

Submittal Data

GA Line AY Series Thermal Modules and Thermal-Links

Outdoor Modular Heaters

Heating

The Robur AY00-119 Heater is designed for outdoor installation requiring no protection from adverse weather conditions. An individual module offers a nominal heating output of 110,900 BTU/h with hot water

supply temperatures up to 185 °F. Modular heater links, mounted on steel rails are mechanically and electrically pre-assembled by Robur to operate as one integrated system. Packages with up to five modules are available,

offering heating outputs up to 554,500 BTU/h. These heating systems satisfy larger heating requirements with modularity, redundancy and staging capability. Ideal for custom residential, commercial or industrial applications.



Overview

The AY00-119 boilers are heater modules, designed for outdoor installation; they produce hot water up to 185 °F. Each unit is composed of:

- a thermally insulated combustion chamber, designed for outdoor installation;
- pre-mixed multi-gas burner, with low NOX and CO emissions;
- high temperature limit switch for heat exchanger;
- high temperature exhaust limit switch;
- electronic ignition system with high discharge transformer.

The boiler is equipped with a forced draft design exhaust duct, with draft breaking device for exhausting of gas during unit operation. The exhaust duct is situated in the rear portion of the unit.

The AY00-119 unit is equipped with an electrical control box with electronic card for the unit management and operation control.

This unit is designed to work alone, or in multiple modular configurations.

AY00-119 units are natural gas or LPG fired and require 208 - 230V 60Hz SINGLE PHASE electrical power. AY00-119 units can be controlled by an optional DDC (Direct Digital Controller) and each DDC can control up to 16 individual units piped on a common hydronic loop.

Control and safety devices

The heater module includes:

- AY10 Electronic Control Board with integrated microprocessor, LCD display and encoder; located inside the electric box, it is programmable and it controls and monitors the operation of the heater;
- flue gas temperature limit switch; located inside the rear portion of the combustion chamber; helps to prevent overheating of the water heat exchanger;
- high temperature limit switch; located on the outlet water line; helps to prevent overheating of the water heat exchanger;
- safety relief valve; located on the outlet water line; it controls the water pressure inside the hydronic system;
- differential air pressure switch; located inside the

electric box; it helps manage the combustion system controlling the air flowing into the air-gas mixing chamber and stopping the burner if the air flow is too low;

- ignition control box; located inside the electric box; it manages the combustion system controlling the burner ignition, the gas valve, the air pressure switch, the air blower and the flame sensor;
- dual gas valve;
- differential hot water flow switch; located between the water lines; it controls the hot water flow and helps prevent the overheating of the water heat exchanger;
- water temperature sensors; they are located on the water lines and monitor the water temperatures.

PERFORMANCE RATINGS - HEATING ⁽¹⁾			AY 00-119	AY 00-238	AY 00-357	AY 00-476	AY 00-595
Heating capacity ⁽²⁾	BTU/h		110,900	221,800	332,700	443,600	554,500
Gas input (HHV)	BTU/h		129,000	258,000	387,000	516,000	645,000
Ambient operating temperature	maximum	°F	116.6	116.6	116.6	116.6	116.6
	minimum	°F	-7.6	-7.6	-7.6	-7.6	-7.6
Hot water temperature	maximum outlet (to hydronic system)	°F	185	185	185	185	185
	maximum inlet (to unit)	°F	167	167	167	167	167
Nominal hot water flow	GPM		8.81	17.6	26.4	35.2	44.0

ELECTRICAL RATINGS ⁽¹⁾		
Required voltage, 60 Hz, single phase ⁽³⁾	V	208-230
Operating consumption ⁽⁴⁾	kW	0.076 0.152 0.228 0.304 0.380

PHYSICAL DATA ⁽¹⁾		
Pressure drop	Feet of Head / PSI _g	8.3 / 3.6 8.97 / 3.92
Operating weight	pounds	220 738 1,047 1,318 1,708
Please contact Robur Corporation for equipment Dimensions		

⁽¹⁾ All illustrations and specifications contained herein are based on the latest information available at the time of publication.

