

Hoval UltraGas® 2 D (250-3100)

Gas boiler

- Double boiler made of steel with condensing technology consisting of 2 individual boilers of 125, 150, 190, 230, 300, 350, 400, 450, 530, 620, 700, 800, 1000, 1100, 1300 or 1550 kW
- Combustion chamber made of stainless steel
- Maximum flue gas condensation by secondary heating surfaces made of TurboFer hybrid stainless steel composite pipes; flue gas side: Stainless steel/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
- 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® 2 D (600-3100):** 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 HovalConnect option)
- Adaptation of the heating strategy based on the weather forecast (with HovalConnect option)



Model range

UltraGas® 2 D type	Nominal heat output at 50/30 °C kW
(250)	25-252
(300)	35-302
(380)	38-382
(460)	51-466
(600)	67-604
(700)	73-700
(800)	85-802
(900)	96-906
(1060)	110-1066
(1240)	136-1244
(1400)	146-1406
(1600)	166-1608
(2000)	205-1998
(2200)	229-2224
(2600)	269-2640
(3100)	324-3100

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
- 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

Boiler permissions

UltraGas® 2 D (250-3100)
CE product ID No.: applied for

Availability:

UltraGas® 2 D (1060-3100)
Available starting 1 July 2021

Number of modules that can be additionally installed in the heat generator (per single boiler):

UltraGas® 2 (125-450)

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

UltraGas® 2 (530-1100):

- 4 controller modules/module expansions

UltraGas® 2 (1300, 1550):

- 6 controller modules/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

- Free-standing calorifier see «Calorifiers»
- Additional control for more heating circuits
- Hydraulic connection

Delivery

- 2 gas boilers, casing with thermal insulation, 2 TopTronic® E controls, flue gas collector and combustion air connection delivered separately packed

On site

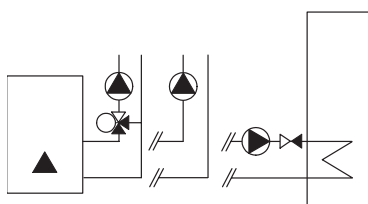
- Mounting of casing, thermal insulations and boiler control panel
- Mounting of boiler feet
- Mounting of the flue gas connection line and flue gas overpressure set (motorised air intake suction flaps)
- Bus cable for connecting the two boiler controllers of the double boiler on site (not included in scope of delivery)

Notice

For the version with common flue gas line with overpressure, the flue gas excess pressure set must be imperatively mounted.

- Set consists of a flue gas collector and motorised air intake suction flaps for back flow protection

Floor-standing gas condensing boiler



Availability:

UltraGas® 2 D (1060-3100)
Available starting 1 July 2021

Hoval UltraGas® 2 D (250-3100)

Double boiler consisting of two individual boilers (UltraGas® 2 125-1550 kW), each with a 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)

Gas boiler made of steel with TopTronic® E control, combustion chamber made of stainless steel.

Secondary heating surfaces made of TurboFer® stainless steel composite pipes; Pre-mix burner with fan.

Delivery

2 gas boilers, cladding and thermal insulation
2 TopTronic® E controls, flue gas collector and combustion air connection supplied separately packaged

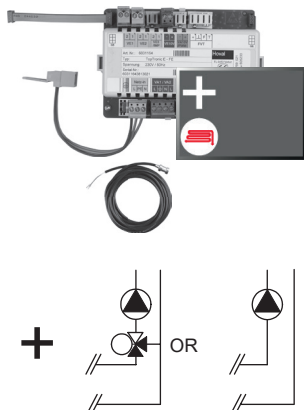
UltraGas® 2 D Type	Nominal heat output at 50/30 °C kW	Operating pressure bar
(250)	25-252	6
(300)	35-302	6
(380)	38-382	6
(460)	51-466	6
(600)	67-604	6
(700)	73-700	6
(800)	85-802	6
(900)	96-906	6
(1060)	110-1066	6
(1240)	136-1244	6
(1400)	146-1406	6
(1600)	166-1608	6
(2000)	205-1998	6
(2200)	229-2224	6
(2600)	269-2640	6
(3100)	324-3100	6

Part No.

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

Consisting of:

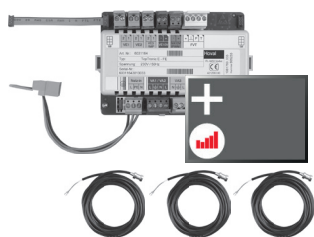
- Fitting accessories
- 1x contact sensor

ALF/2P/4/T L = 4.0 m

- Basic plug set FE module

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

incl. energy balancing in each case

Consisting of:

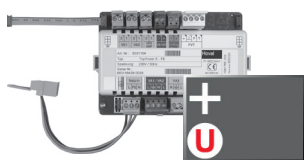
- Fitting accessories
- 3 contact sensors

ALF/2P/4/T L = 4.0 m

- Plug set FE module

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

Consisting of:

- Fitting accessories
- Plug set FE module

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

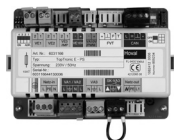
Accessories for TopTronic® E



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

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

6052 983
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6052 985
6052 986
6052 987



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

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2055 888
2056 775
2056 776



System housing

System housing 182 mm
System housing 254 mm

6038 551
6038 552

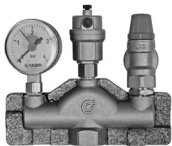


Bivalent switch

2061 826

Further information
see "Controls"

Accessories



Fitting pipe flow



Fitting pipe return



Flow temperature guard
for underfloor heating system (1 guard per heating circuit) 15-95 °C, switching difference 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

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

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

Safety set DN 25
complete with safety valve DN32 (3 bar)
Pressure gauge and automatic aspirator with barrier
Connection: 1" internal thread.

Fitting pipe for flow and return
Suitable for max. 6 bar, with screws and nuts.

- for installation on the flow or high and low-temperature return of the Hoval UltraGas® 2 boiler.
- for installation of an additional safety temperature limiter, a maximum pressure limiter as well as a system flow sensor for flow temperature regulation and
- for connection of an expansion tank on the return

Dimension	Suitable to UltraGas® 2 D	Connection
DN 65 ¹⁾	(250-460)	flow
DN 65 ¹⁾	(250-460)	return
DN 100 ¹⁾	(600-1400)	flow
DN 100 ¹⁾	(600-1400)	return
DN 125 ¹⁾	(1600-2200)	flow
DN 125 ¹⁾	(1600-2200)	return
DN 150 ¹⁾	(2600,3100)	flow
DN 150 ¹⁾	(2600,3100)	return

¹⁾ 2 pieces are necessary

Further information see "Dimensions"
Hoval UltraGas® 2 (125-1550)

Part No.

242 902

6033 745

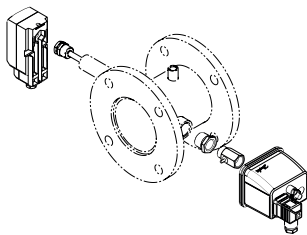
6010 082

6018 709

6053 408
6023 108
6053 409
6023 110
6055 078
6023 112
6055 079
6051 680

6053 398

Accessories



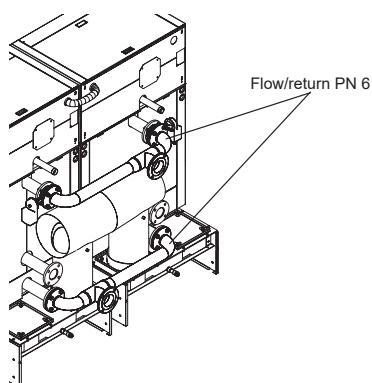
Safety armature set

Compatible with fitting pipe for meeting safety requirements of EN 12828: > 300 kW or SWKI HE301-01: 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



Pipe connection double boiler

Flow/return PN 6

Pipe connection set for double boiler including motor shut-off flap valves. For 24 V, pre-wired.

