

### Cabin Slim Thermal Energy System BC-e mini: consists of protective housing and built-in equipment with gas condensing boiler TopGas® max (50 - 150)

#### Cabin Slim protective housing

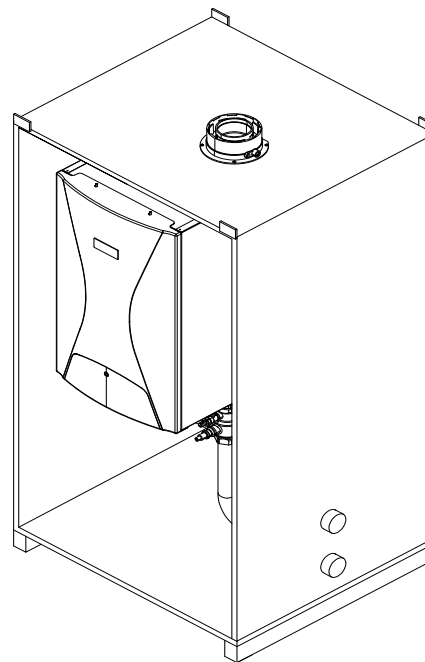
- One-piece support stand made of steel profiles 100x50x3 mm
- Vertical angular and middle profiles painted in white RAL 9010
- Double sandwich panels which guarantee excellent thermal and sound insulation of the housing, mounted on the front, rear and sides, except for the top and bottom:
  1. Inner side: galvanized sheet metal 0,8 mm thick;
  2. rock wool insulation 20 mm thick, density 100 kg/m<sup>3</sup> fire resistance class "A1";
  3. Exterior: galvanized sheet metal - painted white RAL 9010, 0,6 mm thick
- Step surface made of structured aluminum sheet 3/4.5 mm thick, reinforced substructure for better fastening of accessories
- Front access door with opening on one side, 2 door opening handles with lock and key, to allow access to all equipment for service and maintenance;
- Ventilation grilles installed for operation with natural or liquefied petroleum gas with openings of 2 cm<sup>2</sup> for ventilation and securing the supply of combustion air, made of steel profiles.
- The final roof surface guarantees the impermeability of the structure, made of galvanized steel sheet painted in white RAL 9016.

#### Thermal Energy System BC-e mini Built-in equipment

- Wall-hanging gas condensing boiler TopGas® max (50-150) CE-0085CS0419
- Threaded hydraulic connections of the boiler supply and return line made of steel pipes painted black. By default, all connections are on the right side.
- Insulation of flow and return pipes with rockwool and aluminum foil, with electrical heating cable for frost protection.
- Safety equipment according to EN 12828: safety line, manometer with three-way valve, double thermostat, maximum and minimum water pressure switch, calibrated safety valve.
- Expansion diaphragm pressure vessel with volume 8 liters - **only for boiler protection**.
- Drain from safety valve and condensate with built-in funnel and drain pipe outside housing.
- Natural gas supply pipe with thermal shut-off valve, gas filter with test connection, compensator and external shut-off valve.
- Internal electrical installation for power supply the users and signal cables.
- External terminal box with IP65 protection for boiler power supply and signal cables.
- Single-walled aluminum chimney, ending about 0.25 m above the roof of the protective housing.
- With condensate neutralization

#### Options

- Indoor lighting and service socket
- External signal light for plant condition warning
- Different connection sets with pump



#### Model range

Cabin Slim Thermal Energy System BC-e mini with TopGas® max	Nominal heat output at 50/30 °C kW
(50)	9.1-49.9
(65)	14.9-69.9
(100)	22.3-102.0
(125)	26.3-125.3
(150)	29.8-150.4

- Connections (flow / return / gas / electricity) on the left or rear side
- Expansion of control circuits (installation inside the building)
- Remote monitoring and control via TopTronic E interface

#### Wall-hanging gas condensing boiler TopGas® max

- With condensing boiler technology
- For the combustion of:
  - natural gas E
  - natural gas E with a hydrogen content (H2) of up to 20 % by vol.
  - propane according to DIN 51622
  - biomethane according to EN 16723
- Heat exchanger made of stainless steel
- Built-in:
  - water pressure guard for water shortage protection
  - flue gas temperature sensor with flue gas limiter function
  - automatic quick aspirator
- Integrated backflow check valve on the combustion air side
- Pre-mixing surface burner made of stainless steel
  - Modulating with gas/air group control
  - Automatic ignition
  - Ionisation guard
- Minimum water flow necessary (see technical data)
- Wall-hanging gas condensing boiler fully clad with coated white steel plates

#### Basic boiler control panel

- Automatic function device with monitoring unit
- Modulating burner control
- Operation and fault indication

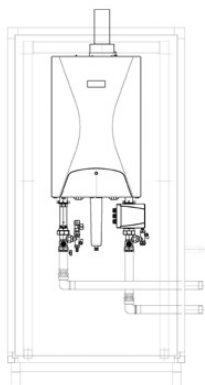
#### Delivery

- The boiler and installation come preassembled in housing, ready for installation.

