

BUDERUS

GB162 Series

Wall-Mounted Gas Condensing Boiler



Output: 290 MBH and 333 MBH

Input: 290 MBH and 333 MBH

The Most Flexible Boiler System in the Industry

Comfortable. Efficient. Intelligent Heating.

Buderus

Good things come in small packages

The GB162 Series



The GB162 is a high-performance, compact gas condensing boiler capable of achieving ultra-high efficiency levels of up to 96%. GB162 boilers are available with individual inputs of 290 MBH or 333 MBH. Each boiler is capable of up to 5:1 turndown ratio for a single boiler and up to 20:1 turndown for 4 boiler cascades. This ensures that when the demand for heat is low the efficiency is maintained. Optimum performance minimizes energy usage and is achieved in the GB162 through the large, aluminum ALU-Plus heat exchanger and the advanced Energy Management System, encouraging the condensing process.

Save space and energy

The GB162 can be used individually in a residence or commercial operation, but it is especially well suited for multi-boiler cascades. Typically linking together two to four boilers, cascades may be expanded up to 8 units to meet the required BTU load of your installation.

With the GB162's small size, wall-hung attribute, and light weight—only 150 lbs each—there is a great deal of flexibility in planning an installation. Not only is it easy to install as a single unit, but it is easy to install as a multi-boiler cascade. The boilers can be configured back-to-back or in-line by using our custom frame. This is especially useful when boiler rooms are small or unusually shaped. In fact, a 4-boiler cascade, delivering over 1,000 MBH, can fit in less than 13 square feet of floor space. This makes the GB162 ideal for new installations, as well as for replacing an inefficient heating system and freeing up valuable commercial floor space.

Outstanding efficiency

The GB162 is capable of achieving efficiencies of up to 96%. This is due, in part, to its patented, extremely efficient, aluminum silicate ALU-Plus heat exchanger, but also because our advanced Energy Management System encourages the GB162 to remain in condensing mode.

Condensing technology has long been used in Europe. By condensing the water vapor in the flue gases into liquid water, the maximum amount of heat from the fuel is captured.

The condensing efficiencies of the GB162 can also be combined with the benefits of a cascading system to ensure you receive every possible bit of energy from the fuel you are burning.



Award-winning design

The GB162 is the proud recipient of the 2008 iF Product Design award. Every year about 2,700 products from 35 countries are judged by renowned experts.

Only the best products receive the iF seal of outstanding design quality. The iF seal is one the world's three leading design awards. It is an internationally recognized trademark, recognizing its recipient's place on the cutting edge of contemporary design, heat exchanger, and a host of energy saving features.

The GB162 is also extremely quiet in operation, thanks to a number of acoustic insulation measures and the low resistance on water flowing through the boiler. Combine its compact size, wall-hung versatility, and quiet operation with its vertical or horizontal venting options, and the GB162 makes heating system planning easier, as it offers potential placement not just in a traditional boiler room.