Operating method: continuously controlling (2 10 V)

for UltraGas® 2 D (250-460)

for UltraGas® 2 D (600-900)

for UltraGas® 2 D (1060-1400)

for UltraGas® 2 D (1600-2200)

for UltraGas® 2 D (2600,3100)

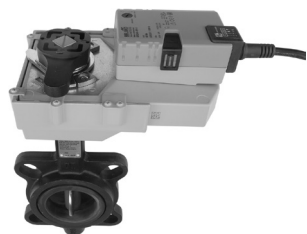
6054 637

6054 638

6054 639

6054 640

6054 641



Hydraulic butterfly valve

for direct installation on the flow and/or return of the boiler.

For 24 V, pre-wired.

Operating method: continuously controlling (2 10 V)

As an option if no flow/return set is ordered.

UltraGas® 2 (125-230) DN 65

UltraGas® 2 (300-700) DN 100

UltraGas® 2 (800-1100) DN 125

UltraGas® 2 (1300, 1550) DN 150

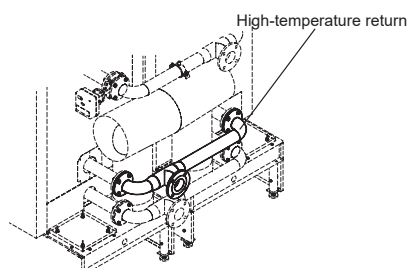
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6051 894

2 pieces per double boiler necessary



Pipe connection double boiler

High-temperature return PN 6

for UltraGas® 2 D

(e.g. for return calorifier charge).

zu UltraGas® 2 D (250-460)

zu UltraGas® 2 D (600-900)

zu UltraGas® 2 D (1060-1400)

zu UltraGas® 2 D (1600-2200)

zu UltraGas® 2 D (2600,3100)

6054 636

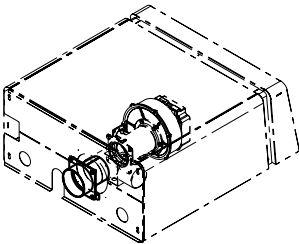
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6004 924

6009 534

6051 915

Accessories

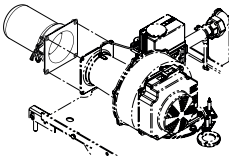


Connection for direct combustion air input
Only in combination with a motorised air intake damper (ordered separately). Can also be used for creating a boiler cascade with a common flue gas line.

- UltraGas® 2 (125,150)
- UltraGas® 2 (190,230)
- UltraGas® 2 (300,350)
- UltraGas® 2 (400,450)
- UltraGas® 2 (530-700)
- UltraGas® 2 (800-1100)
- UltraGas® 2 (1300,1550)

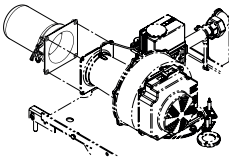
Part No.

- 6052 847
- 6052 848
- 6053 097
- 6052 849
- 6053 780
- 6053 782
- 6052 849



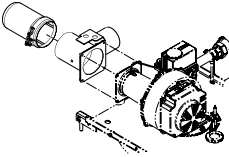
Connection protection filter
for UltraGas® 2 (125-700)
for installation on the air suction socket of the Venturi for filtering the combustion air in the building phase
Pore width of the filter < 50 µm

6052 283



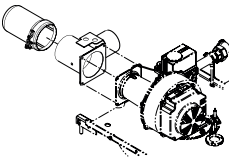
Connection protection filter
for UltraGas® 2 (800-1550)
for installation on the air suction socket of the Venturi for filtering the combustion air in the building phase
Pore width of the filter < 50 µm

6052 284



Connection protection filter
for UltraGas® 2 (125-700)
for assembly on air intake damper for filtering the combustion air in the building phase
Pore width of the filter < 50 µm

6052 151



Connection protection filter
for UltraGas® 2 (800-1550)
for assembly on air intake damper for filtering the combustion air in the building phase
Pore width of the filter < 50 µm

6052 152

Accessories



Gas valve

with thermally releasing cut-off device.

Typ	Anschluss
DN 25	R 1"
DN 32	R 1 1/4"
DN 40	R 1 1/2"
DN 50	R 2"

2069 324
2069 325
2069 326
2069 327



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"
70602/6B	Rp 1"
70604/6B	Rp 1 1/4"
70603/6B	Rp 1 1/2"
70631/6B	Rp 2"
70610F/6B	DN 65

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



Gas pipe compensator 1"

for UltraGas® (125,150),
UltraGas® (250D,300D),
UltraGas® 2 (125,150),
UltraGas® 2 D (250,300)
for compensating for connection
tolerances in the gas pipe

6034 556



Gas pipe compensator 1 1/2"

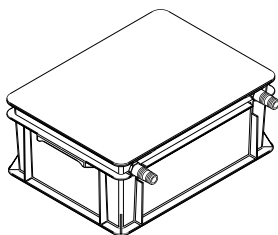
for UltraGas® (200-350),
UltraGas® (400D-700D),
UltraGas® 2 (190,230),
UltraGas® 2 D (380,460)
for compensating for connection
tolerances in the gas pipe

6034 557

2 pieces per double boiler necessary

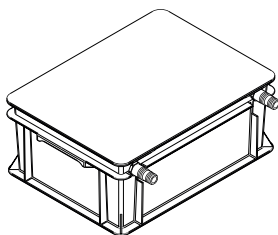
Condensate drainage to UltraGas® 2 D

Placed under the boiler



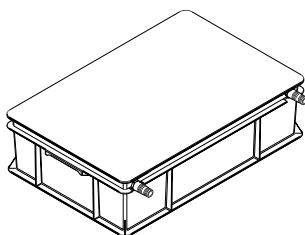
Neutralisation box HNB-0400
for UltraGas® 2 (125-400)
Condensate drain into a lower
drainage duct.
Neutralisation granulate: 3 kg
Connection hose: 2 m
Service life up to 1 year,
depending on the boiler operating mode
Positioning behind or under the boiler
One neutralisation box per boiler

6054 792



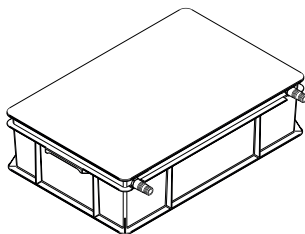
Neutralisation box HNB-0800
for UltraGas® 2 (450-800)
Condensate drain into a lower
drainage duct.
Neutralisation granulate: 6 kg
Connection hose: 2 m
Service life up to 1 year,
depending on the boiler operating mode.
Positioning behind or under the boiler
One neutralisation box per boiler

6054 793



Neutralisation box HNB-1200
for UltraGas® 2 (1000,1100)
Condensate drain into a lower
drainage duct.
Neutralisation granulate: 9 kg
Connection hose: 2 m
Service life up to 1 year,
depending on the boiler operating mode
Positioning behind or under the boiler
One neutralisation box per boiler

