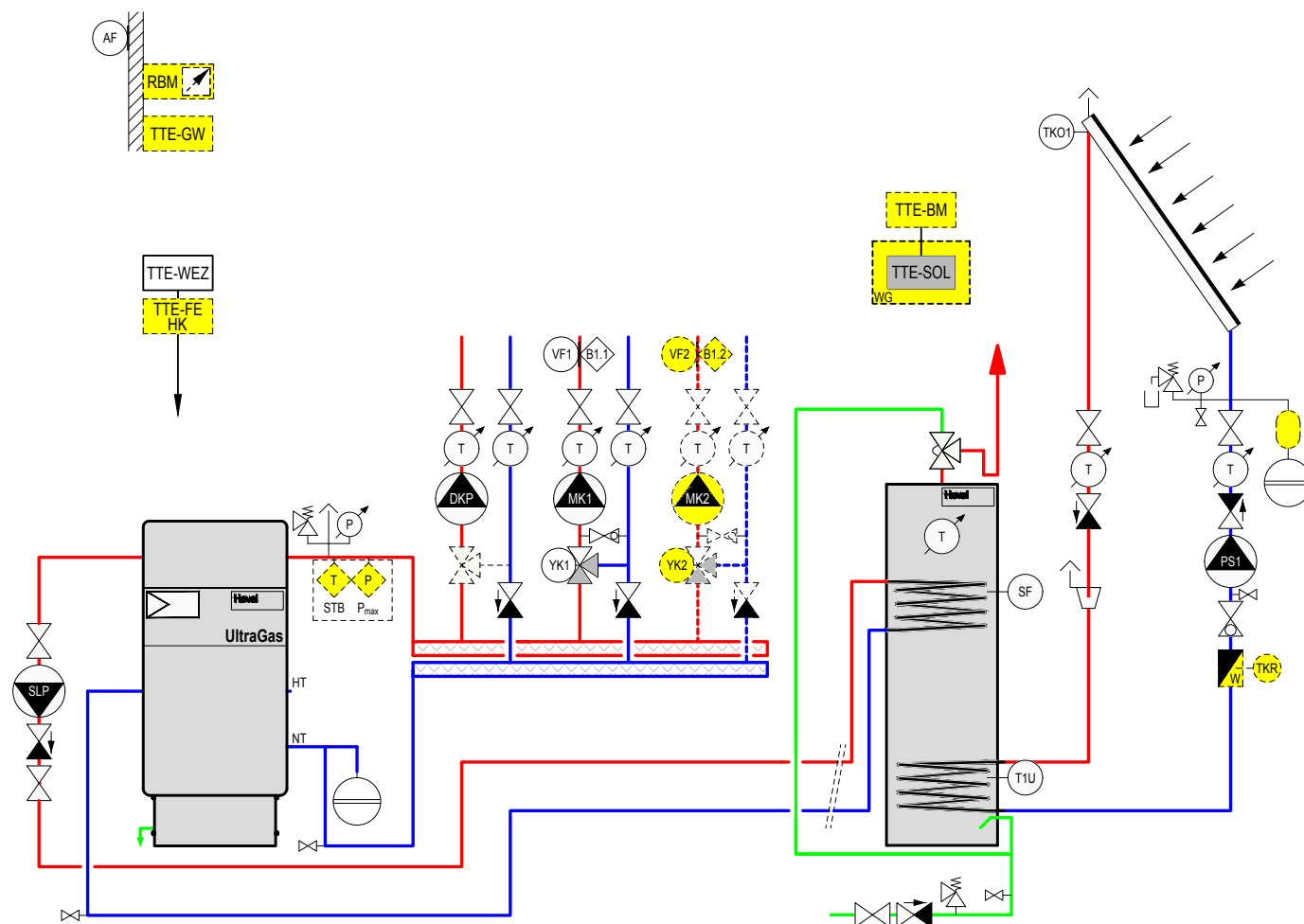
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway
TTE-FE HK	TopTronic® E module expansion heating circuit
VF2	Flow temperature sensor 2
B1.2	Flow temperature guard (if required)
MK2	Pump mixer circuit 2
YK2	Actuator mixer 2

UltraGas® (15-100)

Gas boiler with

- calorifier
- 1 direct circuit
- 1 direct circuit and 1-... mixer circuit(s)
(calorifier before distributor)
- solar collectors

Hydraulic schematic BDEE040/BAAE020



TTE-WEZ	TopTronic® E basic module heat generator (installed)
TTE-SOL	TopTronic® E solar module
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
TKO1	Collector sensor 1
T1U	Storage tank sensor
DKP	Pump for heating circuit without mixer
PS1	Solar circuit pump
SLP	Calorifier charging pump

Option	
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway
TTE-BM	TopTronic® E control module
WG	Wall casing

TTE-FE HK	TopTronic® E module expansion heating circuit
VF2	Flow temperature sensor 2
B1.2	Flow temperature guard (if required)
MK2	Pump mixer circuit 2
YK2	Actuator mixer 2
TKR	Return sensor

Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

Hoval UltraGas® (125-1550)

Floor-standing gas condensing boiler

- Floor-standing gas condensing boiler, combustion chamber made of stainless steel
- Maximum flue gas condensation by secondary heating surfaces made of UltraGas® (125-1150):
aluFer® stainless steel composite pipes UltraGas® (1550):
hybrid stainless steel composite pipes;
flue gas side: aluminium
water side: stainless steel
- Thermal insulation with mineral wool mat
- Water pressure sensor:
 - Fulfills the function of a minimum and maximum pressure limiter
 - Replacement for the low water level protection
- Flue gas temperature sensor with flue gas limiter function
- Pre-mix burner
 - with fan and venturi
 - modulating operation
 - automatic ignition
 - ionisation guard
 - gas pressure monitor
- Gas boiler fully cased with steel plates, red powder-coated
- Heating connections incl. counter flanges, screws and seals backwards for:
 - flow
 - return - high temperature
 - return - low temperature
- **UltraGas® (400-1550):**
with integrated gas pipe compensator
- TopTronic® E controller installed
- Possibility of connecting an external gas solenoid valve with error output

TopTronic® E controller

Control panel

- Colour touchscreen 4.3 inch
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp

TopTronic® E control module

- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with HovalConnect option)
- Adaptation of the heating strategy based on the weather forecast (with HovalConnect option)

TopTronic® E basic module heat generator (TTE-WEZ)

- Control functions integrated for
 - 1 heating circuit with mixer
 - 1 heating circuit without mixer
 - 1 hot water charging circuit
 - bivalent and cascade management



Model range

UltraGas® type	Output 40/30 °C kW
(125)	28-123
(150)	28-150
(200)	44-200
(250)	49-250
(300)	57-300
(350)	58-350
(400)	97-400
(450)	97-450
(500)	97-500
(575)	136-575
(650)	136-650
(720)	142-720
(850)	166-850
(1000)	224-1000
(1150)	233-1150
(1550)	328-1558
H (720)	142-720
H (1000)	224-1000

- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- Rast-5 basic plug set

Options for TopTronic® E controller

- Can be expanded by max.
1 module expansion:
 - module expansion heating circuit or
 - module expansion heat accounting or
 - module expansion universal
- Can be networked with a total of up to 16 controller modules:
 - heating circuit/hot water module
 - solar module
 - buffer module
 - measuring module

Number of modules that can be additionally installed in the heat generator:

- UltraGas® (125-300)**
 - 1 module expansion and 1 controller module **or**
 - 2 controller modules

Permissions boilers

UltraGas® (125-1150)
CE product ID No.: CE-0085AQ0620

UltraGas® (350-500)

- 1 module expansion and 2 controller modules **or**
- 1 controller module and 2 module expansions **or**
- 3 controller modules

UltraGas® (575-1550)

- 4 controller modules or module expansions

Notice

Max. 1 module expansion can be connected to the basic module heat generator (TTE-WEZ)!

The supplementary plug set must be ordered in order to use expanded controller functions.

Further information about the TopTronic® E
see "Controls"

Optional

- Transport in individual pieces and welding on site (delivery time approx. 6 weeks)
- For liquefied gas
 - propane up to 1000 kW
- With or without neutralisation
- Direct combustion air connection
- Free-standing calorifier see Calorifiers.
- High-pressure version UltraGas® H (720,1000) with operating pressure 8 bar (delivery time approx. 8 weeks)

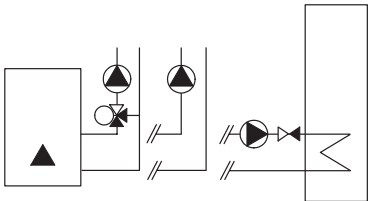
Delivery

- Boiler, casing and insulation separately packed and delivered

On-site

- Mounting of insulation, casing and control panel
- Mounting of boiler feet

Floor-standing gas condensing boiler



Hoval UltraGas® (125-1550)
Floor-standing gas condensing boiler
with built-in Hoval TopTronic® E control

- Control functions integrated for
- 1 heating circuit with mixer
 - 1 heating circuit without mixer
 - 1 hot water charging circuit
 - bivalent and cascade management
- Can be optionally expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion heat accounting or
 - module expansion universal
 - Can be optionally networked with a total of up to 16 controller modules (incl. solar module)

Boiler made of steel with TopTronic® E control, combustion chamber made of stainless steel. Secondary heating surfaces made of UltraGas® (125-1150):
aluFer® stainless steel composite pipes;
UltraGas® (1550):
hybrid stainless steel composite pipes;
Pre-mix burner with fan.
Modulating burner.

Delivery
Boiler, casing and thermal insulation separately packed

Floor-standing gas condensing boiler with TopTronic® E

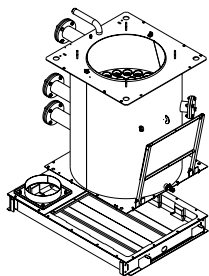
UltraGas® type	Output 40/30 °C kW ¹	Operating pressure bar
(125)	28-125	5
(150)	28-150	5
(200)	44-200	5
(250)	49-250	5
(300)	57-300	5
(350)	58-350	6
(400)	97-400	6
(450)	97-450	6
(500)	97-500	6
(575)	136-575	6
(650)	136-650	6
(720)	142-720	6
(850)	166-850	6
(1000)	224-1000	6
(1150)	233-1150	6
(1550)	328-1558	6

¹ kW = modulation range

Part No.

7011 992
7011 993
7011 994
7011 995
7011 996
7011 997
7011 998
7011 999
7012 000
7012 001
7012 002
7012 003
7012 004
7012 005
7015 789
7017 831

Floor-standing gas condensing boiler (delivery in separate parts)



Hoval UltraGas® (125-1550) (delivery in separate parts)

Floor-standing gas condensing boiler with built-in Hoval TopTronic® E control for delivery in separate parts. Assembled on-site by the installer.

UltraGas® type	Output at 40/30 °C kW ¹	Operating pressure bar
(125)	28-125	5
(150)	28-150	5
(200)	44-200	5
(250)	49-250	5
(300)	57-300	5
(350)	58-350	6
(400)	97-400	6
(450)	97-450	6
(500)	97-500	6
(575)	136-575	6
(650)	136-650	6
(720)	142-720	6
(850)	166-850	6
(1000)	224-1000	6
(1150)	233-1150	6
(1550)	328-1558	6

¹ kW = modulation range

Part No.

7013 629
7013 630
7013 631
7013 632
7013 633
7013 634
7013 635
7013 636
7013 637
7013 638
7013 639
7013 640
7013 641
7013 642
7015 790
7017 839

Floor-standing gas condensing boiler (high-pressure design)

Delivery time approx. 8 weeks

Hoval UltraGas® H (720,1000) (high-pressure design)

Floor-standing gas condensing boiler in **high-pressure design** (operating pressure 8 bar)

UltraGas® type	Output at 40/30 °C kW ¹	Operating pressure bar
H (720)	142-720	8
H (1000)	224-1000	8

¹ kW = modulation range

7013 657
7013 669

Modification set for propane
for UltraGas® (125-350)

6047 610

Modification set for propane
for UltraGas® (400-720)

6047 612

Modification set for propane
for UltraGas® (850,1000)

6047 611

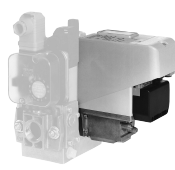
Accessories



Gas filter	
with measurement nozzle before and behind the filter inset (diameter: 9 mm)	
Pore width of the filter inset < 50 µm	
Max. pressure difference 10 mbar	
Max. inlet pressure 100 mbar	
Type	Connection
70612/6B	Rp ¾"
70602/6B	Rp 1"
70604/6B	Rp 1¼"
70603/6B	Rp 1½"
70631/6B	Rp 2"
70610F/6B	DN 65

Part No.

2007 995
2007 996
2054 495
2007 997
2007 998
2007 999

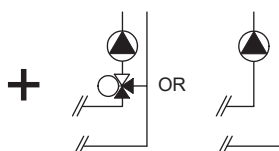
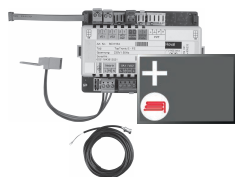


Valve testing system	
for UltraGas® (125-1150),	
UltraGas® (250D-2300D)	
Automatic, compact testing system for testing the leakage of the gas valve before each burner start with ready-to-connect wiring.	
Suitable for all gas qualities for which the UltraGas® is permitted.	
UltraGas® (125-350)	6039 964
UltraGas® (400-720)	6039 965
UltraGas® (850,1150)	6039 966

6039 964
6039 965
6039 966

TopTronic® E module expansions

for TopTronic® E basic module heat generator



TopTronic® E module expansion heating circuit TTE-FE HK

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating circuit without mixer or
- 1 heating circuit with mixer

incl. fitting accessories

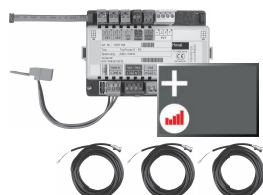
1x contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:

Boiler control, wall housing, control panel

Notice

The supplementary plug set may have to be ordered to implement functions differing from the standard!



TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating/cooling circuit w/o mixer or
 - 1 heating/cooling circuit with mixer
- in each case incl. energy balancing

incl. fitting accessories

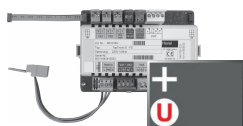
3x contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:

Boiler control, wall housing, control panel

Notice

Suitable flow rate sensors (pulse sensors) must be provided on site.



TopTronic® E module expansion Universal TTE-FE UNI

Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions.

incl. fitting accessories

Can be installed in:

Boiler control, wall housing, control panel

Further information

see "Controls" - "Hoval TopTronic® E module expansions" chapter

Notice

Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

Part No.

6034 576

6037 062

6034 575

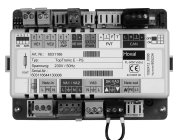
Accessories for TopTronic® E



Supplementary plug set

for basic module heat generator (TTE-WEZ)
for controller modules and module expansion
TTE-FE HK

6034 499
6034 503



TopTronic® E controller modules

TTE-HK/WW TopTronic® E heating circuit/
hot water module
TTE-SOL TopTronic® E solar module
TTE-PS TopTronic® E buffer module
TTE-MWA TopTronic® E measuring module

6034 571
6037 058
6037 057
6034 574



TopTronic® E room control modules

TTE-RBM TopTronic® E room control modules
easy white
comfort white
comfort black

6037 071
6037 069
6037 070



Enhanced language package TopTronic® E

one SD card required per control module
Consisting of the following languages:
HU, CS, SL, RO, PL, TR, ES, HR, SR, JA, DA

6039 253



HovalConnect

HovalConnect LAN
HovalConnect WLAN

6049 496
6049 498

HovalConnect available from mid-2020

Up to that point, TopTronic® E online is delivered.

TopTronic® E interface modules

GLT module 0-10 V
HovalConnect Modbus
HovalConnect KNX

6034 578
6049 501
6049 593



TopTronic® E wall casing

WG-190 Wall casing small
WG-360 Wall casing medium
WG-360 BM Wall casing medium with
control module cut-out
WG-510 Wall casing large
WG-510 BM Wall casing large with
control module cut-out

6035 563
6035 564
6035 565
6035 566
6038 533



TopTronic® E sensors

AF/2P/K Outdoor sensor
TF/2P/5/6T Immersion sensor, L = 5.0 m
ALF/2P/4/T Contact sensor, L = 4.0 m
TF/1.1P/2.5S/6T Collector sensor, L = 2.5 m

2055 889
2055 888
2056 775
2056 776



System housing

System housing 182 mm
System housing 254 mm

6038 551
6038 552



Bivalent switch

2061 826

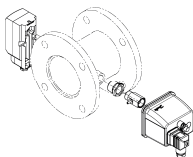
Further information
see "Controls"



Assembly tube flow



Assembly tube return



Flow temperature switch
for under floor heating (1 guard per heating circuit) 15-95 °C, differential gap 6 K, capillary tube max. 700 mm, setting (visible from the outside) inside the housing cover.

Clamp-on thermostat RAK-TW1000.S
Thermostat with strap, without cable and plug

Set clamp-on thermostat RAK-TW1000.S
Thermostat with strap, with cable (4 m) and plug

Immersion thermostat RAK-TW1000.S SB 150
Thermostat with pocket 1/2" - depth of immersion 150 mm, brass nickel-plated

Safety set
Complete with safety valve (3 bar), Pressure gauge and autom. aspirator with shut-off valve. Connection inner thread

For UltraGas® (125-200)
DN 25 - Rp 1" to 200 kW
For UltraGas® (250-350)
DN32 - Rp 1 1/4" to 350 kW

Automatic quick release air vent 1/2"
with cut-off valve

Assembly tube for flow and return
for assembly on flow resp. high and low temperature return of the Hoval UltraGas® boiler. With screws and nuts for connection of

- an additional safety temperature limiter and a maximum pressure limiter on the flow and
- an expansion tank on the return

Dimension	Suitable for UltraGas®	Connection
DN 65	(125-300)	flow
DN 65	(125-300)	return
DN 100	(350-500)	flow
DN 100	(350-500)	return
DN 125	(575-1150)	flow
DN 125	(575-1150)	return
DN 150	(1550)	flow
DN 150	(1550)	return

Further information see "Dimensions"

Safety armature set
Compatible with armature pipe for meeting safety requirements of EN 12828: > 300 kW or SWKI 93-1: 70-1000 kW related to single boiler
Consisting of:

- adjustable maximum pressure limiter incl. ball valve
- safety temperature limiter (RAK-ST.131)

Part No.

242 902

6033 745

6010 082

6018 709

6018 710

2002 582

6032 993
6023 108

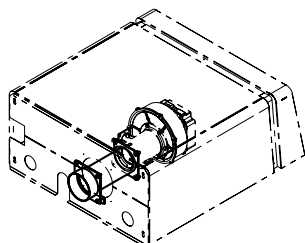
6023 109
6023 110

6023 111
6023 112

6051 678
6051 680

6051 903

Accessories



Connection for direct combustion air inlet

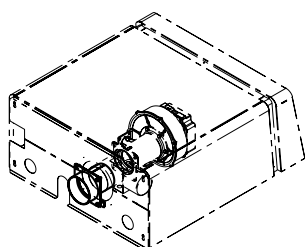
Cannot be combined with motorised air intake suction flap

UltraGas® (125,150)
UltraGas® (200-300)
UltraGas® (350)
UltraGas® (400-500)
UltraGas® (575-720)
UltraGas® (850-1150)

6018 903
6018 904
6018 905
6018 906
6012 476
6019 728

Recommendation:

If the air inlet at the facade is near a noise sensitive place (window of bedroom, terrace etc.), we recommend to use a sound absorber at the direct combustion air inlet.



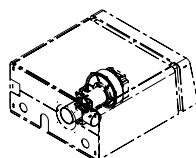
Connection for direct combustion air inlet

Can only be used in combination with a motorised air intake suction flap (must be ordered separately). Can also be used for cascading boiler systems with a common flue gas line.

Complete with cabling.

UltraGas® (125,150)
UltraGas® (200-300)
UltraGas® (350)
UltraGas® (400-500)
UltraGas® (575-720)
UltraGas® (850-1150)

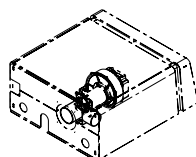
6025 113
6025 114
6025 115
6025 104
6025 063
6025 094



Motorised air intake suction flap DN 110

for UltraGas® (125-350)
For cascading boiler systems with a common flue gas line.
Complete with cabling

6015 196



Motorised air intake suction flap DN 180

for UltraGas® (400-1550)
For cascading boiler systems with a common flue gas line.
Complete with cabling

6015 197



Hydraulic butterfly valve

for direct installation on the boiler flow and/or return of the boiler.
For 230 V, pre-wired.
Damper position: closed or fully open.

UltraGas® (125-300) DN 65
UltraGas® (350-500) DN 100
also suitable for high-pressure version
UltraGas® (575-1150) DN 125
also suitable for high-pressure version
UltraGas® (1550) DN 150
also suitable for high-pressure version

6002 660
6042 055
6037 866
6049 302



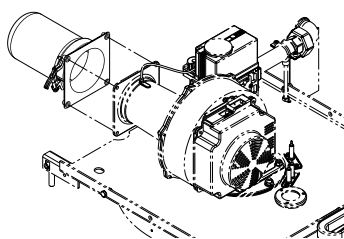
Gas pipe compensator 1"
for UltraGas® (125,150) and
UltraGas® (250D,300D)
for compensating for connection
tolerances in the gas pipe

6034 556



Gas pipe compensator 1½"
for UltraGas® (200-350) and
UltraGas® (400D-700D)
for compensating for connection
tolerances in the gas pipe

6034 557

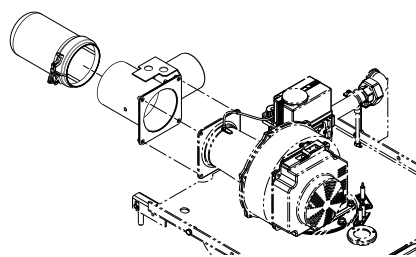


Connection protection filter
for UltraGas® (125-350)
for assembly on air suction socket of
Venturi for filtering combustion air
during construction
Filter pore width < 50 µm

6047 593

Connection protection filter
for UltraGas® (400-1550)
for assembly on air suction socket of
Venturi for filtering combustion air
during construction
Filter pore width < 50 µm

6047 594



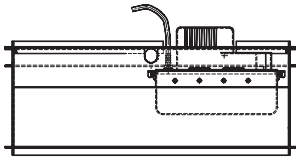
Connection protection filter
for UltraGas® (125-350)
for assembly on air intake damper
for filtering combustion air
during construction
Filter pore width < 50 µm

6047 595

Connection protection filter
for UltraGas® (400-1550)
for assembly on air intake damper
for filtering combustion air
during construction
Filter pore width < 50 µm

6047 596

Condensate drainage to UltraGas® (125-1150)

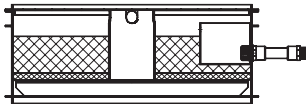


Placed under the boiler

Condensate box KB 22

for UltraGas® (125-1550), (250D-3100D),
UltraOil® (65-300), (320D-600D)
Condensate drain into a higher
drainage duct with delivery pump.
Max. delivery head 3.5 m up to 1200 kW
Delivery volume 120 l/h
incl. liquid level switch,
silicone hose 9/13 mm, 4 m long,
electrical cable 1.5 m with plug
12 kg granulate
Up to UltraGas® (1150) or
UltraGas® (2300D) one condensate
box KB 22 required per boiler
UltraGas® (1550) or
UltraGas® (3100D) two condensate
boxes KB 22 required per boiler

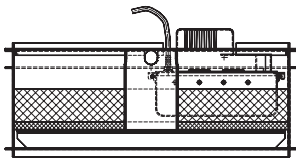
6033 767



Neutralisation box KB 23

for UltraGas® (125-1550), (250D-3100D),
UltraOil® (65-300), (320D-600D)
Condensate drainage into lower situated
drain pipe without condensate
delivery pump
with neutralisation
12 kg neutralisation granulate
Placed under the boiler
Use one box per boiler.

6001 917



Neutralisation box KB 24

for UltraGas® (125-1550), (250D-3100D),
UltraOil® (65-300), (320D-600D)
Neutralisation box for transporting
condensation water into a higher lying
drainage duct, delivery head max. 3.5 m
up to 1200 kW
Delivery volume 120 l/h
incl. liquid level switch,
silicone hose 9/13 mm, 4 m long,
electrical cable 1.5 m with plug
12 kg granulate
Up to UltraGas® (1150) or
UltraGas® (2300D) one neutralisation
box KB 24 required per boiler
UltraGas® (1550) or
UltraGas® (3100D) two neutralisation
boxes KB 24 required per boiler

6033 764



Condensate pump

for transporting condensation water
into a higher drainage duct.
Including connection line,
completely wired,
cable and plug for connection
to the boiler controller
max. transport height: 3.5 m
Delivery rate up to 294 l/h
combinable with neutralisation box
can be mounted in boiler socket

6034 771



Neutralisation granulate

for neutralisation box
Refill set volume 3 kg
Life time of one filling:
approx. 2-4 years; depending on amount
of condensate

2028 906

Part No.



For commissioning and other services
please contact your Hoval sales office.

