

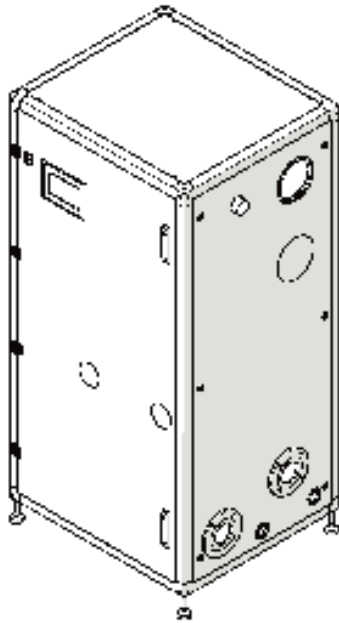
Bosch Buderus SSB800/1000/1000TL - Gen 2 Stainless Steel Condensing Boiler

Engineering
Submittal
Sheet



BOSCH

Boiler Components



Engineering Specifications

There shall be provided and installed Bosch Buderus ____ Model SSB800 SA, ____ Model SSB1000 SA, ____ Model SSB1000 TL in quantities of _____. Bosch Buderus Stainless Steel Boilers referred to as SSB are condensing hot water boilers, suitable for direct venting. The SSB is factory set for operation using Natural Gas but shall be field convertible to LP Gas using the supplied conversion kit.

The SSB SA series Boiler(s) shall utilize two individual plasma welded 441 dual tube stainless steel heat exchanger modules. Both Modules contain independent fan motor, gas valve, burner tube, circulator and all the necessary safety components to allow for true on-board redundancy. Each module is provided with isolation valves and drain to allow for independent service.

Boiler(s) shall be constructed, tested and labeled in accordance with ASME Section IV and shall bear the ASME stamp. Boilers shall be CSA approved for USA and Canada and have an applicable Canadian registration Number.

Heat exchanger modules shall be labeled for 80 psig (MAWP)

maximum allowable working pressure rating. An integrated pressure sensor shall ensure minimum water pressures are maintained. In addition to the minimum water pressure sensor, each module shall encompass a low water cut-out (LWCO) and an individual flow-sensor on each module to identify low water or low flow conditions.

Boiler(s) shall be capable of up to 40:1 turndown ratio based upon supply and return water temperatures and/or outdoor reset control. Boiler(s) shall have a settable Power Mode parameter to allow for selection of desired module operation for either parallel or serial operation of up to 8 modules. Boiler(s) shall be designed for large residential, commercial and light industrial applications.

Boiler(s) shall be equipped with a 75 lb. pressure relief valve per boiler module.

Boiler(s) shall be equipped with Manual Reset High Limits (MRHL), Low water cut-outs with test button, and Flow Sensors on each boiler

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Engineering Specifications

module.

Boiler(s) shall be equipped with Low and High gas pressure switches with manual resets per ASME CSD-1 requirements.

Boiler(s) shall utilize multiple (twin-pipe) or single (concentric or single-pipe) terminations for both vertical and horizontal vent configurations as outlined in the boiler installation manual.

Boiler(s) shall be installed in a system that meets the water quality standards outlined in the boiler installation manual.

Boiler(s) shall function directly with hydronic emitters.

Boiler(s) may be controlled using an enable/disable command from “dry” closure contacts such as a relay or BMS system.

Boiler(s) shall be equipped with an optional outdoor air temperature sensor to control supply water temperature based upon outdoor air temperatures for increased fuel efficiency.

Boiler(s) shall contain an on-board, 7” color touch-screen which allows for multiple heating configurations including set point operation, outdoor reset using a demand signal, full outdoor reset with constant circulation, permanent heat demand, analog 0-10 Vdc (4 – 20 mA) setpoint control.

The Boiler(s) control shall have multiple domestic hot water heating parameters designed for the most common application including boiler control of an indirect tank thru a manufacturer supplied 10k ohm NTC thermistor or a field supplied aquastat.

The Boiler(s) hydraulic manifold piping (water, gas and exhaust/air) shall be factory installed and self-contained within the Boiler(s) outer cabinet. All external Boiler(s) hydraulic connections shall be able to be connected in any configuration on either the left or right side of the Boiler(s) in order to allow for maximum installation flexibility and site requirements.

