

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)	5.9-18.6	60
(26/23)	7.6-23.4	80
(32/28)	7.8-27.1	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
(21/18)  	5.9-18.6	60
(26/23)  	7.6-23.4	80
(32/28)  	7.8-27.1	124







Part No.

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
(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

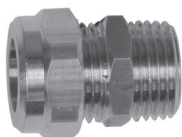
2012 075



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

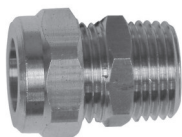
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Accessories



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

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



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

2062 165

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

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.

Part No.

TopGas® combi (21/18, 26/23, 32/28)

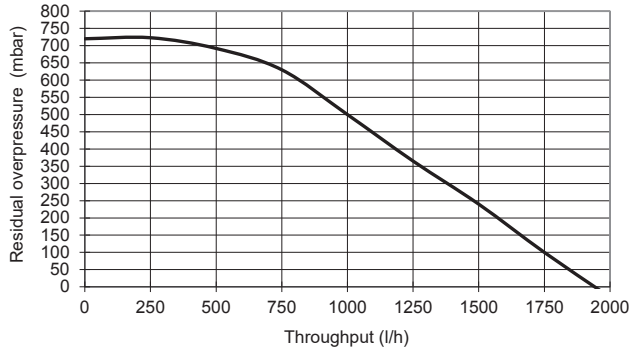
Type		(21/18)	(26/23)	(32/28)	
• Nominal heat output at 80/60 °C, natural gas	kW	5.4-17.8	6.9-22.8	7.1-26.3	
• Nominal heat output at 50/30 °C, natural gas	kW	5.9-18.6	7.6-23.4	7.8-27.1	
• Nominal heat output at 80/60 °C, propane ²⁾	kW	5.7-17.8	7.3-22.8	7.3-26.3	
• Nominal heat output at 50/30 °C, propane 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	92	93
- with control	ηs	%	93	94	95
- with control and room sensor	ηs	%	95	96	97
• Energy efficiency class domestic water heating	ηs	%	83 L	85 XL	85 XL
• NOx class (EN 15502)		6	6	6	
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx	mg/kWh	27	34	51
• 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.

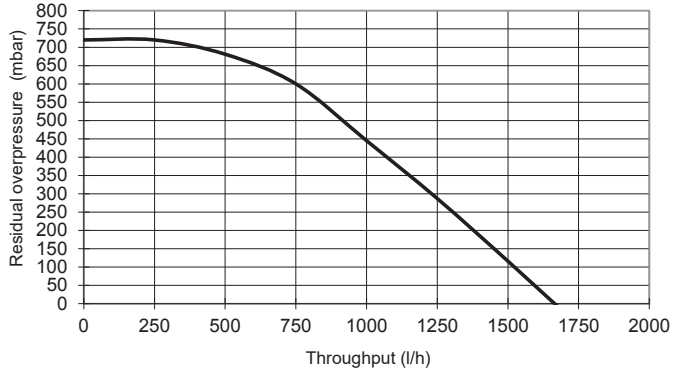
²⁾ Data related to NCV. TopGas® combi can also be operated with propane.

Maximum residual overpressure heating pump

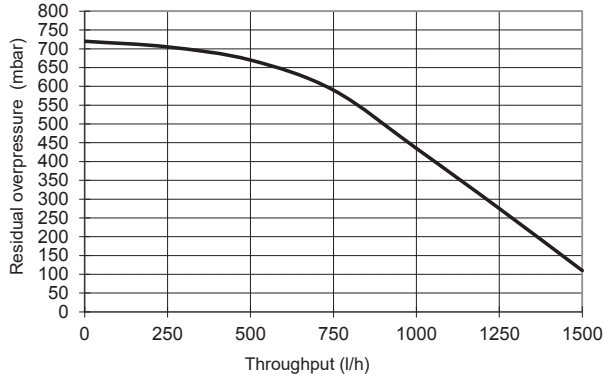
TopGas® combi (21/18)



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!