#### On-site

- Housing positioning
- Connection to the heating system, gas pipeline and to the power supply

Cabin Slim Thermal Energy System BC-e mini: consists of protective housing and built-in equipment with gas condensing boiler TopGas® max (50 - 150)



**Cabin Slim Thermal Energy System BC-e mini - TopGas® max with direct connection**

Cabin Slim Thermal Energy System BC-e mini - TopGas® max wall-mounted gas condensing boilers consists of protective housing and other built-in equipment for outdoor installation.

Stainless steel heat exchanger with modulating stainless steel burner and automatic function device LMS14 and control panel fully clad. Connection set with pump and safety equipment.

*Delivery*

- The boiler and installation come preassembled in housing, ready for installation.

Cabin Slim Thermal Energy System BC-e mini with TopGas® max	Nominal heat output at 50/30 °C kW <sup>1)</sup>
(50)	9.1-49.9
(65)	14.9-69.9
(100)	22.3-102.0
(125)	26.3-125.3
(150)	29.8-150.4

<sup>1)</sup> kW = modulation range

**Cabin Slim Thermal Energy System BC-e mini TopGas® max (50-150) with plate heat exchanger**

Cabin Slim Thermal Energy System BC-e mini - TopGas® max wall-mounted gas condensing boilers consists of protective housing and other built-in equipment for outdoor installation.

Stainless steel heat exchanger with modulating stainless steel burner and automatic function device LMS14 and control panel fully clad. Connection set with pump, safety equipment and plate heat exchanger.

*Delivery*

- The boiler and installation come preassembled in housing, ready for installation.

Cabin Slim Thermal Energy System BC-e mini with TopGas® max	Nominal heat output at 50/30 °C kW <sup>1)</sup>	Operating pressure bar
(50)	9.1-49.9	3
(65)	14.9-69.9	3
(100)	22.3-102.0	3
(125)	26.3-125.3	3
(150)	29.8-150.4	3

<sup>1)</sup> kW = modulation range

**Part Nr.**

- CST 7019 687 HR
- CST 7019 688 HR
- CST 7019 689 HR
- CST 7019 690 HR
- CST 7019 691 HR

- CSET 7019 687 HR
- CSET 7019 688 HR
- CSET 7019 689 HR
- CSET 7019 690 HR
- CSET 7019 691 HR

Cabin Slim Thermal Energy System BC-e mini: consists of protective housing and built-in equipment with gas condensing boiler TopGas® max (50 - 150)

**Cabin Slim Thermal Energy System BC-e mini - TopGas® max with hydraulic switch**

Cabin Slim Thermal Energy System BC-e mini - TopGas® max wall-mounted gas condensing boilers consists of protective housing and other built-in equipment for outdoor installation.

Stainless steel heat exchanger with modulating stainless steel burner and automatic function device LMS14 and control panel fully clad. Connection set with pump, safety equipment and hydraulic switch.

*Delivery*

- The boiler and installation delivered preassembled in housing, ready for installation.

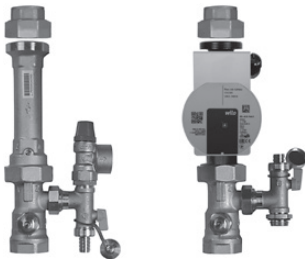
Cabin Slim Thermal Energy System BC-e mini with TopGas® max	Nominal heat output at 50/30 °C with kW <sup>1)</sup>
(50)	9.1-49.9
(65)	14.9-69.9
(100)	22.3-102.0
(125)	26.3-125.3
(150)	29.8-150.4

<sup>1)</sup> kW = modulation range

**Part Nr.**

- CSHYT 7019 687 HR
- CSHYT 7019 688 HR
- CSHYT 7019 689 HR
- CSHYT 7019 690 HR
- CSHYT 7019 691 HR

**Built-in connection sets with pump**



**Connection set**

Consists of:

*Return:*

- Shut-off valve with sealing nut and side outlet with refill / discharge valve and connection for the expansion vessel.
- High efficient pump with speed control, different versions