The Boiler(s) shall be capable of installation in combinations of 2, 3 or 4 TL modules with respective turn-down ratios of 20, 30 and 40 to 1. Multiple Boiler sections shall be engineered so that up to 4 Boilers may be interconnected using the manufacturers provided flanged connections. All manifold piping (water, gas and exhaust/air) between Boiler sections shall be engineered and sized by the manufacturer to accommodate the hydraulic requirements of up to a maximum of 4 Boilers.

Boiler(s) shall be equipped with a multi-speed circulator pump on each module.

| General Data | | | | |
|-----------------------------------|------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| | Unit | SSB800 | SSB1000 | SSB1000TL |
| Boiler category | – | ASME Sect.IV | ASME Sect.IV | ASME Sect.IV |
| Type of Gas | – | Natural Gas, Propane | Natural Gas, Propane | Natural Gas, Propane |
| Heat exchanger construction | – | 441 Stainless Steel | 441 Stainless Steel | 441 Stainless Steel |
| Surface heat exchanger (total) | Sq. Ft (m2) | 54 (5.0) | 86 (8.0) | 86 (8.0) |
| Gas Connections | Ø Inch | 2" NPT | 2" NPT | 3" Flanged |
| Water Connections | Ø Inch | 3 | 3 | 5 |
| Vent/Air Intake Connections | Ø Inch (Ø mm) | 6 (160) | 6 (160) | 10 (254) |
| Vent Materials | – | CPVC, PP, Stainless Steel AL29-4C | CPVC, PP, Stainless Steel AL29-4C | PP, Stainless Steel AL29-4C |
| Water Volume | Gallons (Liters) | 13.0 (50) | 16.0 (60) | 20.0 (75) |
| Weight - dry | Lbs (kg) | 743 (337) | 787 (357) | 849 (385) |
| Shipping Weight | Lbs (kg) | 836 (379) | 880 (399) | 941 (427) |
| Min. clearance to combustibles ** | Inch (mm) | 12 (305) | 12 (305) | 12 (305) |
| Dimension LxWxH | Inch (mm) | 31.5 x 35.4 x 70.9 (800x900x1800) | 31.5 x 35.4 x 70.9 (800x900x1800) | 31.5 x 35.4 x 70.9 (800x900x1800) |

** The 2” minimum clearance is required for all sides of the boiler. The boiler may be installed on combustible (wood) floors excluding carpets.

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Performance Data

| | Unit | SSB800 | SSB1000 | SSB1000TL |
|------------------|----------------|---------------|-----------------|-----------------|
| Max Input* | BTU/hr (kW) | 798,000 (234) | 1,024,000 (300) | 1,024,000 (300) |
| Min Input | BTU/hr (kW) | 79,800 (23) | 100,000 (29) | 100,000 (29) |
| Turndown | Ratio (%) | 10:1 (10%) | 10:1 (10%) | 10:1 (10%) |
| Combustion Eff.* | Efficiency (%) | 97.6 | 95.4 | 95.4 |
| Thermal Eff.* | Efficiency (%) | 96.8 | 96.8 | 96.8 |
| Gross Output* | BTU/hr (kW) | 772,000 (226) | 991,000 (290) | 991,000 (290) |
| Net Rating* | BTU/hr (kW) | 671,300 (197) | 861,700 (252) | 861,700 (252) |

* = AHRI certified performance data

Operational Data

| | Unit | SSB800 | SSB1000 | SSB1000TL |
|---|------------------|-------------------------|-------------------------|-------------------------|
| Max. NG pressure | Inch W.C. (mbar) | 20 (50) | 20 (50) | 20 (50) |
| Min. NG pressure | Inch W.C. (mbar) | 3.5 (8.72) | 3.5 (8.72) | 3.5 (8.72) |
| Max. LPG pressure | Inch W.C. (mbar) | 20 (50) | 20 (50) | 20 (50) |
| Min. LPG pressure | Inch W.C. (mbar) | 8 (19.9) | 8 (19.9) | 8 (19.9) |
| CO2 working range NG (LP) | % | 8.5 - 9.5 (10.3 - 10.7) | 8.5 - 9.5 (10.3 - 10.7) | 8.5 - 9.5 (10.3 - 10.7) |
| Max. allowable working pressure (MAWP) | PSI (bar) | 80 (5.5) | 80 (5.5) | 80 (5.5) |
| Recommended water flow at max power (ΔT 36 °F / 20 °C) | GPM (m3/h) | 44.4 (10.0) | 56.8 (12.9) | 56.8 (12.9) |
| Water pressure drop @ recommended water flow | Feet Head (mbar) | 19 (568) | 28 (837) | 25 (747) |
| Max. operating temperature | °F (°C) | 194 (90) | 194 (90) | 194 (90) |
| Max HE allowable temperature | °F (°C) | 210 (98.9) | 210 (98.9) | 210 (98.9) |
| Ambient storage temperature dry | °F (°C) | 5 to 158 (-15 to 70) | 5 to 158 (-15 to 70) | 5 to 158 (-15 to 70) |
| Ambient functioning temperature | °F (°C) | 32 to 120 (0 to 49) | 32 to 120 (0 to 49) | 32 to 120 (0 to 49) |
| Electrical Req. 120VAC/1PH/60Hz | – | 15.1 FLA * | 15.1 FLA * | 15.1 FLA * |