6054 794



Neutralisation box HNB-1600
for UltraGas® 2 (1300,1550)
Condensate drain into a lower
drainage duct.
Neutralisation granulate: 12 kg
Connection hose: 2 m
Service life up to 1 year,
depending on the boiler operating mode
Positioning behind or under the boiler
One neutralisation box per boiler

6054 795



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. 1 year, depending on amount
of condensate

2028 906

Hoval UltraGas® 2 D (250-3100)

Type		D (250)	D (300)	D (380)	D (460)
• Nominal heat output at 80/60 °C, natural gas	kW	21-228	33-278	35-354	47-436
• Nominal heat output at 50/30 °C, natural gas	kW	25-252	35-302	38-382	51-466
• Nominal heat output at 80/60 °C, propane ²⁾	kW	-	-	-	-
• Nominal heat output at 50/30 °C, propane ²⁾	kW	-	-	-	-
• Nominal heat input with natural gas ¹⁾	kW	23-232	32-284	35-358	47-446
• Nominal heat input with propane ²⁾	kW	-	-	-	-
• Operating pressure heating min./max. (PMS)	bar	1/6	1/6	1/6	1/6
• Operating temperature max. (T _{max})	°C	95	95	95	95
• Boiler water content (V _{H2O})	l	2 x 207	2 x 195	2 x 276	2 x 265
• Flow resistance boiler		see diagram			
• Minimum circulation water quantity	l/h	-	-	-	-
• Boiler weight (without water capacity, incl. cladding)	kg	2 x 378	2 x 400	2 x 490	2 x 510
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV) ³⁾	%	98.6/88.9	97.6/88.1	98.5/88.7	97.7/88.1
• Boiler efficiency at 30 % partial load (NCV/GCV) ³⁾	%	108.7/98.1	108.7/98.1	109.0/98.2	108.4/97.8
• Room heating energy efficiency					
- without control	ηs %	93	93	93	93
- with control	ηs %	95	95	95	95
- with control and room sensor	ηs %	97	97	97	97
• NOx class (EN 15502)		6	6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	25	28	33	37
• Carbon monoxide emissions at 50/30 °C ⁴⁾	CO mg/Nm ³	31	21	25	13
• O ₂ content in flue gas min./max. output ⁵⁾	%	5.9/5.6	5.5/6.0	5.9/6.0	6.0/5.9
• CO ₂ content in flue gas at min./max. output	%	8.6/8.7	8.8/8.5	8.6/8.5	8.5/8.6
• Heat loss in standby mode	Watt	760	760	1020	1020
• Dimensions		see dimensional drawing			
• Gas flow pressure min./max.					
- Natural gas E/LL	mbar	17.4-80	17.4-80	17.4-80	17.4-80
- Liquid gas	mbar	-	-	-	-
• 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	2.3-23.3	3.2-28.5	3.5-35.9	4.7-44.7
- Natural gas LL (Wo = 12.4 kWh/m ³) NCV = 8.57 kWh/m ³	m ³ /h	2.7-27.1	3.7-33.1	4.1-41.8	5.5-52.0
- Propane (NCV = 25.9 kWh/m ³)	m ³ /h	-	-	-	-
• Operating voltage	V/Hz	230/50	230/50	230/50	230/50
• Electrical power consumption min./max.	Watt	41/280	43/450	38/302	49/456
• Standby	Watt	7	8	8	8
• Type of 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)	76	81	67	70
- Flue gas noise radiated from the mouth (DIN 45635 part 47) (room air dependent/independent of room air)	dB(A)	-	-	-	-
• Condensate quantity (natural gas) at 50/30 °C	l/h	22	24	30	40
• pH value of the condensate	(approx.)	4.2	4.2	4.2	4.2
• Construction		B23P, C53, C63			
• Flue gas system					
- Temperature class		T120	T120	T120	T120
- Flue gas mass flow at max. nominal heat input (dry)	kg/h	376	452	566	688
- Flue gas mass flow at min. nominal heat input (dry)	kg/h	37	51	55	63
- Flue gas temperature at max. nominal heat output and 80/60 °C ⁵⁾	°C	64	65	68	69
- Flue gas temperature at max. nominal heat output and 50/30 °C ⁵⁾	°C	43	45	46	47
- Flue gas temperature at min. nominal heat output and 50/30 °C ⁵⁾	°C	29	28	29	29
- Max. permissible temperature of the combustion air	°C	48	48	48	48
- Volume flow of combustion air	Nm ³ /h	308	360	464	560
- Maximum supply pressure for supply air and flue gas line	Pa	60	60	60	60
- Maximum draught/underpressure at flue gas outlet	Pa	-50	-50	-50	-50

¹⁾ Data related to NCV. The boiler series is tested for EE/H setting. With a factory setting to a Wobbe value of 15.0 kWh/m³, operation in the Wobbe value range from 12.0 to 15.7 kWh/m³ is possible without resetting.

²⁾ Data related to NCV.

