

■ Description

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

- Gas boiler, insulation and casing are delivered separately packed

On site

- Installation of the casing and insulation, boiler control 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

Permissions boilers

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 97/23/EG.

Boiler control TopTronic® T/U3.2

- For operating temperature to 105 °C
- For mounting on top of boiler CompactGas (700-2800) mounting sideways left or right
- Integrated control for
 - 1 mixing circuit
 - 1 heating circuit without mixer
 - domestic hot water loading circuit
- Possibility of further functions using
 - various key modules and/or
 - installation of separate control unit TopTronic® T/N (see Accessories)
- Main switch "I/O"
- Safety temperature limiter 120 °C,
- Fine fuse 6.3 A
- Fault display "burner"
- Running time meter and pulse counter
- Boiler sensor
- Large LCD display
- Rotary push-button
- Buttons for
 - day time room temperature
 - night room temperature
 - hot water temperature
 - operating mode selection (holiday, absent, heating operation prolongation, automatic, summer, continuous - reduced - frost protection)
 - adjusting the heating curves
 - system information
 - emission measurement and manual operation
- Outdoor sensor AF200
- Flow sensor with plug
- Calorifier sensor with plug
- Plug connection for burner
- Connection available for room stations

Delivery

- Boiler control separately delivered

At place

- Mounting of the control panel at the boiler
- Installation of the boiler control for mounting sideways

Control panel

with thermostat T 2.2

- For systems without TopTronic® regulator
- 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 meter integrated
- 2 Burner running time meter and pulse counter integrated
- Flue gas thermometer, 4.5 m capillary tube

Delivery

- Control panel separately delivered

At place

- Mounting of the control panel at the boiler

Control panel

with thermostat T 0.2

- For external control
- For systems without TopTronic® regulator
- 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
- Safety temperature limiter 130 °C

Delivery

- Control panel separately delivered

On site

- Mounting of the control panel at the boiler

■ Part No.


CompactGas
Gas boiler (1000-2800)
Part No.**Boiler**

High-efficiency boiler made of steel
for gas firing, without control panel

Design: delivery complete

Boiler, insulation and casing
separately packed and delivered

CompactGas type	Output kW	Working pressure bar	
(700)	250-700	6	7012 515
(1000)	300-1000	6	7006 279
(1400)	420-1400	6	7006 280
(1800)	540-1800	6	7006 281
(2200)	660-2200	6	7006 282
(2800)	840-2800	10	7012 485

The minimum boiler operating temperature
and the minimum boiler return temperature
must imperatively be observed
(see technical data).

A return temperature control must be pro-
vided!

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) Ø 380

for CompactGas (1000) Ø 400

for CompactGas (1400-2800) Ø 450

6002 192

6030 026

6002 156



Intermediate flange drilled D480x20

for CompactGas (1000) Ø 480

6017 593

Intermediate flange drilled D520x20

for CompactGas (1400-2800) Ø 520

6017 594

■ Part No.

**Control panels
with heating regulator TopTronic® T
for Hoval CompactGas**
Part No.

Boiler controller TopTronic® T/U3.1

6020 537

Max. operating temperature 90°C
For mounting on top of boiler
(sideways, change on site).
Integrated control function for

- 1 mixing circuit
- 1 heating circuit without mixer
- domestic hot water loading circuit incl. outdoor sensor, flow sensor and calorifier sensor with plug

Option to expand the functions by

- different key modules and/or
- mounting of an additional heating regulator TopTronic® T/N (see accessories)


Boiler controller TopTronic® T/U3.2

6020 538

Max. operating temperature 105°C
Functions like boiler controller TopTronic® T/U3.1
Delivery:
Boiler controller separately delivered

The boiler complies with the Pressure Equipment Directive (PED) 97/23/EC. Request for corresponding boiler plate required.


Contact sensor VF204

2023 998

can be used as flow or return flow sensor
with 4 m cable

■ Part No.