*Flow:*

- Connection piece with integrated non-return valve
- Shut-off valve with sealing nut and side drain with safety valve 3 bar, incl. refill / discharge valve

Connection set / pump Type	For TopGas® boilers
AS 32-TG max/SPS-I 10 PM1	(50)
AS 32-TG max/SPS-I 12 PM1	(65)
AS 40-TG/SPS-I 12 PM1	(100-125)
AS 40 Stratos Maxo 30/0,5-14	(150)

Preparation for Glycol inside Cabin (price per boiler)

GLYCOLTG001HR



Modbus module OCI351 (optional)  
For connecting TopGas max boiler to the TopTronic® E regulation

2085 886

**Cabin Slim Thermal Energy System**  
**BC-e mini - TopGas® max**

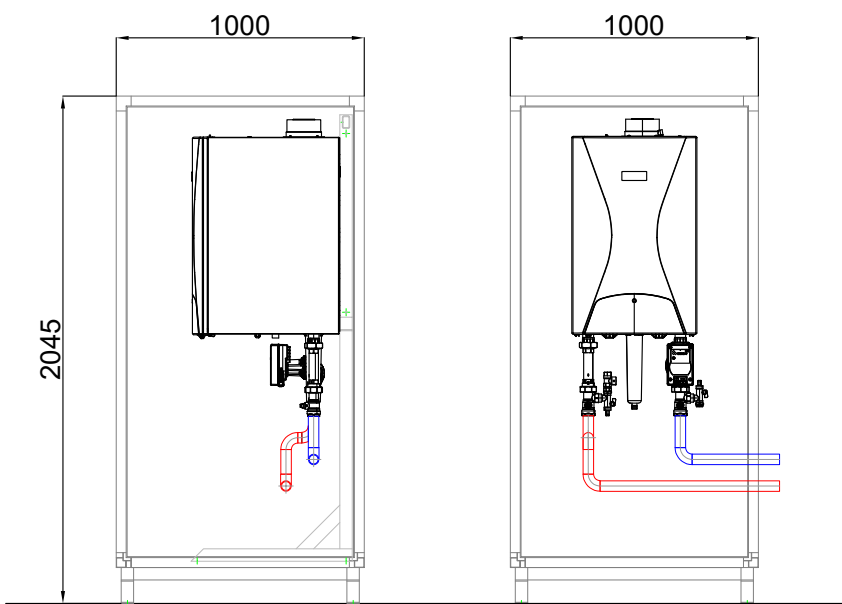
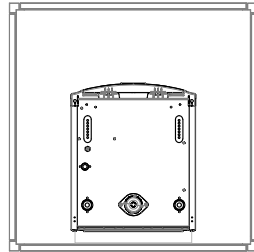
Type		(50)	(65)	(100)	(125)	(150)	
• Nominal heat output at (natural gas)	50/30°	kW	9.1-49.9	14.9-69.9	22.3-102.0	26.3-125.3	29.8-150.4
	80/60°	kW	7.8-45.3	13.0-66.4	19.4-94.1	22.5-113.9	25.7-138.3
	Nominal load with natural gas	kW	8.2-47.1	13.5-68.1	20.1-96.7	24.2-116	26.6-140.8
• Max. operating pressure heating	bar	3.0	4.5	6.0	6.0	6.0	
• Gas connection (on boiler)	inch	R ¾"	R ¾"	R 1"	R 1"	R 1"	
• Flue gas/combustion air connection (on boiler)	mm	80 / 125	80 / 125	100 / 150	100 / 150	100 / 150	
• Gas flow pressure min./max	Natural gas E/LL	mbar	18-50	18-50	18-50	18-50	18-50
	Propane	mbar	37-50	37-50	37-50	37-50	37-50
• Gas connection values at 15 °C/1013 mbar	Natural gas E (W <sub>0</sub> = 15,0 kWh/m <sup>3</sup> ) (NCV = 9,97 kWh/m <sup>3</sup> )	m <sup>3</sup> /h	0.8-4.9	1.4-7.0	2.1-10.0	2.5-12.0	2.7-14.5
	Propane (NCV = 25,9 kWh/m <sup>3</sup> )	m <sup>3</sup> /h	0.3-1.9	0.6-2.8	0.8-4.0	1.3-4.8	1.1-5.8
	Operation voltage	Volt/Hz	1 ~ 230/50	1 ~ 230/50	1 ~ 230/50	1 ~ 230/50	1 ~ 230/50
• Electrical power consumption min./max. (boiler)	Watt	16/75	22/115	33/139	35/226	27/297	
• Electrical power consumption max. (pump)	Watt	320	320	320	320	340	
• Electrical power consumption min./max. (heating cable)	Watt	0 / 48	0 / 48	0 / 48	0 / 48	0 / 48	
• Safety valve release pressure	bar	3.0	3.0	3.0	3.0	3.0	
• Expansion vessel volume	liter	8.0	8.0	8.0	8.0	8.0	
• Boiler water content (V <sub>(H<sub>2</sub>O)</sub> )	liter	3.0	4.5	6.5	8.0	9.5	
• Gas valve with thermal release	inch	¾"	¾"	1"	1"	1"	
• Hoval connection set with pump		AS 32-TG max/SPS-I 10 PM1	AS 32-TG max/SPS-I 12 PM1	AS 40-TG/ SPS-I 12 PM1	AS 40-TG/ SPS-I 12 PM1	AS 40 Stratos Maxo 30/0,5- 14	
• Boiler weight	kg	42	53	66	74	89	
• Cabin weight	kg	280	280	280	280	280	
• Cabin + built-in equipment total weight	kg	348	359	372	380	400	
• Condensate drain dimension	DN	40	40	40	40	40	
• Heating flow/return dimension	DN	100	100	100	100	100	
• Gas connection dimension	inch	¾"	¾"	1"	1"	1"	
• Gas connection type		thread	thread	thread	thread	thread	