³⁾ Conversion acc. to EN 15502-1, Appendix J

⁴⁾ Data related to 3 % of O₂

⁵⁾ Technical data ascertained during the approval test

Type		D (600)	D (700)	D (800)	D (900)
• Nominal heat output at 80/60 °C, natural gas	kW	62-566	70-664	80-756	87-858
• Nominal heat output at 50/30 °C, natural gas	kW	67-604	73-700	85-802	96-906
• Nominal heat output at 80/60 °C, propane ²⁾	kW	-	-	-	-
• Nominal heat output at 50/30 °C, propane ²⁾	kW	-	-	-	-
• Nominal heat input with natural gas ¹⁾	kW	62-582	70-676	78-770	89-874
• Nominal heat input with propane ²⁾	kW	-	-	-	-
• Operating pressure heating min./max. (PMS)	bar	1/6	1/6	1/6	1/6
• Operating temperature max. (T _{max})	°C	95	95	95	95
• Boiler water content (V _(H2O))	l	2 x 522	2 x 496	2 x 483	2 x 457
• Flow resistance boiler		see diagram			
• Minimum circulation water quantity	l/h	-	-	-	-
• Boiler weight (without water capacity, incl. cladding)	kg	2 x 770	2 x 810	2 x 830	2 x 850
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV) ³⁾	%	98.2/88.5	98.1/88.5	98.3/88.6	98.3/88.7
• Boiler efficiency at 30 % partial load (NCV/GCV) ³⁾	%	109.2/98.4	108.4/97.7	108.3/97.6	108.3/97.9
• Room heating energy efficiency					
- without control	ηs %	93	93	-	-
- with control	ηs %	95	95	-	-
- with control and room sensor	ηs %	97	97	-	-
• NOx class (EN 15502)		6	6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	31	38	41	37
• Carbon monoxide emissions at 50/30 °C ⁴⁾	CO mg/Nm ³	21	21	26	31
• O ₂ content in flue gas min./max. output ⁵⁾	%	6.0/5.9	6.0/5.9	6.0/5.9	5.9/5.8
• CO ₂ content in flue gas at min./max. output	%	8.5/8.6	8.6/8.6	8.5/8.6	8.6/8.6
• Heat loss in standby mode	Watt	1500	1500	1500	1500
• Dimensions		see dimensional drawing			
• Gas flow pressure min./max.					
- Natural gas E/LL	mbar	17.4-80	17.4-80	17.4-80	17.4-80
- Liquid gas	mbar	-	-	-	-
• Gas connection values at 15 °C/1013 mbar:		0	0	0	0
- Natural gas E (Wo = 15.0 kWh/m ³) NCV = 9.97 kWh/m ³	m ³ /h	6.2-58.4	7.0-67.8	7.8-77.2	8.9-87.7
- Natural gas LL (Wo = 12.4 kWh/m ³) NCV = 8.57 kWh/m ³	m ³ /h	7.2-67.9	8.2-78.9	9.1-89.8	10.4-102.0
- Propane (NCV = 25.9 kWh/m ³)	m ³ /h	-	-	-	-
• Operating voltage	V/Hz	230/50	230/50	230/50	230/50
• Electrical power consumption min./max.	Watt	42/520	44/584	53/1120	63/1160
• Standby	Watt	5	8	5	8
• Type of 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)	-	73	-	79
- Flue gas noise radiated from the mouth (DIN 45635 part 47) (room air dependent/independent of room air)	dB(A)	-	-	-	-
• Condensate quantity (natural gas) at 50/30 °C	l/h	52	62	70	80
• pH value of the condensate	(approx.)	4.2	4.2	4.2	4.2
• Construction		B23P, C53, C63			
• Flue gas system					
- Temperature class		T120	T120	T120	T120
- Flue gas mass flow at max. nominal heat input (dry)	kg/h	920	1076	1216	1390
- Flue gas mass flow at min. nominal heat input (dry)	kg/h	98	112	123	142
- Flue gas temperature at max. nominal heat output and 80/60 °C ⁵⁾	°C	68	66	67	69
- Flue gas temperature at max. nominal heat output and 50/30 °C ⁵⁾	°C	47	46	48	48
- Flue gas temperature at min. nominal heat output and 50/30 °C ⁵⁾	°C	28	28	29	29
- Max. permissible temperature of the combustion air	°C	48	48	48	48
- Volume flow of combustion air	Nm ³ /h	752	880	994	1138
- Maximum supply pressure for supply air and flue gas line	Pa	60	60	60	60
- Maximum draught/underpressure at flue gas outlet	Pa	-50	-50	-50	-50

¹⁾ Data related to NCV. The boiler series is tested for EE/H setting. With a factory setting to a Wobbe value of 15.0 kWh/m³, operation in the Wobbe value range from 12.0 to 15.7 kWh/m³ is possible without resetting.

²⁾ Data related to NCV.

³⁾ Conversion acc. to EN 15502-1, Appendix J

⁴⁾ Data related to 3 % of O₂

⁵⁾ Technical data ascertained during the approval test

Type		D (1060)	D (1240)	D (1400)	D (1600)
• Nominal heat output at 80/60 °C, natural gas	kW	100-994	125-1160	132-1306	150-1486
• Nominal heat output at 50/30 °C, natural gas	kW	110-1066	136-1244	146-1406	166-1608
• Nominal heat output at 80/60 °C, propane ²⁾	kW	-	-	-	-
• Nominal heat output at 50/30 °C, propane ²⁾	kW	-	-	-	-
• Nominal heat input with natural gas ¹⁾	kW	101-1012	124-1182	134-1336	151-1518
• Nominal heat input with propane ²⁾	kW	-	-	-	-
• Operating pressure heating min./max. (PMS)	bar	1/6	1/6	1/6	1/6
• Operating temperature max. (T _{max})	°C	95	95	95	95
• Boiler water content (V _(H2O))	l	2 x 571	2 x 536	2 x 509	2 x 831
• Flow resistance boiler		see diagram			
• Minimum circulation water quantity	l/h	-	-	-	-
• Boiler weight (without water capacity, incl. cladding)	kg	2 x 978	2 x 1050	2 x 1100	2 x 1370
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV) ³⁾	%	98.2/88.5	98.2/88.5	98.2/88.5	98.3/88.6
• Boiler efficiency at 30 % partial load (NCV/GCV) ³⁾	%	109.1/98.3	109.0/98.2	108.9/98.1	109.1/98.3
• Room heating energy efficiency					
- without control	ηs %	-	-	-	-
- with control	ηs %	-	-	-	-
- with control and room sensor	ηs %	-	-	-	-
• NOx class (EN 15502)		6	6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	33	33	40	36
• Carbon monoxide emissions at 50/30 °C ⁴⁾	CO mg/Nm ³	20	24	26	23
• O ₂ content in flue gas min./max. output ⁵⁾	%	5.9/5.9	5.9/6.0	6.0/5.7	6.0/5.8
• CO ₂ content in flue gas at min./max. output	%	8.6/8.6	8.5/8.5	8.5/8.7	8.5/8.6
• Heat loss in standby mode	Watt	2000	2000	2000	2400
• Dimensions		see dimensional drawing			
• Gas flow pressure min./max.					
- Natural gas E/LL	mbar	17.4-80	17.4-80	17.4-80	17.4-80
- Liquid gas	mbar	-	-	-	-
• Gas connection values at 15 °C/1013 mbar:		0	0	0	0
- Natural gas E (Wo = 15.0 kWh/m ³) NCV = 9.97 kWh/m ³	m ³ /h	10.1-101.5	12.4-118.6	13.4-134.0	15.1-152.3
- Natural gas LL (Wo = 12.4 kWh/m ³) NCV = 8.57 kWh/m ³	m ³ /h	11.8-118.1	14.5-137.9	15.6-155.9	17.6-177.1
- Propane (NCV = 25.9 kWh/m ³)	m ³ /h	-	-	-	-
• Operating voltage	V/Hz	230/50	230/50	230/50	230/50
• Electrical power consumption min./max.	Watt	67/1610	63/1662	67/2120	94-2024
• Standby	Watt	5	5	5	7
• Type of 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)	80	78	79	-
- Flue gas noise radiated from the mouth (DIN 45635 part 47) (room air dependent/independent of room air)	dB(A)	-	-	-	-
• Condensate quantity (natural gas) at 50/30 °C	l/h	78	102	96	114
• pH value of the condensate	(approx.)	4.2	4.2	4.2	4.2
• Construction		B23P, C53, C63			
• Flue gas system					
- Temperature class		T120	T120	T120	T120
- Flue gas mass flow at max. nominal heat input (dry)	kg/h	1600	1866	2110	2396
- Flue gas mass flow at min. nominal heat input (dry)	kg/h	159	196	211	238
- Flue gas temperature at max. nominal heat output and 80/60 °C ⁵⁾	°C	67	68	69	66
- Flue gas temperature at max. nominal heat output and 50/30 °C ⁵⁾	°C	45	47	49	44
- Flue gas temperature at min. nominal heat output and 50/30 °C ⁵⁾	°C	28	28	29	28
- Max. permissible temperature of the combustion air	°C	48	48	48	48
- Volume flow of combustion air	Nm ³ /h	1308	1528	1726	1962
- Maximum supply pressure for supply air and flue gas line	Pa	60	60	60	60
- Maximum draught/underpressure at flue gas outlet	Pa	-50	-50	-50	-50

¹⁾ Data related to NCV. The boiler series is tested for EE/H setting. With a factory setting to a Wobbe value of 15.0 kWh/m³, operation in the Wobbe value range from 12.0 to 15.7 kWh/m³ is possible without resetting.