ALU-Plus heat exchanger modern technology—modern efficiency

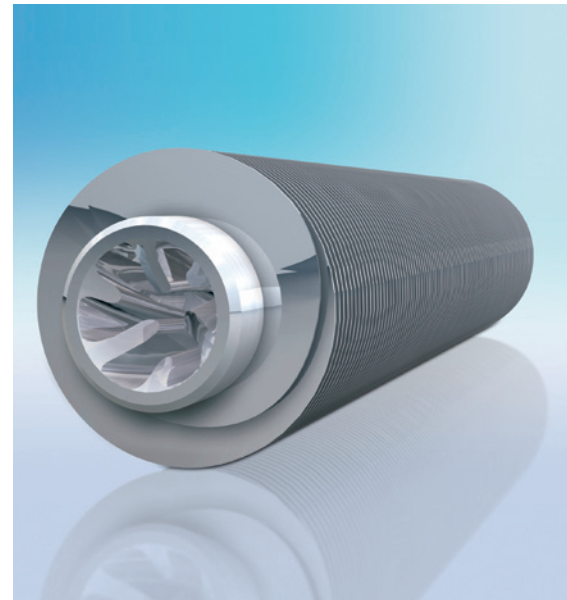
The Buderus GB162 wall-hung condensing boilers use an advanced, aluminum ALU-Plus heat exchanger design. This lightweight heat exchanger has a number of innovative features to prolong its life and increase the efficiency of the boiler. Fins on the outside of the aluminum tube increase the exterior surface area. This means more hot flue gas comes into contact with the heat exchanger to maximize heat transfer. A spiral channel on the inside of the tube increases the internal surface area and creates turbulence, bringing more water into contact with the heating surface, also ensuring optimal heat transfer. The surface of the heat exchanger tubes are treated with a patented plasma-polymerization process that leaves the surface so smooth that no deposits can adhere to it. In addition to also helping maintain extremely high efficiency, this keeps the heat exchanger clean.

Achieve greater efficiencies with a cascade and reduce carbon footprint

Energy efficiency is not just applicable to residential boilers, even though that is what we most often hear of. Boilers for commercial applications—from offices and public buildings to hospitals, schools and colleges, multi-family dwellings, and sports centers—also have a significant impact on our environment. Companies and owners of commercial properties are increasingly looking to improve or upgrade their boiler rooms to maximize energy efficiency, but also to minimize their carbon emissions and increase the value of the building.

Cascade systems, a relatively new development in heating technology, achieve significant energy savings because their output can be precisely controlled to match the demand for heating. Each individual unit comes into operation only when the demand is high enough for an additional boiler in the cascade to fire. A cascade system adapts particularly well to seasonal temperature changes by allowing heat output to be precisely matched to heating demand whether in summer or winter.

The optional 4323 commercial control handles up to eight GB162 boilers and offers the flexibility to operate the cascade in either series or parallel mode. In serial mode the heat demand will fire the first boiler and, as load increases, it will continue to modulate to 100%. If the heating demand is not satisfied, the control will fire additional boilers in the same manner until the load or capacity is met. To better conserve energy, the boiler cascade can also operate in parallel mode.



A safe economical choice

Buderus manufactures with strict quality procedures. This ensures that all our boilers are fully tested at the factory and are certified to meet rigorous standards for safety, efficiency, and the environment.

At Buderus we use only the most reliable and efficient components in the design and manufacture of our products. All Buderus boilers are built to withstand heavy and constant use. The GB162 is no exception. It benefits from the very latest in high efficiency heating technology with the patented, award winning ALU-Plus heat exchanger, and a host of energy saving features.



In parallel mode the first boiler would fire at 20% and, as the heat load increases, additional boilers would fire at 20% until all boilers are operational. Once all the boilers in the cascade are firing, the control collectively modulates all the boilers to satisfy the load. Parallel mode enables the boilers to run at the lowest modulation rate for the longest period of the heating cycle.

Optional controls also allow a cascade heating system to be configured so that different zones can be operated with mixed temperature circuits and domestic hot water priority. To ensure that the system always runs in the most efficient mode of operation, this is all automatically controlled.

Straight forward installation

A single GB162 boiler comes complete with a pump group and wall mounting bracket. For a single boiler installation our low loss header kit must be purchased additionally to expedite the assembly of the near boiler piping.






For a multi-boiler system, Buderus offers both in-line and back-to-back cascade package. With all the necessary fittings and accessories to allow the installer to simply assemble the framework and join everything together. Once the boilers are mounted on the frame work, they are connected with the factory-supplied low-loss header and then covered with the pipe insulation. The result is an easy installation where everything fits perfectly, all the piping is neat, and the boilers are ready to be connected to the main heating system. The combination of the low-loss header and EMS control system ensures worry-free boiler flow rates.

Easy service and quiet operation

A ceramic pre-mix burner and modulating fan provide modulation to 20% of total output and the boiler is so quiet that it can be located near living or working areas without causing a disturbance.