Values in the table are subject to change

**Cabin Slim Thermal Energy System  
BC-e mini - TopGas® max**

(Dimensions in mm)

contact Technical Office for detailed dimensional drawings



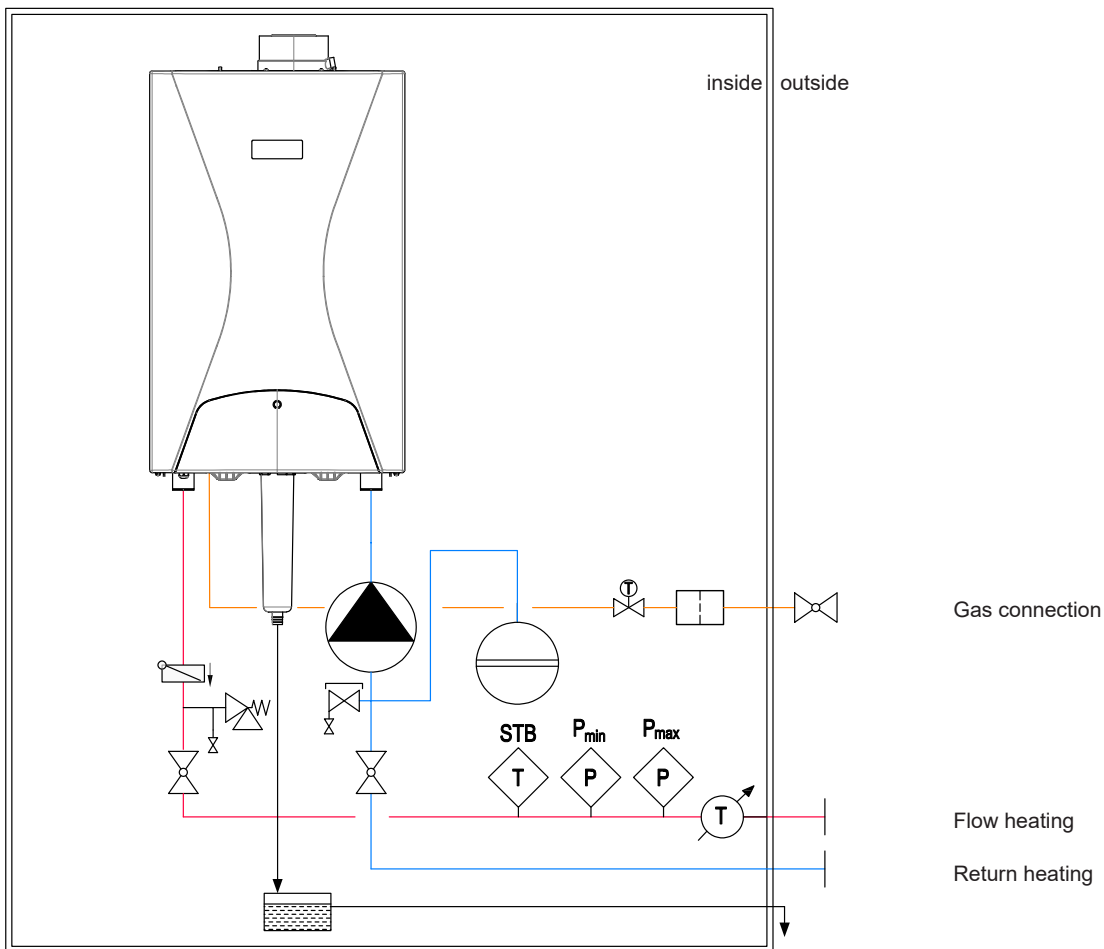
**Notice:**

Dimensions are approximate and can be subject to changes and adjustments.