²⁾ Data related to NCV.

³⁾ Conversion acc. to EN 15502-1, Appendix J

⁴⁾ Data related to 3 % of O₂

⁵⁾ Technical data ascertained during the approval test

Type		D (2000)	D (2200)	D (2600)	D (3100)
• Nominal heat output at 80/60 °C, natural gas	kW	185-1852	203-2076	241-2460	297-2894
• Nominal heat output at 50/30 °C, natural gas	kW	205-1998	229-2224	269-2640	324-3100
• Nominal heat output at 80/60 °C, propane ²⁾	kW	-	-	-	-
• Nominal heat output at 50/30 °C, propane ²⁾	kW	-	-	-	-
• Nominal heat input with natural gas ¹⁾	kW	187-1886	206-2114	247-2502	297-2938
• Nominal heat input with propane ²⁾	kW	-	-	-	-
• Operating pressure heating min./max. (PMS)	bar	1/6	1/6	1/6	1/6
• Operating temperature max. (T _{max})	°C	95	95	95	95
• Boiler water content (V _(H2O))	l	2 x 756	2 x 718	2 x 1211	2 x 1118
• Flow resistance boiler					
• Minimum circulation water quantity	l/h	-	-	-	-
• Boiler weight (without water capacity, incl. cladding)	kg	2 x 1540	2 x 1600	2 x 2130	2 x 2300
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV) ³⁾	%	98.2/88.5	98.2/88.5	98.2/88.5	98.2/88.6
• Boiler efficiency at 30 % partial load (NCV/GCV) ³⁾	%	109.0/98.2	108.6/98.0	108.7/97.9	108.5/97.9
• Room heating energy efficiency					
- without control	ηs %	-	-	-	-
- with control	ηs %	-	-	-	-
- with control and room sensor	ηs %	-	-	-	-
• NOx class (EN 15502)		6	6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	36	41	37	35
• Carbon monoxide emissions at 50/30 °C ⁴⁾	CO mg/Nm ³	25	26	23	23
• O ₂ content in flue gas min./max. output ⁵⁾	%	6.0/5.9	6.0/5.9	6.0/5.9	6.0/6.0
• CO ₂ content in flue gas at min./max. output	%	8.5/8.6	8.5/8.5	8.5/8.6	8.5/8.5
• Heat loss in standby mode	Watt	2400	2400	3200	3200
• Dimensions					
• Gas flow pressure min./max.					
- Natural gas E/LL	mbar	17.4-80	17.4-80	17.4-80	17.4-80
- Liquid gas	mbar	-	-	-	-
• 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	18.8-189.2	20.7-212.0	24.8-251.0	29.8-294.7
- Natural gas LL (Wo = 12.4 kWh/m ³) NCV = 8.57 kWh/m ³	m ³ /h	21.8-220.1	24.0-246.7	28.8-291.9	34.7-342.8
- Propane (NCV = 25.9 kWh/m ³)	m ³ /h	-	-	-	-
• Operating voltage	V/Hz	230/50	230/50	230/50	230/50
• Electrical power consumption min./max.	Watt	3x400/50	3x400/50	3x400/50	3x400/50
• Standby	Watt	203-3746	203-3866	271/8222	301/8282
• Type of protection	IP	7	7	5	7
• Permitted ambient temperature during operation	°C	20	20	20	20
• Sound power level					
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	5-40	5-40	5-40	5-40
- Flue gas noise radiated from the mouth (DIN 45635 part 47) (room air dependent/independent of room air)	dB(A)	-	82	89	88
• Condensate quantity (natural gas) at 50/30 °C	l/h	-	-	-	-
• pH value of the condensate	(approx.)	136	142	200	276
• Construction		4.2	4.2	4.2	4.2
• Flue gas system					
- Temperature class		T120	T120	T120	T120
- Flue gas mass flow at max. nominal heat input (dry)	kg/h	2976	3338	3950	4460
- Flue gas mass flow at min. nominal heat input (dry)	kg/h	295	650	390	450
- Flue gas temperature at max. nominal heat output and 80/60 °C ⁵⁾	°C	69	70	66	68
- Flue gas temperature at max. nominal heat output and 50/30 °C ⁵⁾	°C	47	49	45	46
- Flue gas temperature at min. nominal heat output and 50/30 °C ⁵⁾	°C	28	29	29	28
- Max. permissible temperature of the combustion air	°C	48	48	48	48
- Volume flow of combustion air	Nm ³ /h	2438	2732	3234	3660
- Maximum supply pressure for supply air and flue gas line	Pa	60	60	60	60
- Maximum draught/underpressure at flue gas outlet	Pa	-50	-50	-50	-50

¹⁾ Data related to NCV. The boiler series is tested for EE/H setting. With a factory setting to a Wobbe value of 15.0 kWh/m³, operation in the Wobbe value range from 12.0 to 15.7 kWh/m³ is possible without resetting.

²⁾ Data related to NCV.

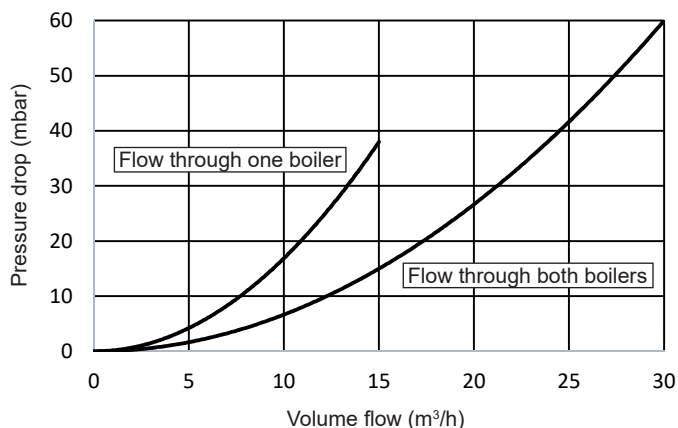
⁴⁾ Data related to 3 % of O₂

³⁾ Conversion acc. to EN 15502-1, Appendix J

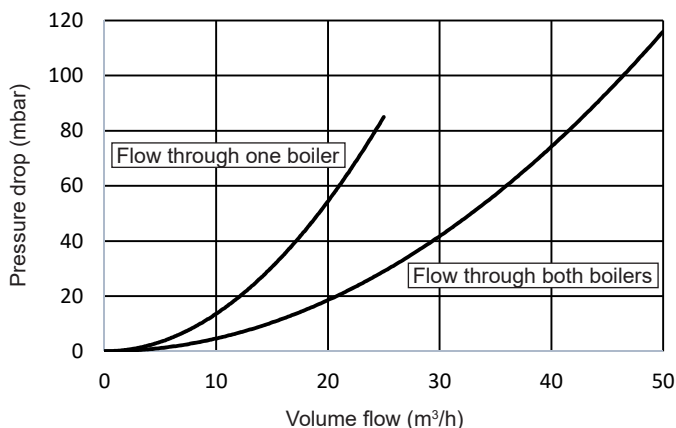
⁵⁾ Technical data ascertained during the approval test