* FLA (Full Load Amperage) - maximum current drawn by the boiler if all pumps reach rated horsepower.

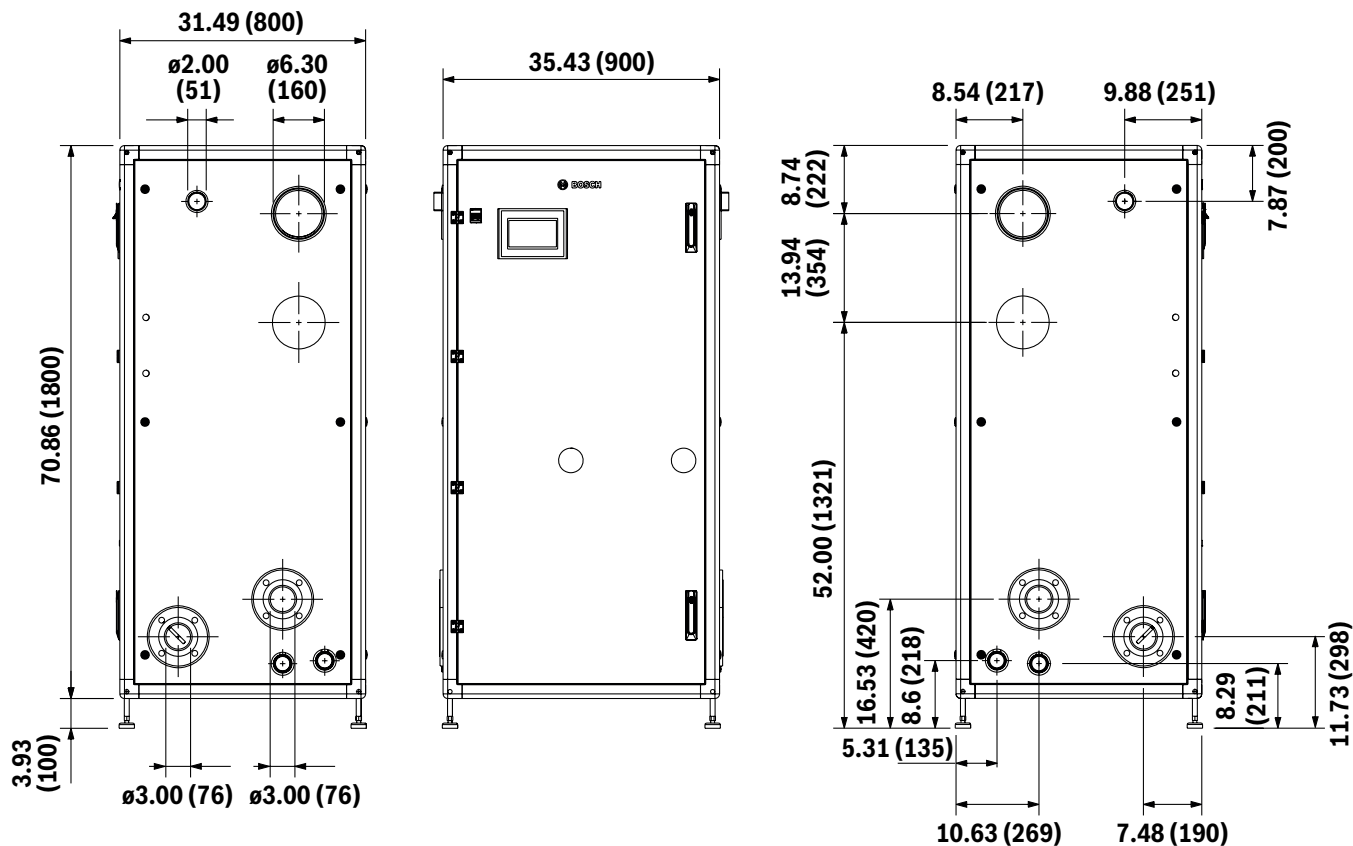
Approval Data

| Approval description | SSB800 | SSB1000 | SSB1000TL |
|-------------------------------|-----------------|----------|-----------|
| Standard listings & approvals | CSA, ASME, AHRI | | |