UltraGas® (125-350)

Type		(125)	(150)	(200)	(250)	(300)	(350)
• Nominal heat output at 80/60 °C, natural gas	kW	25-114	25-139	39-185	44-231	51-278	51-324
• Nominal heat output at 40/30 °C, natural gas	kW	28-125	28-150	44-200	49-250	57-300	58-350
• Nominal heat output at 50/30 °C, natural gas ⁵⁾	kW	27-123	28-150	42-193	48-243	55-294	56-344
• Nominal heat output at 80/60 °C, propane ²⁾	kW	31-113	35-138	63-185	78-230	80-278	95-320
• Nominal heat output at 40/30 °C, propane ²⁾	kW	34-125	39-150	70-200	87-250	91-300	109-350
• Nominal heat output at 50/30 °C, propane ⁵⁾	kW	33-123	39-150	68-194	85-243	88-294	105-344
• Nominal load with natural gas ¹⁾	kW	26-116	26-141	40-188	45-235	52-283	53-330
• Nominal load with propane ²⁾	kW	32-116	36-141	65-190	80-235	84-283	100-330
• Operating pressure heating min./max. (PMS)	bar	1/5	1/5	1/5	1/5	1/5	1/6
• Operating temperature max. (T _{max})	°C	90	90	90	90	90	90
• Boiler water content (V _(H₂O))	l	206	194	359	341	318	428
• Flow resistance boiler		see diagrams					
• Minimum circulation water quantity	l/h	-	-	-	-	-	-
• Boiler weight (without water content, incl. casing)	kg	434	458	641	674	726	881
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV)	%	97.9/88.2	97.8/88.1	97.9/88.2	97.9/88.2	98.0/88.3	98.2/88.5
• Boiler efficiency at 30 % partial load (NCV/GCV)	%	108.1/97.4	108.0/97.3	108.1/97.4	108.1/97.4	108.0/97.3	108.0/97.3
• Room heating energy efficiency							
- without control	ηs %	92	92	93	93	93	93
- with control	ηs %	94	94	95	95	95	95
- with control and room sensor	ηs %	96	96	97	97	97	97
• NOx class (EN 15502)		6	6	6	6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	32	29	31	36	31	34
• Carbon monoxide emissions (full-load operation, 3% O ₂)	CO mg/Nm ³	13	18	11	18	22	14
• Content of CO ₂ in the flue gas minimum/maximum output	%	8.8/9.0	8.8/9.0	8.8/9.0	8.8/9.0	8.8/9.0	8.8/9.0
• Heat loss in standby mode	Watt	480	480	530	530	530	750
• Dimensions		see table of dimensions					
• Gas flow pressure minimum/maximum							
- Natural gas E/LL	mbar	17.4-80	17.4-80	17.4-80	17.4-80	17.4-80	17.4-80
- Propane	mbar	37-57	37-57	37-57	37-57	37-57	37-57
• Gas connection value at 15 °C/1013 mbar:							
- Natural gas E (Wo = 15.0 kWh/m ³) NCV = 9.97 h/m ³	m ³ /h	2.6-11.6	2.6-14.1	4.0-18.9	4.5-23.6	5.2-28.4	5.3-33.1
- Natural gas LL (Wo = 12.4 kWh/m ³) NCV = 8.57 h/m ³	m ³ /h	3.0-13.5	3.0-16.5	4.7-21.9	5.3-27.4	6.1-33.0	6.2-38.5
- Propane (NCV = 25.9 kWh/m ³)	m ³ /h	1.2-4.5	1.4-5.4	2.5-7.3	3.1-9.1	3.2-10.9	3.9-12.7
• Operation voltage	V/Hz	230/50	230/50	230/50	230/50	230/50	230/50
• Electrical power consumption min./max.	Watt	40/166	40/245	38/140	40/222	44/344	46/328
• Stand-by	Watt	12	12	12	12	12	12
• IP rating (integral protection)	IP	20	20	20	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40	5-40	5-40
• Sound power level							
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	69	72	65	68	72	74
- Exhaust noise is radiated from the mouth (DIN 45635 part 47)	dB(A)	65	67	61	64	66	71
- Sound pressure level (depending on install. conditions) ³⁾	dB(A)	59	62	55	58	62	64
• Condensate quantity (natural gas) at 40/30 °C	l/h	10.9	13.3	17.7	22.1	26.6	30.6
• pH value of the condensate	approx.	4.2	4.2	4.2	4.2	4.2	4.2
• Construction type		B23P, C53, C63					
• Flue gas system							
- Temperature class		T120	T120	T120	T120	T120	T120
- Flue gas mass flow at nominal heat load (dry)	kg/h	192	234	312	390	470	541
- Flue gas mass flow at lowest nominal heat load (dry)	kg/h	39.1	39.1	60.2	67.7	78.2	79.7
- Flue gas temperature at nominal output and operation 80/60 °C	°C	69	71	69	70	71	69
- Flue gas temperature at nominal output and operation 40/30 °C	°C	48	49	48	49	49	46
- Flue gas temp. at lowest nominal heat load and operation 40/30 °C	°C	32	32	32	32	32	32
- Maximum permitted temperature of the combustion air	°C	50	50	50	50	50	50
- Volume flow rate combustion air	Nm ³ /h	143	175	233	291	350	404
- Maximum supply pressure for supply air and flue gas line ⁴⁾	Pa	100	120	120	130	130	130
- Maximum draught/depression at flue gas outlet	Pa	-50	-50	-50	-50	-50	-50

¹⁾ Data related to NCV. The boiler series is tested for EE/H-settings. With a factory setting of the Wobbe coefficient of 15.0 kWh/m³ operation at a Wobbe coefficient of 12.0 up to 15.7 kWh/m³ is possible without new settings.

²⁾ Data related to NCV.

³⁾ See also notices at "Engineering".

⁴⁾ Details for multi-boiler plants (cascade) with common flue gas line: see Hoval UltraGas® (250D-2000D).

⁵⁾ Factory measurements

UltraGas® (400-720)

Type		(400)	(450)	(500)	(575)	(650)	(720)
• Nominal heat output at 80/60 °C, natural gas	kW	87-371	87-417	87-463	122-533	122-603	127-665
• Nominal heat output at 40/30 °C, natural gas	kW	97-400	97-450	97-500	136-575	136-650	142-720
• Nominal heat output at 50/30 °C, natural gas ⁵⁾	kW	95-393	95-442	94-490	131-565	131-640	140-713
• Nominal heat output at 80/60 °C, propane ²⁾	kW	139-370	139-410	139-455	169-524	169-592	169-655
• Nominal heat output at 40/30 °C, propane ²⁾	kW	154-400	154-450	154-500	185-575	185-650	185-720
• Nominal heat output at 50/30 °C, propane ⁵⁾	kW	151-393	151-442	149-490	178-565	178-640	182-713
• Nominal load with natural gas ¹⁾	kW	89-377	89-424	89-471	125-542	125-613	130-677
• Nominal load with propane ²⁾	kW	144-377	144-424	144-471	175-542	175-613	175-677
• Operating pressure heating min./max. (PMS)	bar	1/6	1/6	1/6	1/6	1/6	1/6
• Operating temperature max. (T _{max})	°C	90	90	90	90	90	90
• Boiler water content (V _(H2O))	l	411	387	375	549	529	478
• Flow resistance boiler				see diagrams			
• Minimum circulation water quantity	l/h	-	-	-	-	-	-
• Boiler weight (without water content, incl. casing)	kg	922	972	991	1277	1303	1396
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV)	%	98.3/88.6	98.3/88.6	98.3/88.6	98.3/88.6	98.3/88.6	98.3/88.6
• Boiler efficiency at 30 % partial load (NCV/GCV)	%	108.1/97.4	108.0/97.3	108.0/97.3	108.1/97.4	108.0/97.3	108.0/97.3
• Room heating energy efficiency							
- without control	ηs %	93	-	-	-	-	-
- with control	ηs %	95	-	-	-	-	-
- with control and room sensor	ηs %	97	-	-	-	-	-
• NOx class (EN 15502)		6	6	6	6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV) NOx	mg/kWh	33	33	33	32	35	32
• Carbon monoxide emissions (full-load operation, 3% O ₂)	mg/Nm ³	22	22	27	22	27	25
• Content of CO ₂ in the flue gas minimum/maximum output	%	8.8/9.0	8.8/9.0	8.8/9.0	8.8/9.0	8.8/9.0	8.8/9.0
• Heat loss in standby mode	Watt	750	750	750	1000	1000	1000
• Dimensions		see table of dimensions					
• Gas flow pressure minimum/maximum							
- Natural gas E/LL	mbar	17.4-80	17.4-80	17.4-80	17.4-80	17.4-80	17.4-80
- Propane	mbar	37-57	37-57	37-57	37-57	37-57	37-57
• Gas connection value at 15 °C/1013 mbar:							
- Natural gas E (Wo = 15.0 kWh/m ³) NCV = 9.97 h/m ³	m ³ /h	8.9-37.8	8.9-42.5	8.9-47.2	12.5-54.4	12.5-61.5	13.0-67.9
- Natural gas LL (Wo = 12.4 kWh/m ³) NCV = 8.57 h/m ³	m ³ /h	10.4-44.0	10.4-49.5	10.4-55.0	14.6-63.2	14.6-71.5	15.2-79.0
- Propane (NCV = 25.9 kWh/m ³)	m ³ /h	5.6-14.6	5.6-16.4	5.6-18.2	6.8-20.9	6.8-23.7	6.8-26.1
• Operation voltage	V/Hz	230/50	230/50	230/50	230/50	230/50	230/50
• Electrical power consumption min./max.	Watt	58/442	58/580	68/745	59/720	59/1030	62/1150
• Stand-by	Watt	12	12	12	12	12	9
• IP rating (integral protection)	IP	20	20	20	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40	5-40	5-40
• Sound power level							
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	71	73	75	72	75	77
- Exhaust noise is radiated from the mouth (DIN 45635 part 47)	dB(A)	72	73	74	69	72	74
- Sound pressure level (depending on install. conditions) ³⁾	dB(A)	61	63	65	62	65	67
• Condensate quantity (natural gas) at 40/30 °C	l/h	35.4	39.9	44.3	50.9	57.6	63.6
• pH value of the condensate	approx.	4.2	4.2	4.2	4.2	4.2	4.2
• Construction type		B23P, C53, C63					
• Flue gas system							
- Temperature class		T120	T120	T120	T120	T120	T120
- Flue gas mass flow at nominal heat load (dry)	kg/h	626	704	782	900	1018	1124
- Flue gas mass flow at lowest nominal heat load (dry)	kg/h	134	134	134	189	189	195
- Flue gas temperature at nominal output and operation 80/60 °C	°C	71	71	72	71	72	71
- Flue gas temperature at nominal output and operation 40/30 °C	°C	48	47	49	47	49	46
- Flue gas temperature at lowest nominal heat load and operation 40/30 °C	°C	32	32	32	32	32	32
- Maximum permitted temperature of the combustion air	°C	50	50	50	50	50	50
- Volume flow rate combustion air	Nm ³ /h	467	525	583	671	759	838
- Maximum supply pressure for supply air and flue gas line ⁴⁾	Pa	130	130	130	130	130	130
- Maximum draught/depression at flue gas outlet	Pa	- 50	- 50	- 50	- 50	- 50	-50

¹⁾ Data related to NCV. The boiler series is tested for EE/H-settings. With a factory setting of the Wobbe coefficient of 15.0 kWh/m³ operation at a Wobbe coefficient of 12.0 up to 15.7 kWh/m³ is possible without new settings.

²⁾ Data related to NCV.

³⁾ See also notices at "Engineering".

⁴⁾ Details for multi-boiler plants (cascade) with common flue gas line: see Hoval UltraGas® (250D-2000D).

⁵⁾ Factory measurements

UltraGas® (850-1550)

Type		(850)	(1000)	(1150)	(1550)	H (720)	H (1000)
• Nominal heat output at 80/60 °C, natural gas	kW	148-788	199-927	208-1060	298-1441	127-665	199-927
• Nominal heat output at 40/30 °C, natural gas	kW	166-850	224-1000	233-1150	328-1558	142-720	224-1000
• Nominal heat output at 50/30 °C, natural gas ⁵⁾	kW	165-847	221-996	231-1146	324-1550	140-713	221-996
• Nominal heat output at 80/60 °C, propane ²⁾	kW	235-789	269-927	-	-	169-655	269-927
• Nominal heat output at 40/30 °C, propane ²⁾	kW	257-851	293-1000	-	-	185-720	293-1000
• Nominal heat output at 50/30 °C, propane ⁵⁾	kW	255-848	289-996	-	-	182-713	289-996
• Nominal load with natural gas ¹⁾	kW	152-802	205-943	214-1082	303-1467	130-677	205-943
• Nominal load with propane ²⁾	kW	238-803	272-943	-	-	175-677	272-943
• Operating pressure heating min./max. (PMS)	bar	1/6	1/6	1/6	1/6	1/8	1/8
• Operating temperature max. (T _{max})	°C	90	90	90	90	90	90
• Boiler water content (V _(H2O))	l	860	793	737	966	478	793
• Flow resistance boiler		see diagrams					
• Minimum circulation water quantity	l/h	-	-	-	-	-	-
• Boiler weight (without water content. incl. casing)	kg	1850	1965	2023	2500	1424	2008
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV)	%	98.3/88.6	98.3/88.6	98.3/88.6	98.2/88.5	98.3/88.6	98.3/88.6
• Boiler efficiency at 30 % partial load (NCV/GCV)	%	108.1/97.4	108.1/97.4	108.1/97.4	108.1/97.4	107.7/97.0	108.1/97.4
• NOx class (EN 15502)		6	6	6	6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	32	32	45	35	32	32
• Carbon monoxide emissions (full-load operation, 3% O ₂)	CO mg/Nm ³	22	22	16	24	25	22
• Content of CO ₂ in the flue gas minimum/maximum output	%	8.8/9.0	8.8/9.0	8.8/9.0	8.4/8.5	8.8/9.0	8.8/9.0
• Heat loss in standby mode	Watt	1200	1200	1200	1600	1000	1200
• Dimensions		see table of dimensions					
• Gas flow pressure minimum/maximum							
- Natural gas E/LL	mbar	17.4-50	17.4-50	17.4-50	17.4-80	17.4-80	17.4-50
- Propane	mbar	37-50	37-50	-	-	37-57	37-50
• Gas connection value at 15 °C/1013 mbar:							
- Natural gas E (Wo = 15.0 kWh/m ³) NCV = 9.97 h/m ³	m ³ /h	15.2-80.4	20.6-94.6	21.5-108.5	30.4-147.1	13.0-67.9	20.6-94.6
- Natural gas LL (Wo = 12.4 kWh/m ³) NCV = 8.57 h/m ³	m ³ /h	17.7-93.6	23.9-110.0	25.0-126.3	35.4-171.2	15.2-79.0	23.9-110.0
- Propane (NCV = 25.9 kWh/m ³)	m ³ /h	9.2-31.0	10.5-36.4	-	-	6.8-26.1	10.5-36.4
• Operating voltage	V/Hz	230/50	1x230/50 3x400/50	1x230/50 3x400/50	1x230/50 3x400/50	230/50	1x230/50 3x400/50
• Electrical power consumption min./max.	Watt	51/1010	103/2420	103/2730	301/4111	62/1150	103/2420
• Stand-by	Watt	9	9	9	7	9	9
• IP rating (integral protection)	IP	20	20	20	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40	5-40	5-40
• Sound power level							
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	77	82	83	85	77	82
- Exhaust noise radiated from the mouth (DIN 45635 part 47)	dB(A)	70	74	80	-	74	74
- Sound pressure level (depending on installation conditions) ³⁾	dB(A)	67	72	-	-	67	72
• Condensate quantity (natural gas) at 40/30 °C	l/h	75.4	88.9	102.2	138	63.6	88.9
• pH value of the condensate	approx.	4.2	4.2	4.2	4.2	4.2	4.2
• Construction type		B23P, C53, C63					
• Flue gas system							
- Temperature class		T120	T120	T120	T120	T120	T120
- Flue gas mass flow at nominal heat load (dry)	kg/h	1331	1565	1800	2225	1124	1565
- Flue gas mass flow at lowest nominal heat load (dry)	kg/h	230	311	322	456	195	311
- Flue gas temperature at nominal output and operation 80/60 °C	°C	69	69	71	67	71	69
- Flue gas temperature at nominal output and operation 40/30 °C	°C	49	49	50	43	46	49
- Flue gas temperature at lowest nominal heat load and operation 40/30 °C	°C	32	32	32	31	32	32
- Maximum permitted temperature of the combustion air	°C	50	50	50	50	50	50
- Volume flow rate combustion air	Nm ³ /h	992	1167	1342	1885	838	1167
- Maximum supply pressure for supply air and flue gas line ⁴⁾	Pa	130	130	130	130	130	130
- Maximum draught/depression at flue gas outlet	Pa	-50	-50	-50	-50	-50	-50

¹⁾ Data related to NCV. The boiler series is tested for EE/H-settings. With a factory setting of the Wobbe coefficient of 15.0 kWh/m³ operation at a Wobbe coefficient of 12.0 up to 15.7 kWh/m³ is possible without new settings.

²⁾ Data related to NCV.

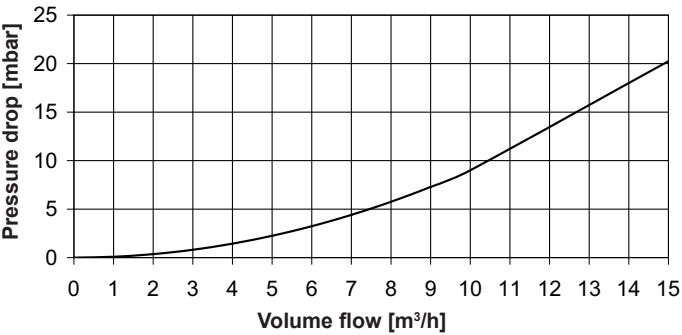
³⁾ See also notices at "Engineering".

⁴⁾ Details for multi-boiler plants (cascade) with common flue gas line: see Hoval UltraGas® (250D-2000D).

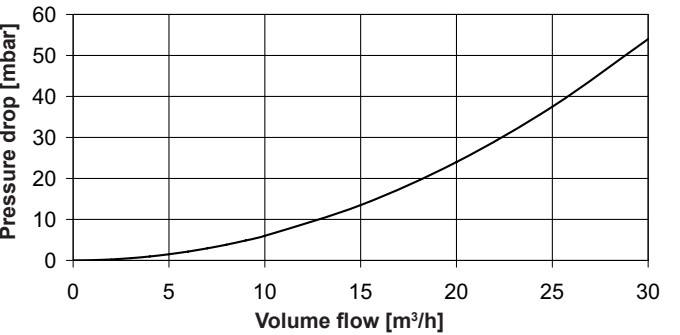
⁵⁾ Factory measurements

Flow resistance on the heating water side

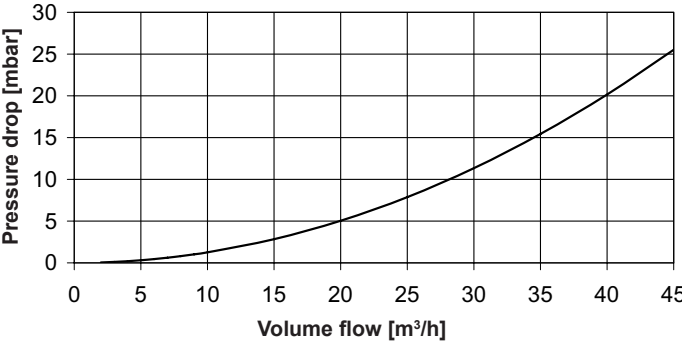
UltraGas® (125,150)



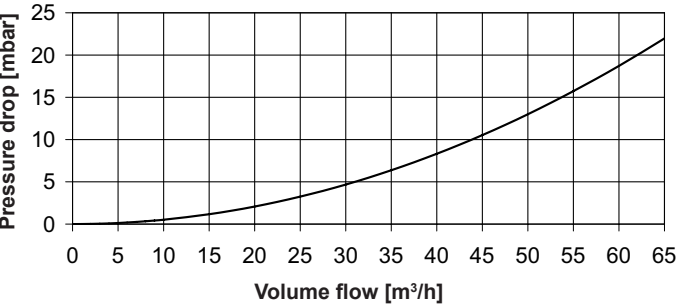
UltraGas® (200-300)



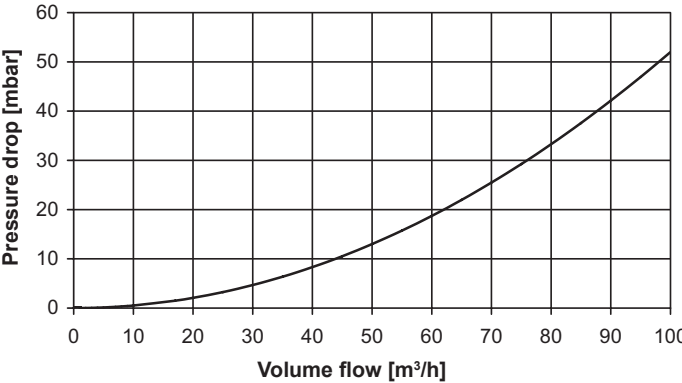
UltraGas® (350-500)



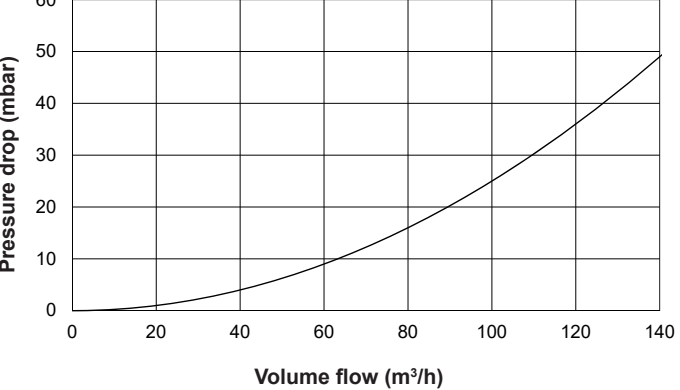
UltraGas® (575-720), UltraGas® H (720)



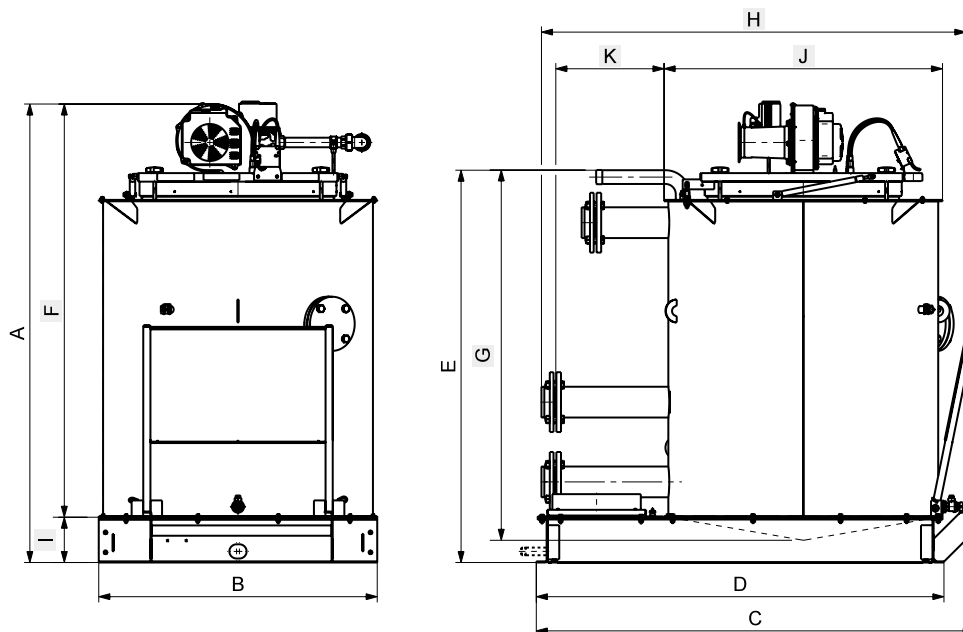
UltraGas® (850-1150), UltraGas® H (1000)



UltraGas® (1550)



Opening dimension UltraGas® Boiler without casing and insulation

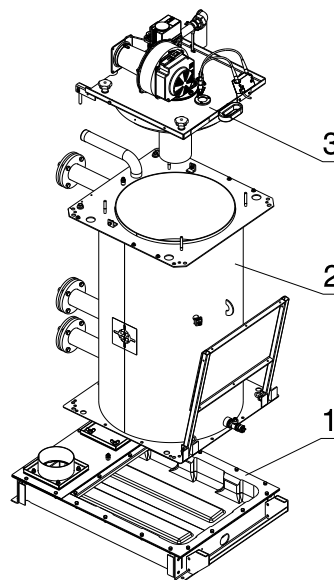


UltraGas® type	A	B	C	D	E	Measurements for installation in separate parts					
						F	G	H	I	J	K
(125,150)	1520	680	1072	980	1295	1380	1191	1040	140	680	236
(200-300)	1585	790	1422	1330	1355	1445	1260	1390	140	950	316
(350)	1610	970	1530	1420	1380	1450	1272	1480	160	970	377
(400-500)	1810	970	1530	1420	1380	1650	1272	1480	160	970	377
(575-720)	1810	1150	1720	1605	1400	1635	1316	1690	175	1150	408
(850-1150)	1885	1410	2027	1916	1483	1686	1375	2000	199	1410	458
(1550)	2244	1410	2032	1916	1780	-	-	-	-	-	-
H (720)	1810	1150	1720	1605	1400	1635	1316	1690	175	1150	408
H (1000)	1885	1410	2027	1916	1483	1686	1375	2000	199	1410	458

Weights for insertion in separate parts UltraGas®

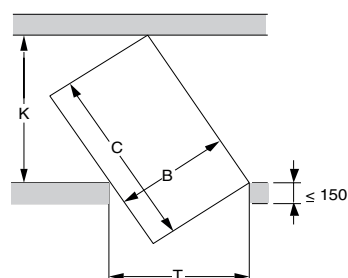
(all measures in kg)

UltraGas® type	Weights for insertion in separate parts		
	1 base	2 heat exchanger	3 burner
(125,150)	47	250	38
(200)	73	395	54
(250)	73	430	54
(300)	73	475	54
(350)	113	550	70
(400)	113	585	70
(450)	113	630	70
(500)	113	650	70
(575)	143	900	94
(650)	143	935	94
(720)	143	1030	94
(850)	200	1350	138
(1000)	200	1460	138
(1150)	200	1520	138
(1550)	200	1770	150
H (720)	143	1130	94
H (1000)	200	1680	138



Required min. width of door and corridor to bring in the boiler

The following informations are minimal dimensions



$$K = \frac{B}{T} \times C$$

$$T = \frac{B}{K} \times C$$

- T Door width
- K Corridor width
- B Boiler width
- C Max. boiler length

Calculation example for the necessary corridor width

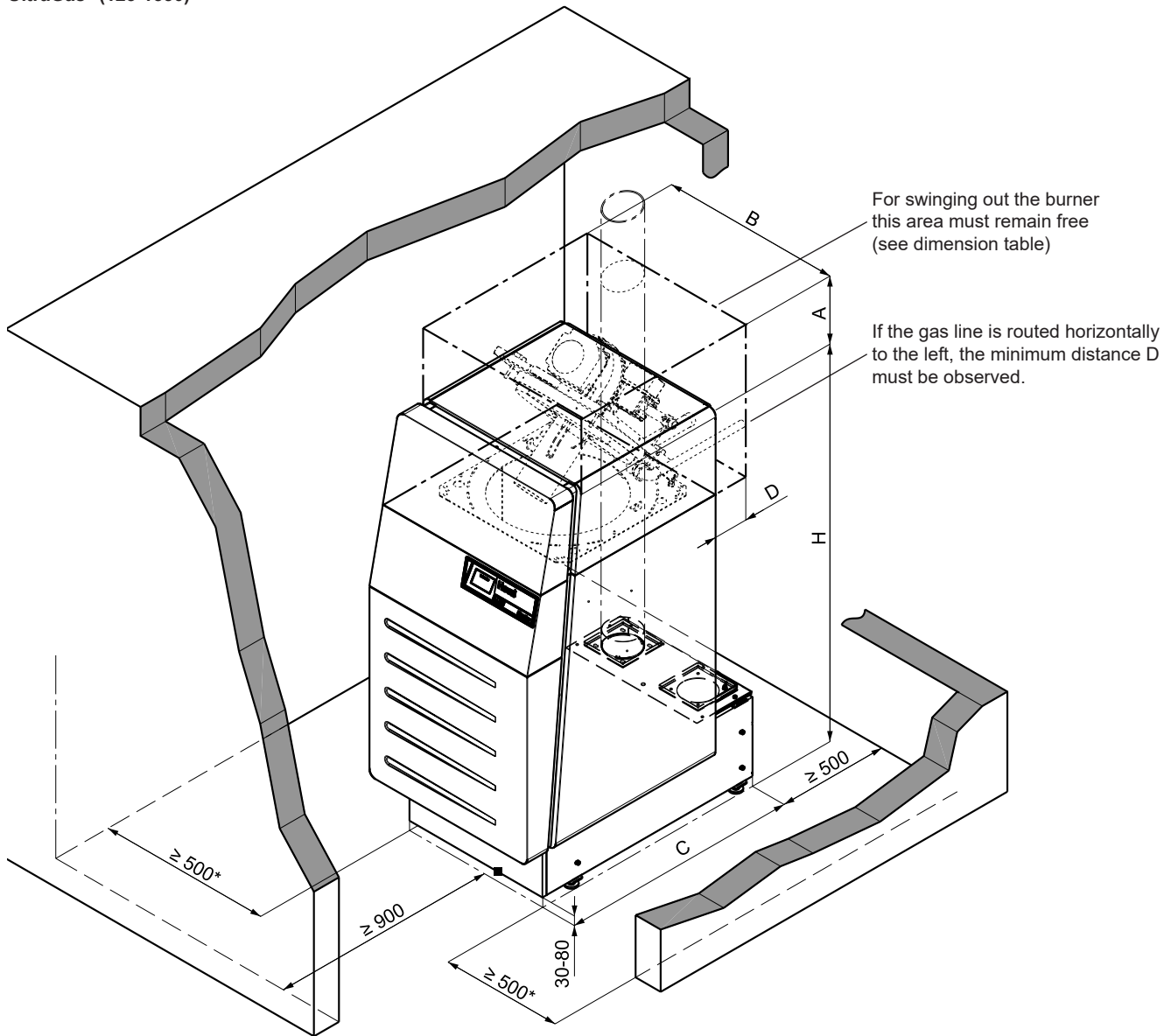
Door width T = 1000

$$\text{UltraGas® (400-500)} \quad K = \frac{970}{1000} \times 1530 = \text{corridor width} \geq 1484$$

Space requirements

(Dimensions in mm)

UltraGas® (125-1550)



UltraGas® type	A	A minimal	B	C	D	H	H minimal
(125,150)	180 ¹⁾	80 ²⁾	820	1237	200	1853	1733 ³⁾
(200-300)	360 ¹⁾	160 ²⁾	930	1584	200	1954	1834 ³⁾
(350-500)	200 ¹⁾	100 ²⁾	1110	1679	200	2100	1980 ³⁾
(575-720)	200 ¹⁾	100 ²⁾	1290	1843	0	2116	1996 ³⁾
(850-1150)	420 ¹⁾	230 ²⁾	1550	2154	0	2170	2050 ³⁾
(1550)	430 ¹⁾	280 ²⁾	1550	2090	460	2577	2457 ³⁾

¹⁾ If room height is too small: reduction of dimension possible. See A minimal.