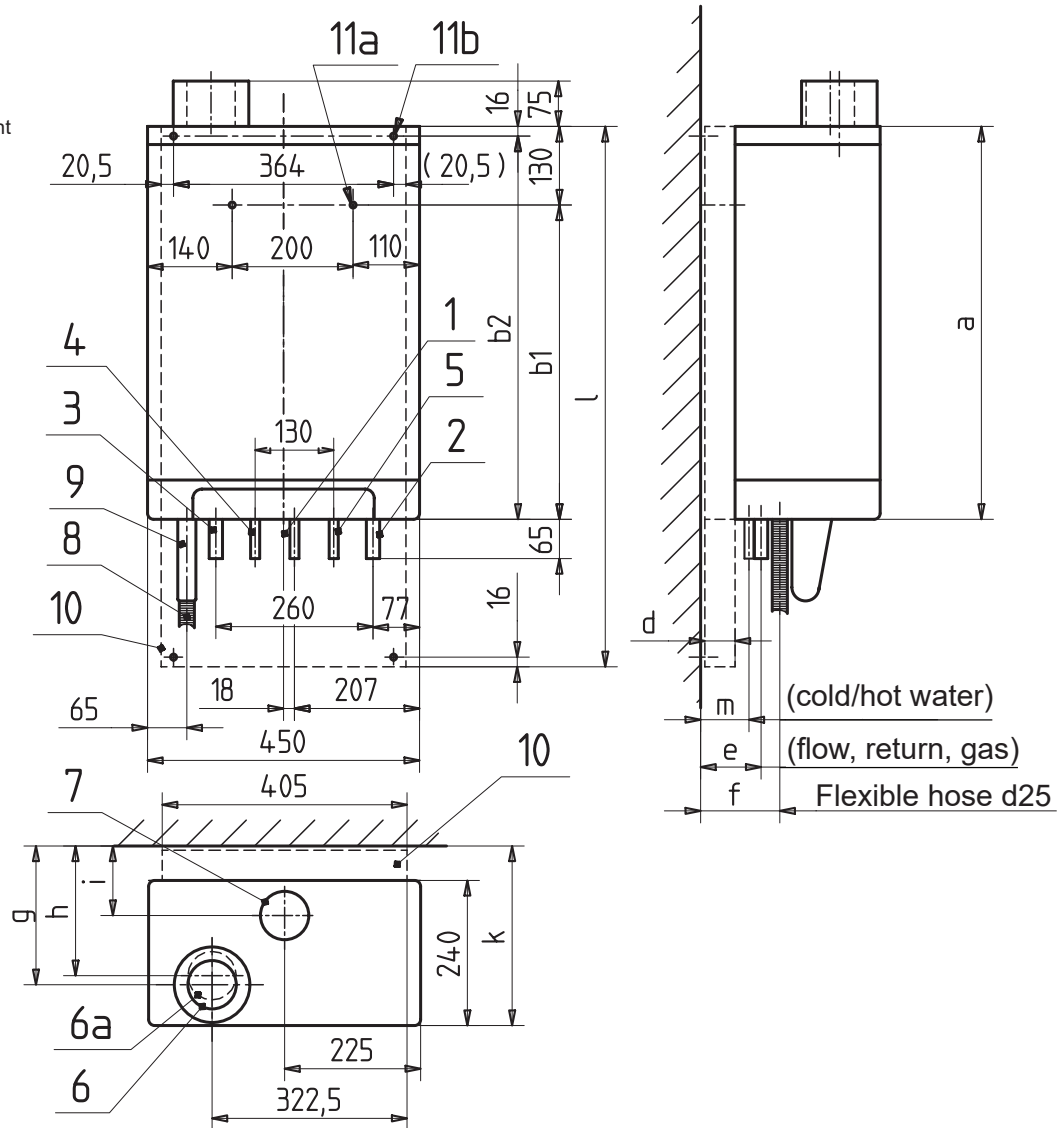
Notice:

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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

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 1/2"
- 2 Return Heating D22 for clamp ring screwing Rp 3/4"
- 3 Flow Heating D22 for clamp ring screwing Rp 3/4"
- 4 Hot water D15 for clamp ring screwing Rp 1/2"

- 5 Cold water D15 for clamp ring screwing Rp 1/2"
- 6 Central 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

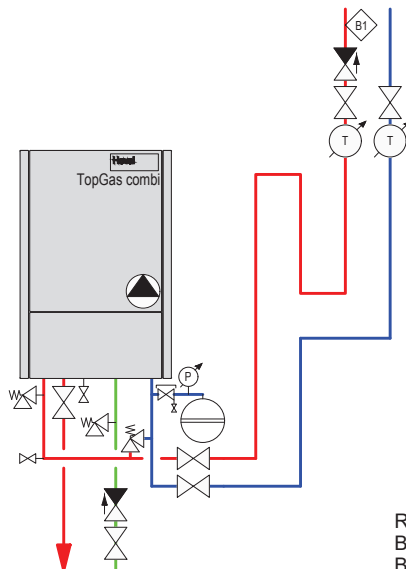
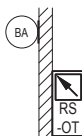
- The sound power level value is dependent on local and spacial circumstances.
- The sound pressure level is dependent on the installation conditions and can e.g. be 10 to 15 dB(A) lower than the sound power level at a distance of 1 m.

■ **Examples**

Hoval TopGas® combi

- Gas boiler with
- integrated continuous flow calorifier
 - 1 direct circuit

Hydraulic schematic BDCE010



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