**Control panels with heating regulator
TopTronic® T to Hoval CompactGas**
Part No.

Control panel T 2.2

- For systems without TopTronic® regulator.
- For direct 2-stage burner control, 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 counter integrated
- For mounting sideways left or right on the boiler

6015 017

6015 477

6015 478


Control panel T 0.2

- For external switching command
- For systems without TopTronic® regulator
- For special control function
 - without burner running time meter and pulse counter
 - incl. 2 burner running time meters integrated
 - incl. 2 burner running time meters and pulse counter integrated
- For mounting sideways left or right on the boiler

6015 016

6015 475

6015 476

Accessories to control panel with thermostat
Flue gas thermometer
4 m, capillary tube

2411 49

**Accessories to heat regulation system
TopTronic® T**

Hoval
TopTronic® T
1

Key module 1 for Hoval TopTronic® T
for 2nd mixing circuit

6012 154

Key module consists of:

- function key 1,
- 1 flow sensor VF204S with plug,
- 2 loose plugs

Only one key module is possible!
System approaches and applications
see Hoval CD

Additional heating regulator set ZN1

6020 574

for extending functionality
and implementing further heating circuits
Consisting of:

Heating regulator TopTronic® T/N for

- 1 mixer circuit
- 1 heating circuit without mixer
- hot water loading

Only one key module per regulator is possible!

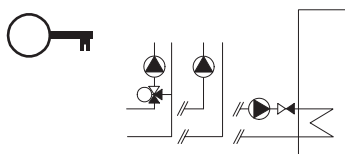
Flow sensor VF202K

with 2 m cable and plug.

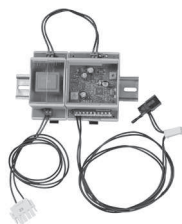
Cable set

for connecting the auxiliary heating regulator
TopTronic® T/ N with the boiler controller.

Mounting on site



■ Part No.



Set BMS module 1-10 V
(building management system)
Control 0-10 V Δ 11.5-115 °C
Consisting of: BMS module and trafo
Can be installed!

Part No.

6015 195

Communication modules/remote connection see Controls



Room station RS-T
for TopTronic® T
effective on one mixing circuit

2034 939



Remote control RFF-T
for TopTronic® T
effective on one mixing circuit

2022 239



Outdoor sensor AF 200
(may be included in the heat generator scope of delivery)
for one mixing circuit or for the mean value (per regulator 2 outdoor temperature sensors possible)

2022 995



Flue gas temperature sensor PT 1000/4
L = 2.5 m
including fixing screws
(installation on site)

6913 57



Cable sensor KVT 20/5/6S
5 m cable and plug

6012 687



Contact sensor VF204S
can be used as flow or return flow sensor
with 4 m cable and plug

6012 688

■ Part No.



Part No.

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 immer-
sion 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	6003 741
(1400)	(4 pcs)	500	6003 742
(1800-2800)	(4 pcs)	800	6005 623

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.

■ Technical data

CompactGas (700-2800)

Type		(700)	(1000)	(1400)	(1800)	(2200)	(2800)
• Nominal output at 80/60 °C	kW	700	1000	1400	1800	2200	2800
• Range of output at 80/60 °C	kW	250-700	300-1000	420-1400	540-1800	660-2200	840-2800
• Burner input maximum	kW	725	1037	1458	1865	2280	2901
• Maximum working temperature ¹	°C	105	105	105	105	105	105
• Minimum working temperature	°C	75	75	75	75	75	75
• Minimum boiler return temperature	°C	35	35	35	35	35	35
• Safety temperature limiter setting (water side) ²	°C	120	120	120	120	120	120
• Working/test pressure	bar	6/9	6/9	6/9	6/9	6/9	10/16
• Boiler efficiency at full load at 80/60 °C (net calorific value/gross calorific value)	%	96.5/87.0	96.4/86.9	96.0/86.5	96.5/87.0	96.5/87.0	96.5/87.0
• Efficiency at partial load 30% (EN 303) (net calorific value/gross calorific value)	%	97.4/87.7	97.4/87.7	97.3/87.7	97.4/87.7	97.5/87.8	97.5/87.8
• Standard efficiency 75/60 °C (according to DIN 4702 part 8) (net calorific value/gross calorific value)	%	97.4/87.7	97.4/87.8	97.1/87.5	97.5/87.9	97.5/87.9	97.5/87.9
• Stand-by loss at 70 °C	Watt	850	1000	1200	1350	1550	1800
• Flue gas temperature at nominal output at 80/60 °C	°C	94	101	102	99	93	92
• 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	6.5	7.2
• Flue gas mass flow at nominal output 10.5% CO ₂ natural gas	kg/h	1133	1623	2271	2923	3571	4546
• Flow resistance boiler ³	z-value	0.012	0.012	0.003	0.003	0.003	0.002
• Water flow resistance at 20 K	mbar	10.8	22.0	10.8	17.9	26.7	28.8
• Water flow volume at 20 K	m³/h	30.0	42.9	60.0	77.1	94.3	120.0
• Boiler water content	litres	670	1130	1580	2020	2534	2844
• Insulation thickness boiler body	mm	80	80	80	80	80	80
• Weight (incl. casing)	kg	1390	2100	2794	3500	4455	5702
• Weight (without casing)	kg	1250	1960	2654	3200	4105	5302
• Heating surface	m²	36.52	44.23	68.49	89.51	117.26	142.34
• Combustion chamber dimension Ø inside x length	mm	584/1835	684/1985	830/2180	830/2301	830/3076	922/3272
• Combustion chamber volume	m³	0.492	0.729	1.179	1.244	1.663	2.222
• Dimensions	see Dimensions						