²⁾ **Attention!** With A minimal the burner can not be swung out completely anymore! This makes cleaning more difficult!

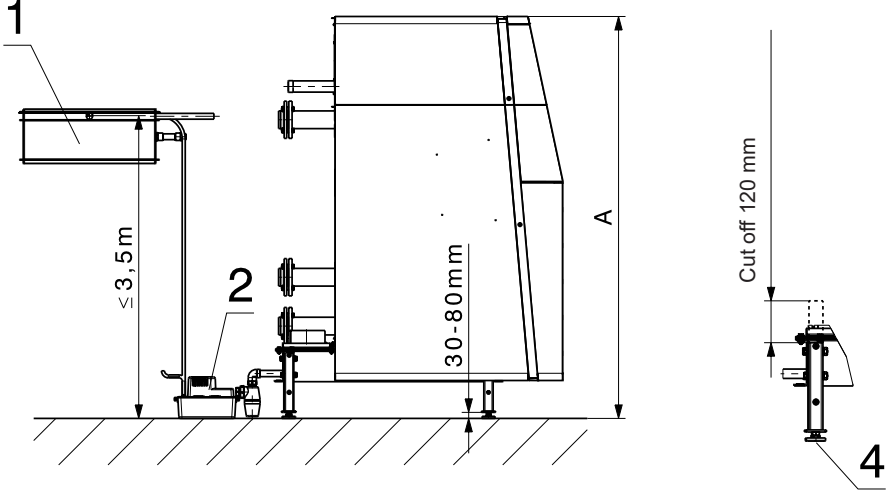
³⁾ Feet can be shortened, no base cladding possible. For details, see next page.

* The boiler can be placed with one side directly on the wall. For the casing to be installed, however, there must be a distance of at least 100 mm from the wall.

* The cleaning aperture must be easily accessible. As a result, a minimum distance of 500 mm must be maintained on the cleaning opening side.

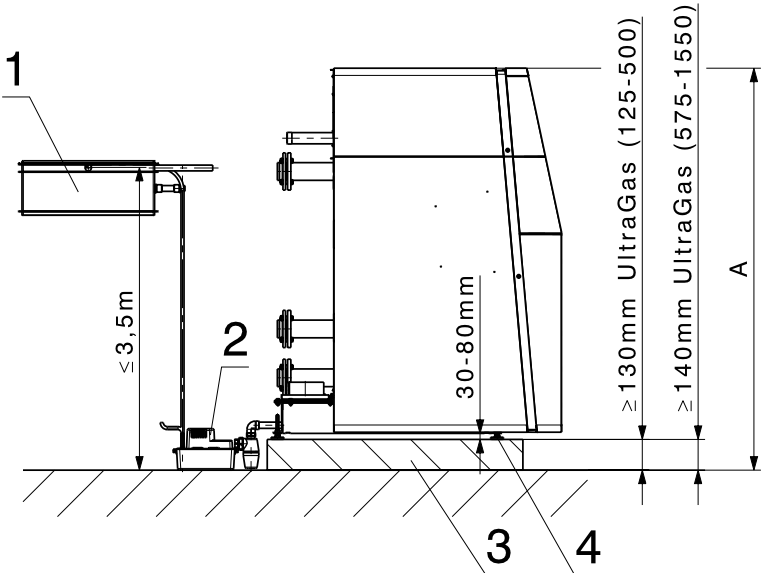
Space requirements
(Dimensions in mm)

UltraGas® with shortened boiler feet



UltraGas® type	A
(125,150)	1733-1783
(200-300)	1833-1883
(350-500)	1980-2030
(575-720), H(720)	1996-2046
(850-1150), H(1000)	2049-2099
(1550)	2457-2507

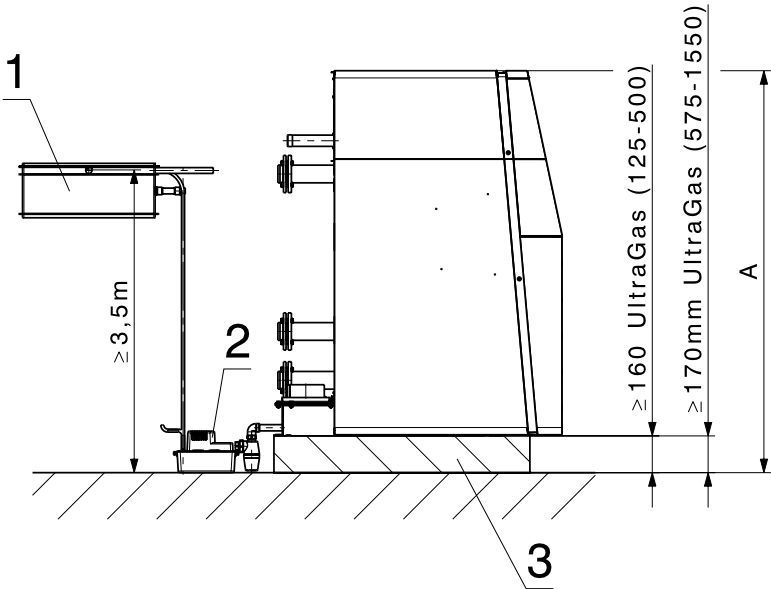
UltraGas® with masonry base and adjustable feet



UltraGas® type	A
(125,150)	1733-1783
(200-300)	1833-1883
(350-500)	1980-2030
(575-720), H(720)	2006-2056
(850-1150), H(1000)	2049-2099
(1550)	2457-2507

- 1 Neutralisation box
- 2 Condensate pump
- 3 Masonry base
- 4 Feet adjustable 30-80 mm

UltraGas® with masonry base without adjustable feet



UltraGas® type	A
(125,150)	1733
(200-300)	1833
(350-500)	1980
(575-720), H(720)	2006
(850-1150), H(1000)	2049
(1550)	2457

Base plates and adjustable feet
will not be refunded!

Neutralisation unit for Hoval UltraGas® (125-1550)

(Dimensions in mm)

Neutralisation box type KB 23

Application

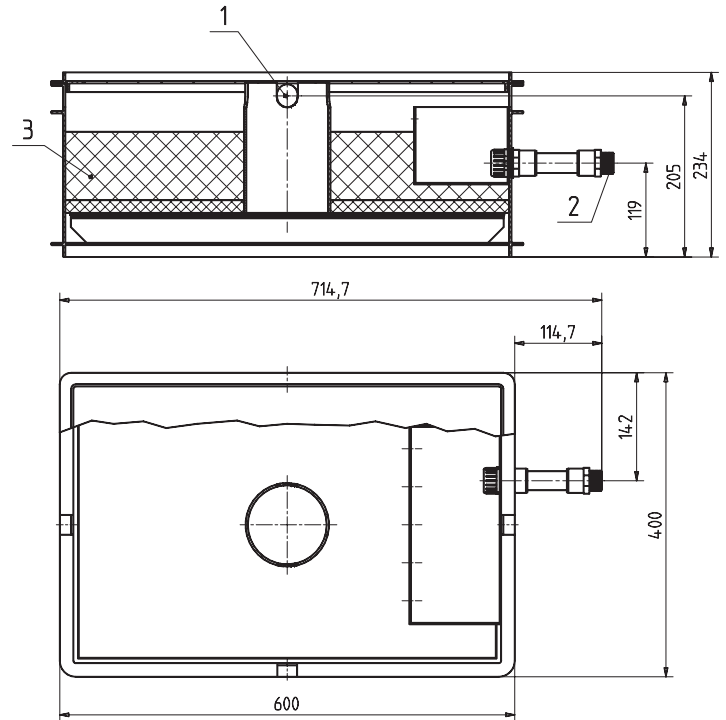
- Condensate drainage into lower situated drain pipe.
- With condensate neutralisation.
- Placed under or adjacent to the boiler

Execution

- Collector box with neutralisation unit
- 12 kg neutralisation granulate
- When installing under the boiler:
Fit boiler connection line (syphon) to neutralisation box.

On site

- In case of installation adjacent to the boiler, fit connection pipes between the boiler (syphon) and the neutralisation box.
- Drain pipe from the neutralisation box



- 1 Condensate inlet from the boiler
- 2 Outlet R 3/4"
- 3 Condensate box with 12 kg granulate

Neutralisation box with pump type KB 24

Application

- Condensate drainage into a higher situated drain pipe
- With condensate pump, delivery height 3.5 m
- With condensate neutralisation, 12 kg granulate
- Placed under or adjacent to boiler

Execution

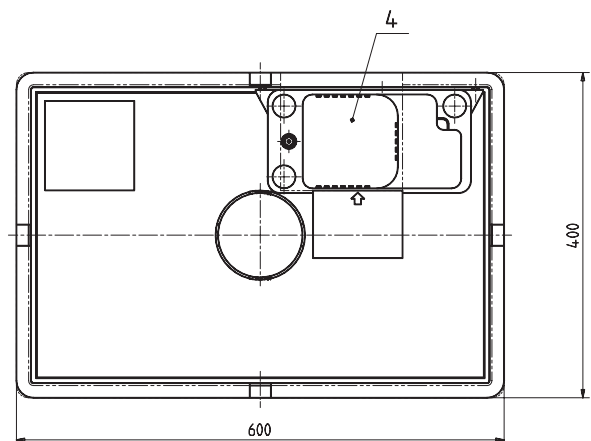
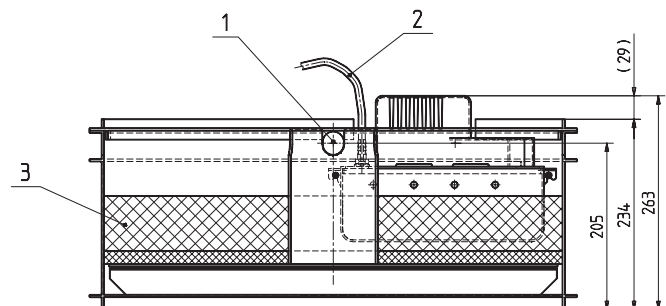
- Collector box with delivery pump and neutralisation unit
- 12 kg neutralisation granulate
- Pump delivery height max. 3.5 m (2 dm³/min)
- Silicone hose Ø 9/13 mm, length 4 m
- Electric cable length 1.5 m with plug for connection to the boiler control panel if the installation is located under the boiler
- Plastic connection pipe Ø 25, boiler (syphon) to neutralisation box if the installation is located under the boiler.

On site

- Drain pipe if the silicone hose is too short.

In the case of installation adjacent to boiler:

- Connection pipe between the boiler (syphon) and the neutralisation box
- Electrical connection between the delivery pump and the electrical control panel if the supplied cable is too short.



- 1 Condensate inlet from the boiler
- 2 Outlet from pump, silicon hose Ø 9/13 mm, length 4 m
- 3 Condensate box with 12 kg granulate (KB 24)
- 4 Condensate pump

Condensate box with pump type KB 22

Application

- Condensate drainage into a higher situated drain pipe
- With condensate pump, delivery height 3.5 m
- Placed under or adjacent to boiler

Execution

Type characteristics as KB 24, but **without** neutralisation granulate

Standards and guidelines

The following standards and guidelines must be complied with:

- Hoval technical information and installation instructions
- hydraulic and technical control regulations of Hoval
- local building law
- fire protection regulations
- DIN EN 12828
- Safety-relevant requirements
- DIN EN 12831 Heaters
- Rules for the calculation of the heat requirements of buildings
- VDI 2035 Protection against damage by corrosion and boiler scale formation in heating and service water installations
- local fire brigade regulations

Water quality

Heating water:

- The European Standard EN 14868 and the Directive VDI 2035 must be observed.
- Hoval boilers and calorifiers are designed for heating plants without significant oxygen intake (plant type I according to EN 14868).
- Plants with
 - **continuous** oxygen intake (e.g. under-floor heating systems without diffusion proof plastic piping) or
 - **intermittent** oxygen intake (e.g. where frequent refilling is necessary)
 must be equipped with **separate circuits**.
- Treated heating water must be tested at least once yearly, according to the inhibitor manufacturer's instructions, more frequent testing may be necessary.
- A refilling is not necessary if the quality of the heating water in existing installations (e.g. exchange of boiler) conforms to VDI 2035. The Directive VDI 2035 applies equally to the replacement water.
- New and if applicable existing installations must be adequately cleaned and flushed before being recharged! The boiler may only be filled after the heating system has been flushed.
- Parts of the boiler/the calorifier which have contact with water are made of ferrous materials and stainless steel.

- On account of the danger of stress cracking corrosion in the parts made of stainless steel the chloride, nitrate and sulfate contents of the heating water must not exceed 50 mg/l in total.
- The pH value of the heating water should lie between 8.3 and 9.5 after 6 to 12 weeks of heating operation.
- The electrical conductivity of the heating water must not exceed the value of 200 µS/cm. Higher values are permissible when using conditioning agents.

Filling and replacement water:

- For a plant using Hoval boilers untreated domestic water is generally best suited as filling and replacement water. However, the quality of the untreated domestic water must at least fulfil the standard set in VDI 2035 or be desalinated and/or be treated with inhibitors. The stipulations of EN 14868 must be observed.
- In order to maintain a high level of boiler efficiency and to avoid overheating of the heating surfaces the values given in the table should not be exceeded (dependent on boiler performance ratings - for multi-boiler plants rating of smallest boiler applies - and on the water content of the plant).
- The total amount of filling and replacement water which is used throughout the total service life of the boiler must not exceed three times the water capacity of the plant.
- If frost protection agent is being used, please contact the Hoval company to ask for the separate engineering sheet.

Frost protection agent

- see separate engineering sheet "Use of frost protection agent".

Heating room

- Gas boilers cannot be positioned in rooms in which halogen compounds can occur and into which combustion air can enter (e.g. laundrettes, hairdressers).
- Halogen compounds can be caused by cleaning and degreasing solutions, dissolvents, glue and bleaching lyes. Pay attention to the Procal leaflet, corrosion through Halogen compounds.

Combustion air

For the version with common flue gas line with overpressure, the flue gas excess pressure set must be imperatively mounted! The supply of combustion air must be guaranteed. There must be no possibility to close the air supply opening. For direct combustion air to boiler (LAS system) mount the connection for direct combustion air inlet.

- **Room air-dependent operation:**
Minimum free cross-section of the opening into the open: 150 cm² or twice 75 cm² and additionally 2 cm² necessary for each kW of output over 50 kW for vent into the open.

Gas connection

Manual gas shut-off tap and gas filter

Immediately in front of the boiler a manual gas shut-off device (tap) must be installed according to relevant regulations. In the UltraGas® (400-1550) types, an external gas filter must be installed in the gas supply line. Make sure that the gas line from the external gas filter to the gas connection of the boiler is cleaned.

For the UltraGas® (125-350) types, it is necessary to comply with the local regulations concerning the need for a gas filter.

Commissioning

- Start-up is to be carried out only by a specialist of Hoval.
- Burner setting values according to the installation instructions.

Shut-off valve

- A shut-off valve must be installed upstream of every gas boiler.

Construction of a recommended gas connection



Legend:



Gas ball valve



Gas hose/compensator



Gas filter



Pressure gauge with test burner and push button cock

Table 1: Maximum filling quantity without/with demineralisation

	Total hardness of the filling water up to...							
	<0.1	0.5	1	1.5	2	2.5	3	>3.0
[mol/m³] ¹⁾	<1	5	10	15	20	25	30	>30
f°H	<0.56	2.8	5.6	8.4	11.2	14.0	16.8	>16.8
d°H	<0.71	3.6	7.1	10.7	14.2	17.8	21.3	>21.3
e°H	<10	50.0	100.0	150.0	200.0	250.0	300.0	>300
~mg/l	<20	100.0	200.0	300.0	400.0	500.0	600.0	>600
Conductance ²⁾	<20	100.0	200.0	300.0	400.0	500.0	600.0	>600
Boiler size of the individual boiler	maximum filling quantity without demineralisation							
50 to 200 kW	NO DEMAND	50 l/kW	20 l/kW	20 l/kW				
200 to 600 kW		50 l/kW	50 l/kW	20 l/kW				always demineralise
over 600 kW								

¹⁾ Total of alkaline earths

²⁾ If the conductance in µS/cm exceeds the tabular value an analysis of the water is necessary.

Type of gas

- The boiler is only to be operated with the type of gas stated on the rating plate.

Gas pressure natural gas

- Necessary flow pressure at the boiler inlet: UltraGas® (125-720) and UltraGas® (1550) min. 17.4 mbar, max. 80 mbar UltraGas® (850-1150) min. 17.4 mbar, max. 50 mbar

Gas pressure propane

- A gas pressure controller to reduce the boiler inlet pressure must be installed on site for propane.
- Necessary flow pressure at the boiler inlet: UltraGas® (125-1000) min. 37 mbar, max. 57 mbar

Gas pressure regulator

- In boilers with a heat input in excess of 70 kW, install a pressure regulator in accordance with EN88-1 in the gas supply line directly before the boiler.

Closed heating system

The boiler is only approved for use in closed heating systems.

Minimum circulation water quantity

No minimum water circulation volume is required.

Calorifier connection

If a calorifier is connected, all heating groups must be provided with a mixer.

Boiler base

The boiler should be placed on a sufficiently high base (boiler base see accessories) to protect it against floor humidity and for the siphon for condensate drain.

Installation instructions

Please observe the installation instructions supplied with every boiler.

Space requirements

See "Dimensions" for information

Pump after-run time

- For operating temperatures of the boiler above 85 °C, after each burner switch-off, the circulating pump must be in operation for at least 2 minutes (the pump after-run is included in the boiler controller with TopTronic® E control).

Heating boiler in the attic

If the gas boiler is positioned on the top floor, the installation of a low water protection, which automatically turns the gas burner off in case of water shortage, is recommended.

Condensate drain

- A permit for discharge of the flue gas condensate into the sewage system must be obtained from the relevant authority or sewer operator.
- The condensate from the flue gas line can be discharged via the boiler. A condensate trap is no longer needed in the flue gas system.
- The condensate must be conducted openly (funnel) into the sewage system.

- Suitable materials for condensate drain:
 - stoneware pipes
 - pipes made from PVC
 - pipes made from polyethylene (PE)
 - pipes made from ABS or ASA

Expansion tank

- An adequately dimensioned expansion tank must be provided.
- The expansion tank has to be installed in principle at the boiler return, or at the safety flow.
- At the safety flow a safety valve and an automatic exhaustor must be installed.

Noise damping

The following measures are possible for sound insulation:

- Make boiler room walls, ceiling and floor as solid as possible.
- If there are living areas above or below the boiler room, connect pipes flexibly using expansion joints.
- Connect circulating pumps to the piping network using expansion joints

Noise level

- The acoustic power level value is dependent on the local and spacial circumstances.
- The acoustic pressure level is dependent on the installation conditions and can for instance be 5 to 10 dB(A) lower than the acoustic power level at a distance of 1 m.
- DIN 4108 must be observed when installing in domestic living areas

Recommendation:

If the air inlet at the facade is near a noise sensitive place (window of bedroom, terrace etc.), we recommend to use a sound absorber at the direct combustion air inlet.

Allocation of gas filters for UltraGas®

UltraGas®	Gas throughput	Gas filter type	Dimension	Pressure drop gas filter (with clean filter) mbar
Type	m³/h			
(125)	11.6	70602/6B	Rp 1"	0.2
(150)	14.1	70603/6B	Rp 1½"	0.1
(200)	18.8	70603/6B	Rp 1½"	0.2
(250)	23.5	70603/6B	Rp 1½"	0.2
(300)	28.3	70603/6B	Rp 1½"	0.3
(350)	32.6	70603/6B	Rp 1½"	0.4
(400) ¹⁾	37.7	70631/6B	Rp 2"	0.3
(450) ¹⁾	42.4	70631/6B	Rp 2"	0.3
(500) ¹⁾	47.1	70631/6B	Rp 2"	0.4
(575) ¹⁾	54.2	70631/6B	Rp 2"	0.5
(650) ¹⁾	61.3	70631/6B	Rp 2"	0.6
(720) ¹⁾	67.7	70631/6B	Rp 2"	0.7
H (720) ¹⁾	67.7	70631/6B	Rp 2"	0.7
(850) ¹⁾	80.2	70631/6B	Rp 2"	1.0
(1000) ¹⁾	94.3	70631/6B	Rp 2"	1.4
H (1000) ¹⁾	94.3	70631/6B	Rp 2"	1.4
(1150) ¹⁾	108.2	70631/6B	Rp 2"	1.8
(1550) ¹⁾	147.1	70610F/6B	DN 65	1.9

¹⁾ On the UltraGas® (400-1550) installation of a gas filter in front of the gas burner is mandatory! It is essential to set the dimensions of the gas line!

Flue gas system

- Gas boilers must be connected to a flue gas system (chimney or flue gas lines).
- Flue gas lines must be gas tight and leak tight against condensate and over pressure.
- The flue gas lines must be secured against unwanted loosening of the plug connections.
- The flue gas system must be connected with an angle, so that the resulting condensate of the flue gas system can flow back to the boiler and can be neutralised there before discharging into the canalisation.
- Gas boilers with condensation heat utilisation are to be connected to a flue gas line min. Temperature class T120.
- A flue gas temperature limiter is built in the boiler.

Dimensions flue gas systems

Basic rules:

- Height over sea level max. 1000 m.
- The first 2 m of the flue gas line must be configured with the same dimension as the flue gas connector, after which the size of the flue gas system can be selected according to the table below.

Connecting pipes

Horizontal connecting pipes must be installed with an inclination of at least 50 mm per metre of their length installed in the direction of the boiler to allow free return flow of condensation water towards the boiler. The whole flue gas system must be installed so that condensate can never collect at any point.

• Combustion air:

In the case of room air-independent operation (accessories optional) the air pipe should be of the same dimension as the flue gas line.

If the flue gas line diameter is greater than the combustion air connection an individual calculation must be effected.

Boiler UltraGas® type	Flue gas dim. mm internal	Flue gas line (smooth walled)	Number of elbows 90° (flue gas + supply air)				
		Designation DN	Total pipe length in m (flue gas + supply air)				
			1	2	3	4	5 *
(125)	155	130	24	23	22	21	
(150)	155		15	14	13	12	
(125)	155	150	44	44	44	44	
(150)	155		44	44	44	44	
(200)	252		24	24	23	22	
(250)	252		12	12	11	11	
(125)	155	175	50	50	50	50	
(150)	155		50	50	50	50	
(200)	252		50	50	50	50	
(250)	252		46	45	45	44	
(200)	252	200	50	50	50	50	
(250)	252		50	50	50	50	
(300)	252		50	50	50	50	
(350)	302		42	41	40	39	
(250)	252	250	50	50	50	50	
(300)	252		50	50	50	50	
(350)	302		50	50	50	50	
(400)	302		50	50	50	50	
(450)	302		50	50	50	50	
(500)	302		50	50	50	50	
(350)	302	300	50	50	50	50	
(400)	302		50	50	50	50	
(450)	302		50	50	50	50	
(500)	302		50	50	50	50	
(575)	302		50	50	50	50	
(650)	302		50	50	50	50	
(720)	302		50	50	50	50	
(850)	402	350	50	50	50	50	
(850)	402	400	50	50	50	50	
(1000)	402	400	50	50	50	50	
(1150)	402	400	50	50	50	50	
(1550)	402	400	50	50	50	50	

Notice: The data contained in the table "Dimensions flue gas systems" represent guide values.

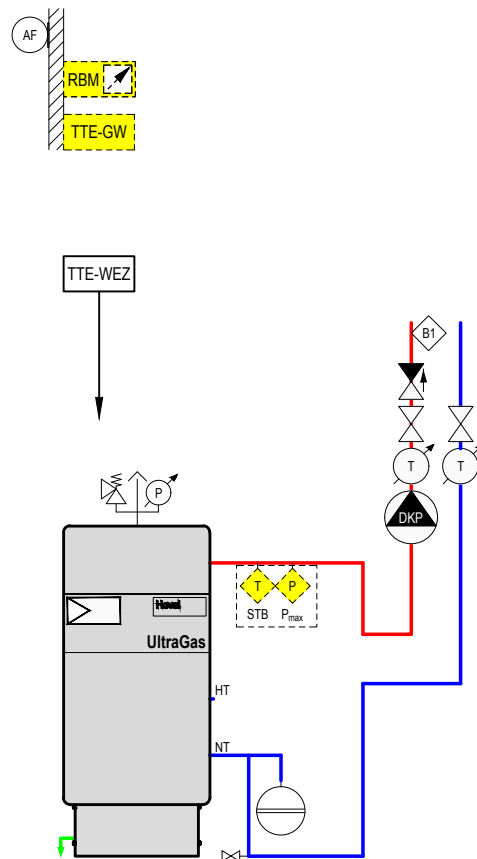
An exact calculation for the flue gas duct must be made on-site.

* With 5 bends or more the feed pressure total at the combustion air/flue gas line is to be reduced by 30 % for the calculation.

With total pipe lengths exceeding 50 m, a separate calculation is necessary.