| Massachusetts Plumbing Board | Approved | | |
| CRN # | Z0467.2CL | Y9641.2C | Y9641.2C |
| SCAQMD approval | Approved | | |

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SSB800/SSB1000 Boiler Dimensions

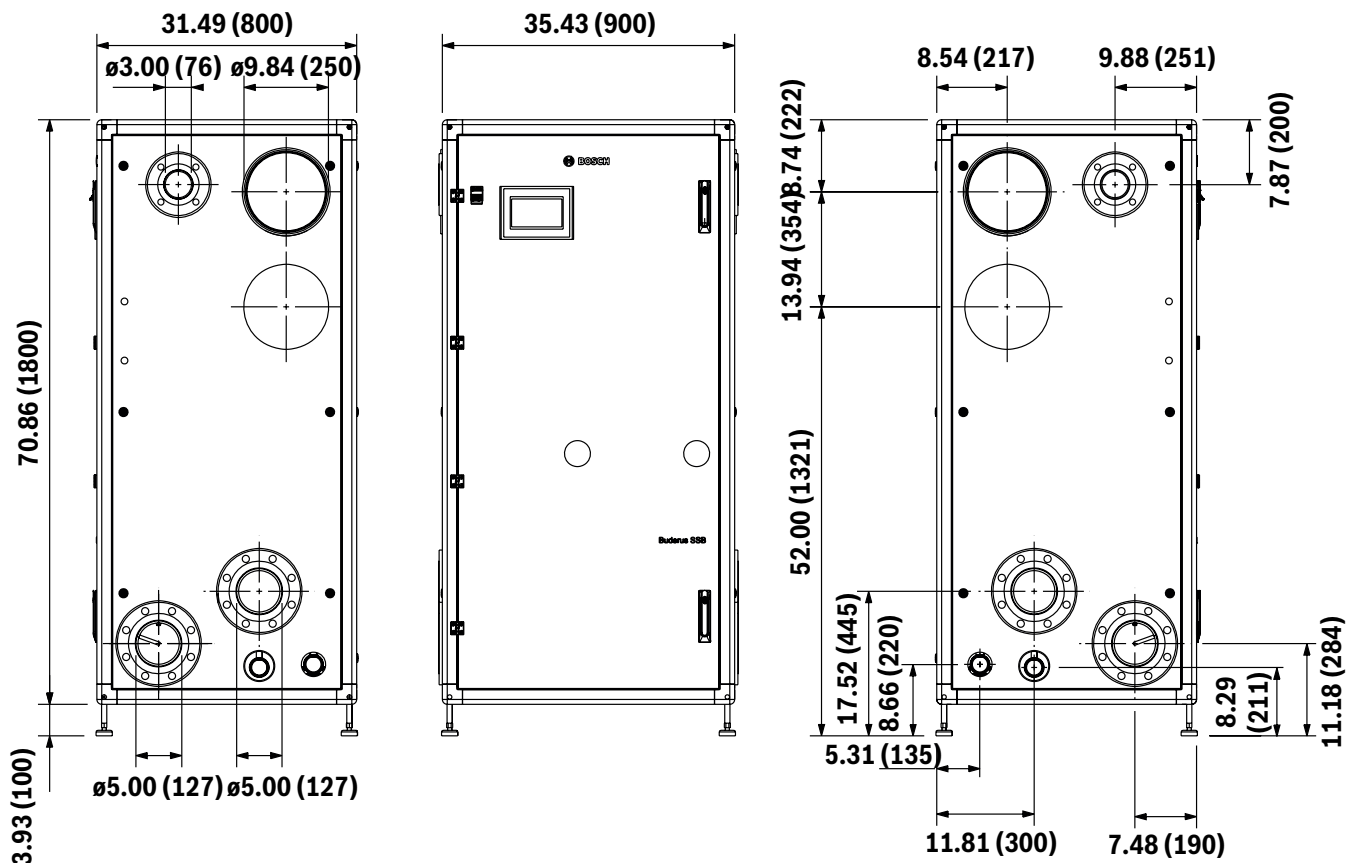


Dimensions in inches (mm)
Tolerances on all dimensions shown is +/- 1/4" (6.35mm)