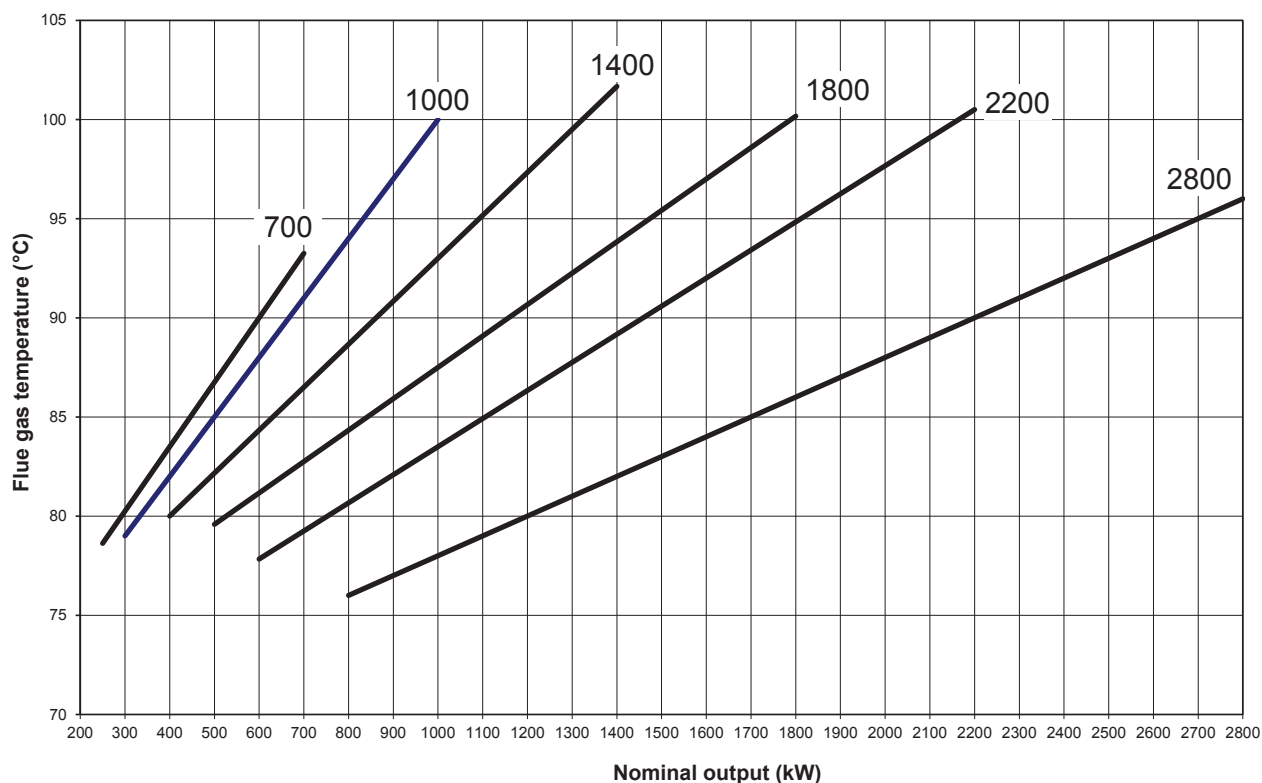
¹ Limited by the boiler control T2.2 to 90 °C resp. U3.2 and T0.2 to 105 °C.