UltraGas® (125-1550)

Gas boiler with
- 1 direct circuit



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (installed)
B1	Flow temperature guard (if required)
AF	Outdoor sensor
DKP	Pump for heating circuit without mixer

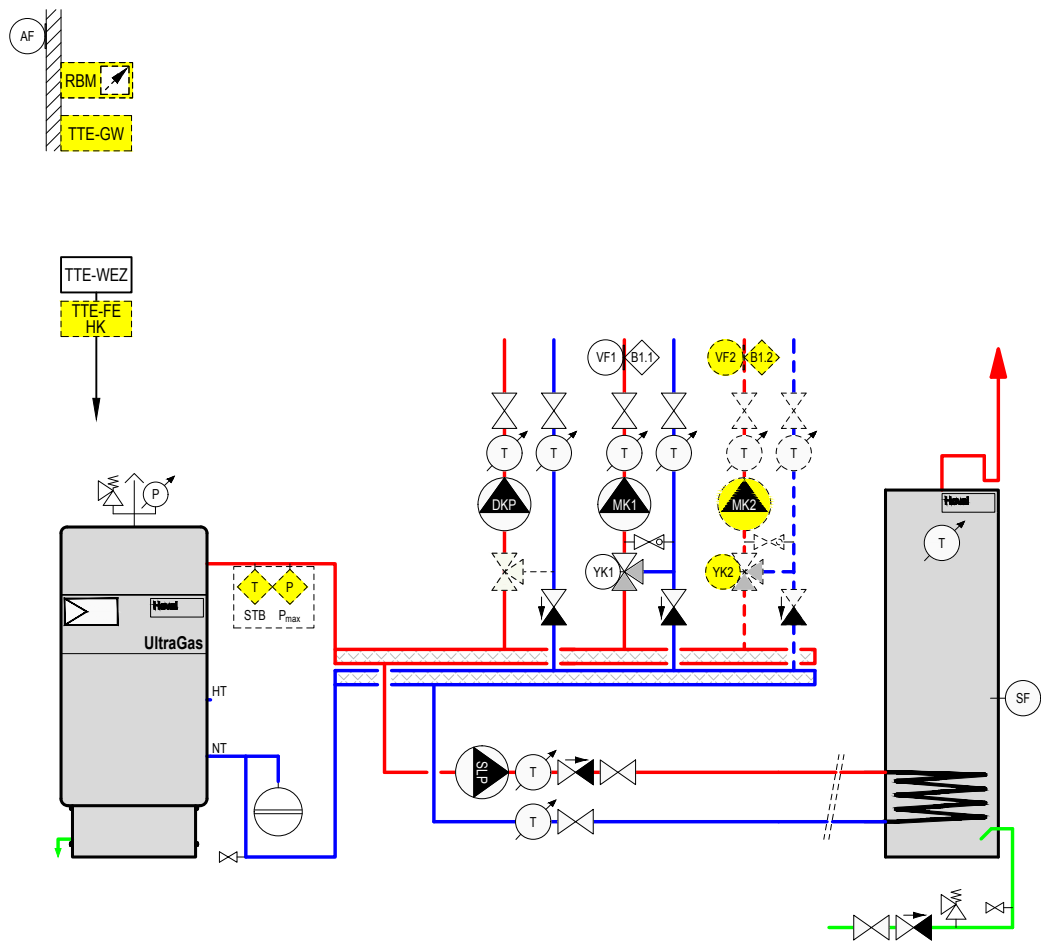
Option

RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway

UltraGas® (125-1550)
Gas boiler with

- calorifier
- 1 direct circuit and 1-... mixer circuit(s)

Hydraulic schematic BDEE030



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

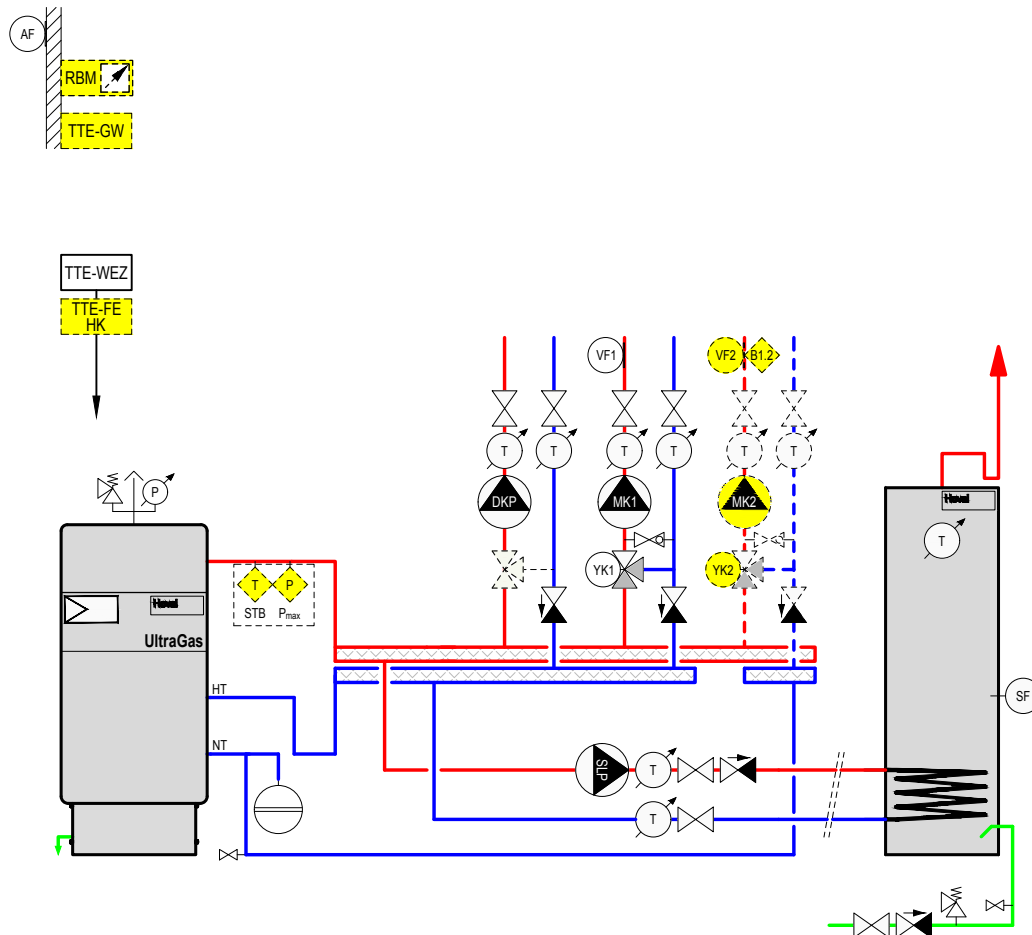
TTE-WEZ	TopTronic® E basic module heat generator (installed)
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
DKP	Pump for heating circuit without mixer
SLP	Calorifier charging pump
<i>Option</i>	
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway
TTE-FE HK	TopTronic® E module expansion heating circuit
VF2	Flow temperature sensor 2
B1.2	Flow temperature guard (if required)
MK2	Pump mixer circuit 2
YK2	Actuator mixer 2

UltraGas® (125-1550)

Gas boiler with

- calorifier
- 1 direct circuit and 1-... mixer circuit(s)
(HT/LT separation)

Hydraulic schematic BDEE050



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (installed)
VF1	Flow temperature sensor 1
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
DKP	Pump for heating circuit without mixer
SLP	Calorifier charging pump

Option

RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway

TTE-FE HK	TopTronic® E module expansion heating circuit
VF2	Flow temperature sensor 2
B1.2	Flow temperature guard (if required)
MK2	Pump mixer circuit 2
YK2	Actuator mixer 2

Hoval UltraGas® (250D-3100D)

Floor-standing gas condensing boiler

- With condensing boiler technology
- Double boiler made of steel, consisting of 2 individual boilers at 125, 150, 200, 250, 300, 350, 400, 450, 575, 650, 720, 850, 1000, 1150 or 1550 kW
- Thermal insulation with mineral wool
- Combustion chamber made of stainless steel
- Maximum flue gas condensation by secondary heating surfaces made of UltraGas® (125-1150):
aluFer® stainless steel composite pipes;
UltraGas® (1550):
hybrid stainless steel composite pipes;
flue gas side: aluminium
water side: stainless steel
- Water pressure sensor:
 - Fulfills the function of a minimum and maximum pressure limiter
 - Replacement for low water level protection
- Water pressure sensor (minimum and maximum limiter) integrated
- Flue gas temperature sensor with flue gas limiter function
- Pre-mix burner
 - with fan and venturi
 - modulating operation
 - automatic ignition
 - ionisation guard
 - gas pressure monitor
- Gas boiler fully cased with steel plates, red powder-coated.
- Flue gas overpressure set consisting of motorised air intake suction flap (connection for direct combustion air supply without accessories possible) and flue gas collector.
- Heating connections backwards incl. counter flanges, screws and seals
 - Flow
 - Return - high temperature
 - Return - low temperature
- **UltraGas® (800D-3100D):**
with integrated gas pipe compensator
- Each individual boiler has a Hoval TopTronic® E control built in
- Possibility of connecting an external gas solenoid valve with error output

TopTronic® E controller

Control panel

- Colour touchscreen 4.3 inch
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp

TopTronic® E control module

- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with online HovalConnect)



Model range

UltraGas® type	Output range at 40/30 °C kW
(250D)	28-246
(300D)	28-300
(400D)	44-400
(500D)	49-500
(600D)	57-600
(700D)	58-700
(800D)	97-800
(900D)	97-900
(1000D)	97-1000
(1150D)	136-1150
(1300D)	136-1300
(1440D)	142-1440
(1700D)	166-1700
(2000D)	224-2000
(2300D)	233-2300
(3100D)	328-3100

- Adaptation of the heating strategy based on the weather forecast (with online HovalConnect)

TopTronic® E basic module heat generator (TTE-WEZ)

- Control functions integrated for
 - 1 heating circuit with mixer
 - 1 heating circuit without mixer
 - 1 hot water loading circuit
 - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- Rast-5 basic plug set

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion heat accounting or
 - module expansion universal
- Can be networked with a total of up to 16 controller modules:
 - heating circuit/hot water module
 - solar module
 - buffer module
 - measuring module

Permissions boilers

UltraGas® (250D-2300D)
CE product ID No.: CE-0085AQ0620

Number of modules that can be additionally installed in the heat generator (per single boiler) UltraGas® (125-300)

- 1 module expansion and 1 controller module **or**
- 2 controller modules

UltraGas® (350-500)

- 1 module expansion and 2 controller modules **or**
- 1 controller module and 2 module expansions **or**
- 3 controller modules

UltraGas® (575-1550)

- 4 controller modules or module expansions

Notice

Max. 1 module expansion can be connected to the basic module heat generator (TTE-WEZ)!

The supplementary plug set must be ordered in order to use expanded controller functions.

Further information about the TopTronic® E
see "Controls"

Optional

- For liquid gas
 - propane up to 2000 kW
- Neutralisation units
- Free-standing calorifier CombiVal
- Additional control for more heating circuits
- Hydraulic connection

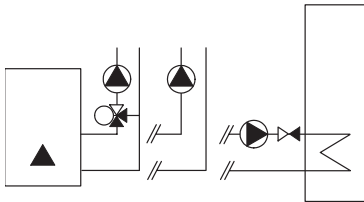
Delivery

- 2 boilers, casing with thermal insulation, 2 TopTronic® E controls, flue gas collector and combustion air connection delivered separately packed

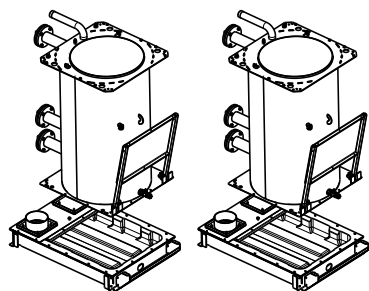
On site

- Mounting of boiler foot
- Mounting of thermal insulation, casing and control panel
- Mounting of the flue gas connection line and flue gas overpressure set (motorised air intake suction flaps)
- Bus cable for connecting the two boiler controls of the double boiler on site (not included in scope of delivery).

Part No.



Floor-standing gas condensing boiler (delivery in separate parts)



Hoval UltraGas® (250D-3100D) (delivery in separate parts)

Double boiler consisting of two individual boilers (UltraGas® 125-1550 kW), each with a built-in Hoval TopTronic® E control for **delivery in separate parts**. Assembled on-site by the installer.

UltraGas® type	Output 40/30 °C kW	Operating pressure bar
(250D)	28-246	5
(300D)	28-300	5
(400D)	44-400	5
(500D)	49-500	5
(600D)	57-600	5
(700D)	58-700	6
(800D)	97-800	6
(900D)	97-900	6
(1000D)	97-1000	6
(1150D)	136-1150	6
(1300D)	136-1300	6
(1440D)	142-1440	6
(1700D)	166-1700	6
(2000D)	224-2000	6
(2300D)	233-2300	6
(3100D)	328-3100	6

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7013 651
7013 652
7013 653
7013 654
7013 655
7013 656
7015 792
7017 977



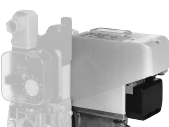
From the UltraGas® 800D,
a gas filter per boiler is mandatory.

Gas filter

with measurement nozzle before and behind the filter inset (diameter: 9 mm)
Pore width of the filter inset < 50 µm
Max. pressure difference 10 mbar
Max. inlet pressure 100 mbar

Type	Connection
70612/6B	Rp ¾"
70602/6B	Rp 1"
70604/6B	Rp 1¼"
70603/6B	Rp 1½"
70631/6B	Rp 2"
70610F/6B	DN 65

2007 995
2007 996
2054 495
2007 997
2007 998
2007 999



Valve testing system

for UltraGas® (125-1150),
UltraGas® (250D-2300D)
Automatic, compact testing system for testing the leakage of the gas valve before each burner start with ready-to-connect wiring. Suitable for all gas qualities for which the UltraGas® is permitted.

UltraGas® (250D-700D)	6039 964
UltraGas® (800D-1440D)	6039 965
UltraGas® (1700D-2300D)	6039 966

For an UltraGas® double boiler,
two valve testing systems must be ordered.

Modification set for propane for UltraGas® (125-350)

6047 610

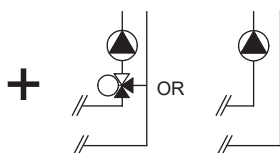
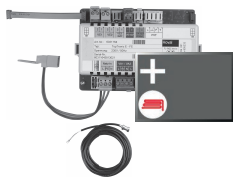
Modification set for propane for UltraGas® (400-720)

6047 612

Modification set for propane for UltraGas® (850,1000)

6047 611

TopTronic® E module expansions for TopTronic® E basic module heat generator



TopTronic® E module expansion heating circuit TTE-FE HK

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating circuit without mixer or
- 1 heating circuit with mixer

incl. fitting accessories

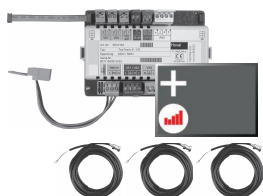
1 contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:

Boiler control, wall housing, control panel

Notice

The supplementary plug set may have to be ordered to implement functions differing from the standard!



TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating/cooling circuit w/o mixer or
 - 1 heating/cooling circuit with mixer
- in each case incl. energy balancing

incl. fitting accessories

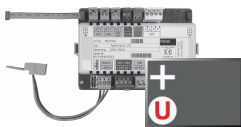
3 contact sensors ALF/2P/4/T L = 4.0 m

Can be installed in:

Boiler control, wall housing, control panel

Notice

Suitable flow rate sensors (pulse sensors) must be provided on site.



TopTronic® E module expansion Universal TTE-FE UNI

Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

incl. fitting accessories

Can be installed in:

Boiler control, wall housing, control panel

Further information

see "Controls" - "Hoval TopTronic® E module expansions" chapter

Notice

Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

Part No.

6034 576

6037 062

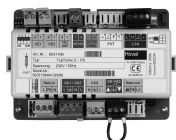
6034 575

Accessories for TopTronic® E



Supplementary plug set

for basic module heat generator (TTE-WEZ)
for controller modules and module expansion
TTE-FE HK



TopTronic® E controller modules

TTE-HK/WW TopTronic® E heating circuit/
hot water module
TTE-SOL TopTronic® E solar module
TTE-PS TopTronic® E buffer module
TTE-MWA TopTronic® E measuring module



TopTronic® E room control modules

TTE-RBM TopTronic® E room control modules
easy white
comfort white
comfort black



Enhanced language package TopTronic® E

one SD card required per control module
Consisting of the following languages:
HU, CS, SL, RO, PL, TR, ES, HR, SR, JA, DA



HovalConnect

HovalConnect LAN
HovalConnect WLAN

HovalConnect available from mid-2020

Up to that point, TopTronic® E online is delivered.

TopTronic® E interface modules

GLT module 0-10 V
HovalConnect Modbus
HovalConnect KNX



TopTronic® E wall casing

WG-190 Wall casing small
WG-360 Wall casing medium
WG-360 BM Wall casing medium with
control module cut-out
WG-510 Wall casing large
WG-510 BM Wall casing large with
control module cut-out



TopTronic® E sensors

AF/2P/K Outdoor sensor
TF/2P/5/6T Immersion sensor, L = 5.0 m
ALF/2P/4/T Contact sensor, L = 4.0 m
TF/1.1P/2.5S/6T Collector sensor, L = 2.5 m



System housing

System housing 182 mm
System housing 254 mm



Bivalent switch

Part No.

6034 499
6034 503

6034 571
6037 058
6037 057
6034 574

6037 071
6037 069
6037 070

6039 253

6049 496
6049 498

6034 578
6049 501
6049 593

6035 563
6035 564
6035 565
6035 566
6038 533

2055 889
2055 888
2056 775
2056 776

6038 551
6038 552

2061 826

Further information
see "Controls"

Part No.



Flow temperature guard

for underfloor heating system (1 guard per heating circuit) 15-95 °C, differential gap 6 K, capillary tube max. 700 mm setting (visible from the outside) under the housing cover

Clamp-on thermostat RAK-TW1000.S
Thermostat with strap, without cable and plug

242 902

Kit clamp-on thermostat RAK-TW1000.S
Thermostat with strap,
enclosed cable (4 m) and plug

6033 745



Immersion thermostat RAK-TW1000.S SB 150
Thermostat with pocket 1/2" - depth of immersion 150 mm, brass nickel-plated

6010 082



Safety set

Complete with safety valve (3 bar), Pressure gauge and autom. aspirator with shut-off valve. Connection inner thread

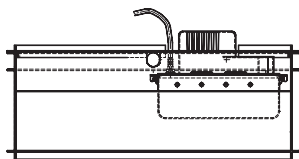
For UltraGas® (125-200)
DN 25 - Rp 1" to 200 kW

6018 709

For UltraGas® (250-350)
DN 32 - Rp 1 1/4" to 350 kW

6018 710

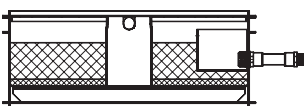
Condensate drainage to UltraGas® (250D-3100D)



Placed under the boiler

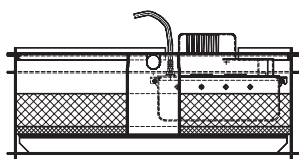
Condensate box KB 22

for UltraGas® (125-1550), (250D-3100D),
UltraOil® (65-300), (320D-600D)
Condensate drain into a higher
drainage duct with delivery pump.
Max. delivery head 3.5 m up to 1200 kW
Delivery volume 120 l/h
incl. liquid level switch,
silicone hose 9/13 mm, 4 m long,
electrical cable 1.5 m with plug
12 kg granulate
Up to UltraGas® (1150) or
UltraGas® (2300D) one condensate
box KB 22 required per boiler
UltraGas® (1550) or
UltraGas® (3100D) two condensate
boxes KB 22 required per boiler



Neutralisation box KB 23

for UltraGas® (125-1550), (250D-3100D),
UltraOil® (65-300), (320D-600D)
Condensate drainage into lower situated
drain pipe without condensate
delivery pump
with neutralisation
12 kg neutralisation granulate
Placed under the boiler
Use one box per boiler.



Neutralisation box KB 24

for UltraGas® (125-1550), (250D-3100D),
UltraOil® (65-300), (320D-600D)
Neutralisation box for transporting
condensation water into a higher lying
drainage duct, delivery head max. 3.5 m
up to 1200 kW
Delivery volume 120 l/h
incl. liquid level switch,
silicone hose 9/13 mm, 4 m long,
electrical cable 1.5 m with plug
12 kg granulate
Up to UltraGas® (1150) or
UltraGas® (2300D) one neutralisation
box KB 24 required per boiler
UltraGas® (1550) or
UltraGas® (3100D) two neutralisation
boxes KB 24 required per boiler



Neutralisation granulate

for neutralisation box
Refill set volume 3 kg
Life time of one filling:
approx. 2-4 years; depending on amount
of condensate



Condensate pump

for transporting condensation water
into a higher drainage duct.
Including connection line,
completely wired,
cable and plug for connection
to the boiler controller
max. transport height: 3.5 m
Delivery rate up to 294 l/h
combinable with neutralisation box
can be mounted in boiler socket

Part No.

6033 767

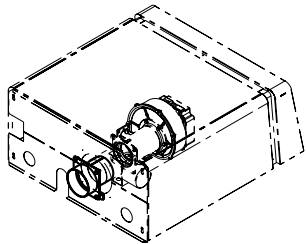
6001 917

6033 764

2028 906

6034 771

Accessories

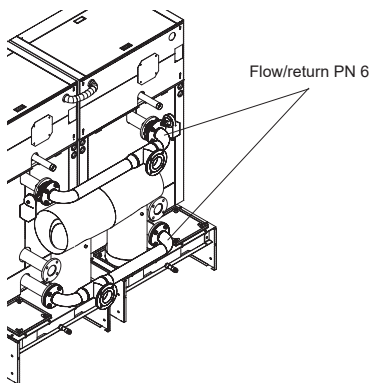


Connection for a direct combustion air supply

In combination with the motor-driven air intake dampers included in the scope of delivery of the double boiler system. Per installation two pieces must be ordered.

UltraGas® (250D,300D)
UltraGas® (400D-600D)
UltraGas® (700D)
UltraGas® (800D-1000D)
UltraGas® (1150D-1440D)
UltraGas® (1700D,2300D)

6025 113
6025 114
6025 115
6025 104
6025 063
6025 094



Pipe connection double boiler

Flow/return PN 6

Pipe connection set for double boiler including motor shut-off flap valves.

for UltraGas® (250D-600D)
for UltraGas® (700D-1000D)
for UltraGas® (1150D-1440D)
for UltraGas® (1700D,2300D)
for UltraGas® (3100D)

6038 472
6038 643
6038 644
6038 645
6051 890



Hydraulic butterfly valve

for direct installation on the boiler flow and/or return of the boiler.

For 230 V, pre-wired.

Damper position: closed or fully open.

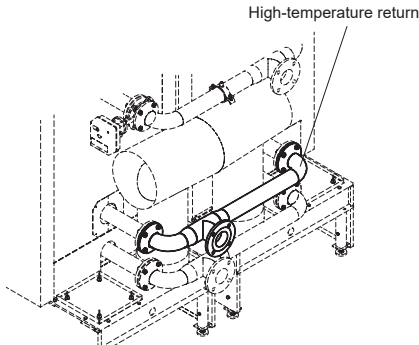
As an option, if no flow/return set is ordered.

Two pieces required per double boiler.

Suitable for high-pressure version (8 bar)!

UltraGas® (250D-600D)	1 piece	DN 65
UltraGas® (700D-1000D)	1 piece	DN 100
UltraGas® (1150D-2300D)	1 piece	DN 125
UltraGas® (3100D)	1 piece	DN 150

6002 660
6042 055
6037 866
6049 302



High-temperature return

Pipe connection set for double boiler (e.g. for return calorifier charge)

for UltraGas® (250D-600D)
for UltraGas® (700D-1000D)
for UltraGas® (1150D-1440D)
for UltraGas® (1700D,2300D)
for UltraGas® (3100D)

6001 926
6004 924
6009 534
6020 274
6051 915

Part No.



Gas pipe compensator 1"
for UltraGas® (125,150) and
UltraGas® (250D,300D)
for compensating for connection
tolerances in the gas pipe

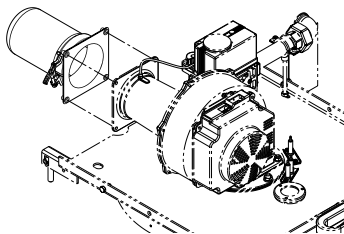
6034 556



Gas pipe compensator 1½"
for UltraGas® (200-350) and
UltraGas® (400D-700D)
for compensating for connection
tolerances in the gas pipe

6034 557

2 pieces per double boiler necessary

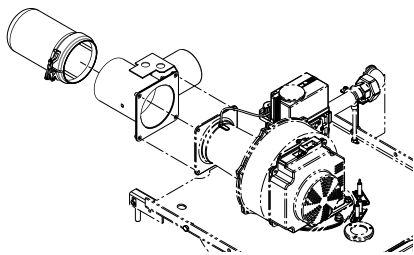


Connection protection filter
for UltraGas® (125-350)
for assembly on air suction socket of
Venturi for filtering combustion air
during construction
Filter pore width < 50 µm

6047 593

Connection protection filter
for UltraGas® (400-1550)
for assembly on air suction socket of
Venturi for filtering combustion air
during construction
Filter pore width < 50 µm

6047 594



Connection protection filter
for UltraGas® (125-350)
for assembly on air intake damper
for filtering combustion air
during construction
Filter pore width < 50 µm

6047 595

Connection protection filter
for UltraGas® (400-1550)
for assembly on air intake damper
for filtering combustion air
during construction
Filter pore width < 50 µm

6047 596



Assembly tube flow



Assembly tube return

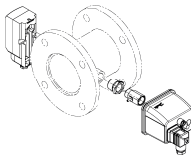
Assembly tube for flow and return
for assembly on flow resp. high and low temperature return of the UltraGas® boiler.
For connection of

- an additional safety temperature limiter and a maximum pressure limiter on the flow and
- an expansion tank on the return

Dimension	Suitable to UltraGas®	Connection
DN 65 ¹⁾	(250D-600D)	flow
DN 65 ¹⁾	(250D-600D)	return
DN 100 ¹⁾	(700D-1000D)	flow
DN 100 ¹⁾	(700D-1000D)	return
DN 125 ¹⁾	(1250D-2300D)	flow
DN 125 ¹⁾	(1250D-2300D)	return
DN 150 ¹⁾	(3100D)	flow
DN 150 ¹⁾	(3100D)	return

¹⁾ 2 pieces are necessary

Further information see “Dimensions”
Hoval UltraGas® (125-1550)



Safety armature set
Compatible with armature pipe for meeting safety requirements of EN 12828: > 300 kW or SWKI 93-1: 70-1000 kW related to single boiler
Consisting of:

- adjustable maximum pressure limiter incl. ball valve
- safety temperature limiter (RAK-ST.131)

2 pieces per double boiler necessary

Part No.

6032 993
6023 108
6023 109
6023 110
6023 111
6023 112
6051 678
6051 680

6051 903

Services



Commissioning

Commissioning by works service or Hoval trained authorised serviceman/company is condition for warranty.

For commissioning and other services please contact your Hoval sales office.