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SSB1000TL Boiler Dimensions

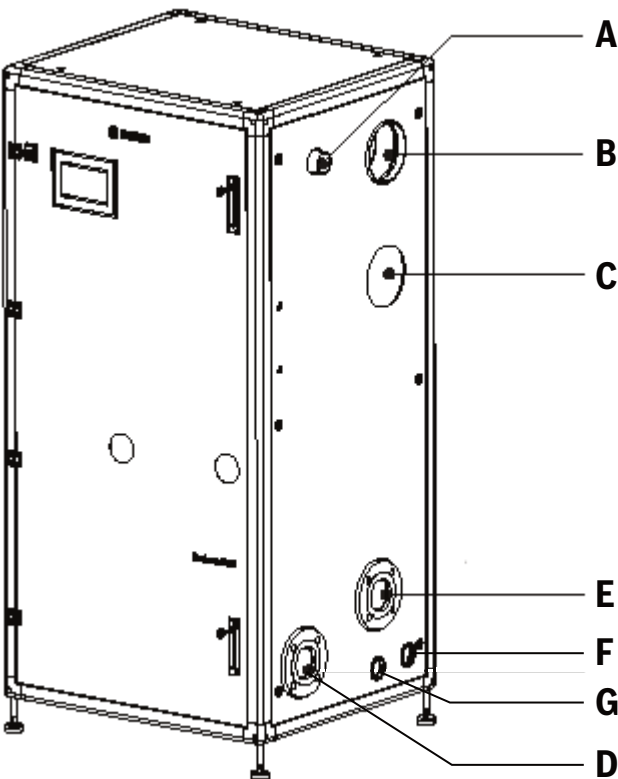


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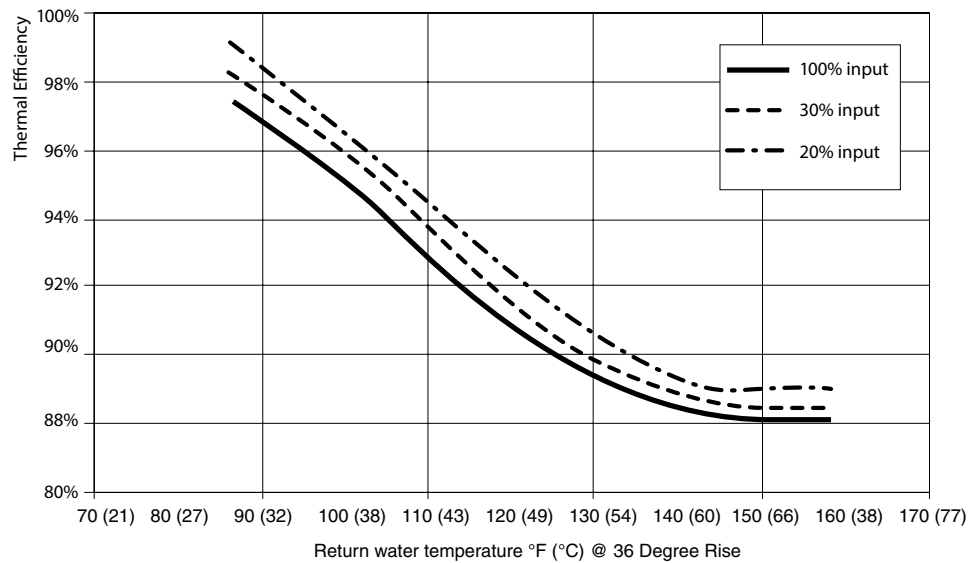
SSB800/SSB1000/SSB1000TL Boiler Connections