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

Technical data

Flue gas and output diagram

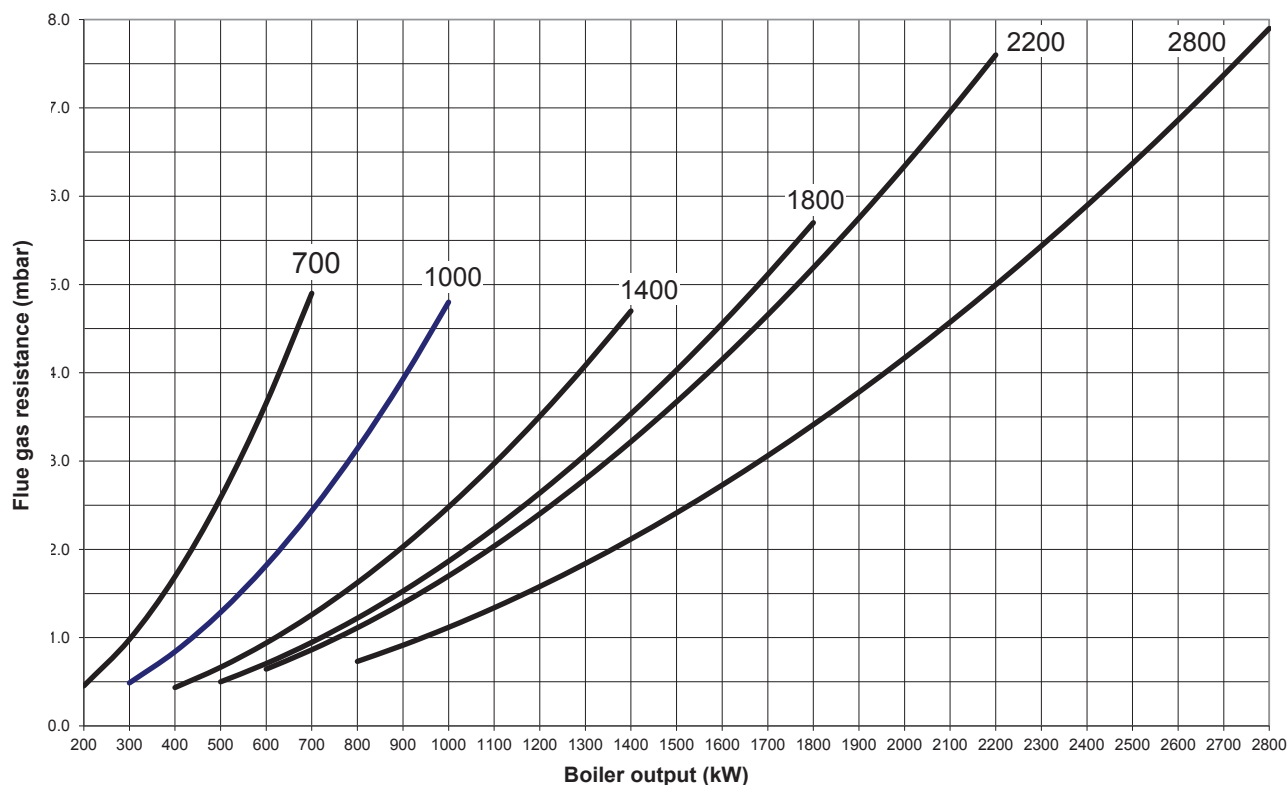


kW = Boiler output

°C = Flue gas temperature on clean surface,
boiler flow temperature 80 °C,
return temperature 60 °C
(in accordance with DIN 4702).