Flow resistance on the heating water side

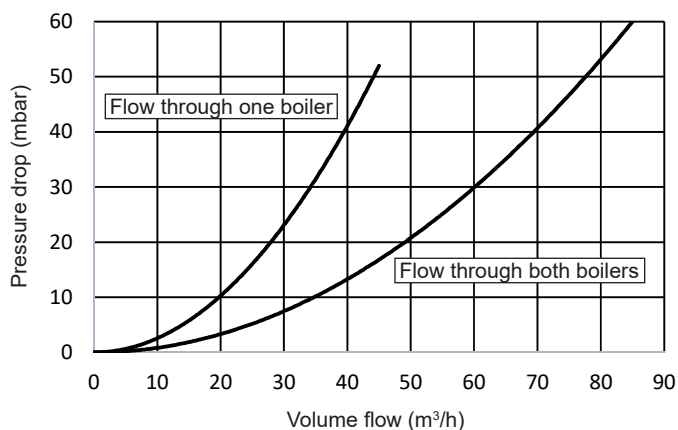
UltraGas® 2 D (250,300)



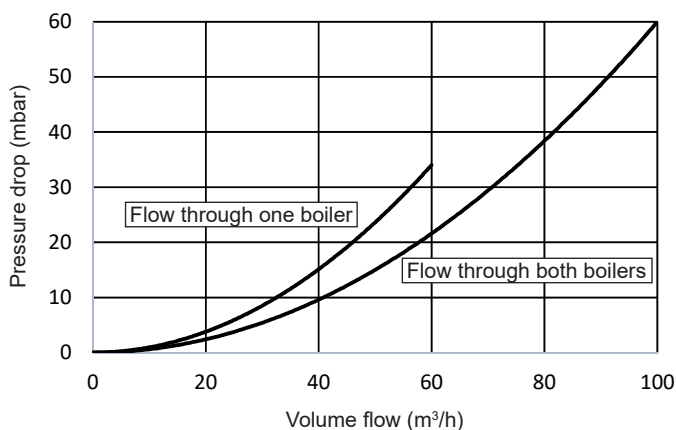
UltraGas® 2 D (380,460)



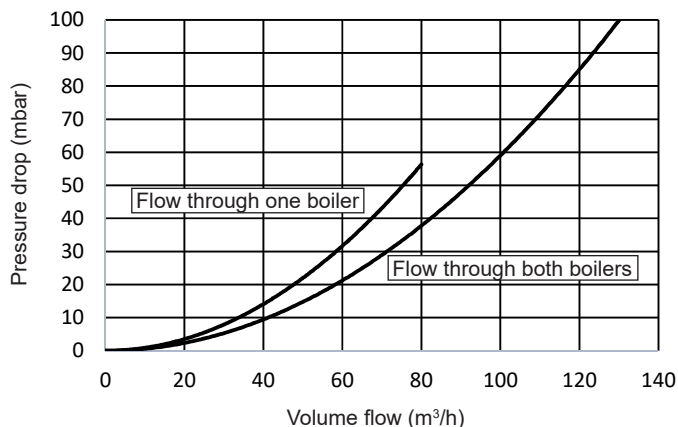
UltraGas® 2 D (600-900)



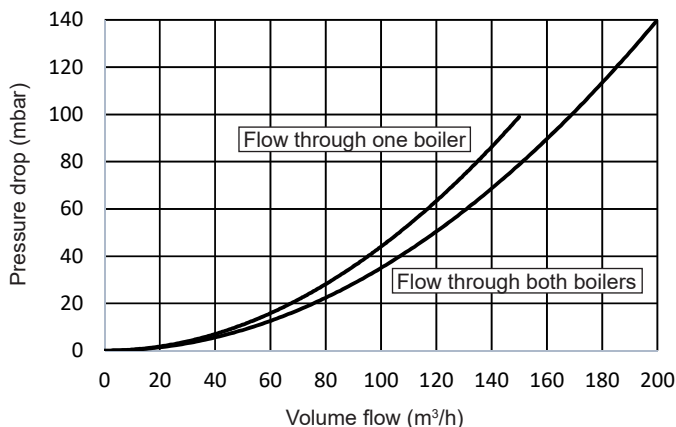
UltraGas® 2 D (1060-1400)



UltraGas® 2 D (1600-2200)

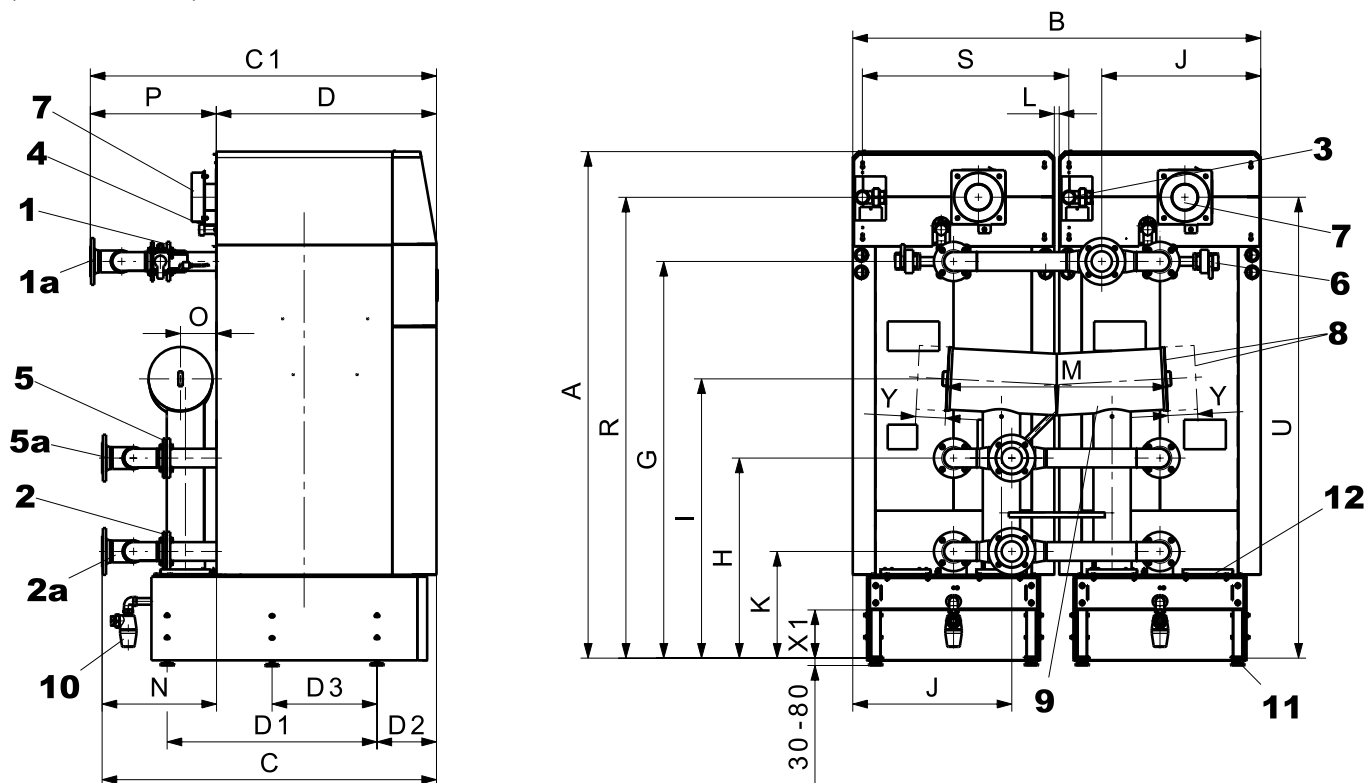


UltraGas® 2 D (2600,3100)