The compact size and light weight of the GB162 allows for ease of installation, even where space is limited. A single push button door release allows access to all parts, including the heat exchanger, for servicing. What could be easier?



| | | |
|---|--|---|
| <p>1</p> <p>1st step: The sturdy floor standing cascade framework is bolted together.</p>  | <p>2</p> <p>2nd step: Low-loss header, flow, return and gas pipes are fitted.</p>  | |
| <p>3</p> <p>3rd step: Individual GB162 boilers are mounted securely on the framework.</p>  | <p>4</p> <p>4th step: Pump groups (additional accessory) and valves are connected to boilers and flow and return pipe work attached to the headers.</p>  | <p>5</p> <p>5th step: Custom-fit insulation is added to pipe work and fitted around each pump group to minimize heat loss. Can be assembled to either side.</p>  |

Sophisticated controls for optimal performance

Complete your system

Once you have a Buderus boiler, you can add a Buderus indirect fired hot water tank, or an optional Buderus control—or both. In addition to maximizing comfort and fuel savings, optional Logamatic control will accommodate specialized heating applications such as radiant flooring or multiple boilers. Multiple design innovations increase the versatility of Buderus Logamatic controls. A Buderus boiler combined with a Logamatic control produces a premium heating system that will provide years of exceptional comfort and economy.

Buderus Controls

Standard

- **BC10 Boiler Control** included with cascades
- **AM10 Weather Compensation Module** included for single boiler installations

Options

- **RC35 Control with Automatic Mode and Adjustable Programs** ensures energy-saving operation by reducing the room temperature at certain times or shutting down heating completely (adjustable night setback) to control the heating system to ensure optimum heating comfort and minimum energy consumption.
- **MCM10 (Cascade Module) for 4 boiler installations.** Expandable to 8 boilers using 2; 16 boilers using 4 MCM10 Modules.
- **4000 Series Controls**
 - Accommodates single or multiple boiler installations
 - Can be interfaced to a building management system via LON module
 - Modular construction allows for ease of field configuration and flexibility of installation
- **SM10 solar DHW module,** controls solar pump and sensors for the collector panels and the tank
- **WM10 low loss header sensor module**

The convenience of a Logamatic Control

In addition to manual adjustments, Logamatic controls can be pre-programmed for automatic night and day functions and pre-set to trigger automatic adjustments based on outdoor or indoor temperature shifts. This includes adjustment by time, date, or temperature between various modes of operation. All Logamatic controls now include summer, winter and vacation modes to efficiently regulate energy consumption. An optional module is available that enables direct communication with building management systems.

Multiple or single boiler control with the 4000 Series

Logamatic controls can be used to adjust the firing rates of burners in multi-boiler systems. The Logamatic control maintains precise control of system temperature to match load requirements, providing maximum system efficiency. This regulation is effective in single or multi-boiler systems, with any heat source, and in accordance with one or multiple heating zones.

Domestic Hot Water Tanks



4000 Control



Optional integrated multi-boiler system controller with the following features and control modules:

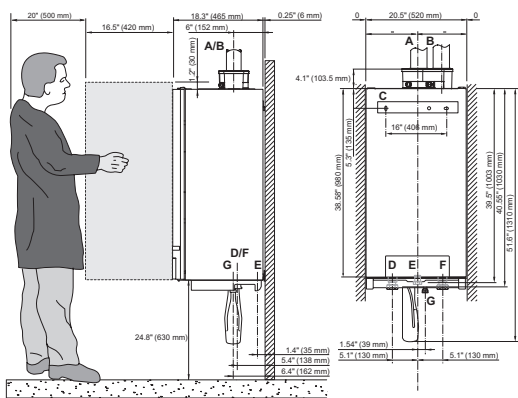
- Control of single and modulating burners for up to 8 boilers with 4323 control
- Automatic and load/switch dependent burner rotation
- Operation of boiler pumps, 2, 3, or 4-way valves and system pumps
- Capable of DHW and other external on-demand loads
- Self diagnostics and system parameter display
- Solar Integration Module available