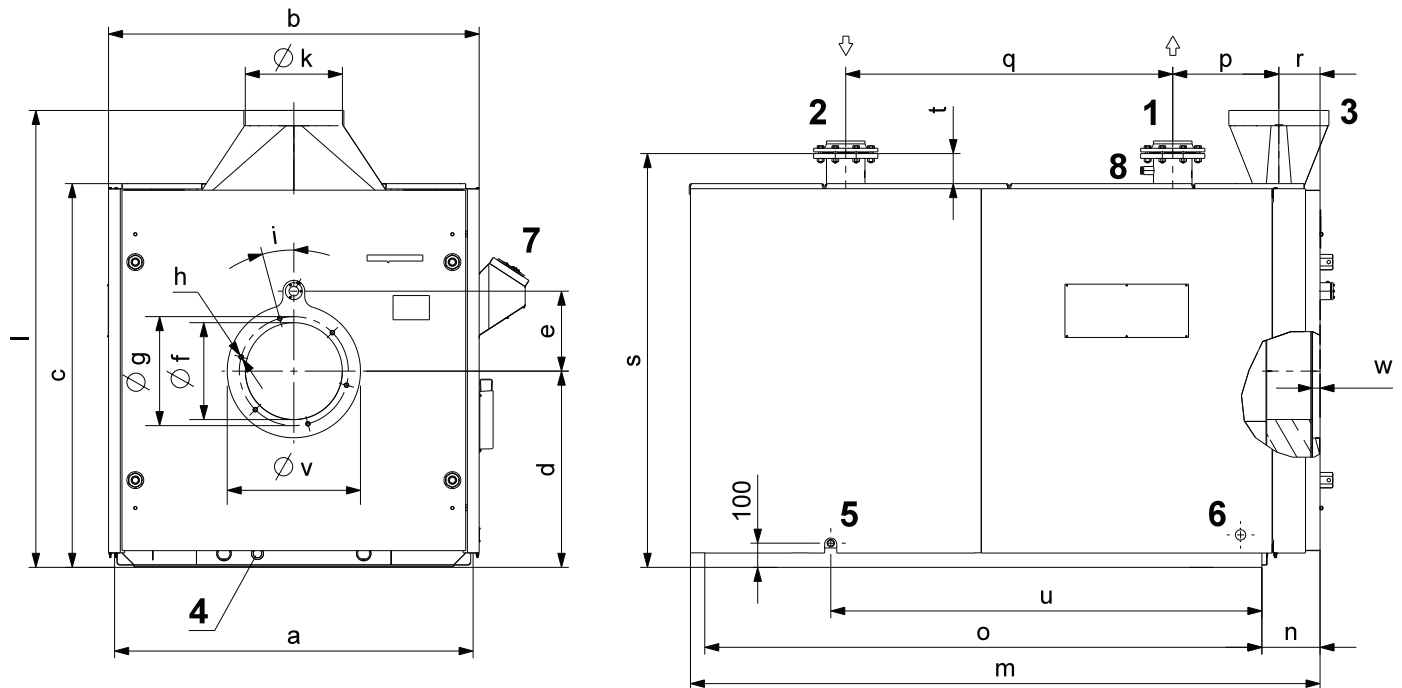
- Operated with natural gas H, $\lambda = 1.15$ with max. burner output (CO₂ natural gas H = 10.5%)
- A reduction of the boiler water temperature to -10K causes a reduction of the flue gas temperature of approx. 6-8 K.
- A modification of the lambda λ (CO₂ concentration) of ± 0.09 causes a modification of the flue gas temperature of approx. ± 8 K.

Flue gas resistance



■ Dimensions

(Dimensions in mm)



Type	a	b	c	d	e	f	g	h	i	k (inside)
(700)	1100	1150	1175	590	250	290	330	6xM12	15°	303
(1000)	1280	1330	1384	710	310	350	400	6xM12	15°	353
(1400)	1480	1530	1584	810	330	400	450	6xM16	15°	403
(1800)	1580	1630	1684	860	330	400	450	6xM16	15°	453
(2200)	1580	1630	1684	860	330	400	450	6xM16	15°	453
(2800)	1680	1730	1784	910	330	400	450	6xM16	15°	503

Type	l*	m	n	o	p	q	r	s	t	u	v	w
(700)	1436	2229	240	1930	389	1110	170	1271	96	1406	420	31
(1000)	1646	2430	240	2130	438	1210	170	1487	103	1564	500	31
(1400)	1886	2600	240	2300	438	1350	170	1708	124	1780	550	31
(1800)	2038	2790	257	2438	438	1350	187	1808	124	1884	600	48
(2200)	2038	3529	257	3213	438	2125	187	1808	124	2659	600	48
(2800)	2188	3745	257	3430	638	2100	187	1908	124	2799	600	48

* with condensate trap: + 155 mm

A condensate trap must imperatively be mounted!