UltraGas® (250D-700D)

Type		(250D)	(300D)	(400D)	(500D)	(600D)	(700D)
• Nominal heat output at 80/60 °C, natural gas	kW	25-228	25-278	39-370	44-462	51-556	51-648
• Nominal heat output at 40/30 °C, natural gas	kW	28-250	28-300	44-400	49-500	57-600	58-700
• Nominal heat output at 50/30 °C, natural gas ³⁾	kW	27-246	28-300	42-386	48-486	55-588	56-688
• Nominal heat output at 80/60 °C, propane ²⁾	kW	31-226	35-276	63-370	78-454	80-546	95-626
• Nominal heat output at 40/30 °C, propane ²⁾	kW	34-250	39-300	70-400	87-500	91-600	109-700
• Nominal heat output at 50/30 °C, propane ³⁾	kW	33-246	39-300	68-388	85-486	88-588	105-688
• Nominal load with natural gas ¹⁾	kW	26-232	26-282	40-376	45-470	52-566	53-660
• Nominal load with propane ²⁾	kW	32-232	36-282	65-376	80-470	84-566	100-660
• Operating pressure heating min./max. (PMS)	bar	1/5	1/5	1/5	1/5	1/5	1/6
• Operating temperature max. (T _{max})	°C	90	90	90	90	90	90
• Boiler water content (V _(H2O))	l	412	388	719	682	636	857
• Flow resistance boiler				see diagram			
• Minimum circulation water quantity	l/h	-	-	-	-	-	-
• Boiler weight (without water content, incl. casing)	kg	868	916	1282	1348	1452	1762
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV)	%	97.9/88.2	97.8/88.1	97.9/88.2	97.9/88.2	98.0/88.3	98.2/88.5
• Boiler efficiency at 30 % partial load (NCV/GCV)	%	108.1/97.4	108.0/97.3	108.1/97.4	108.1/97.4	108.0/97.3	108.0/97.3
• NOx class (EN 15502)		6	6	6	6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	32	29	31	36	31	34
• Carbon monoxide emissions (full-load operation, 3% O ₂)	CO mg/Nm ³	13	18	11	18	22	14
• Content of CO ₂ in the flue gas minimum/maximum output	%	8.8/9.0	8.8/9.0	8.8/9.0	8.8/9.0	8.8/9.0	8.8/9.0
• Heat loss in standby mode	Watt	960	960	1060	1060	1060	1500
• Dimensions		see table of dimensions					
• Gas flow pressure minimum/maximum							
- Natural gas E/LL	mbar	17.4-80	17.4-80	17.4-80	17.4-80	17.4-80	17.4-80
- Propane	mbar	37-57	37-57	37-57	37-57	37-57	37-57
• Gas connection value at 15 °C/1013 mbar:							
- Natural gas E (Wo = 15.0 kWh/m ³) NCV = 9.97 kWh/m ³	m ³ /h	2.6-23.3	2.6-28.3	4.0-37.7	4.5-47.1	5.2-56.8	5.3-66.2
- Natural gas LL (Wo = 12.4 kWh/m ³) NCV = 8.57 kWh/m ³	m ³ /h	3.0-27.1	3.0-32.9	4.7-43.9	5.3-54.8	6.1-66.0	6.2-77.0
- Propane ²⁾ (NCV = 25.9 kWh/m ³)	m ³ /h	1.2-8.9	1.4-10.9	2.5-14.5	3.1-18.1	3.2-21.9	3.9-25.5
• Operation voltage	V/Hz	230/50	230/50	230/50	230/50	230/50	230/50
• Electrical power consumption min./max.	Watt	40/332	40/490	38/280	40/444	44/688	46/656
• Stand-by	Watt	18	18	18	18	18	18
• IP rating (integral protection)	IP	20	20	20	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40	5-40	5-40
• Sound power level							
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	72	75	69	72	75	77
- Exhaust noise is radiated from the mouth (DIN 45635 part 47) (room air dependent/room air independent)	dB(A)	68	70	65	68	69	74
• Condensate quantity (natural gas) at 40/30 °C	l/h	21.7	26.5	35.3	44.2	53.2	61.3
• pH value of the condensate	approx.	4.2	4.2	4.2	4.2	4.2	4.2
• Construction type		B23P, C53, C63					
• Flue gas system							
- Temperature class		T120	T120	T120	T120	T120	T120
- Flue gas mass flow at nominal heat load (dry)	kg/h	383	468	624	780	940	1082
- Flue gas mass flow at lowest nominal heat load (dry)	kg/h	39.1	39.1	60.2	67.7	78.2	79.8
- Flue gas temperature at nominal output and operation 80/60 °C	°C	69	71	69	70	71	69
- Flue gas temperature at nominal output and operation 40/30 °C	°C	48	49	48	49	49	46
- Flue gas temperature at lowest nominal heat load and operation 40/30 °C	°C	32	32	32	32	32	32
- Maximum permitted temperature of the combustion air	°C	50	50	50	50	50	50
- Volume flow rate combustion air	Nm ³ /h	286	349	465	582	701	807
- Maximum supply pressure for supply air and flue gas line	Pa	60	60	60	60	60	60
- Maximum draught/depression at flue gas outlet	Pa	-50	-50	-50	-50	-50	-50

¹⁾ Data related to NCV. The boiler series is tested for EE/H-settings. With a factory setting of the Wobbe coefficient of 15.0 kWh/m³ operation at a Wobbe coefficient of 12.0 up to 15.7 kWh/m³ is possible without new settings.

²⁾ Data related to NCV.

³⁾ Factory measurements

UltraGas® (800D-1300D)

Type		(800D)	(900D)	(1000D)	(1150D)	(1300D)
• Nominal heat output at 80/60 °C, natural gas	kW	87-742	87-834	87-926	122-1066	122-1206
• Nominal heat output at 40/30 °C, natural gas	kW	97-800	97-900	97-1000	136-1150	136-1300
• Nominal heat output at 50/30 °C, natural gas ³⁾	kW	95-786	95-884	94-980	131-1130	131-1280
• Nominal heat output at 80/60 °C, propane ²⁾	kW	139-728	139-820	139-910	169-1048	169-1184
• Nominal heat output at 40/30 °C, propane ²⁾	kW	154-800	154-900	154-1000	185-1150	185-1300
• Nominal heat output at 50/30 °C, propane ³⁾	kW	151-786	151-884	149-980	178-1130	178-1280
• Nominal load with natural gas ¹⁾	kW	89-754	89-848	89-942	125-1084	125-1226
• Nominal load with propane ²⁾	kW	144-754	144-848	144-942	175-1084	175-1228
• Operating pressure heating min./max. (PMS)	bar	1/6	1/6	1/6	1/6	1/6
• Operating temperature max. (T _{max})	°C	90	90	90	90	90
• Boiler water content (V _(H2O))	l	822	774	751	1098	1058
• Flow resistance boiler		see diagram				
• Minimum circulation water quantity	l/h	-	-	-	-	-
• Boiler weight (without water content, incl. casing)	kg	1844	1944	1982	2554	2606
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV)	%	98.3/88.6	98.3/88.6	98.3/88.6	98.3/88.6	98.3/88.6
• Boiler efficiency at 30 % partial load (NCV/GCV)	%	108.1/97.4	108.0/97.3	108.0/97.3	108.1/97.4	108.0/97.3
• NOx class (EN 15502)		6	6	6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	33	33	33	32	35
• Carbon monoxide emissions (full-load operation, 3% O ₂)	CO mg/Nm ³	22	22	27	22	23
• Content of CO ₂ in the flue gas minimum/maximum output	%	8.8/9.0	8.8/9.0	8.8/9.0	8.8/9.0	8.8/9.0
• Heat loss in standby mode	Watt	1500	1500	1500	2000	2000
• Dimensions		see table of dimensions				
• Gas flow pressure minimum/maximum						
- Natural gas E/LL	mbar	17.4-80	17.4-80	17.4-80	17.4-80	17.4-80
- Propane	mbar	37-57	37-57	37-57	37-57	37-57
• Gas connection value at 15 °C/1013 mbar:						
- Natural gas E (Wo = 15.0 kWh/m ³) NCV = 9.97 kWh/m ³	m ³ /h	8.9-75.6	8.9-85.1	8.9-94.5	12.5-108.7	12.5-123.0
- Natural gas LL (Wo = 12.4 kWh/m ³) NCV = 8.57 kWh/m ³	m ³ /h	10.4-88.0	10.4-98.9	10.4-109.9	14.6-126.5	14.6-143.1
- Propane ²⁾ (NCV = 25.9 kWh/m ³)	m ³ /h	5.6-29.1	5.6-32.7	5.6-36.4	6.8-41.9	6.8-47.4
• Operation voltage	V/Hz	230/50	230/50	230/50	230/50	230/50
• Electrical power consumption min./max.	Watt	58/884	58/1160	68/1490	59/1440	59/2060
• Stand-by	Watt	18	18	18	18	18
• IP rating (integral protection)	IP	20	20	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40	5-40
• Sound power level						
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	74	76	78	75	78
- Exhaust noise is radiated from the mouth (DIN 45635 part 47) (room air dependent/room air independent)	dB(A)	74	75	76	72	75
• Condensate quantity (natural gas) at 40/30 °C	l/h	70.9	79.7	88.5	101.9	115.2
• pH value of the condensate	approx.	4.2	4.2	4.2	4.2	4.2
• Construction type		B23P, C53, C63				
• Flue gas system						
- Temperature class		T120	T120	T120	T120	T120
- Flue gas mass flow at nominal heat load (dry)	kg/h	1252	1408	1564	1799	2035
- Flue gas mass flow at lowest nominal heat load (dry)	kg/h	134	134	134	188	188
- Flue gas temperature at nominal output and operation 80/60 °C	°C	71	71	72	71	72
- Flue gas temperature at nominal output and operation 40/30 °C	°C	48	47	49	47	49
- Flue gas temperature at lowest nominal heat load and operation 40/30 °C	°C	32	32	32	32	32
- Maximum permitted temperature of the combustion air	°C	50	50	50	50	50
- Volume flow rate combustion air	Nm ³ /h	933	1050	1166	1342	1518
- Maximum supply pressure for supply air and flue gas line	Pa	60	60	60	60	60
- Maximum draught/depression at flue gas outlet	Pa	-50	-50	-50	-50	-50

¹⁾ Data related to NCV. The boiler series is tested for EE/H-settings. With a factory setting of the Wobbe coefficient of 15.0 kWh/m³ operation at a Wobbe coefficient of 12.0 up to 15.7 kWh/m³ is possible without new settings.

²⁾ Data related to NCV.

³⁾ Factory measurements

UltraGas® (1440D-3100D)

Type		(1440D)	(1700D)	(2000D)	(2300D)	(3100D)
• Nominal heat output at 80/60 °C, natural gas	kW	127-1330	148-1576	199-1854	208-2120	298-2882
• Nominal heat output at 40/30 °C, natural gas	kW	142-1440	166-1700	224-2000	233-2300	328-3116
• Nominal heat output at 50/30 °C, natural gas ³⁾	kW	140-1426	165-1694	221-1992	231-2292	324-3100
• Nominal heat output at 80/60 °C, propane ²⁾	kW	169-1310	235-1578	269-1854	-	-
• Nominal heat output at 40/30 °C, propane ²⁾	kW	185-1440	257-1701	293-2000	-	-
• Nominal heat output at 50/30 °C, propane ³⁾	kW	182-1426	255-1696	289-1992	-	-
• Nominal load with natural gas ¹⁾	kW	130-1354	152-1604	205-1886	214-2164	303-2934
• Nominal load with propane ²⁾	kW	175-1354	238-1606	272-1886	-	-
• Operating pressure heating min./max. (PMS)	bar	1/6	1/6	1/6	1/6	1/6
• Operating temperature max. (T _{max})	°C	90	90	90	90	90
• Boiler water content (V _(H2O))	l	956	1720	1586	1474	1932
• Flow resistance boiler		see diagram				
• Minimum circulation water quantity	l/h	-	-	-	-	-
• Boiler weight (without water content, incl. casing)	kg	2792	3700	3930	4046	5000
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV)	%	98.3/88.6	98.3/88.6	98.3/88.6	98.3/88.6	98.2/88.5
• Boiler efficiency at 30 % partial load (NCV/GCV)	%	108.0/97.3	108.1/97.4	108.1/97.4	108.1/97.4	108.1/97.4
• NOx class (EN 15502)		6	6	6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	32	32	32	45	35
• Carbon monoxide emissions (full-load operation, 3% O ₂)	CO mg/Nm ³	25	22	22	16	24
• Content of CO ₂ in the flue gas minimum/maximum output	%	8.8/9.0	8.8/9.0	8.8/9.0	8.8/9.0	8.4/8.5
• Heat loss in standby mode	Watt	2000	2400	2400	2400	3200
• Dimensions		see table of dimensions				
• Gas flow pressure minimum/maximum						
- Natural gas E/LL	mbar	17.4-80	17.4-50	17.4-50	17.4-50	17.4-80
- Propane	mbar	37-57	37-50	37-50	-	-
• Gas connection value at 15 °C/1013 mbar:						
- Natural gas E (Wo = 15.0 kWh/m ³) NCV = 9.97 kWh/m ³	m ³ /h	13.0-135.8	15.2-160.9	20.6-189.2	21.5-217.1	30.4-294.3
- Natural gas LL (Wo = 12.4 kWh/m ³) NCV = 8.57 kWh/m ³	m ³ /h	15.2-158.0	17.7-187.2	23.9-220.1	25.0-252.5	35.4-342.4
- Propane ²⁾ (NCV = 25.9 kWh/m ³)	m ³ /h	6.8-52.3	9.2-62.0	10.5-72.8	-	-
• Operation voltage	V/Hz	230/50	230/50	1x230/50 3x400/50	1x 230/50 3x400/50	1x230/50 3x400/50
• Electrical power consumption min./max.	Watt	62/2300	51/2020	103/4840	103/5460	301/8222
• Stand-by	Watt	18	18	18	18	14
• IP rating (integral protection)	IP	20	20	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40	5-40
• Sound power level						
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	80	80	85	86	88
- Exhaust noise is radiated from the mouth (DIN 45635 part 47) (room air dependent/room air independent)	dB(A)	77	73	78	84	-
• Condensate quantity (natural gas) at 40/30 °C	l/h	127.3	150.8	177.8	204.4	276.0
• pH value of the condensate	approx.	4.2	4.2	4.2	4.2	4.2
• Construction type		B23P, C53, C63				
• Flue gas system						
- Temperature class		T120	T120	T120	T120	T120
- Flue gas mass flow at nominal heat load (dry)	kg/h	2248	2663	3130	3600	4450
- Flue gas mass flow at lowest nominal heat load (dry)	kg/h	195	228	308	322	456
- Flue gas temperature at nominal output and operation 80/60 °C	°C	71	69	69	71	67
- Flue gas temperature at nominal output and operation 40/30 °C	°C	46	49	49	50	43
- Flue gas temperature at lowest nominal heat load and operation 40/30 °C	°C	32	32	32	32	31
- Maximum permitted temperature of the combustion air	°C	50	50	50	50	50
- Volume flow rate combustion air	Nm ³ /h	1676	1984	2334	2684	3770
- Maximum supply pressure for supply air and flue gas line	Pa	60	60	60	60	60
- Maximum draught/depression at flue gas outlet	Pa	-50	-50	-50	-50	-50

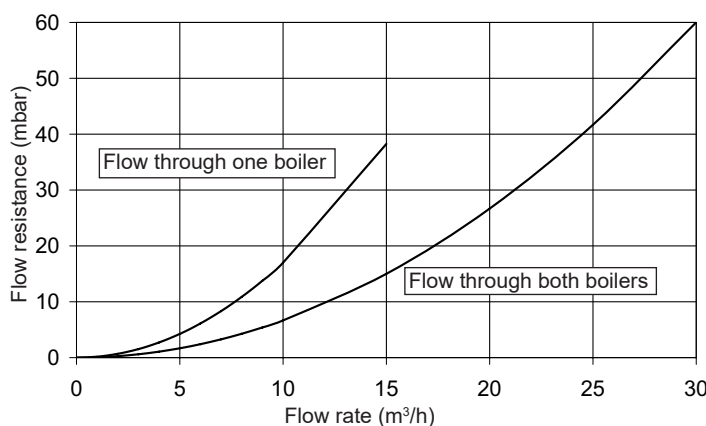
¹⁾ Data related to NCV. The boiler series is tested for EE/H-settings. With a factory setting of the Wobbe coefficient of 15.0 kWh/m³ operation at a Wobbe coefficient of 12.0 up to 15.7 kWh/m³ is possible without new settings.

²⁾ Data related to NCV.

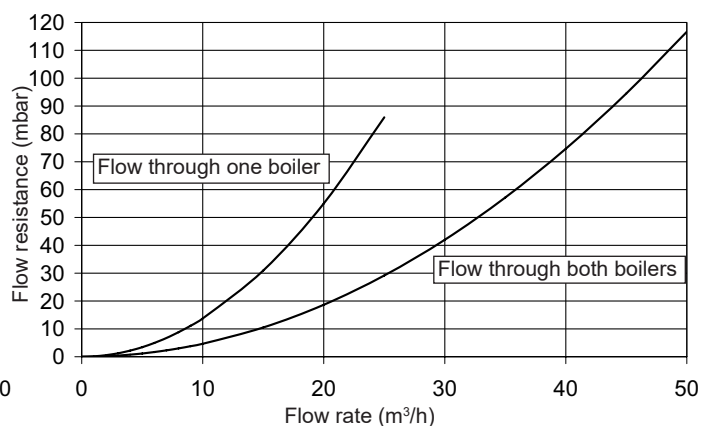
³⁾ Factory measurements

Flow resistance on the heating water side

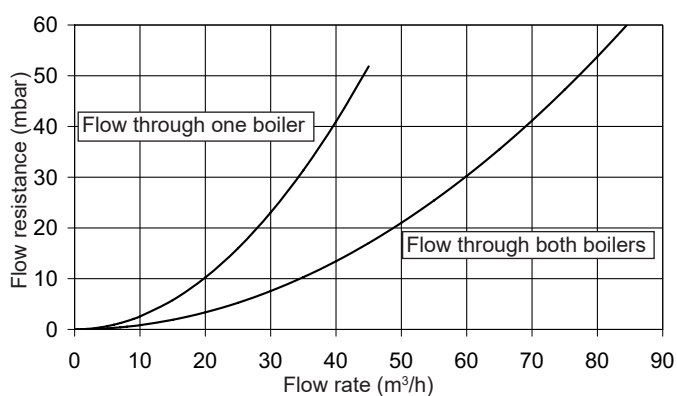
UltraGas® (250D, 300D)



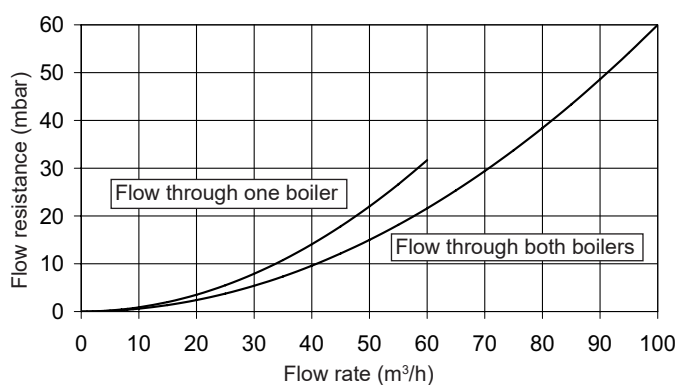
UltraGas® (400D-600D)



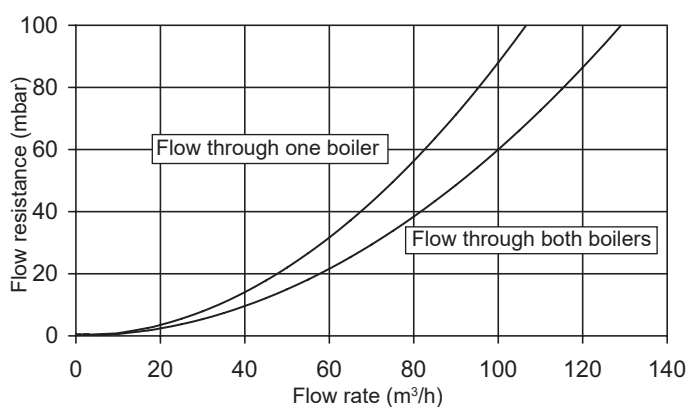
UltraGas® (700D-1000D)



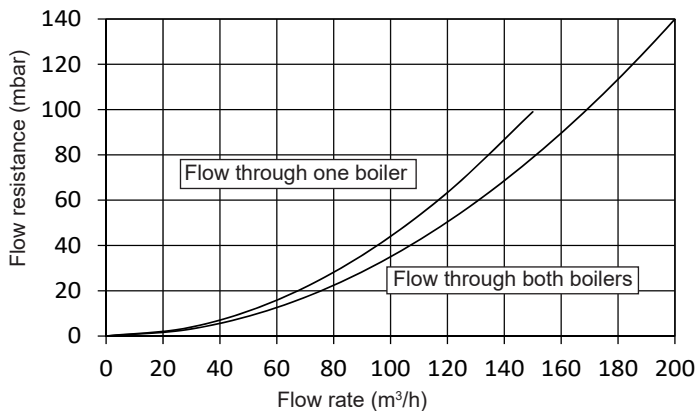
UltraGas® (1150D-1440D)



UltraGas® (1700D-2300D)

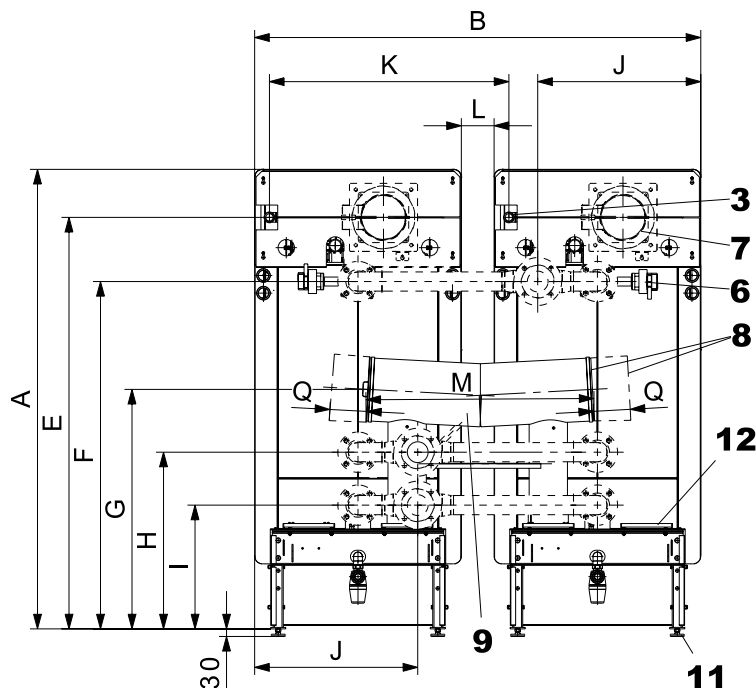
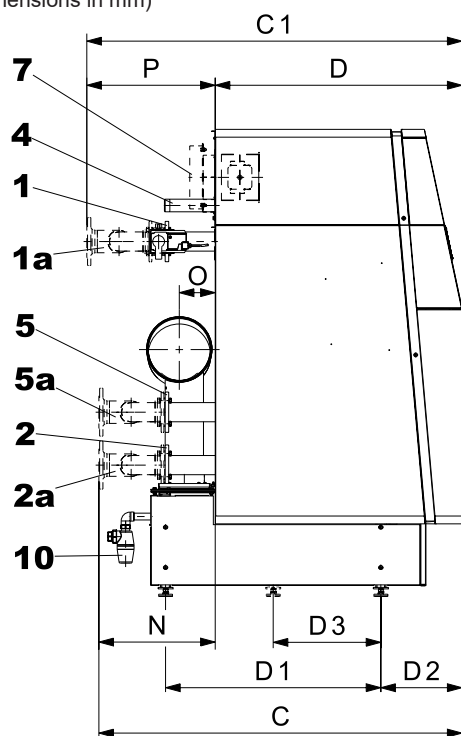


UltraGas® (3100D)



UltraGas® (250D-3100D)

(Dimensions in mm)



UltraGas®
type

type	A	B	C	C1	D	D1	D2	D3	E	F	G	H	I	J	K	L	M	N	O	P	Q
(250D,300D)	1823	1770	1443	1491	981	854	324	-	1633	1378	944	701	491	645	950	130	902	462	143	510	-
(400D-600D)	1923	1880	1790	1758	1247	1204	321	-	1696	1428	1023	718	498	702	950	20	930	543	173	511	-
(700D)	2070	2240	1969	1887	1268	1294	326	-	1720	1438	1078	808	528	904	1130	20	1019	701	205	619	-
(800D-1000D)	2070	2240	1969	1887	1268	1294	326	-	1829	1438	1078	808	528	904	1130	20	1019	701	205	619	-
(1150D-1440D)	2086	2600	2223	2283	1438	1480	316	-	1847	1442	1093	834	554	1054	1310	20	1019	785	195	845	-
(1700D-2300D)	2139	3120	2538	2598	1703	1790	313	895	1888	1494	1140	858	578	1184	1570	20	1322	835	240	895	495
(3100D)	2547	3140	2562	2617	1632	1790	242	895	2219	1756	1401	978	598	1334	1590	40	1322	930	240	985	495

UltraGas® type	(250D,300D)	(400D-600D)	(700D)	(800D-1000D)	(1150D-1440D)	(1700D-2300D)	(3100D)
1 Flow heating	DN 65/PN 6/4 S*DN 65/PN 6/4 S*	DN 100/PN 6/4 S*DN 100/PN 6/4 S*	DN 125/PN 6/8 S*DN 125/PN 6/8 S*	DN 150/PN 6/8 S*DN 150/PN 6/8 S*	DN 200/PN 6/8 S*DN 200/PN 6/8 S*	DN 250/PN 6/8 S*DN 250/PN 6/8 S*	DN 300/PN 6/8 S*DN 300/PN 6/8 S*
1a Flow pipe connection (option) ¹⁾	DN 80/PN 6/4 S*DN 80/PN 6/4 S*	DN 125/PN 6/8 S*DN 125/PN 6/8 S*	DN 150/PN 6/8 S*DN 150/PN 6/8 S*	DN 200/PN 6/8 S*DN 200/PN 6/8 S*	DN 250/PN 6/8 S*DN 250/PN 6/8 S*	DN 300/PN 6/8 S*DN 300/PN 6/8 S*	DN 350/PN 6/8 S*DN 350/PN 6/8 S*
2 Low temperature-return	DN 65/PN 6/4 S*DN 65/PN 6/4 S*	DN 100/PN 6/4 S*DN 100/PN 6/4 S*	DN 125/PN 6/8 S*DN 125/PN 6/8 S*	DN 150/PN 6/8 S*DN 150/PN 6/8 S*	DN 200/PN 6/8 S*DN 200/PN 6/8 S*	DN 250/PN 6/8 S*DN 250/PN 6/8 S*	DN 300/PN 6/8 S*DN 300/PN 6/8 S*
2a Return pipe connection (option) ¹⁾	DN 80/PN 6/4 S*DN 80/PN 6/4 S*	DN 125/PN 6/8 S*DN 125/PN 6/8 S*	DN 150/PN 6/8 S*DN 150/PN 6/8 S*	DN 200/PN 6/8 S*DN 200/PN 6/8 S*	DN 250/PN 6/8 S*DN 250/PN 6/8 S*	DN 300/PN 6/8 S*DN 300/PN 6/8 S*	DN 350/PN 6/8 S*DN 350/PN 6/8 S*
3 Gas connection	Rp 1"	Rp 1½"	Rp 1½"	Rp 2"	Rp 2"	Rp 2"	Rp 2"
4 Safety flow and flow calorifier	R 1½"	R 1½"	R 1½"	R 2"	R 2"	R 2"	R 2"
5 High temperature-return	DN 65/PN 6/4 S*DN 65/PN 6/4 S*	DN 100/PN 6/4 S*DN 100/PN 6/4 S*	DN 125/PN 6/8 S*DN 125/PN 6/8 S*	DN 150/PN 6/8 S*DN 150/PN 6/8 S*	DN 200/PN 6/8 S*DN 200/PN 6/8 S*	DN 250/PN 6/8 S*DN 250/PN 6/8 S*	DN 300/PN 6/8 S*DN 300/PN 6/8 S*
5a High temperature-return Pipe connection (option) ¹⁾	DN 80/PN 6/4 S*DN 80/PN 6/4 S*	DN 125/PN 6/8 S*DN 125/PN 6/8 S*	DN 150/PN 6/8 S*DN 150/PN 6/8 S*	DN 200/PN 6/8 S*DN 200/PN 6/8 S*	DN 250/PN 6/8 S*DN 250/PN 6/8 S*	DN 300/PN 6/8 S*DN 300/PN 6/8 S*	DN 350/PN 6/8 S*DN 350/PN 6/8 S*
6 Motorised air shut off valve							
7 Induction combustion air	Ø 122/125	Ø 197/200	Ø 197/200	Ø 247/250	Ø 247/250	Ø 247/250	-/-
8 Flue gas outlet connection left or right possible	Ø 254/256	Ø 306/308	Ø 356/358	Ø 356/358	Ø 356/358	Ø 504/506	Ø 504/506
9 Flue gas collector							
10 Condensate drain with screw including syphon for plastic tube	DN 25	DN 25	DN 25	DN 25	DN 40	DN 40	DN 40
11 Boiler foot adjustable up to 20-80 mm							
12 Cleaning opening							