RC35 Control



Technical Specifications—Single Units

Without pump group

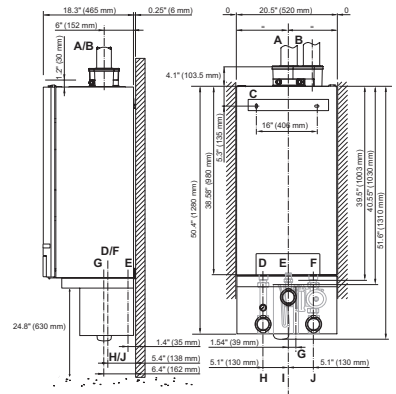


The required permanent minimum clearances are:

- Front: 1" (25 mm)
- Right Side: 0
- Left Side: 0
- Above: 6" (152 mm)

The position selected for installation MUST allow at least 37" (940 mm) for adequate space for servicing in front of the boiler. Maintain an installation clearance from combustible construction from hot water piping of at least 1" (25 mm).

With pump group



| General Specifications | GB162/80 NG | GB162/80 LP* | GB162/100 NG | GB162/100 LP* |
|--|----------------------|----------------------|-------------------------------------|-------------------------------------|
| Rated thermal load input | 72,000–290,000 btu/h | 62,000–270,000 btu/h | 72,000–333,000 btu/h | 62,000–315,000 btu/h |
| Heating capacity / Gross output | 260,000 btu/h | 242,000 btu/h | 302,000 btu/h | 282,000 btu/h |
| Net IBR | 226,000 btu/h | 210,000 btu/h | 263,000 btu/h | 245,000 btu/h |
| Efficiency rating | 92.1% AFUE | 92.1% AFUE | Low Fire 96.1% High Fire 90.8%** | Low Fire 96.1% High Fire 90.8%** |
| De-ration altitudes 2,000–5,500 ft. %/1,000 ft. | 2.2 | 2.3 | 2.0 | 2.1 |
| De-ration altitudes 5,500–8,000 ft. %/1,000 ft. | 2.0 | 2.5 | 1.7 | 2.1 |
| De-ration altitudes 8,000–10,200 ft. %/1,000 ft. | 2.8 | 2.0 | 2.6 | 1.9 |

| Heating | | | | |
|--|---|---------------------|---------------------|---------------------|
| Maximum flow temperature | 180°F (82°C) | 180°F (82°C) | 180°F (82°C) | 180°F (82°C) |
| Max. working pressure (boiler) | 50 psi (3.6 bar) | 50 psi (3.6 bar) | 50 psi (3.6 bar) | 50 psi (3.6 bar) |
| Min. water circulation volume | 0 | 0 | 0 | 0 |
| Flow temperature | 86–180°F (30–82°C), can be set on the BC10 basic controller | | | |
| Resistance at rT = 20 K | 3.26 psi (225 mbar) | 3.26 psi (225 mbar) | 4.57 psi (315 mbar) | 4.57 psi (315 mbar) |
| Heating circuit volume of heat exchanger | 1.3 gal. (5.0 l) | 1.3 gal. (5.0 l) | 1.3 gal. (5.0 l) | 1.3 gal. (5.0 l) |

| Pipe Connections Boiler, Without Pump Group | | | | |
|---|--|---------------|--|---------------|
| Gas connection (E) | Rp1" | Rp1" | Rp1" | Rp1" |
| Heating water connection | G1½" union nut with female thread enclosed | | G1½" union nut with female thread enclosed | |
| Condensate connection (G) | Ø 1¼" (32 mm) | Ø 1¼" (32 mm) | Ø 1¼" (32 mm) | Ø 1¼" (32 mm) |