1 Flow	2 Return	3 Flue gas outlet
(700) DN 125, PN 6	(700) DN 125, PN 6	4 Draining R 1"
(1000) DN 125, PN 6	(1000) DN 125, PN 6	5 Condensate drain D 31/25 mm (on both sides)
(1400) DN 150, PN 6	(1400) DN 150, PN 6	6 Electrical connection (on both sides)
(1800) DN 150, PN 6	(1800) DN 150, PN 6	7 Control panel
(2200) DN 150, PN 6	(2200) DN 150, PN 6	8 Sleeve Rp 3/4" with immersion pocket
(2800) DN 200, PN 10	(2800) DN 200, PN 10	for boiler temperature sensor

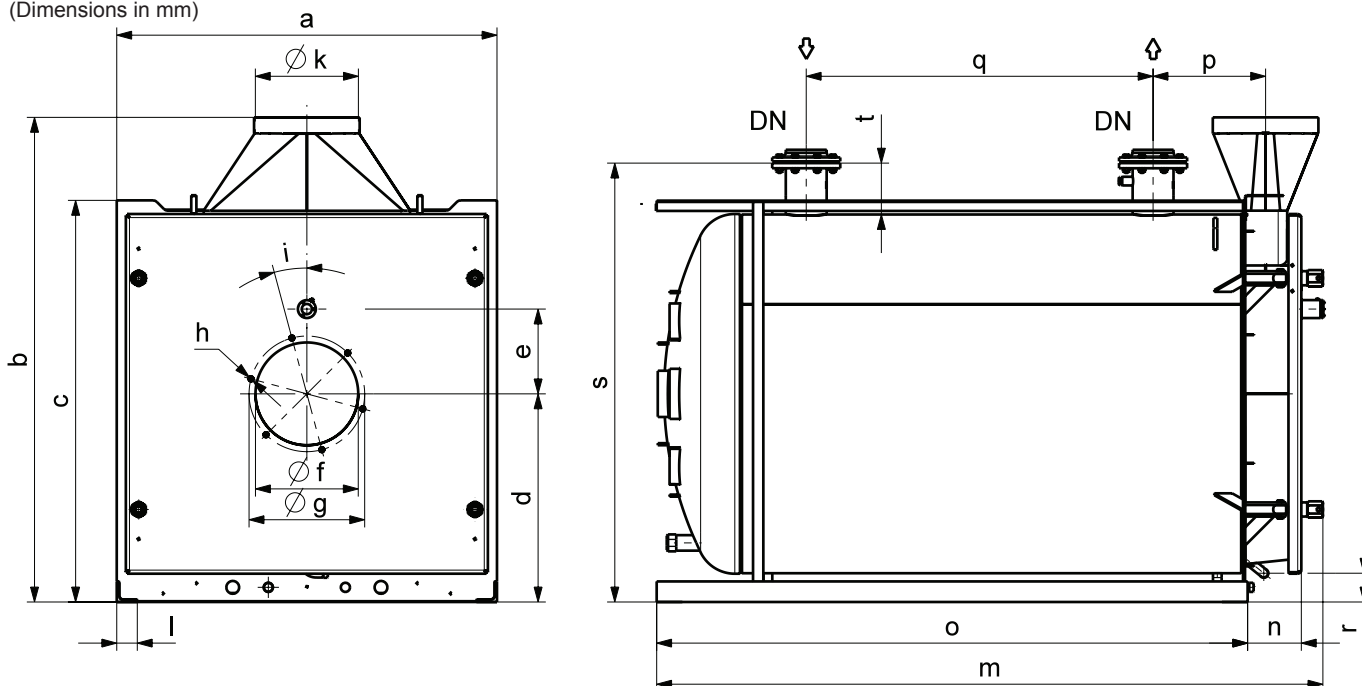
■ Dimensions

Base size

Dimensions without insulation and casing

Boiler incl. flange, outlet without flue gas collector.