¹⁾ Data for pipe connection (option) to Hoval UltraGas® (250D-3100D)

* DN = nominal diameter, PN = nominal pressure,
S = number of screw, example DN 90/PN 6/4 S

Notices

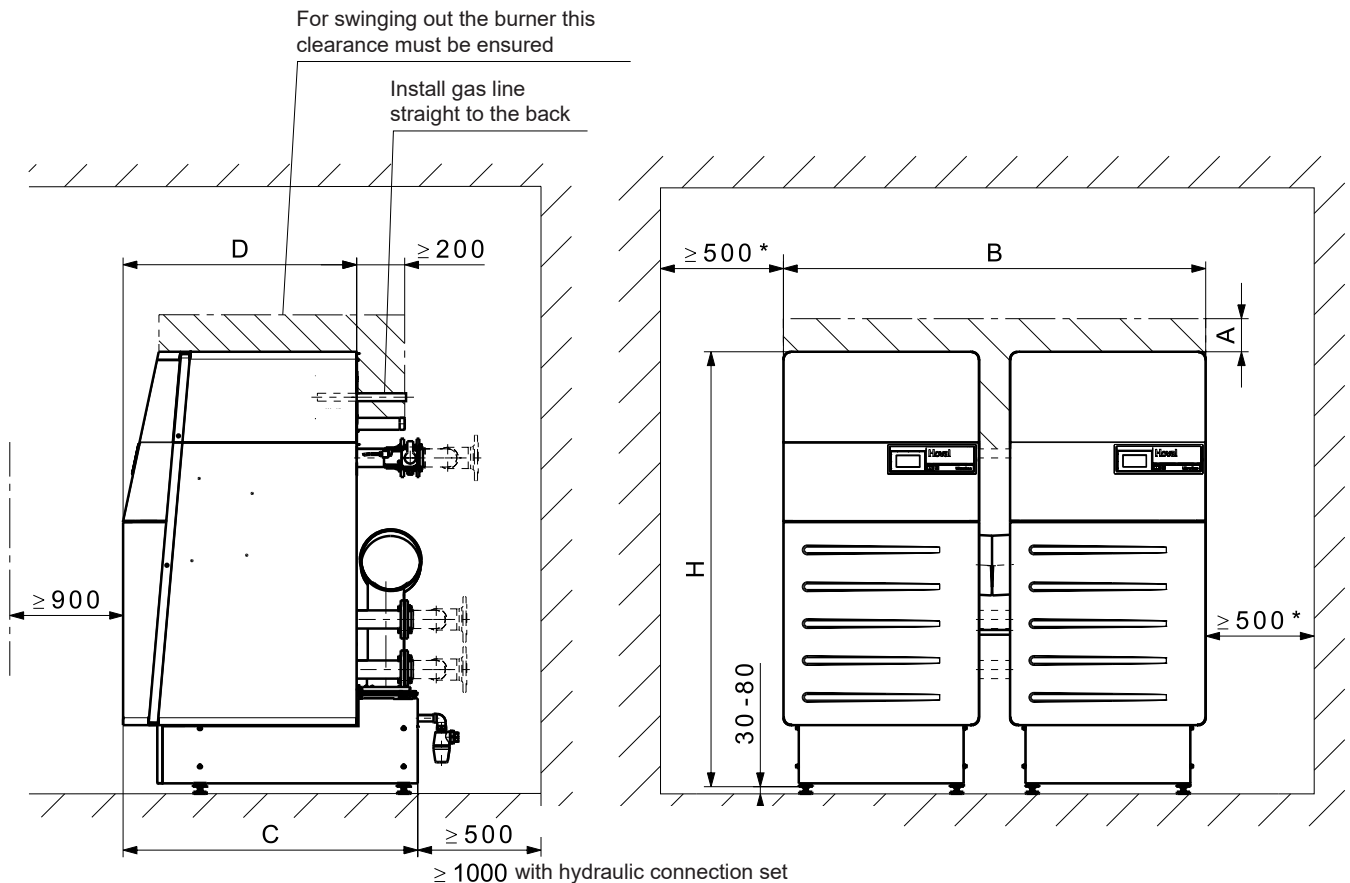
Detailed measurements see UltraGas® (125-1550)

Minimal space - see separate page

Space requirements

UltraGas® (250D-2300D)

(Dimensions in mm)



UltraGas® type	A	A minimal	B	C	D	H	H minimal
(250D,300D)	180 ¹⁾	80 ²⁾	1770	1237	981	1823	1711 ³⁾
(400D-600D)	360 ¹⁾	160 ²⁾	1880	1584	1247	1923	1811 ³⁾
(700D-1000D)	200 ¹⁾	100 ²⁾	2240	1679	1268	2070	1958 ³⁾
(1150D-1440D)	200 ¹⁾	100 ²⁾	2600	1843	1438	2086	1984 ³⁾
(1700D-2300D)	420 ¹⁾	230 ²⁾	3120	2154	1703	2139	2037 ³⁾
(3100D)	430 ¹⁾	280 ²⁾	3140	2090	1632	2547	2455 ³⁾

¹⁾ If room height is too small: Reduction of dimension possible. See A minimal.

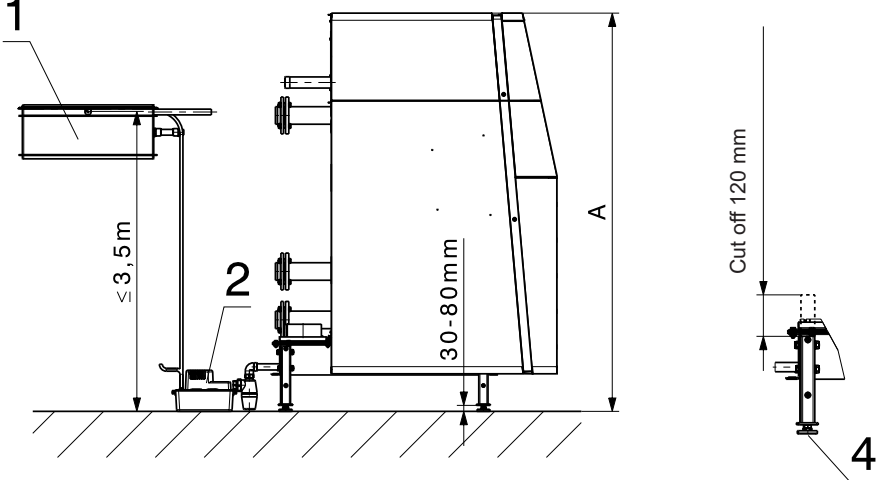
²⁾ **Attention!** With A minimal the burner can not be swung out completely anymore! This makes cleaning more difficult!

³⁾ Feet can be shortened, no base cladding possible. For details, see next page.

* The boiler may be placed against the wall on one side. For the mounting of the casing yet a wall clearance of 100 mm min. must be provided.

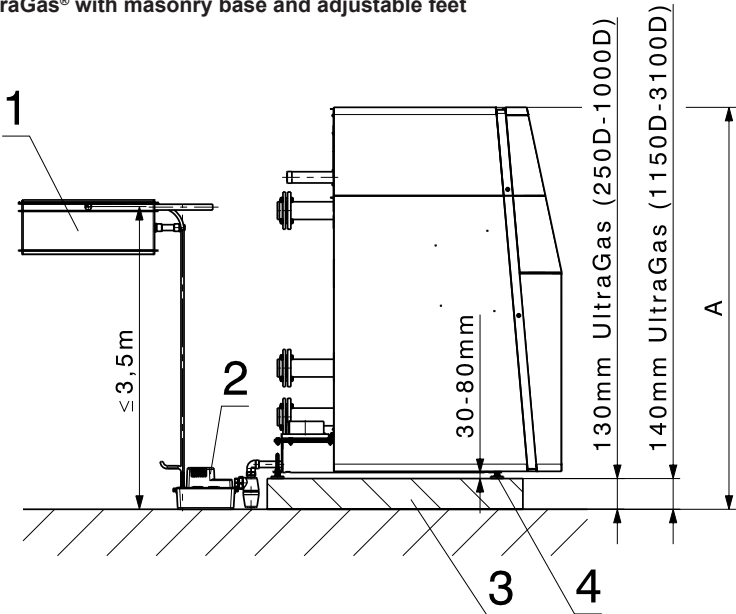
Space requirements

(Dimensions in mm)
UltraGas® with shortened boiler feet



UltraGas® type	A
(250D,300D)	1733-1783
(400D-600D)	1833-1883
(700D-1000D)	1980-2030
(1150D-1440D)	1996-2046
(1700D-2300D)	2049-2099
(3100D)	2457-2507

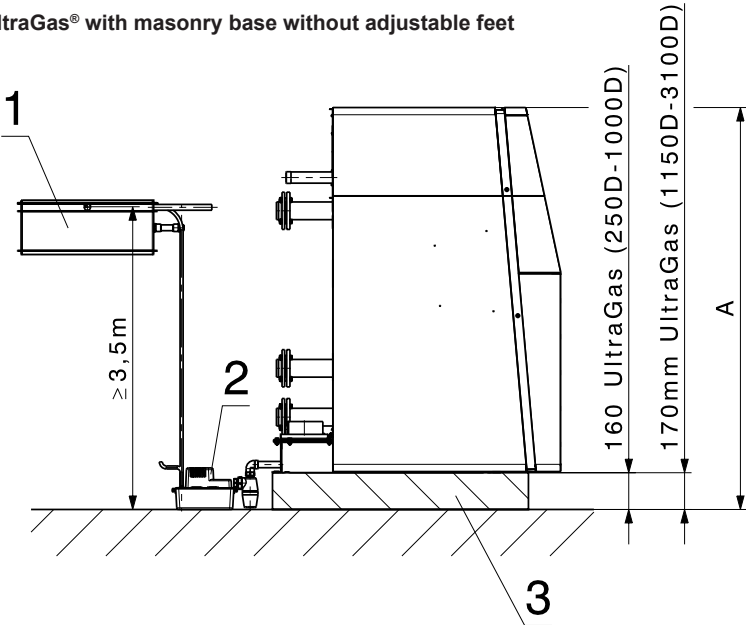
UltraGas® with masonry base and adjustable feet



UltraGas® type	A
(250D,300D)	1733-1783
(400D-600D)	1833-1883
(700D-1000D)	1980-2030
(1150D-1440D)	2006-2056
(1700D-2300D)	2049-2099
(3100D)	2457-2507

- 1 Neutralisation box
- 2 Condensate pump
- 3 Masonry base
- 4 Feet adjustable up to 30-80 mm

UltraGas® with masonry base without adjustable feet



UltraGas® type	A
(250D,300D)	1733
(400D-600D)	1833
(700D-1000D)	1980
(1150D-1440D)	2006
(1700D-2300D)	2049
(3100D)	2457

Base plates and feeds
will not be refunded!

Neutralisation unit for UltraGas® (250D-3100D)

(Dimensions in mm)

Neutralisation box type KB 23

Application

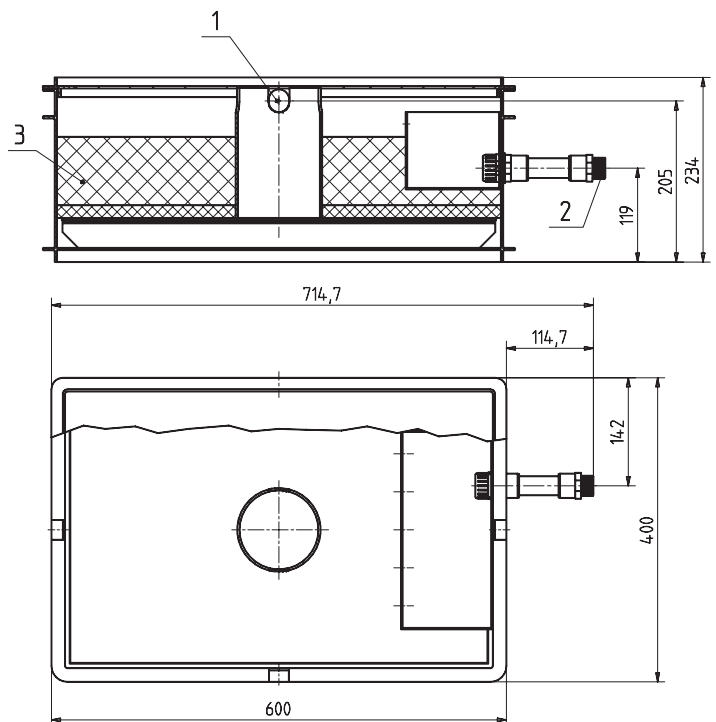
- Condensate drainage into lower situated drain pipe.
- With condensate neutralisation.
- Placed under or adjacent to the boiler

Version

- Plastic condensate collector tank with neutralisation unit
- 12 kg neutralisation granulate
- When installing under to boiler:
Fit boiler connection line to neutralisation box.

On-site:

- In case of installation adjacent to the boiler, fit connection pipes between the boiler (siphon) and the neutralisation box.
- Drain line from the neutralisation box



- 1 Condensate inlet from the boiler
- 2 Outlet R 3/4"
- 3 Condensate box with 12 kg granulate

Neutralisation box with pump type KB 24

Application

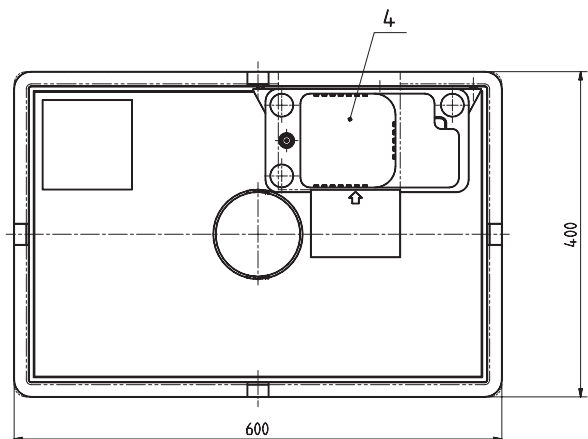
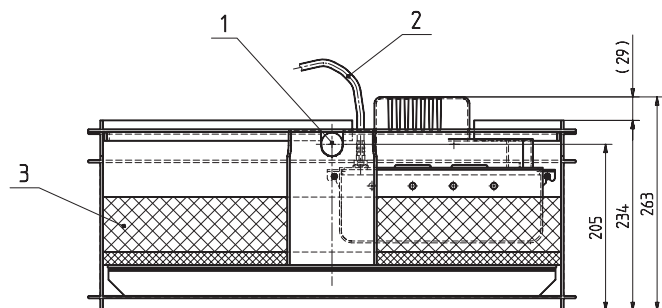
- Condensate drainage into a higher situated drain pipe
- With condensate pump, delivery height 3.5 mm
- With condensate neutralisation, 12 kg granulate
- Installation under or adjacent to boiler

Execution

- Collector tank with delivery pump and neutralisation unit
- 12 kg neutralisation granulate
- Pump delivery height max. 3.5 m (2 dm³/min)
at boiler performance above 1200 kW
two neutralisation boxes/pumps are necessary
- Silicone hose Ø 9/13 mm, length 4 m
- Electrical cable length 1.5 m with plug for connection to the boiler control panel if the installation is located under the boiler
- Plastic connection pipe Ø 25, boiler (siphon) to neutralisation box if the installation location is under the boiler.

On site

- Drain pipe if the silicone hose is too short.
- In the case of installation adjacent to boiler:
Connection pipe between boiler (siphon)
and the neutralisation box
- Electrical connection between the delivery pump
and the electrical control panel if the supply cable is too short.



- 1 Condensate inlet from the boiler
- 2 Outlet from pump, silicon hose Ø 9/13 mm, length 4 m
- 3 Condensate tank with 12 kg granulate (KB24)
- 4 Condensate pump

Condensate box with pump type KB 22

Execution:

- Condensate drainage into a higher situated drain pipe
- With condensate pump, delivery height 3.5 mm
- Installation under or adjacent to boiler

Execution

Type characteristics as KB 24, but **without** neutralisation granulate.

Standards and guidelines

The following standards and guidelines must be complied with:

- Hoval technical information and installation instructions
- hydraulic and technical control regulations of Hoval
- local building law
- fire protection regulations
- EN 12828 Heating systems in buildings
- DIN EN 12831 Heaters Rules for the calculation of the heat requirements of buildings
- VDI 2035 Protection against damage by corrosion and boiler scale formation in heating and service water installations
- local fire brigade regulations

Water quality

Heating water:

- The European Standard EN 14868 and the Directive VDI 2035 must be observed.
- Hoval boilers and calorifiers are designed for heating plants without significant oxygen intake (plant type I according to EN 14868).
- Plants with
 - continuous oxygen intake (e.g. underfloor heating systems without diffusion proof plastic piping) or
 - intermittent oxygen intake (e.g. where frequent refilling is necessary)
 must be equipped with **separate circuits**.
- Treated heating water must be tested at least once yearly, according to the inhibitor manufacturer's instructions, more frequent testing may be necessary.
- A refilling is not necessary if the quality of the heating water in existing installations (e.g. exchange of boiler) conforms to VDI 2035. The Directive VDI 2035 applies equally to the replacement water.

- New and if applicable existing installations must be adequately cleaned and flushed before being recharged! The boiler may only be filled after the heating system has been flushed.
- Parts of the boiler/the calorifier which have contact with water are made of ferrous materials and stainless steel.
- On account of the danger of stress cracking corrosion in the parts made of stainless steel the chloride, nitrate and sulfate contents of the heating water must not exceed 50 mg/l in total.
- The pH value of the heating water should lie between 8.3 and 9.5 after 6 to 12 weeks of heating operation.
- The electrical conductivity of the heating water must not exceed the value of 200 µS/cm. Higher values are permissible when using conditioning agents.

Filling and replacement water:

- For a plant using Hoval boilers untreated domestic water is generally best suited as filling and replacement water. However, the quality of the untreated domestic water must at least fulfil the standard set in VDI 2035 or be desalinated and/or be treated with inhibitors. The stipulations of EN 14868 must be observed.
- In order to maintain a high level of boiler efficiency and to avoid overheating of the heating surfaces the values given in the table should not be exceeded (dependent on boiler performance ratings - for multi-boiler plants rating of smallest boiler applies - and on the water content of the plant).
- The total amount of filling and replacement water which is used throughout the total service life of the boiler must not exceed three times the water capacity of the plant.
- If frost protection agent is being used, please contact the Hoval company to ask for the separate engineering sheet.

Frost protection agent

- see separate engineering sheet "Use of frost protection agent".

Heating room

- Gas boilers cannot be positioned in rooms in which halogen compounds can occur and into which combustion air can enter (e.g. laundrettes, hairdressers).
- Halogen compounds can be caused by cleaning and degreasing solutions, dissolvents, glue and bleaching lyes. Pay attention to the Procal leaflet, corrosion through Halogen compounds.

Combustion air

For the version with common flue gas line with overpressure, the flue gas excess pressure set must be imperatively mounted! The supply of combustion air must be guaranteed. There must be no possibility to close the air supply opening. For direct combustion air to boiler (LAS system) mount the connection for direct combustion air inlet.

- *Room air-dependent operation:*

Minimum free cross-section of the opening into the open: 150 cm² or twice 75 cm² and additionally 2 cm² necessary for each kW of output over 50 kW for vent into the open.

Gas connection

Manual gas shut-off tap and gas filter

Immediately in front of the boiler a manual gas shut-off device (tap) must be installed according to relevant regulations. In the UltraGas® (400-1550) types, an external gas filter must be installed in the gas supply line. Make sure that the gas line from the external gas filter to the gas connection of the boiler is cleaned.

For the UltraGas® (125-350) types, it is necessary to comply with the local regulations concerning the need for a gas filter.

Commissioning

- Start-up is to be carried out only by a specialist of Hoval and the gas supplier.
- Burner setting values according to the installation instructions.

Shut-off valve

- A shut-off valve must be built in in front of every gas boiler.

Construction of a recommended gas connection



Legend:

- Gas ball valve
- Gas hose/compensator
- Gas filter
- Pressure gauge with test burner and push button cock

Table 1: Maximum filling quantity without/with demineralisation

	Total hardness of the filling water up to...							
[mol/m³] ¹⁾	<0,1	0.5	1	1.5	2	2.5	3	>3.0
f°H	<1	5	10	15	20	25	30	>30
d°H	<0.56	2.8	5.6	8.4	11.2	14.0	16.8	>16.8
e°H	<0.71	3.6	7,1	10.7	14.2	17.8	21.3	>21.3
~mg/l	<10	50.0	100.0	150.0	200.0	250.0	300.0	>300
Conductance ²⁾	<20	100.0	200.0	300.0	400.0	500.0	600.0	>600
boiler size of the individual boiler	maximum filling quantity without demineralisation							
200 to 600 kW	NO	50 l/kW	50 l/kW	20 l/kW	always demineralise			
over 600 kW	DEMAND							

¹⁾ Total of alkaline earths

²⁾ If the conductance in µS/cm exceeds the tabular value an analysis of the water is necessary.

Type of gas

- The boiler is only to be operated with the type of gas stated on the rating plate.

Gas pressure natural gas

- Necessary flow pressure at the boiler inlet:
UltraGas® (250D-1440D) and
UltraGas® (3100D)
min. 17.4 mbar, max. 80 mbar
UltraGas® (1700D-2300D)
min. 17.4 mbar, max. 50 mbar

Gas pressure propane

- A gas pressure controller to reduce the boiler inlet pressure must be installed on site for propane.
- Necessary flow pressure at the boiler inlet:
UltraGas® (250D-2000D)
min. 37 mbar, max. 57 mbar

Gas pressure regulator

- In boilers with a heat input in excess of 70 kW, install a pressure regulator in accordance with EN88-1 in the gas supply line directly before the boiler.

Closed heating system

The boiler is only approved for use in closed heating systems.

Minimum circulation water quantity

No minimum water circulation volume is required.

Calorifier connection

If a calorifier is connected, all heating groups must be provided with a mixer.

Boiler base

The boiler should be placed on a sufficiently high base (boiler base see accessories) to protect it against floor humidity and for the siphon for condensate drain.

Installation instructions

Please observe the installation instructions supplied with every boiler.

Space requirements

See "Dimensions" for information

Pump after-run time

- For operating temperatures of the boiler above 85 °C, after each burner switch-off, the circulating pump must be in operation for at least 2 minutes (the pump after-run is included in the boiler controller with TopTronic® E control).

Heating boiler in the attic

- If the gas boiler is positioned on the top floor, the installation of a low water protection, which automatically turns the gas burner off in case of water shortage, is recommended.

Condensate drain

- A permit for discharge of the flue gas condensate into the sewage system must be obtained from the relevant authority or sewer operator.
- The condensate from the flue gas line can be discharged via the boiler. A condensate trap is no longer needed in the flue gas system.
- The condensate must be conducted openly (funnel) into the sewage system.
- Suitable materials for condensate drain:
 - stoneware pipes
 - pipes made from PVC
 - pipes made from polyethylene (PE)
 - pipes made from ABS or ASA

Expansion tank

- An adequately dimensioned expansion tank must be provided.
- The expansion tank has to be installed in principle at the boiler return, or at the safety flow.
- At the safety flow a safety valve and an automatic exhauster must be installed.

Noise damping

The following measures are possible for sound insulation:

- Make boiler room walls, ceiling and floor as solid as possible.
- If there are living areas above or below the boiler room, connect pipes flexibly using expansion joints.
- Connect circulating pumps to the piping network using expansion joints

Noise level

- The acoustic power level value is dependent on the local and spacial circumstances.
- The acoustic pressure level is dependent on the installation conditions and can for instance be 5 to 10 dB(A) lower than the acoustic power level at a distance of 1 m.
- DIN 4109 must be observed when installing in domestic living areas

Recommendation:

If the air inlet at the facade is near a noise sensitive place (window of bedroom, terrace etc.), we recommend to use a sound absorber at the direct combustion air inlet.

Flue gas system

- Gas boilers must be connected to a certified and approved flue gas system such as flue gas lines.
- Flue gas lines must be gas-, condensate- and over pressure-tight.
- The flue gas lines must be secured against unwanted loosening of the plug connections.
- The flue gas system must be connected with an angle, so that the resulting condensate of the flue gas system can flow back to the boiler and can be neutralised there before discharging into the canalisation.
- Gas boilers with condensation heat utilisation are to be connected to a flue gas line min. temperature class T120.
- A flue gas temperature limiter is integrated into the boiler.

Allocation of gas filters for UltraGas®

UltraGas®	Gas throughput	Gas filter type	Dimensions	Pressure drop gas filter (with clean filter) mbar
Type	m³/h			
(125)	11.6	70602/6B	Rp 1"	0.2
(150)	14.1	70603/6B	Rp 1½"	0.1
(200)	18.8	70603/6B	Rp 1½"	0.2
(250)	23.5	70603/6B	Rp 1½"	0.2
(300)	28.3	70603/6B	Rp 1½"	0.3
(350)	32.6	70603/6B	Rp 1½"	0.4
(400) ¹⁾	37.7	70631/6B	Rp 2"	0.3
(450) ¹⁾	42.4	70631/6B	Rp 2"	0.3
(500) ¹⁾	47.1	70631/6B	Rp 2"	0.4
(575) ¹⁾	54.2	70631/6B	Rp 2"	0.5
(650) ¹⁾	61.3	70631/6B	Rp 2"	0.6
(720) ¹⁾	67.7	70631/6B	Rp 2"	0.7
H (720) ¹⁾	67.7	70631/6B	Rp 2"	0.7
(850) ¹⁾	80.2	70631/6B	Rp 2"	1.0
(1000) ¹⁾	94.3	70631/6B	Rp 2"	1.4
H (1000) ¹⁾	94.3	70631/6B	Rp 2"	1.4
(1150) ¹⁾	108.2	70631/6B	Rp 2"	1.8
(1550) ¹⁾	108.2	70610F/6B	DN 65	1.9

¹⁾ On the UltraGas® (400-1550) installation of a gas filter in front of the gas burner is mandatory! It is essential to set the dimensions of the gas line!