| General Specifications | GB162/80 NG | GB162/80 LP* | GB162/100 NG | GB162/100 LP* |
|--|--------------------------|---------------------|--------------------------|-----------------------|
| Flue Gas Values | | | | |
| Condensate quantity at 122/86°F (50/30°C) | 2.4 gal/h (9.0 L/h) | 2.4 gal/h (9.0 L/h) | 2.85 gal/h (10.8 L/h) | 2.85 gal/h (10.8 L/h) |
| pH value of condensate | approx 4.1 | approx 4.1 | approx 4.1 | approx 4.1 |
| Flue gas mass flow rate, full load | 35.3 g/s | 35.3 g/s | 44.9 g/s | 44.9 g/s |
| Flue gas temp, full load 176/140°F (80/60°C) | 153°F (67°C) | 149°F (65°C) | 169°F (76°C) | 165°F (76°C) |
| Flue gas temp, partial load 176/140°F (80/60°C) | 142°F (61°C) | 136°F (58°C) | 142°F (76°C) | 136°F (76°C) |
| Flue gas temp, full load 122/86°F (50/30°C) | 118°F (48°C) | 114°F (46°C) | 124°F (76°C) | 120°F (76°C) |
| Flue gas temp, partial load 122/86°F (50/30°C) | 93°F (34°C) | 88°F (31°C) | 93°F (76°C) | 88°F (76°C) |
| CO ₂ content at full load | 9.3 | 9.6 | 9.4 | 9.7 |
| Free fan feed pressure | 0.602 inch w.c. (150 Pa) | | 0.883 inch w.c. (220 Pa) | |

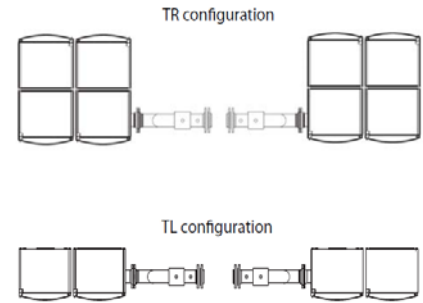
| Flue Gas Connection | | | | |
|---|--------------------------------------|---------------|--------------------------------------|---------------|
| Ø flue gas system, room-air dependent | Ø 4" (100 mm) | Ø 4" (100 mm) | Ø 4" (100 mm) | Ø 4" (100 mm) |
| Ø flue gas system, room-air independent | Ø 4" (100 mm) / 4" (100 mm) parallel | | Ø 4" (100 mm) / 4" (100 mm) parallel | |

* Special order field conversion kit required

** I=B=R Rating based on AHRI BTS2000 spec. 180° F supply and 80° F return

Buderus GB162 Components

| Description | |
|--|---|
| GB162-80 | Single 290 MBH boiler & pump module |
| GB162-100 | Single 333 MBH boiler & pump module |
| GB162-80LB | Single 290 MBH LB [†] boiler & pump module |
| GB162-100LB | Single 333 MBH LB [†] boiler & pump module |
| Single Boiler Kit** Required with the purchase of a single boiler | Low-loss header and AM10 outdoor reset module with temperature sensor |
| Back to Back Installations - Boilers not included | |
| TR2 Cascade Package | For 2 boilers assembled back to back |
| TR3 Cascade Package | For 3 boilers assembled back to back |
| TR4 Cascade Package | For 4 boilers assembled back to back |
| In-Line Installations - Boilers not included | |
| TL2 Cascade Package | For 2 boilers assembled in line |
| TL3 Cascade Package | For 3 boilers assembled in line |
| TL4 Cascade Package | For 4 boilers assembled in line |
| Controls | |
| MCM10 | Cascade module |
| AM10 | Weather compensation module |



| Flanges included with cascade system: | |
|---------------------------------------|----------------------------|
| Cascade | Flange Size & Type |
| TL2 / TR2 / TL3 | 2 ½ " Weld Neck and 2" NPT |
| TR3 | 2 ½ " Weld Neck |
| TL4 / TR4 | 3" Weld Neck |

Buderus GB162 Component Selector

Using the chart below select the BTU requirements and configuration then order the designated components.