(Dimensions in mm)

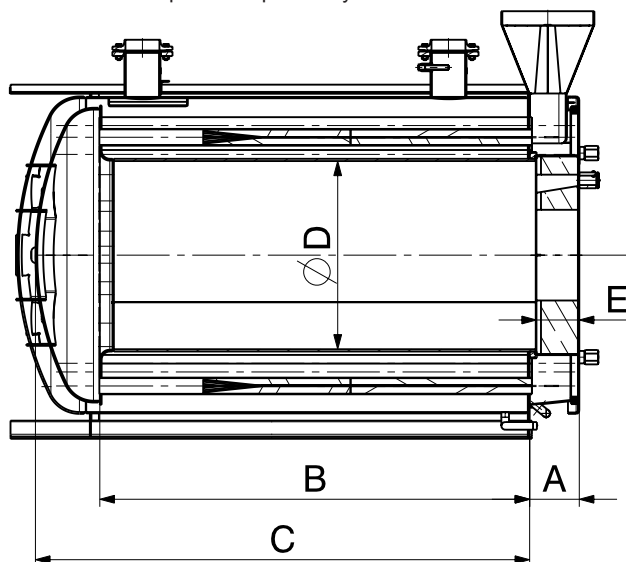


Type	a	b *	c	d	e	f	g	h	i	k (inside)
(700)	1100	1436	1153	590	250	290	330	6xM12	15°	303
(1000)	1280	1646	1363	710	310	350	400	6xM12	15°	353
(1400)	1480	1886	1563	810	330	400	450	6xM16	15°	403
(1800)	1580	2038	1663	860	330	400	450	6xM16	15°	453
(2200)	1580	2038	1663	860	330	400	450	6xM16	15°	453
(2800)	1680	2188	1763	910	330	400	450	6xM16	15°	503

Type	l	m	n	o	p	q	r	s	t	DN
(700)	80	2212	209	1930	389	1110	84,5	1271	180	125
(1000)	80	2423	209	2130	438	1210	96	1487	180	125
(1400)	80	2593	209	2300	438	1350	112	1708	200	150
(1800)	80	2731	209	2438	438	1350	112	1808	200	150
(2200)	80	3506	209	3213	438	2125	112	1808	200	150
(2800)	80	3723	209	3430	638	2100	112	1908	200	200

* with condensate trap: + 155 mm

A condensate trap must imperatively be mounted!



Combustion chamber 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	2968	3288	922	189
(2800)	219	2941	3272	930	189

■ Engineering

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
- DVGW guidelines
- 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
- VDE 0100

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. 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 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 drinking water is generally best suited as filling and replacement water. However, the quality of the untreated drinking 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

Combustion air

- The combustion air supply must be warranted. The air opening must not be lockable.
- Minimal free cross-section for air opening 6.5 cm² per 1 kW boiler output.

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

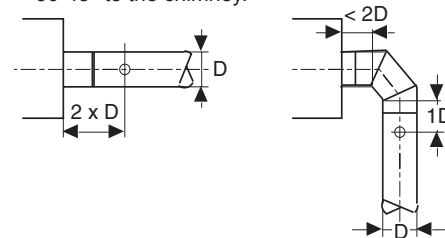
be mounted to the boiler base. Pipes and flue gas tube must be connected flexibly with compensators.

- Pumps have to be connected with compensators to the pipes.
- For damping of flame noise it is possible to install a silencer into the flue gas tube (Space should be foreseen for later installation).

Chimney/flue gas system

Flue gas pipe

- 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

- 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).

Sanitary installation

- The service water temperature must correspond to the local regulations.
- The safety valve may be adjusted on max. 8 bar.