Chimney dimensions (overpressure) to UltraGas® (250D-3100D)

Principles

- Height above sea level max. 1000 m

- The first two metres of the flue pipe must have the same dimension as the flue gas outlet.

- Combustion air:
In the case of room air-dependent operation (accessories optional) the air pipe must be at least the same dimension as the flue gas line. If the flue gas line diameter is greater than the combustion air connection the combustion air pipe must be extended adequately.
- Flue gas overpressure set:
Compellingly necessary, included in the scope of delivery!

Boiler	Flue gas line (smooth walled)	Number of bow 90° (flue gas + air supply)					
Type	Flue gas dim.	Dimension	Total pipe length in m (flue gas + air supply)				
UltraGas®	internal	DN	1	2	3	4	5 *
(250D)	254	200	50	50	48	45	
(300D)	254		35	33	30	27	
(250D)	254	250	50	50	50	50	
(300D)	254		50	50	50	50	
(400D)	306		50	50	50	50	
(500D)	306		38	35	32	29	
(400D)	306	300	50	50	50	50	
(500D)	306		50	50	50	50	
(600D)	306		50	50	50	50	
(700D)	356		50	50	50	50	
(800D)	356		45	40	35	31	
(900D)	356		32	27	22	17	
(1000D)	356		26	21	15	12	
(700D)	356	350	50	50	50	50	
(800D)	356		50	50	50	50	
(900D)	356		50	50	50	50	
(1000D)	356		50	50	50	42	
(1150D)	356		35	25	14	-	
(1300D)	356		17	6	-	-	
(1150D)	356	400	50	50	50	50	
(1300D)	356		50	50	50	50	
(1440D)	356		50	50	50	42	
(1700D)	500	500	50	50	50	50	
(2000D)	500	500	50	50	50	50	
(2300D)	500	500	50	50	50	50	
(3100D)	500	500	50	50	50	50	

Notice: The data contained in the table "Dimensions flue gas systems" represent guide values.

An exact calculation for the flue gas duct must be made on site.

* With 5 bends or more the feed pressure total at the combustion air/flue gas line is to be reduced by 30 % for the calculation.

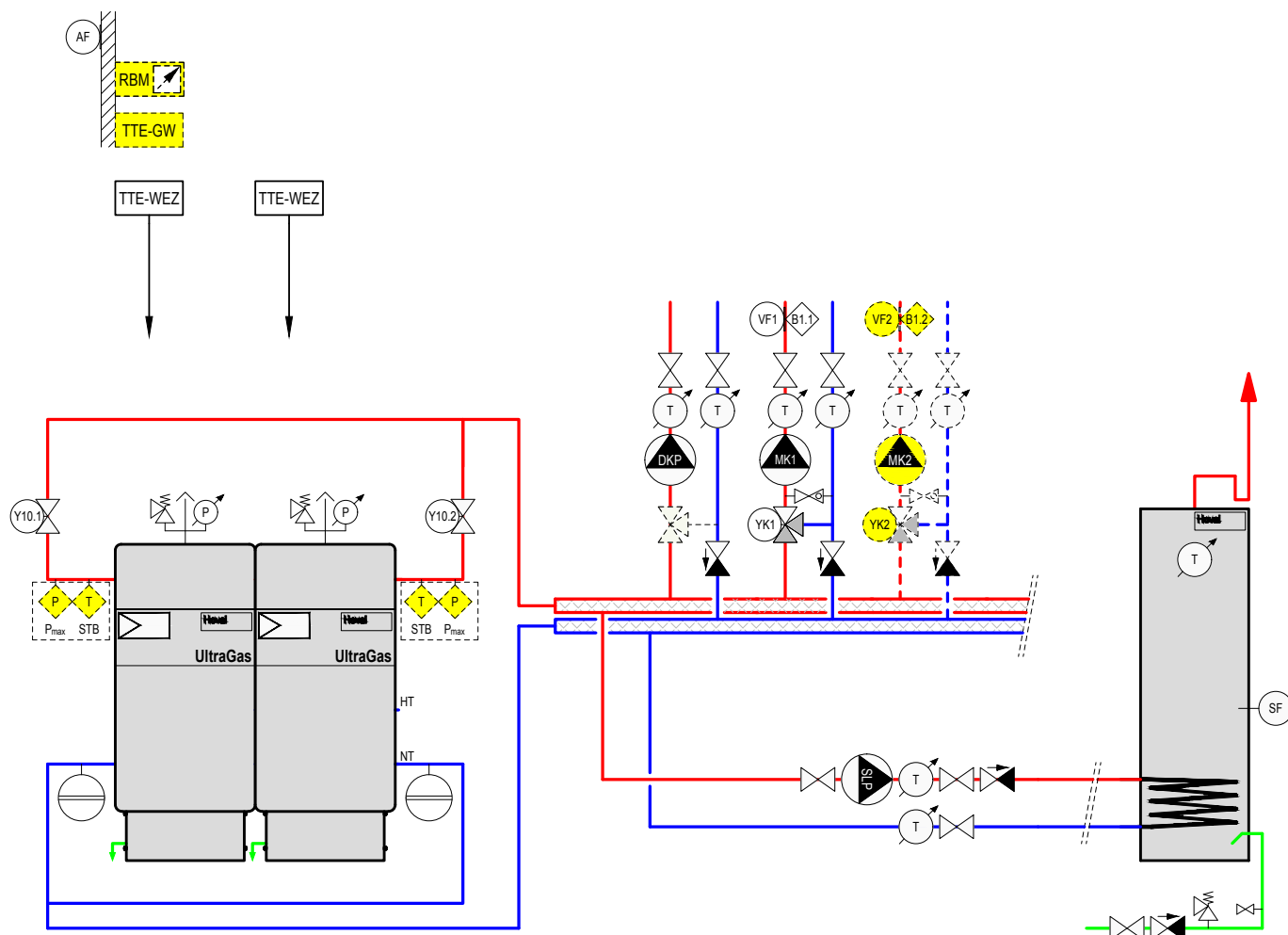
With total pipe lengths exceeding 50 m, a separate calculation is necessary.

UltraGas® (250D-3100D)

2 gas boilers with

- calorifier
- 2 mixer circuits

Hydraulic schematic KBAE010



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (installed)
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
Y10.1	Shut-off device 1 or zone valve (single-wire control)
Y10.2	Shut-off device 2 or zone valve (single-wire control)
DKP	Pump for heating circuit without mixer
SLP	Calorifier charging pump

Option	
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway
VF2	Flow temperature sensor 2
B1.2	Flow temperature guard (if required)
MK2	Pump mixer circuit 2
YK2	Actuator mixer 2

Hoval CompactGas
Gas boiler

Boiler

- High-efficiency boiler to EN 14394 for firing of gas
- Downstream heating surface made of **aluFer®** bounded pipe
- Boiler completely welded
- Also suitable for LowNOx burner with extremely low pollutant emissions
- Insulation at the boiler body 80 mm mineral wool mat and special fabric
- Boiler completely cased with steel plate, red powder coated
- Accessible cover from checkered sheet.
- Flue gas outlet, heating flow and heating return connections to the top incl. counter flanges, screws and seals
- Condensate trap

Optional

- Control panel with boiler control and regulators in different designs
- Free-standing calorifier see Calorifiers
- Boiler door swivels to the left

Delivery

- Boiler, thermal insulation, casing and condensate trap are supplied separately

On site

- Installation of the thermal insulation, casing and condensate trap



Model series	
CompactGas type	Output kW
(700)	250-700
(1000)	300-1000
(1400)	420-1400
(1800)	540-1800
(2200)	660-2200
(2800)	840-2800
(3500)	1050-3500
(4200)	1260-4200

Permissions boilers

CompactGas (700-4200)
CE product ID No.: CE 0085 BT0376
according to Directive on appliances burning
gaseous fuels 90/396/EG

The boiler complies with the PED
Pressure Equipment Directive 2014/68/EU

Boiler control with TopTronic® E/E13.4 controller

- Max. operating temperature 90 °C

Control panel

- Colour touchscreen 4.3 inch
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp

TopTronic® E control module

- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with online HovalConnect)
- Adaptation of the heating strategy based on the weather forecast (with HovalConnect)

TopTronic® E basic module heat generator (TTE-WEZ)

- Control functions integrated for
 - 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 hot water loading circuit
 - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- Rast-5 basic plug set

The supplementary plug set must be ordered in order to use expanded controller functions.

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion heat accounting or
 - module expansion universal
- Can be networked with a total of up to 16 controller modules:
 - heating circuit/hot water module
 - solar module
 - buffer module
 - measuring module

Number of modules that can be additionally installed in the electrical box:

- 1 module expansion and 2 controller modules **or**
- 1 controller module and 2 module expansions **or**
- 3 controller modules

Notice

Max. 1 module expansion can be connected to the basic module heat generator (TTE-WEZ)!

Further information about the TopTronic® E see "Controls"

Delivery

- Boiler control separately delivered

On site

- Mounting of the control panel at the boiler left or right side

Boiler control with TopTronic® E/E13.5 controller

- Max. operating temperature 105 °C

- Design as boiler control TopTronic® E/E13.4, but:
- Safety temperature limiter 120 °C

Delivery

- Boiler control separately delivered

On site

- Mounting of the control panel at the boiler left or right side

Control panel with thermostat T 2.2

- For systems without TopTronic® E controller
- For direct 2-stage burner control, requirement starting from external calorifier or heater instruction is possible.
- Main switch "I/O"
- Safety temperature limiter 110 °C
- Selector switch burner load
- Switch summer/winter
- 3 boiler temperature regulators 30-90 °C
 - temperature regulator for base load heating
 - temperature regulator for full load heating
 - temperature regulator for calorifier
- Boiler and burner breakdown lamp
- Plug connection for burner

Optional

- 2 running time meters integrated
- 2 burner running time meters and pulse counters integrated
- Flue gas thermometer, 4.5 m capillary tube

Delivery

- Control panel separately delivered

On site

- Mounting of the control panel at the boiler left or right side

Control panel with thermostat T 0.2

- For external control
- For systems without TopTronic® E controller
- For special control function
- Main switch "I/O"
- Safety temperature limiter 120 °C,
- 3 boiler temperature regulators 50-105 °C
 - temperature regulator for base load heating
 - temperature regulator for full load heating
 - temperature regulator for calorifier
- Without burner plug connection

Optional

- 2 running time meters integrated
- 2 burner running time meters and pulse counters integrated
- Flue gas thermometer, 4.5 m capillary tube

Delivery

- Control panel separately delivered

On site

- Mounting of the control panel at the boiler left or right side

Gas boiler



Hoval CompactGas (700-4200)

High-efficiency boiler made of steel for gas firing, without control panel

Design: delivery complete

- Boiler, thermal insulation, casing and condensate trap are supplied separately

CompactGas type	Output kW	Working pressure bar
(700)	250-700	6
(1000)	300-1000	6
(1400)	420-1400	6
(1800)	540-1800	6
(2200)	660-2200	6
(2800)	840-2800	10
(3500)	1050-3500	10
(4200)	1260-4200	10

7013 351
7013 352
7013 353
7013 354
7013 355
7013 356
7014 800
7014 321

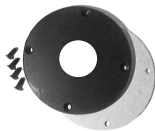
The minimum boiler operating temperature and the minimum boiler return temperature must imperatively be observed (see technical data).
A return temperature control must be provided!

The condensate trap must imperatively be mounted on the flue gas outlet of the boiler!



Blind flange made of steel
incl. setscrews and gasket
for CompactGas (700)
for CompactGas (1000)
for CompactGas (1400-2800)
for CompactGas (3500,4200)

6002 192
6030 026
6002 156
6043 944



Intermediate flange drilled to match burner
made of steel incl. setscrews and gasket to
CompactGas (700)
CompactGas (1000)
CompactGas (1400-2800)

6017 595
6017 593
6017 594

Boiler controllers
with thermostats



Control panel T 2.2

- Operating temperature max. 90 °C
- For systems without TopTronic® E controller.
- For direct 2-stage burner control, incl. plug connection for burner requirement starting from external calorifier or heater instruction is possible.
 - without burner running time meter and pulse counter
 - incl. 2 burner running time meters integrated
 - incl. 2 burner running time meters and pulse counters integrated
- for mounting on heat generator side right (standard) or left (configuration on request). Specify mounting variant in purchase order.

6015 017

6015 477

6015 478



Control panel T 0.2

- Operating temperature max. 105 °C
- For external switching command
- For systems without TopTronic® E controller.
- For special control function without burner plug connection
 - without burner running time meter and pulse counter
 - incl. 2 burner running time meters integrated
 - incl. 2 burner running time meters and pulse counters integrated
- for mounting on heat generator side right (standard) or left (configuration on request). Specify mounting variant in purchase order.

6015 016

6015 475

6015 476

Accessories to control panel
with thermostat

Flue gas thermometer
4 m, capillary tube

241 149

Boiler controller with TopTronic® E control



Boiler controller TopTronic® E/E13.4
for mounting on heat generator side right
(standard) or left (configuration on request).
Specify mounting variant in purchase order.
Maximum operating temperature 90 °C

Control functions integrated for

- 1 heating circuit with mixer
- 1 heating circuit without mixer
- 1 hot water loading circuit
- bivalent and cascade management
- Can be optionally expanded by max.
1 module expansion:
 - module expansion heating circuit or
 - module expansion heat accounting or
 - module expansion universal
- Can be optionally networked with a
total of up to 16 controller modules
(incl. solar module)

Consisting of:

- electrical box
- control panel
- TopTronic® E control module
- TopTronic® E basic module heat generator
- oil automatic function device OFA-200
- safety temperature limiter
- burner cable cpl. 2-stage, L = 5.0 m
- 1 outdoor sensor AF/2P/K
- immersion sensor TF/2P/5/6T/S1, L = 5.0 m
with plug
- contact sensor ALF/2P/4/T/S1, L = 4.0 m
with plug

Notice

The electrical connection for each external
burner must be clarified separately.



Boiler controller TopTronic® E/E13.5
for mounting on heat generator side right
(standard) or left (configuration on request).
Specify mounting variant in purchase order.
Maximum operating temperature 105 °C
Configuration as boiler controller
TopTronic® E/E13.4

Notice

The electrical connection for each external
burner must be clarified separately.

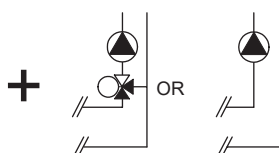
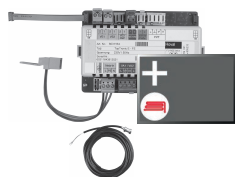
Part No.

6040 236

6040 237

TopTronic® E module expansions

for TopTronic® E basic module heat generator



TopTronic® E module expansion heating circuit TTE-FE HK

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating circuit without mixer or
- 1 heating circuit with mixer

incl. fitting accessories

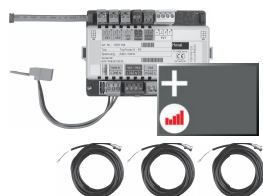
1 contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:

Boiler control, wall housing, control panel

Notice

The supplementary plug set may have to be ordered to implement functions differing from the standard!



TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating/cooling circuit w/o mixer or
 - 1 heating/cooling circuit with mixer
- in each case incl. energy balancing

incl. fitting accessories

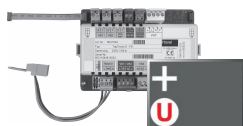
3 contact sensors ALF/2P/4/T L = 4.0 m

Can be installed in:

Boiler control, wall housing, control panel

Notice

Suitable flow rate sensors (pulse sensors) must be provided on site.



TopTronic® E module expansion Universal TTE-FE UNI

Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

incl. fitting accessories

Can be installed in:

Boiler control, wall housing, control panel

Further information

see "Controls" - "Hoval TopTronic® E module expansions" chapter

Notice

Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

Part No.

6034 576

6037 062

6034 575

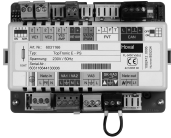
Accessories for TopTronic® E



Supplementary plug set

for basic module heat generator (TTE-WEZ)
for controller modules and module expansion
TTE-FE HK

6034 499
6034 503



TopTronic® E controller modules

TTE-HK/WW TopTronic® E heating circuit/
hot water module
TTE-SOL TopTronic® E solar module
TTE-PS TopTronic® E buffer module
TTE-MWA TopTronic® E measuring module

6034 571
6037 058
6037 057
6034 574



TopTronic® E room control modules

TTE-RBM TopTronic® E room control modules
easy white
comfort white
comfort black

6037 071
6037 069
6037 070



Enhanced language package TopTronic® E

one SD card required per control module
Consisting of the following languages:
HU, CS, SL, RO, PL, TR, ES, HR, SR, JA, DA

6039 253



HovalConnect

HovalConnect LAN
HovalConnect WLAN

6049 496
6049 498

HovalConnect available from mid-2020

Up to that point, TopTronic® E online is delivered.

TopTronic® E interface modules

GLT module 0-10 V
HovalConnect Modbus
HovalConnect KNX

6034 578
6049 501
6049 593



TopTronic® E wall casing

WG-190 Wall casing small
WG-360 Wall casing medium
WG-360 BM Wall casing medium with
control module cut-out
WG-510 Wall casing large
WG-510 BM Wall casing large with
control module cut-out

6035 563
6035 564
6035 565
6035 566
6038 533



TopTronic® E sensors

AF/2P/K Outdoor sensor
TF/2P/5/6T Immersion sensor, L = 5.0 m
ALF/2P/4/T Contact sensor, L = 4.0 m
TF/1.1P/2.5S/6T Collector sensor, L = 2.5 m

2055 889
2055 888
2056 775
2056 776



System housing

System housing 182 mm
System housing 254 mm

6038 551
6038 552



Bivalent switch

2061 826

Further information
see "Controls"



Flow temperature guard
for under floor heating (per heating circuit
1 guard) 15-95 °C, differential gap 6 K,
capillary tube max. 700 mm, setting (visible
from the outside) inside the housing cover.

Clamp-on thermostat RAK-TW1000.S
Thermostat with strap, without cable and plug

242 902

Immersion thermostat RAK-TW1000.S SB 150
Thermostat with pocket ½" - depth of
immersion 150 mm brass nickel-plated

6010 082



Vibration elements for boiler socket
For sound and vibration absorption.
Made of rubber. Cross-section 80/50 mm.

Delivery
Set of 4 vibration elements per boiler,
mounted under the boiler socket

To CompactGas type	Size	Length mm
(700,1000)	(4 pcs)	400
(1400)	(4 pcs)	500
(1800-2800)	(4 pcs)	800
(3500,4200)	(8 pcs)	800

6003 741
6003 742
6005 623
6007 967

Service



Commissioning

Commissioning by works service or Hoval trained authorised serviceman/company is condition for warranty.

For commissioning and other services please contact your Hoval sales office.

Part No.

CompactGas (700-1800)

Type		(700)	(1000)	(1400)	(1800)
• Nominal heat output at 80/60 °C	kW	700	1000	1400	1800
• Range of output at 80/60 °C	kW	250-700	300-1000	420-1400	540-1800
• Burner input max.	kW	725	1037	1458	1865
• Operating temperature ¹⁾ max.	°C	105	105	105	105
• Operating temperature min.	°C	75	75	75	75
• Boiler return temperature min.	°C	35	35	35	35
• Safety temperature limiter setting (water side) ²⁾	°C	120	120	120	120
• Working/test pressure	bar	6/9	6/9	6/9	6/9
• Boiler efficiency at 80/60 °C in full-load operation (related to net calorific value NCV / gross calorific value GCV)	%	96.5/87.0	96.4/86.9	96.0/86.5	96.5/87.0
• Boiler efficiency at 30 % partial load (EN 303) (related to net calorific value NCV / gross calorific value GCV)	%	97.4/87.7	97.4/87.7	97.3/87.7	97.4/87.7
• Standard efficiency (DIN 4702-8, 75/60 °C) (related to net calorific value NCV / gross calorific value GCV)	%	97.4/87.7	97.4/87.8	97.1/87.5	97.5/87.9
• Stand-by loss at 70 °C	Watt	850	1000	1200	1350
• Flue gas temperature at nominal output at 80/60 °C	°C	94	101	102	99
• Maximum chimney draught	Pa	20	20	20	20
• Flue gas resistance at nominal output 10.5 % CO ₂ natural gas 500 m over sea level (tolerance ± 20 %)	mbar	4.9	4.8	4.7	5.7
• Flue gas mass flow at nominal output 10.5 % CO ₂ natural gas	kg/h	1133	1623	2271	2923
• Flow resistance boiler ³⁾	z-value	0.012	0.012	0.003	0.003
• Water flow resistance at 20 K	mbar	10.8	22.0	10.8	17.9
• Water flow volume at 20 K	m³/h	30.0	42.9	60.0	77.1
• Boiler water content	litres	670	1130	1580	2020
• Insulation thickness boiler body	mm	80	80	80	80
• Weight (incl. casing)	kg	1390	2100	2794	3500
• Weight (without casing)	kg	1250	1960	2654	3200
• Heating surface	m²	36.52	44.23	68.49	89.51
• Combustion chamber dimension Ø inside x length	mm	584/1835	684/1985	830/2180	830/2301
• Combustion chamber volume	m³	0.492	0.729	1.179	1.244
• Dimensions	see Dimensions				

¹⁾ Limited by the boiler control T2.2 to 90 °C resp. U3.2 and T0.2 to 105 °C.

²⁾ Maximum safety temperature for boiler control T2.2: 110 °C resp. U3.2 and T0.2: 120 °C.

³⁾ Flow resistance boiler in mbar = volume flow (m³/h)² x z

CompactGas (2200-4200)

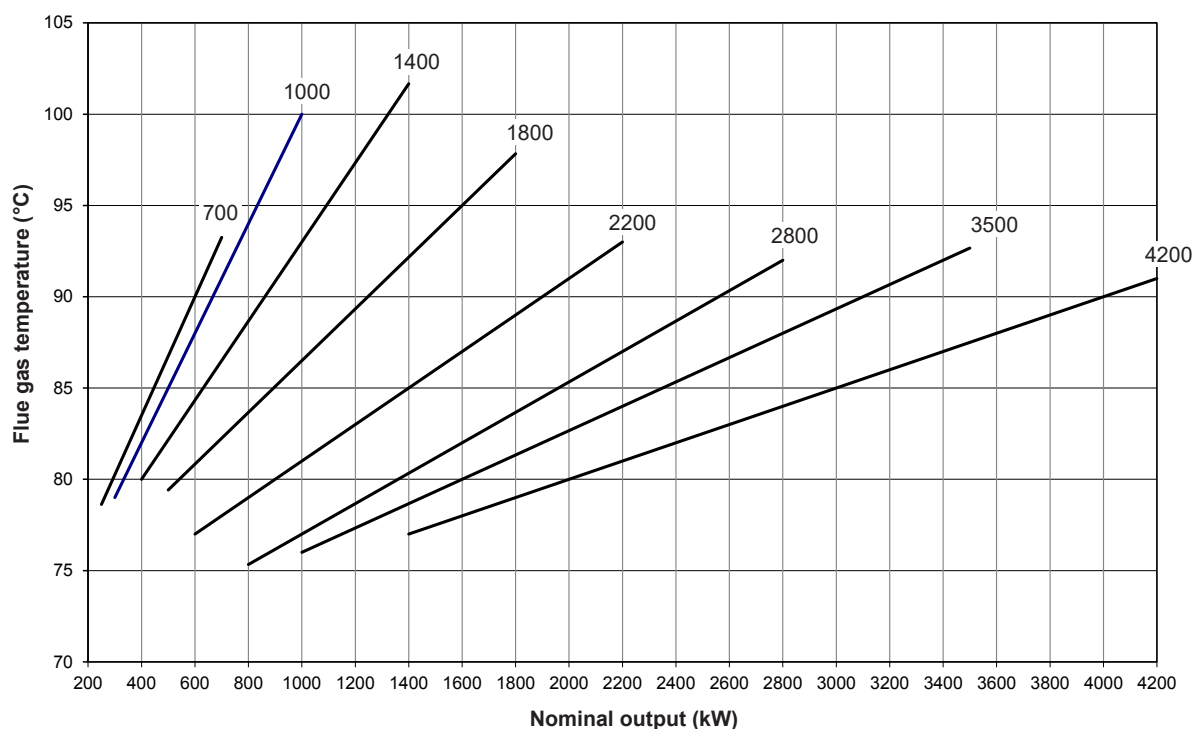
Type		(2200)	(2800)	(3500)	(4200)
• Nominal output at 80/60 °C	kW	2200	2800	3500	4200
• Range of output at 80/60 °C	kW	660-2200	840-2800	1050-3500	1260-4200
• Burner input max.	kW	2280	2901	3626	4351
• Operating temperature ¹⁾ max.	°C	105	105	105	105
• Operating temperature min.	°C	75	75	75	75
• Boiler return temperature min.	°C	35	35	35	35
• Safety temperature limiter setting (water side) ²⁾	°C	120	120	120	120
• Working/test pressure	bar	6/9	10/16	10/16	10/16
• Boiler efficiency at 80/60 °C in full-load operation (related to net calorific value NCV / gross calorific value GCV)	%	96.5/87.0	96.5/87.0	96/86.5	96/86.5
• Boiler efficiency at 30 % partial load (EN 303) (related to net calorific value NCV / gross calorific value GCV)	%	97.5/87.8	97.5/87.8	97/87.3	97/87.3
• Standard efficiency (DIN 4702-8, 75/60 °C) (related to net calorific value NCV / gross calorific value GCV)	%	97.5/87.9	97.5/87.9	97/87.4	97/87.4
• Stand-by loss at 70 °C	Watt	1550	1800	2180	2290
• Flue gas temperature at nominal output at 80/60 °C	°C	93	92	93	91
• Maximum chimney draught	Pa	20	20	20	20
• Flue gas resistance at nominal output 10.5 % CO ₂ natural gas 500 m over sea level (tolerance ± 20 %)	mbar	6.5	7.2	7.9	8.5
• Flue gas mass flow at nominal output 10.5 % CO ₂ natural gas	kg/h	3571	4546	5665	6798
• Flow resistance boiler ³⁾	z-value	0.003	0.002	0.002	0.002
• Water flow resistance at 20 K	mbar	27	29	45	65
• Water flow volume at 20 K	m³/h	94	120	150	180
• Boiler water content	litres	2534	2844	3553	3628
• Insulation thickness boiler body	mm	80	80	80	80
• Weight (incl. casing)	kg	4455	5702	7980	8200
• Weight (without casing)	kg	4105	5302	7580	7800
• Heating surface	m²	117.26	142.34	178.33	217.21
• Combustion chamber dimension Ø inside x length	mm	830/3076	922/3272	1050/2998	1050/3308
• Combustion chamber volume	m³	1.663	2.222	2.596	2.88
• Dimensions		see Dimensions			

¹⁾ Limited by the boiler control T2.2 to 90 °C resp. U3.2 and T0.2 to 105 °C.