UltraGas® 2 D (250-3100)

(Dimensions in mm)



- 1 Flow heating
- 1a Flow connection set (option)¹⁾
- 2 Low-temperature return
- 2a Return connection set (option)¹⁾
- 3 Gas connection
- 4 Safety flow (safety valve, air vent)
- 5 High-temperature return
- 5a High-temperature return connection set (option)¹⁾
- 6 Motorised shut-off valve
- 7 Combustion air intake connector
- 8 Flue gas outlet connection left or right

- 9 Flue gas collector
- 10 Condensate drain with siphon and screw connection for plastic pipe
- 11 Boiler feet (adjustable from 20 to 80 mm)
- 12 Cleaning opening

¹⁾ Information for pipe connections (option) to UltraGas® 2 D (250-3100)

Notice

Detailed dimensions and dimensions for installation as individual parts see UltraGas® 2 (125-1550)

Space requirements - see separate drawing

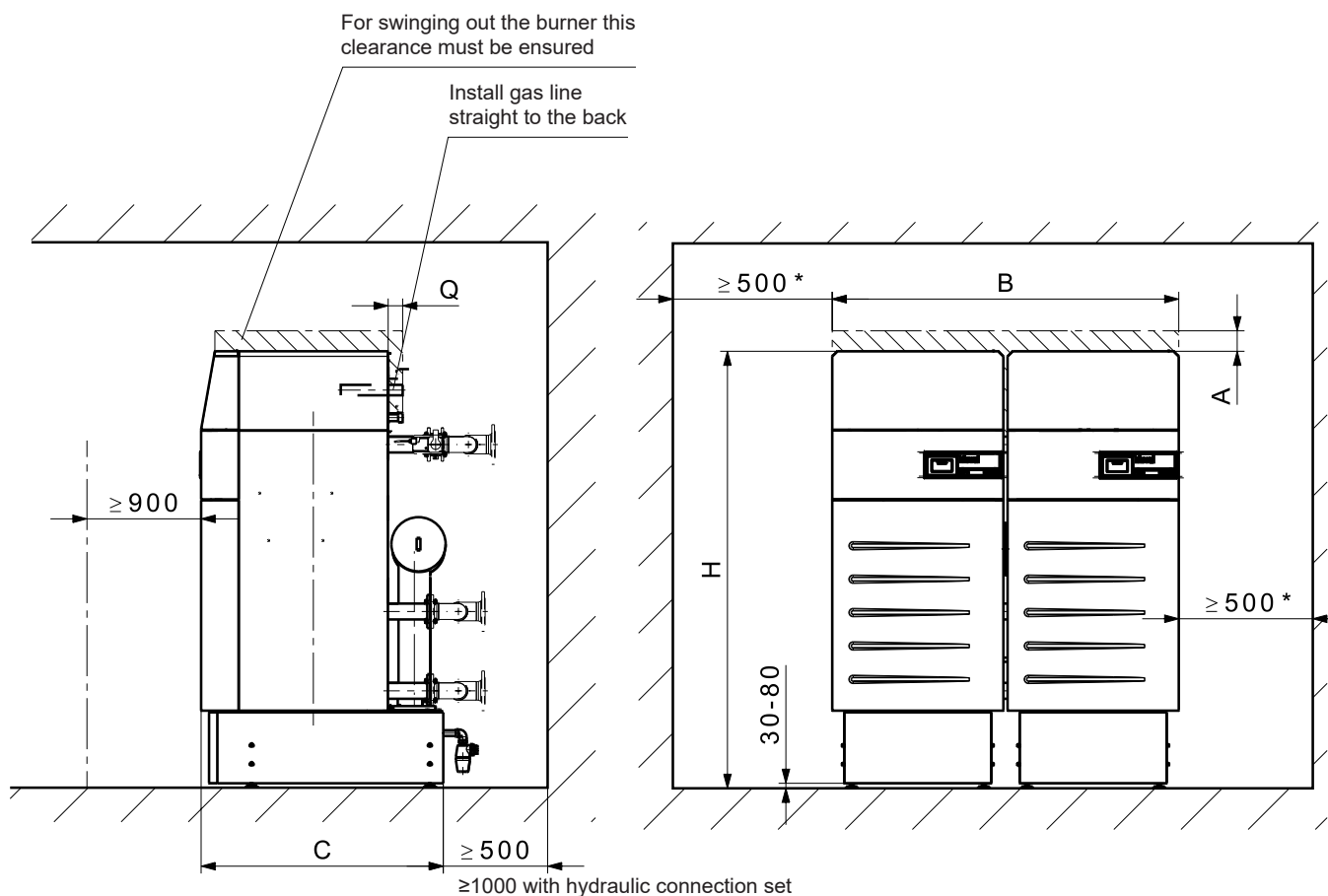
Type	A	B	C	C1	D	D1	D2	D3	G	H	I	J	K	L	M	N	O	P	R	S	U	X1	Y
UltraGas® 2 D																							
(250,300)	2023	1560	1269	1317	799	754	242	-	1579	814	1116	597	434	120	902	470	142	518	1825	840	1825	199	-
(380,460)	2068	1660	1363	1411	895	854	242	-	1617	817	1116	647	437	20	902	468	147	516	1878	840	1878	199	-
(600,700)	2128	1880	1807	1864	1165	1204	242	-	1652	845	1143	814	465	20	930	642	176	699	1939	950	1940	196	-
(800,900)	2198	1880	1807	1864	1165	1204	242	-	1652	845	1143	814	465	20	930	642	176	699	2015	950	1986	196	-
(1060-1400)	2334	2240	1827	1884	1184	1294	242	-	1664	857	1195	904	477	20	1019	643	205	700	2066	1130	2038	189	-
(1600-2200)	2355	2600	2158	2218	1364	1480	242	-	1673	888	1211	1054	508	20	1019	794	205	854	2059	1310	2059	189	-
(2600,3100)	2495	3150	2571	2631	1640	1790	250	895	1700	922	1231	1339	542	30	1322	931	240	991	2164	1590	2164	189	495

Type	1,2,5 ²⁾	1a,2a,5a ²⁾	3	4	7	8	10
UltraGas® 2 D							
(250,300)	DN 65 / PN 6 / 4-hole	DN 80 / PN 6 / 4-hole	Rp 1"	R 1"	Ø 122/125	Ø 254/256	DN 25
(380,460)	DN 65 / PN 6 / 4-hole	DN 80 / PN 6 / 4-hole	Rp 1 ½"	R 1 ¼"	Ø 197/200	Ø 254/256	DN 25
(600,700)	DN 100 / PN 6 / 4-hole	DN 125 / PN 6 / 8-hole	Rp 2"	R 1 ½"	Ø 197/200	Ø 306/308	DN 25
(800,900)	DN 100 / PN 6 / 4-hole	DN 125 / PN 6 / 8-hole	Rp 2"	R 1 ½"	Ø 247/250	Ø 306/308	DN 25
(1060-1400)	DN 100 / PN 6 / 4-hole	DN 125 / PN 6 / 8-hole	Rp 2"	R 2"	Ø 247/250	Ø 356/358	DN 25
(1600-2200)	DN 125 / PN 6 / 8-hole	DN 150 / PN 6 / 8-hole	Rp 2"	R 2"	Ø 247/250	Ø 356/358	DN 40
(2600,3100)	DN 150 / PN 6 / 8-hole	DN 200 / PN 6 / 8-hole	Rp 2"	R 2"	Ø 247/250	Ø 504/506	DN 40