**Notice:**

Contact the Technical Department for the version with heat exchanger.

Cabin Slim Thermal Energy System  
BC-e mini - TopGas® max



Safety equipment  
according norm EN 12828

-  Manometer
-  Thermometer
-  Safety valve
-  Gas thermic valve
-  Gas filter
- STB Safety thermostat
- $P_{min}$  Presostat minimal water pressure
- $P_{max}$  Presostat maximal water pressure

## 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, DIN standards, etc.) 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 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
- EN 14868 "Protection of metallic materials against corrosion"
- VDE 0100 supplement 2

## Water quality

### Filling and replacement water, heating water

#### The following applies:

- VDI 2035
- 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 must be fully demineralised.

#### 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.
- pH value of the heating water for systems with aluminium alloy as water-side material 8.0 to 8.5 (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).
- The following systems must be equipped with separate circuits:
  - Systems operated with softened water.
  - Plants with continual oxygen intake (e.g. underfloor heating without diffusion-proof plastic piping) or intermittent oxygen intake (e.g. requiring frequent topping-up).

- In the case of bivalent heating systems, the values of the heat generator with the strictest requirement for water quality must be complied with.
- 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

The boiler must not be operated with frost protection agent in the heating water.

Separate circuits are required in frost-protected systems.

- see separate engineering sheet "Use of frost protection agent".
- Monopropylene glycol should be used as the antifreeze (e.g., Sentinel X500; Fernox Alpha 11). The proportion should be between 20% and a maximum of 30%.

## Cabin position

- Place the cabin on the level supporting base
- Cabins cannot be positioned close to the places where 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 supply

Combustion air is supplied via ventilation grille located on the side panel of the cabin.

The cabin must be positioned so the air intake through the grilles is unobstructed.

## 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) is installed, according to relevant regulations. An approved gas filter is also installed in the gas supply pipe between the gas valve and the boiler in order to prevent malfunction due to foreign particles being carried along with the gas.

**Type of gas**

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

**Gas pressure natural gas**

- In the boilers with heat output above 70 kW, install gas pressure regulator in gas supply, according to the EN88-1.

Necessary flow pressure at the boiler inlet:  
min. 18 mbar, max. 50 mbar

**Gas pressure propane**

- install gas pressure regulator in gas supply when using propane

Necessary flow pressure at the boiler inlet:  
min. 37 mbar, max. 50 mbar

**Dirt separator**

It is mandatory to install a dirt separator in the return before Cabin Slim Thermal Energy System.

**Minimum water circulation**

- Depending on the boiler type, different minimum circulating water quantities are required through the boiler. For details, see the corresponding data sheets.
- 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 controller)..

**Boiler on the high location**

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

**Condensate drain**

- Permission to drain condensate from flue gases must be obtained from the appropriate institutions.
- The condensate from the flue gas system can be discharged through the boiler. A condensate trap is not needed anymore with the flue gas system.
- The condensate must be openly lead into the sewer (funnel).
- Suitable materials for condensate drainage:
  - ceramic pipes
  - PVC pipes
  - Polyethylen pipes (PE)
  - ABS or ASA pipes

**Flue gas system**

- A flue gas temperature limiter is integrated into the boiler.
- Cabin Slim Thermal Energy System BC-e mini is supplied with flue gas line with height of cca. 250 mm above the Cabin Slim Thermal Energy System roof. If necessary it can be connected to external chimney.
- Gas boilers must be connected to a certified and approved flue gas system such as flue gas lines.
- Flue gas lines must be gas-, condensate- and overpressure-tight.
- The flue gas lines must be secured against unwanted loosening of the plug connections.
- The flue gas system must be connected with an angle, so that the resulting condensate of the flue gas system can flow back to the boiler and can be neutralized there before discharging into the sewer.
- Gas boilers with condensation heat utilisation are to be connected to a flue gas line min. temperature class T120.

**Expansion tank**

- An adequately dimensioned pressure expansion tank for the whole system must be provided.
- Cabin Slim Thermal Energy System BC-e mini is equipped with pressure expansion tank dimensioned **only** for protection of Cabin Slim Thermal Energy System.
- At temperatures above 70 °C pre-expansion vessel must be installed.

**Noise level**

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