Regulations of the calorifier

- See Calorifiers

Maximum filling quantity according to VDI 2035

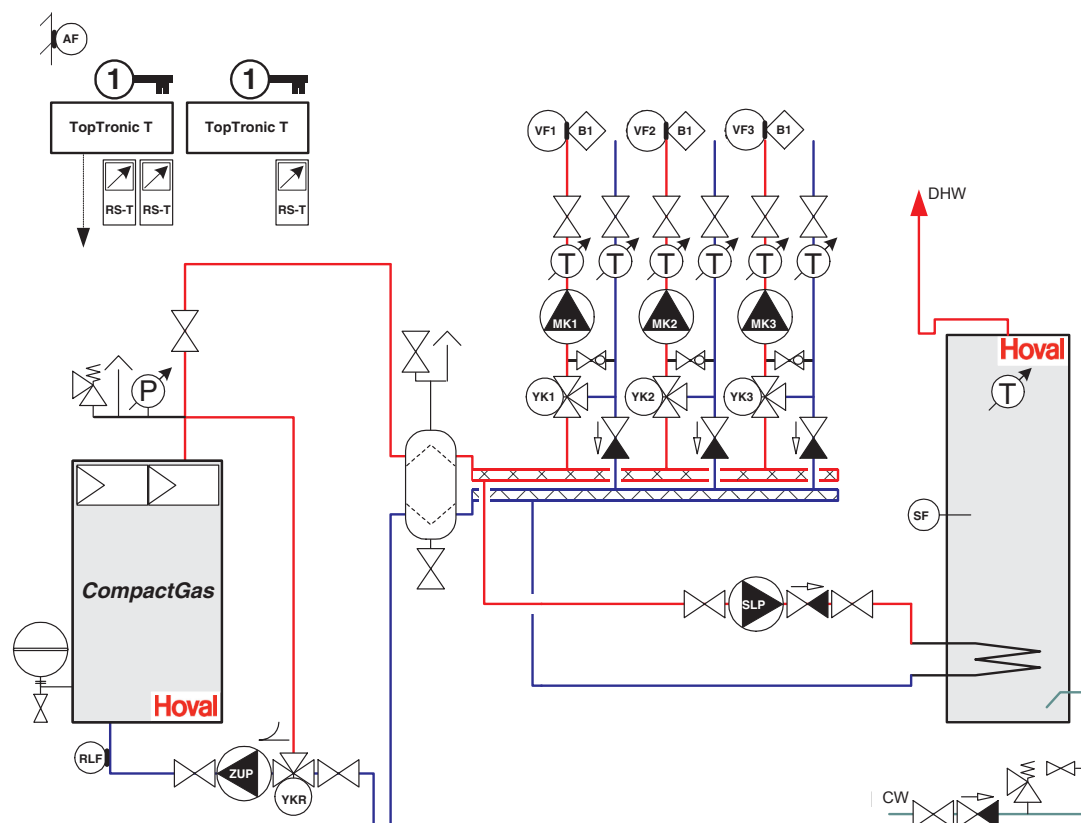
	Carbonate hardness of filling water up to...						
[mol/m ³] ¹	<0.1	0.5	1	1.5	2	2.5	3
f°H	<1	5	10	15	20	25	30
d°H	<0.56	2.8	5.6	8.4	11.2	14.0	16.8
e°H	<0.71	3.6	7.1	10.7	14.2	17.8	21.3
~mg/l	<10	50.0	100.0	150.0	200.0	250.0	300.0
Conductance ²	<20	100.0	200.0	300.0	400.0	500.0	600.0
Boiler size of the individual boiler	maximum filling quantity without desalination						
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.

■ Examples

CompactGas (700-2800) Hydraulic schematic BCWT070



RS-T Room station

AF Outdoor sensor

VF1-3 Flow sensor 1-3

SF Calorifier heater sensor

B1 Flow temperature guard (if required)

MK1-3 Pump mixing circuit 1-3

SLP Calorifier loading pump

RLF Return sensor

ZUP Feed pump

YK1-3 Actuator mixer 1-3

YKR Actuator return mixer

P Pressure switch

CW Cold Water

DHW Domestic Hot Water

Notice:

- This hydraulic schematic is a principle schematic. It does not contain all details for installation. The installation must be done according to local conditions, dimensioning and regulations
- For 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!
- Anti-thermal siphon dip has to be installed.