Note: LP installations require field conversion and an LP conversion Kit (7738000850) must be ordered separately for each boiler that will be converted.

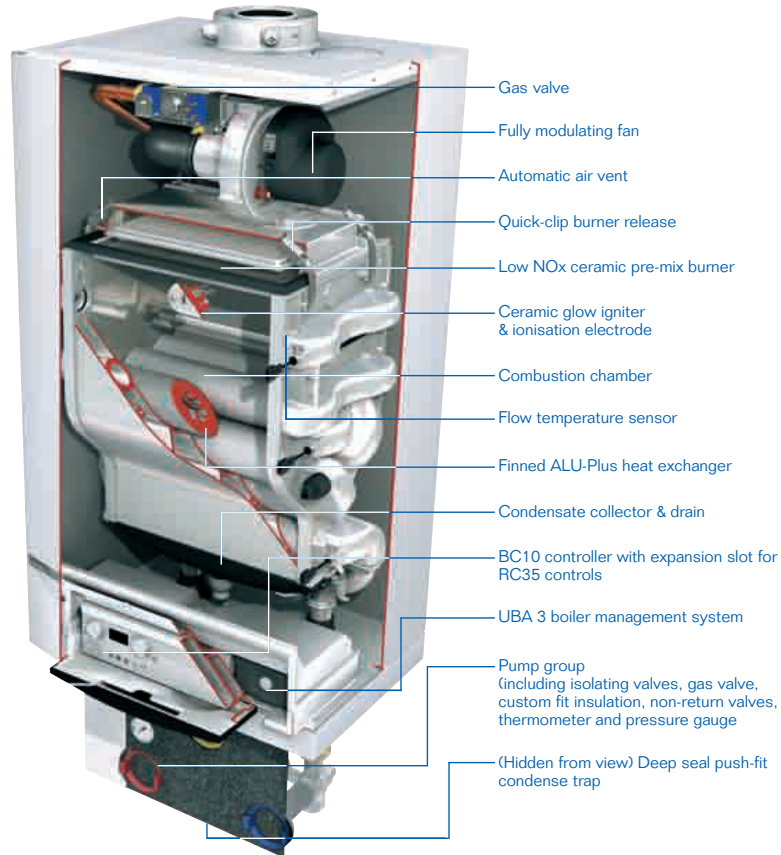
| Configurations | Cascade NG MBH Input / Output | Cascade LP* MBH Input / Output | GB162-80 Boiler† | GB162-100 Boiler† | Back-to-Back Cascades** | | | In-Line Cascades** | | | Controls | |
|----------------|-------------------------------------|--------------------------------------|---------------------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|----------|------|
| | | | | | TR2 Cascade Package | TR3 Cascade Package | TR4 Cascade Package | TL2 Cascade Package | TL3 Cascade Package | TL4 Cascade Package | MCM10 | AM10 |
| TR2-160 | 580 / 520 | 540 / 484 | 2 | | 1 | | | | | | 1 | 1 |
| TL2-160 | 580 / 520 | 540 / 484 | 2 | | | | | | 1 | | 1 | 1 |
| TR2-180 | 623 / 556 | 585 / 524 | 1 | 1 | 1 | | | | | | 1 | 1 |
| TL2-180 | 623 / 556 | 585 / 524 | 1 | 1 | | | | | 1 | | 1 | 1 |
| TR2-200 | 666 / 592 | 630 / 564 | | 2 | 1 | | | | | | 1 | 1 |
| TL2-200 | 666 / 592 | 630 / 564 | | 2 | | | | | 1 | | 1 | 1 |
| TR3-240 | 870 / 780 | 810 / 726 | 3 | | | 1 | | | | | 1 | 1 |
| TL3-240 | 870 / 780 | 810 / 726 | 3 | | | | | | | 1 | 1 | 1 |
| TR3-260 | 913 / 816 | 855 / 766 | 2 | 1 | | 1 | | | | | 1 | 1 |
| TL3-260 | 913 / 816 | 855 / 766 | 2 | 1 | | | | | | 1 | 1 | 1 |
| TR3-280 | 956 / 852 | 900 / 806 | 1 | 2 | | 1 | | | | | 1 | 1 |
| TL3-280 | 956 / 852 | 900 / 806 | 1 | 2 | | | | | | 1 | 1 | 1 |
| TR3-300 | 999 / 888 | 945 / 846 | | 3 | | 1 | | | | | 1 | 1 |
| TL3-300 | 999 / 888 | 945 / 846 | | 3 | | | | | | 1 | 1 | 1 |
| TR4-320 | 1160 / 1040 | 1080 / 968 | 4 | | | | 1 | | | | 1 | 1 |
| TL4-320 | 1160 / 1040 | 1080 / 968 | 4 | | | | | | | | 1 | 1 |
| TR4-340 | 1203 / 1076 | 1125 / 1008 | 3 | 1 | | | 1 | | | | 1 | 1 |
| TL4-340 | 1203 / 1076 | 1125 / 1008 | 3 | 1 | | | | | | | 1 | 1 |
| TR4-360 | 1246 / 1112 | 1170 / 1048 | 2 | 2 | | | 1 | | | | 1 | 1 |
| TL4-360 | 1246 / 1112 | 1170 / 1048 | 2 | 2 | | | | | | | 1 | 1 |
| TR4-380 | 1289 / 1148 | 1215 / 1088 | 1 | 3 | | | 1 | | | | 1 | 1 |
| TL4-380 | 1289 / 1148 | 1215 / 1088 | 1 | 3 | | | | | | | 1 | 1 |
| TR4-400 | 1332 / 1184 | 1260 / 1128 | | 4 | | | 1 | | | | 1 | 1 |
| TL4-400 | 1332 / 1184 | 1260 / 1128 | | 4 | | | | | | | 1 | 1 |