²⁾ Maximum safety temperature for boiler control T2.2: 110 °C resp. U3.2 and T0.2: 120 °C.

³⁾ Flow resistance boiler in mbar = volume flow (m³/h)² x z

Flue gas and output diagram

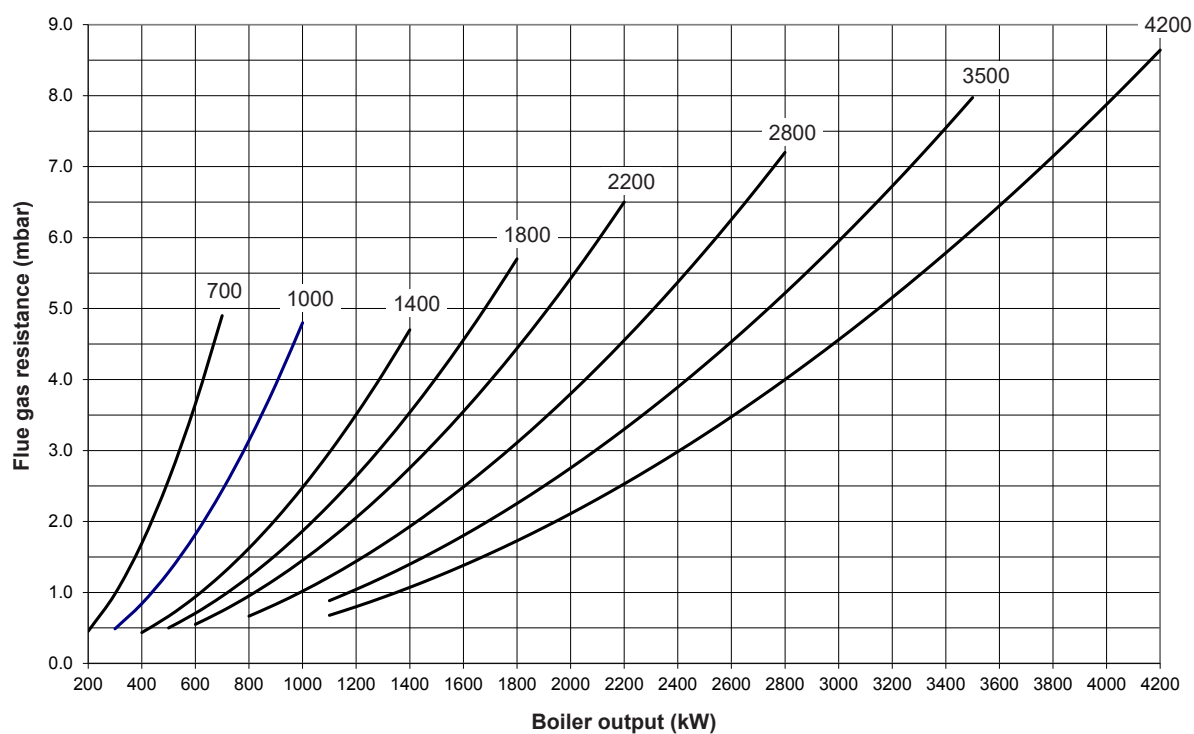


kW = Boiler output

°C = Flue gas temperature on clean surface,
boiler flow temperature 80 °C,
return temperature 60 °C
(in accordance with DIN 4702).

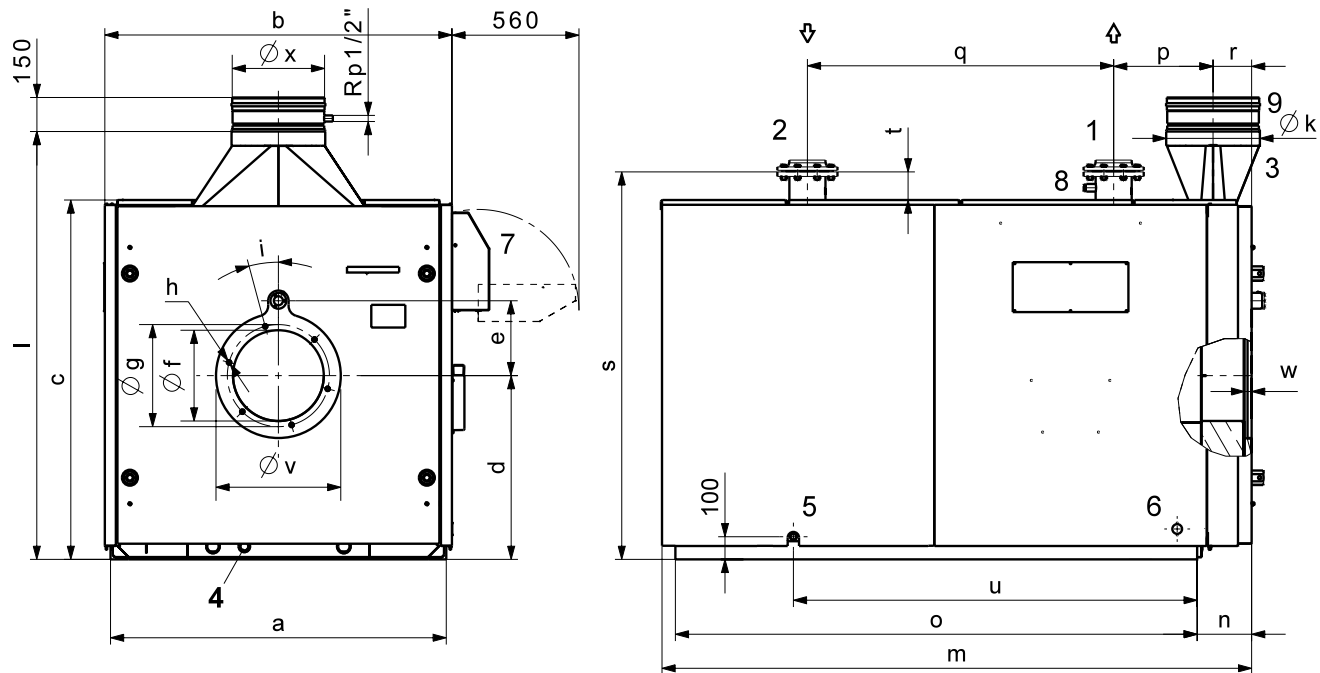
- Operated with natural gas H, $\lambda = 1.15$ with max. burner output (CO₂ natural gas H = 10.5 %)
- A reduction of the boiler water temperature to -10 K causes a reduction of the flue gas temperature of approx. 6-8 K.
- A modification of the lambda λ (CO₂ concentration) of ± 0.09 causes a modification of the flue gas temperature of approx. ± 8 K.

Flue gas resistance



CompactGas (700-4200)

(Dimensions in mm)



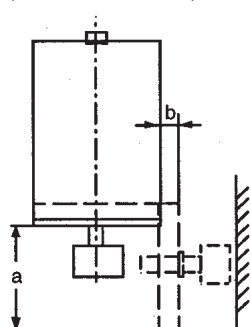
Type	a	b	c	d	e	f	g	h	i	k	l	m	n	o	p	q	r
										(inside)							
(700)	1100	1150	1175	591	250	290	330	4xM12	15°/45°	303	1436	2229	240	1930	389	1110	170
(1000)	1280	1330	1384	710	310	350	400	6xM12	15°	353	1646	2430	240	2130	438	1210	170
(1400)	1480	1530	1584	810	330	400	450	6xM16	15°	403	1886	2600	240	2300	438	1350	170
(1800)	1580	1630	1684	860	360	400	450	6xM16	15°	453	2038	2790	257	2438	438	1350	187
(2200)	1580	1630	1684	860	360	400	450	6xM16	15°	453	2038	3529	257	3213	438	2125	187
(2800)	1680	1730	1784	910	360	400	450	6xM16	15°	503	2188	3745	257	3430	638	2100	187
(3500)	1850	1928	1995	1018	360	400	450	6xM16	15°	553	2398	3905	337	3510	668	2123	236
(4200)	1850	1928	1995	1018	360	400	450	6xM16	15°	603	2398	4205	337	3810	668	2423	236

Type	s	t	u	v	w	x
						(inside)
(700)	1271	96	1406	420	31	298/1
(1000)	1487	103	1564	500	31	348/1
(1400)	1708	124	1780	550	31	398/1
(1800)	1808	124	1884	600	48	448/1
(2200)	1808	124	2659	600	48	448/1
(2800)	1908	124	2799	600	48	498/1
(3500)	2121	126	3141	600 x 600	65	548/1
(4200)	2121	126	3441	600 x 600	65	598/1

- 1 Flow
 - (700) DN 125, PN 6
 - (1000) DN 125, PN 6
 - (1400) DN 150, PN 6
 - (1800) DN 150, PN 6
 - (2200) DN 150, PN 6
 - (2800) DN 200, PN 10
 - (3500) DN 200, PN 10
 - (4200) DN 200, PN 10
- 2 Return
 - (700) DN 125, PN 6
 - (1000) DN 125, PN 6
 - (1400) DN 150, PN 6
 - (1800) DN 150, PN 6
 - (2200) DN 150, PN 6
 - (2800) DN 200, PN 10
 - (3500) DN 200, PN 10
 - (4200) DN 200, PN 10

Tilting out of the boiler door

Boiler door opens to the right or left
(Dimensions in mm)

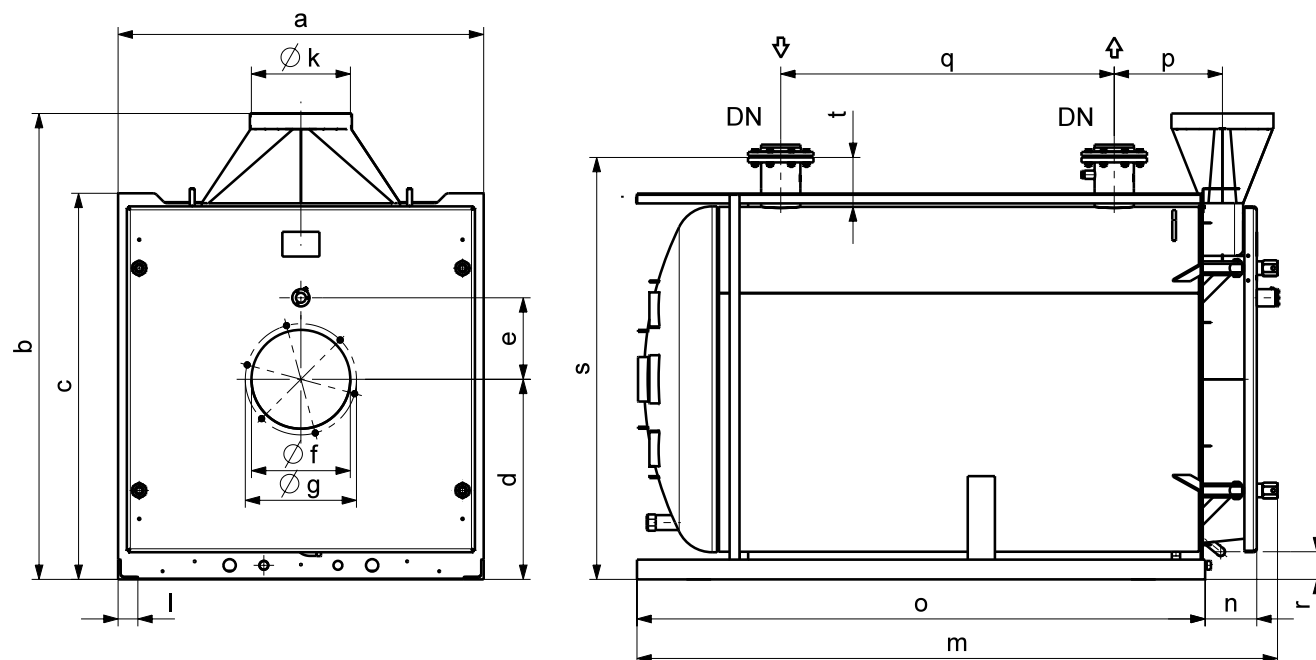


Type	a	b
(700)	875	120
(1000)	1052	120
(1400)	1252	120
(1800)	1337	120
(2200)	1337	120
(2800)	1435	120
(3500)	1700	160
(4200)	1700	160

- 3 Flue gas outlet
- 4 Draining R 1"
- 5 Condensate drain D 31/25 mm (on both sides)
- 6 Electrical connection (on both sides)
- 7 Control panel (optionally left or right)
- 8 Sleeve Rp 3/4" with immersion pocket for boiler temperature sensor
- 9 Condensate trap

CompactGas (700-4200)

(Dimensions in mm)

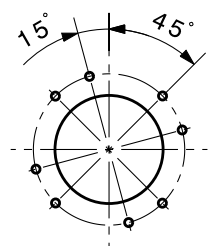


Type	a	b *	c	d	e	f	g	k (inside)	l	m	n	o	p	q	r	s	t	DN
(700)	1100	1436	1153	590	250	290	330	303	80	2212	209	1930	388	1110	64	1271	180	125
(1000)	1280	1646	1363	710	310	350	400	353	80	2423	209	2130	438	1210	96	1487	180	125
(1400)	1480	1886	1563	810	330	400	450	403	80	2593	209	2300	438	1350	112	1708	200	150
(1800)	1580	2038	1663	860	360	400	450	453	80	2731	209	2438	438	1350	112	1808	200	150
(2200)	1580	2038	1663	860	360	400	450	453	80	3506	209	3213	438	2125	112	1808	200	150
(2800)	1680	2188	1763	910	360	400	450	503	80	3723	209	3430	638	2100	112	1908	200	200
(3500)	1850	2398	1973	1018	360	400	450	553	80	3883	272	3510	668	2123	120	2121	200	200
(4200)	1850	2398	1973	1018	360	400	450	603	80	4183	272	3810	668	2423	120	2121	200	200

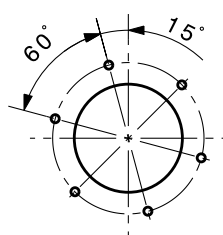
* with condensate trap: + 155 mm

A condensate trap must imperatively be mounted!

Burner connection dimensions



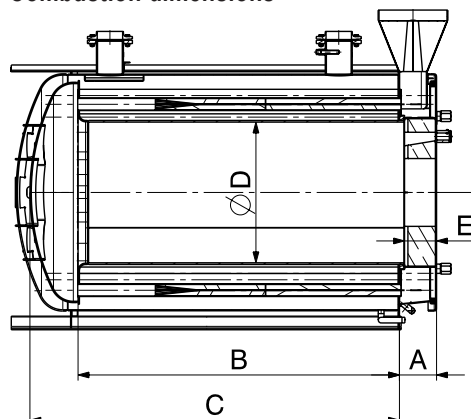
**Screw joint flange
CompactGas (700)**
4 x M12 (15°)
4 x M12 (45°)



**Screw joint flange
CompactGas (1000)**
6 x M12 (15°)

**Screw joint flange
CompactGas (1400-4200)**
6 x M16 (15°)

Combustion dimensions



Type	A	B	C	D	E
(700)	219	1644	1835	584	189
(1000)	219	1748	1985	684	189
(1400)	219	1896	2180	830	189
(1800)	219	1998	2301	830	189
(2200)	219	2773	3076	830	189
(2800)	219	2968	3288	922	189
(3500)	272	3000	3325	1050	256
(4200)	272	3300	3625	1050	256

Standards and guidelines

Following standards and guidelines must be respected:

- technical information and installation manual of the Hoval company
- hydraulic and control technical control regulations of the Hoval company
- local building law
- fire protection standards
- DIN EN 12828
Heating systems in building plans of hot water heating plants
- DIN EN 12831 heating plants in buildings procedure for computing the normed heating capacity

Water quality

Heating water:

- The European Standard EN 14868 and the Directive VDI 2035 must be observed. In particular, attention must be paid to the following stipulations:
- Hoval boilers and calorifiers are designed for heating plants without significant oxygen intake (plant type I according to EN 14868).
- Plants with
 - continuous oxygen intake (e.g. underfloor heating systems without diffusion proof plastic piping) or
 - intermittent oxygen intake (e.g. where frequent refilling is necessary)
 must be equipped with separate circuits.
- Treated filling and replacement water must be tested at least once yearly. According to the inhibitor manufacturer's instructions, more frequent testing may be necessary.
- A refilling is not necessary if the quality of the heating water in existing installations (e.g. exchange of boiler) conforms to VDI 2035. The Directive VDI 2035 applies equally to the replacement water.
- New and if applicable existing installations must be adequately cleaned and flushed before being recharged! The boiler may only be filled after the heating system has been flushed.
- Parts of the boiler which have contact with water are made of ferrous materials.
- On account of the danger of stress cracking corrosion the chloride, nitrate and sulfate contents of the heating water must not exceed 200 mg/l in total.
- The pH value of the heating water should lie between 8.3 and 9.5 after 6 to 12 weeks of heating operation.

Filling and replacement water:

- For a plant using Hoval boilers untreated domestic water is generally best suited as filling and replacement water. However, the quality of the untreated domestic water must at least fulfil the standard set in VDI 2035 or be desalinated and/or be treated with inhibitors. The stipulations of EN 14868 must be observed.
- In order to maintain a high level of boiler efficiency and to avoid overheating of the heating surfaces the values given in the table should not be exceeded (dependent on boiler performance ratings - for multi-boiler plants rating of smallest boiler applies - and on the water content of the plant).

- The total amount of filling and replacement water which is used throughout the total service life of the boiler must not exceed three times the water capacity of the plant.

Combustion air supply

The combustion air supply must be warranted. The air opening must not be lockable. It is very important to ensure that the combustion air is free from halogen compounds. These are present, for example, in spray cans, varnishes, glues, solvents and cleansing agents.

Room air dependent operation:

A minimum free cross-section of once 150 cm² or twice 75 cm² and an additional 2 cm² for each kW boiler capacity in excess of 50 kW is required for the air opening into the outside air.

Burner mounting

- For mounting of the burner an adapter flange may be required depending on the size of the burner flange. The adaptor flange including screws must be delivered by the burner company.
- Length and diameter of the burner pipe should be possible to swivel the boiler door incl. burner by 90°.
- So that the boiler door can be swung out around 90° to the left or right, the connections must be flexible and lead in a sufficient large loop to the burner.
- The space between burner pipe and swivel flange must be isolated. A line must be routed from the burner to the sight glass to carry cooling air, in order to cool the boiler sight glass and keep it clean. (Delivery by the burner company)

Electrical connection of the burner

- Control voltage 1 x 230 V
- Burner motor 1 x 230 V / 3 x 400 V.
- The burner must be connected to the burner connection plug of the boiler.
- For safety reasons the electrical cable of the burner must be that short that the plug must be removed when swivelling boiler door.

Sound absorbing

Sound absorption is possible through the following steps:

- Heating room walls, ceiling and floor should be very solidly built, a sound absorber should be mounted into the air inlet. Pipe holders and support should be protected by means of anti-vibration sleeves.
- Install sound absorber hood for burner.
- If living rooms are located above or under the boiler room, vibration absorbers have to be mounted to the boiler base. Pipes and flue gas tube must be connected flexibly with compensators.
- Connect circulating pumps to the piping network using expansion joints.
- For damping of flame noise it is possible to install a silencer into the flue gas tube (Space should be foreseen for later installation).

Measures for sound reduction

Make sure right from the planning phase that bedrooms are not situated in the immediate vicinity of the sound source (heating room, chimney).

A reduction of the radiated burner air sound level in the heating room (reduction of the burner noises) of up to approx. 12 dB can be achieved encapsulating the burner (sound absorbing hood).

A significant part of the noise development in the combustion chamber and in the secondary heating surfaces is radiated as airborne noise via the flue gas line.

In addition, depending on dimensioning of the chimney and intersection, resonance effects caused by the vibration of the combustion noises (amplification) can occur.

These noises can be reduced on the one hand by measures on the burner side, such as modification of the flame geometry, the atomisation characteristic or the fuel throughput.

On the other hand, flue gas silencers achieve an important noise reduction.

These silencers must usually be adapted to low frequencies of 60-250 Hz.

Flue gas silencers work based on the principle of sound absorption.

The kinetic energy of the flue gases is consumed due to friction, which means a draughting requirement increase in the flue gas line is necessary. This must be taken into account when dimensioning the burner.

Maximum filling quantity without/with demineralisation

	Carbonate hardness of filling water up to...							
[mol/m³] ¹)	<0.1	0.5	1	1.5	2	2.5	3	>3.0
f°H	<1	5	10	15	20	25	30	>30
d°H	<0.56	2.8	5.6	8.4	11.2	14.0	16.8	>16.8
e°H	<0.71	3.6	7.1	10.7	14.2	17.8	21.3	>21.3
~mg/l	<10	50.0	100.0	150.0	200.0	250.0	300.0	>300
Conductance ²)	<20	100.0	200.0	300.0	400.0	500.0	600.0	>600
Boiler size of the individual boiler	maximum filling quantity without demineralisation							
200 to 600 kW		50 l/kW	50 l/kW	20 l/kW	always desalinate			
over 600 kW								

¹⁾ Total of alkaline earths

²⁾ If the conductance in µS/cm exceeds the tabular value an analysis of the water is necessary.

The connection piece from the boiler to the flue gas silencer must be gas-tight as the draught and pressure zero points lie behind the flue gas silencer.

The space required of approx. 1 m for retrofitting of a flue gas silencer should be provided during planning.

Note also that secondary air devices are installed only behind a flue gas silencer.

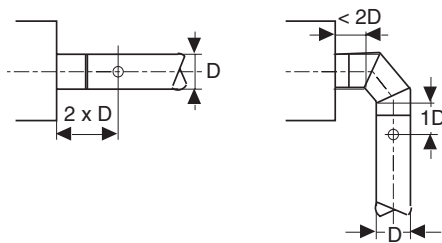
Installation instructions

Please observe the installation instructions supplied with every boiler.

Chimney/flue gas system

Flue gas tube

- The flue gas tube between boiler and chimney must be connected with an angle of 30-45° to the chimney.



- The flue gas tube must be designed that no condensate can get into the boiler. A condensate trap must imperatively be mounted on the flue gas outlet of the boiler.
- A closeable flue gas measuring socket with an inner diameter of 10-21 mm must be foreseen.

Chimney system

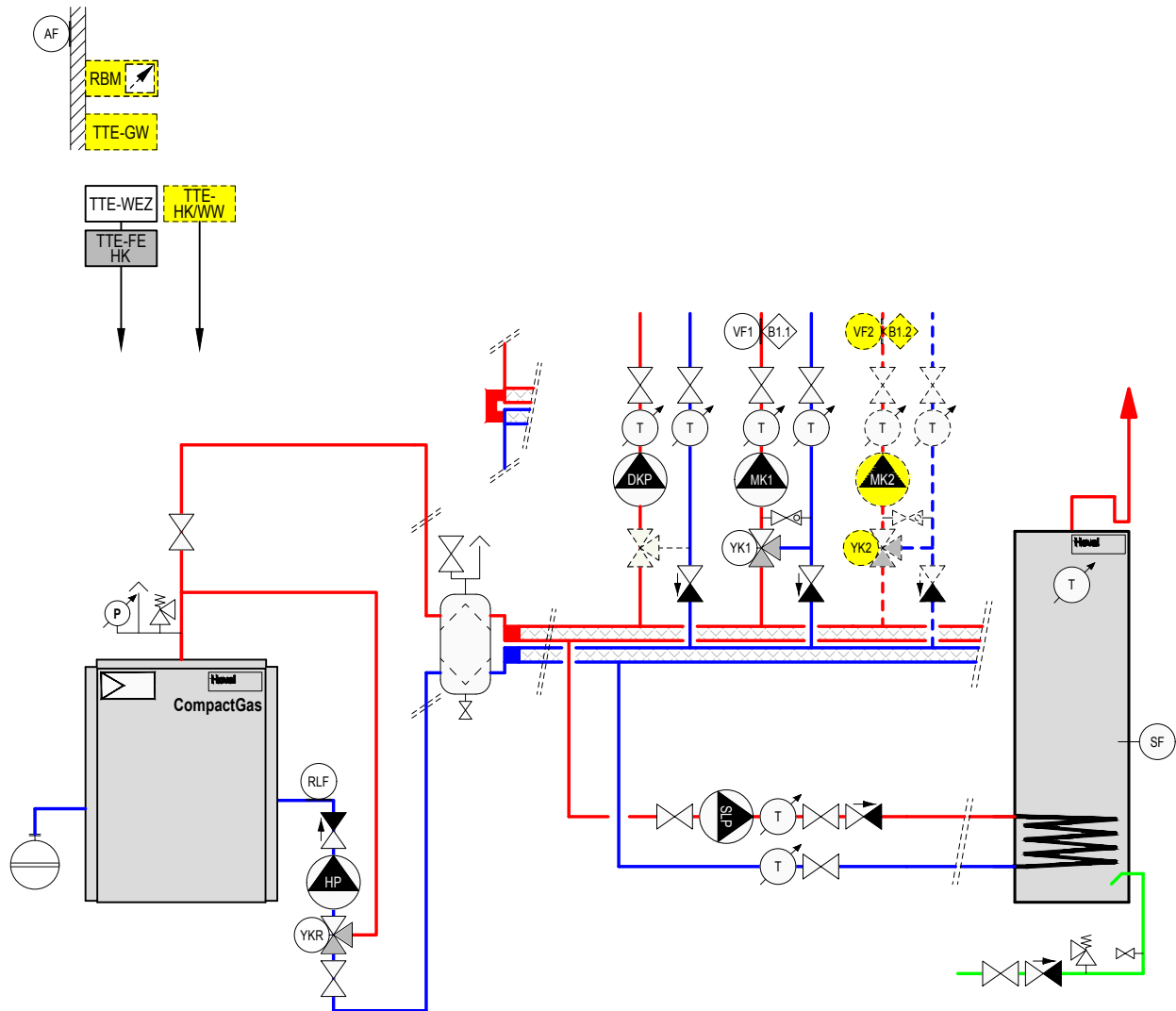
- The flue gas system must be humidity-insensitive and acid proof and admitted up to 160 °C.
- For existing chimney installation the restoration must be carried out according to the instructions of the chimney constructor.
- Calculation of the profile of the chimney according to EN 13384-1 and 2.
- It is recommended to use a secondary air valve for chimney draft limiting. The air valve must be mounted after the flue gas sound absorber (if fitted).

CompactGas (700-4200)

Gas boiler with

- main pump
- return temperature control continuous
- hydraulic switch
- calorifier
- 1 direct circuit and 1-... mixer circuit(s)

Hydraulic schematic BDGE020



Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (pressurised expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (installed)
TTE-FE HK	TopTronic® E module expansion heating circuit
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
DKP	Pump for heating circuit without mixer
HP	Main pump
SLP	Calorifier charging pump
RLF	Return sensor
YKR	Actuator return mixer
AF	Outdoor sensor
SF	Calorifier sensor

Option

RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway
TTE-HK/WW	TopTronic® E heating circuit/hot water module
VF2	Flow temperature sensor 2
B1.2	Flow temperature guard (if required)
MK2	Pump mixer circuit 2
YK2	Actuator mixer 2