²⁾ DN = nominal diameter, PN = nominal pressure

Space requirements

UltraGas® 2 D (250-3100) (Dimensions in mm)



Type	A ¹⁾	A minimal ²⁾	B	C	H ³⁾	H minimal ⁴⁾	Q
UltraGas® 2 D							
(250,300)	169	106	1560	1060	2053	1933	125
(380,460)	155	71	1660	1160	2098	1978	2
(600,700)	285	170	1880	1510	2158	2038	65
(800,900)	230	157	1880	1510	2228	2108	141
(1060-1400)	121	121	2240	1600	2364	2244	155
(1600-2200)	280	195	2600	1786	2385	2265	119
(2600,3100)	291	154	3150	2104	2525	2405	163

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⁾ Height value assumes adjustable feet are set to 30 mm

⁴⁾ The feet can be shortened. **Caution!** If the feet are shortened, the base cladding cannot be installed and the installer will have to fit a siphon with min. 70 mm barrier height. For details see next page.

- The boiler can be placed with one side directly on the wall. However, to protect heat-sensitive walls against damage, a distance of at least 150 mm from the wall must be provided.
- The cleaning opening must be easily accessible. As a result, a minimum distance of 500 mm must be maintained on the cleaning opening side.

Standards and guidelines

The official regulations for installation and operation must be observed. In particular, these are the country-specific standards (e.g. EN standard, ÖNORM, DIN standards, ...) as well as the corresponding regional regulations.

The following standards and guidelines must be complied with:

- Hoval technical information and installation instructions
- hydraulic and technical control regulations of Hoval
- DVGW/ÖVGW directives
- 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
- ÖNORM H 5195
- EN 14868 Protection of metallic materials against corrosion
- VDE 0100 supplement 2

Water quality in heating systems

Filling and replacement water, heating water

The following applies:

- For Germany VDI 2035
- For Austria ÖNORM H5195
- In addition, the EN 14868 standard must be applied, **as well as the manufacturer-specific specifications**

Manufacturer-specific specifications

Filling and replacement water

The filling and replacement water can be both fully demineralised and also merely softened.

Heating water

- In the case of **full demineralisation of the filling and replacement water**, the electrical conductivity of the heating water must not exceed the value of 100 µS/cm.
- In the case of **softening the filling and replacement water**, the following conditions must be complied with:
The quality of the heating water must be checked and documented periodically:
 - For an installed heat output above 100 kW up to and including 1000 kW, an annual check of the heating water is required.
 - For an installed heat output above 1000 kW, an check of the heating water is required twice a year.
 The following standard values for the heating water must be measured and adhered to:
 - Electrical conductivity of the heating water for operation with water containing salts: > 100 µS/cm to ≤ 1500 µS/cm
 - pH value of the heating water for systems without aluminium alloy as water-side material 8.2 to 10.0 (measurement 10 weeks after commissioning at the earliest)
- The sum of the chloride, nitrate and sulphate contents in the heating water must not exceed 50 mg/l in total.

Additional notices

- Hoval boilers and calorifiers are suitable for heating systems without significant oxygen intake. (System type I according to EN 14868).
- Plants with continual oxygen intake (e.g. underfloor heating without diffusion-proof plastic piping) or intermittent oxygen intake (e.g. requiring frequent topping-up) must be equipped with a system separation.
- If only the boiler is replaced in an existing plant, it is not recommended for the entire heating system to be refilled, provided that the heating water already contained in the system complies with the relevant directives or standards.
- Before filling new systems and, where necessary, existing heating systems containing heating water that does not comply with the directives or standards, the heating system must be professionally cleaned and flushed. The boiler must not be filled until the heating system has been flushed.

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, solvents, 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 mount the connection for direct combustion air inlet.

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

- **Room air-dependent operation:**
6 cm² per 1 kW boiler capacity, however at least 200 cm².
- **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

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® 2 D (900-3100) type, 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® 2 D (250-700) 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 installed upstream of every gas boiler.

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: min. 17.4 mbar, max. 80 mbar

Space requirements

See "Dimensions"

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

- 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 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 10 to 15 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.

Dimensions flue gas systems

see "Flue gas pipe systems"

Allocation of gas filters for UltraGas® 2

UltraGas® 2	Gas throughput	Gas filter type	Dimension	Pressure drop gas filter (with clean filter) mbar
Type	m³/h			
(125)	11.9	70602/6B	Rp 1"	0.2
(150)	14.2	70603/6B	Rp 1 ½"	0.1
(190)	18.0	70603/6B	Rp 1 ½"	0.2
(230)	22.4	70603/6B	Rp 1 ½"	0.2
(300)	29.2	70603/6B	Rp 1 ½"	0.3
(350)	33.9	70603/6B	Rp 1 ½"	0.4
(400)	38.6	70631/6B	Rp 2"	0.4
(450)	43.8	70631/6B	Rp 2"	0.3
(530)	50.8	70631/6B	Rp 2"	0.5
(620)	59.3	70631/6B	Rp 2"	0.6
(700)	67.0	70631/6B	Rp 2"	0.7
(800)	76.1	70631/6B	Rp 2"	0.9
(1000)	94.6	70631/6B	Rp 2"	1.4
(1100)	106.0	70631/6B	Rp 2"	1.7
(1300)	125.5	70610F/6B	DN 65	1.4
(1550)	147.3	70610F/6B	DN 65	1.9

Standard values for flue gas line dimensions

Standard values for the flue gas line dimensions can be found in the following table.

Table with bases for calculation

- Calculation based on max. 1000 m above sea level.
- Installation room with supply air opening (room air dependent operation)
- An individual calculation must be carried out for room air-independent operation (accessories as option) or a combustion air supply via a duct.
- Connecting line was calculated with max. 5 m.
- Flue gas overpressure set: Mandatory, included in the scope of delivery!

- 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.

Table "Standard values for flue gas line dimensions"

Boiler		Flue gas line (smooth walled)	Number of elbows 90° (flue gas + supply air)			
Type	Flue gas dim. mm	Designation	Total pipe length in m (flue gas + supply air)			
UltraGas® 2 D	internal	DN	1	2	3	4
(250)	254	200	45	44	43	43
(300)	254		44	43	43	42
(380)	254	225	46	45	44	43
(460)	254	250	47	46	45	44
(600)	306	300	48	47	46	45
(700)	306		47	46	45	44
(800)	306		46	45	44	43
(900)	306	350	48	48	47	46
(1060)	356		48	48	47	46
(1240)	356		47	46	45	44
(1400)	356	400	48	47	46	45
(1600)	402		46	45	44	43
(2000)	402	450	47	46	45	44
(2200)	402	500	46	45	44	43
(2600)	504		48	48	47	46
(3100)	504		48	47	46	45

Notice: The values in the table "Standard values for flue gas line dimensions" are standard values for reference.

An exact calculation for the flue gas duct must be made on-site.

For chimney systems above 25 m effective height, negative pressure in the chimney is to be expected in some operating conditions. Therefore, we recommend an individual design of the chimney system and checking the individual pressure conditions.