† For High Altitude applications (4,000 - 10,000') order "LB" boilers listed in Component Pricing Table

* For LP installations order 1 conversion kit (7738000850) per boiler ordered

** Cascade Kits include low-loss header, frames, supply and return piping, pipe insulation, and connection set

Wall Hung Gas Condensing Boiler GB162 Series



Benefits at a glance

- Compact dimension, light weight, high output
- Innovative ALU-Plus condensing heat exchanger for the longest possible life and easy servicing
- Efficiency of up to 96% at low fire
- Modulation down to 20% of total output for year round efficiency
- Cascades up to 8 units
- Quick-Install: innovative cascade concept for easy installation
- Ideal for smaller commercial buildings and large domestic properties
- No minimum flow rate required
- Whisper quiet
- Low flue gas emissions
- Integrated BC10 boiler controls with space for the optional RC35 Digital
- Programmer and extension modules
- LPG conversion kit available
- Limited Lifetime warranty on the heat exchanger, full year on parts



A Tradition of Excellence

The world leader in heating technologies since 1825, Buderus produced the first low-temperature hydronic heating systems. Today, Buderus products are acknowledged as the global standard in high-efficiency, low emissions hydronic heating. All Buderus products are designed to meet strict safety and environmental regulations.

Buderus boilers are quick and easy to install and will outlast and outperform virtually any other hot water heating system. They are designed for easy access and service. With appropriate maintenance, Buderus boilers deliver the highest efficiencies throughout the lifespan of operation. Buderus is a member of Bosch Thermotechnology.



Model 80 only



Approval numbers are subject to periodic changes and updates. Please visit www.buderus.us for the most up-to-date approval numbers.

755995013a 02/2015
Copyright © 2015 Bosch Thermotechnology Corp.
All rights reserved. Subject to change without notice.