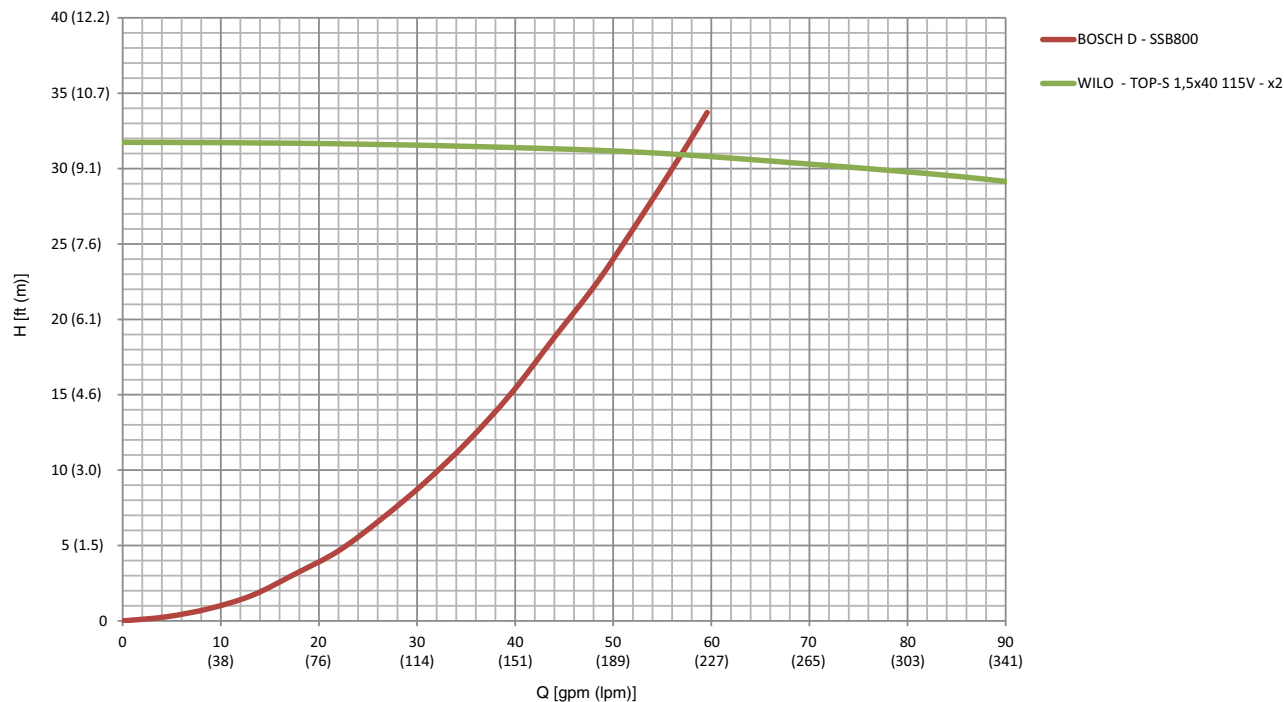
Boiler Connections Data

| Item | Description | Unit | SSB800 | SSB1000 | SSB1000TL |
|------|-------------------------|-----------|-------------|-------------|------------|
| A | Gas Inlet | Inch | 2" male NPT | 2" male NPT | 3" Flanged |
| B | Flue Exhaust (Flanged) | Inch (mm) | 6 (160) | 6 (160) | 10 (254) |
| C | Air Intake | Inch (mm) | 6 (160) | 6 (160) | 10 (254) |
| D | System Supply (Flanged) | Inch (mm) | 3 (76) | 3 (76) | 5 (127) |
| E | System Return (Flanged) | Inch (mm) | 3 (76) | 3 (76) | 5 (127) |
| F | Condensate Outlet | Inch (mm) | 1-1/2 (50) | 1-1/2 (50) | 1-1/2 (50) |
| G | Relief Valve Outlet | Inch (mm) | 2 (60) | 2 (60) | 2 (60) |

Thermal Efficiency Curves SSB800/SSB1000/SSB1000TL



SSB800 Water Pressure Drop

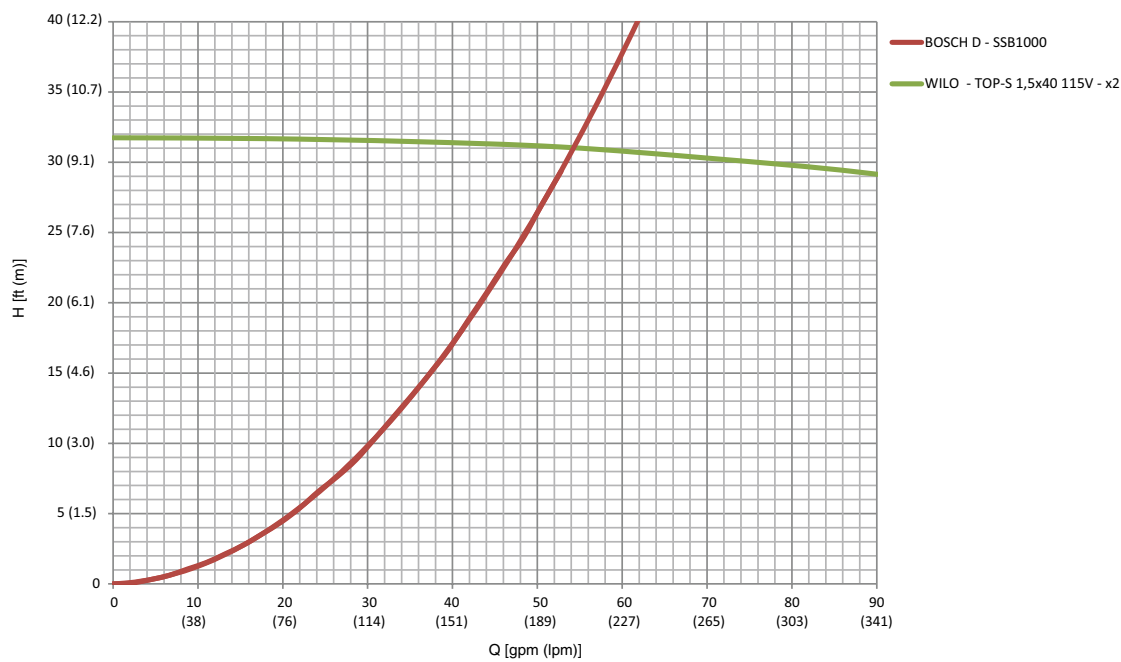


Bosch Buderus SSB800/1000/1000TL - Gen 2

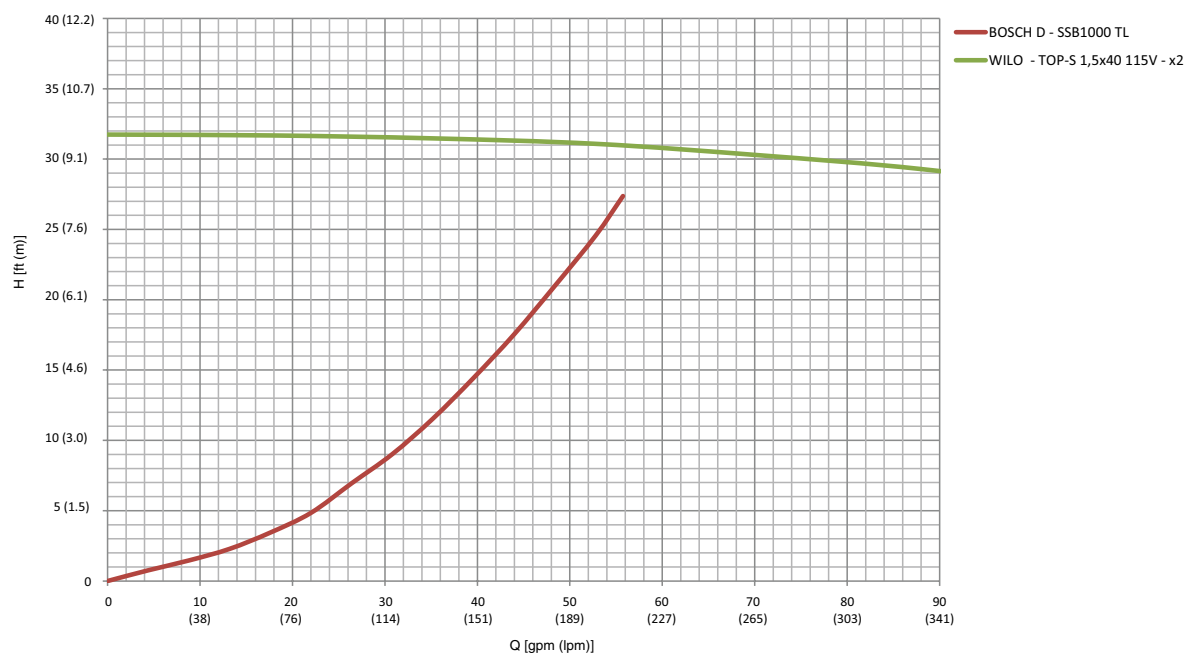
Stainless Steel Condensing Boiler



SSB1000 Water Pressure Drop



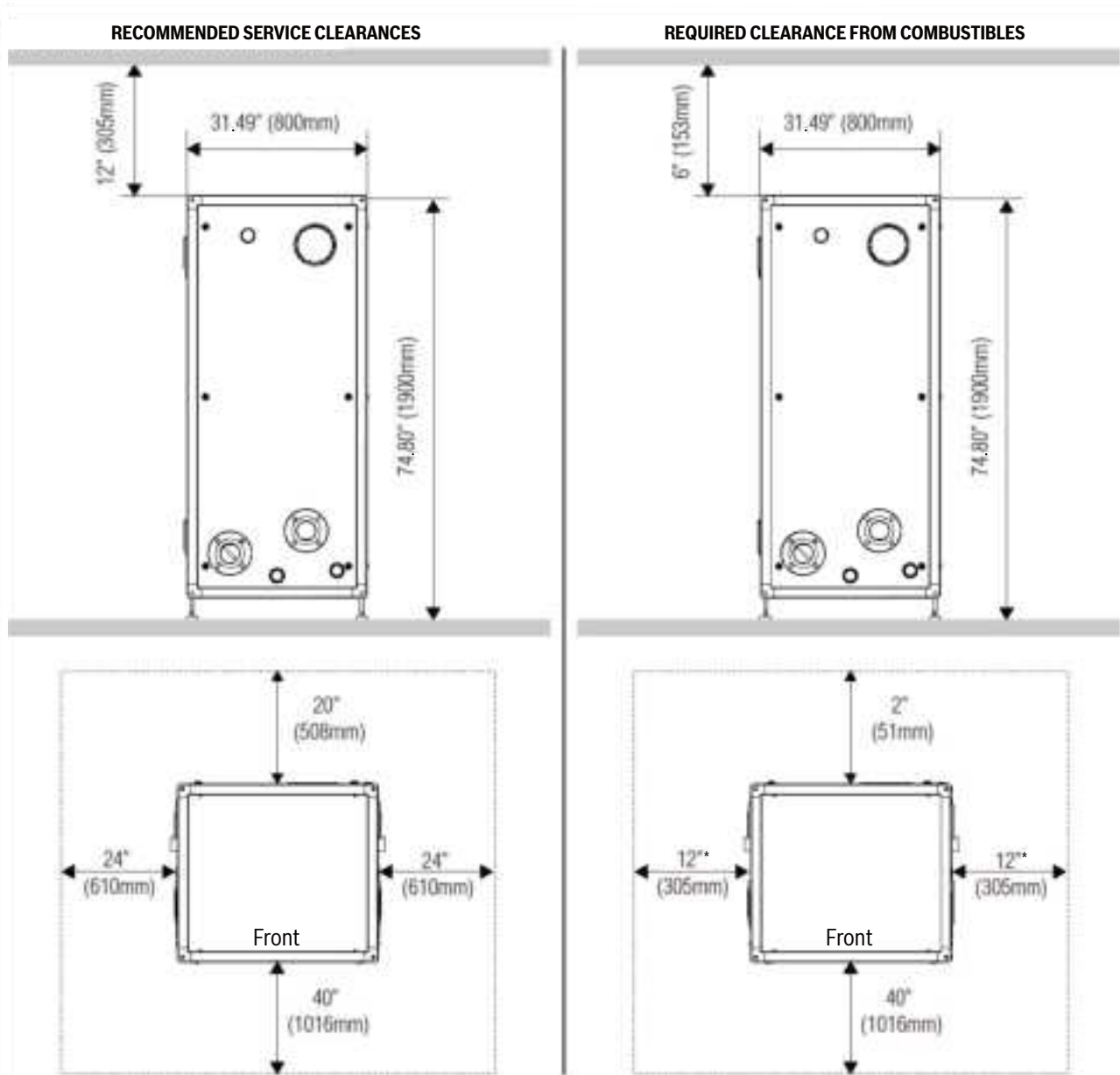
SSB1000TL Water Pressure Drop



Bosch Buderus SSB800/1000/1000TL - Gen 2
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Recommended Boiler Clearances



* Excluding side with connections.

DISCLAIMER

Specifications subject to change without notice. All dimensions shown on these engineering submittal sheets are for reference only and should not be used for field installation purposes. Please refer to current product installation manuals for detailed installation instructions and dimensions.