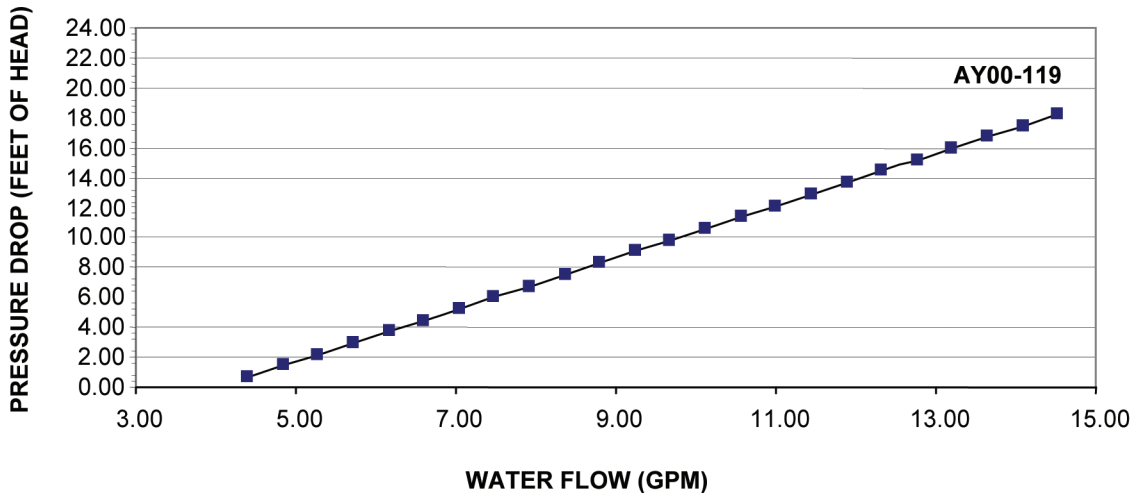
⁽²⁾ Heating capacity at nominal water temperature conditions: outlet 176 °F, inlet 151 °F.

⁽³⁾ Units are factory-wired for 208-230 volts operation.

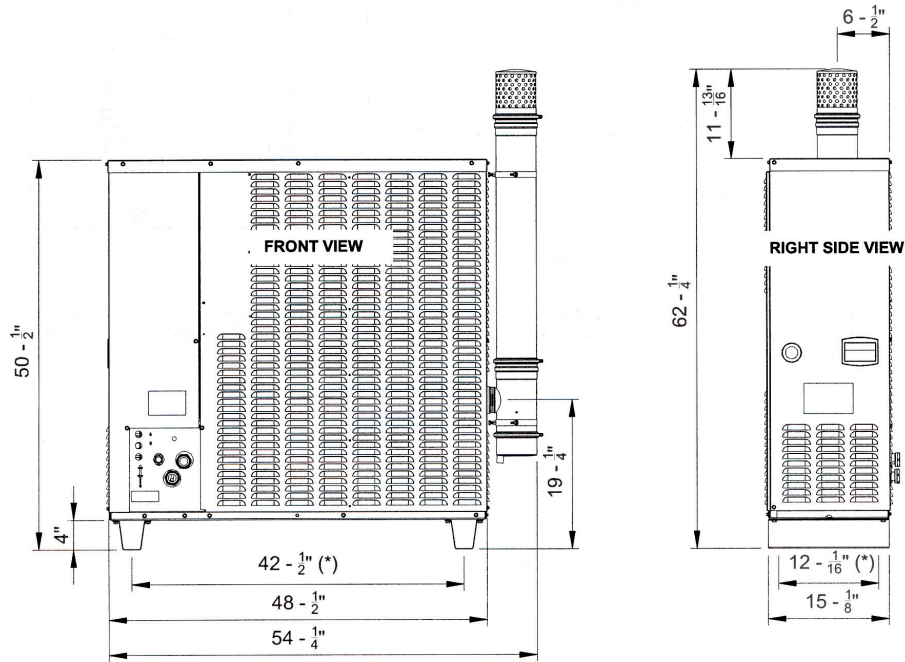
⁽⁴⁾ May vary by ± 10% as function of both power supply and electrical motor input tolerance.

Due to continuous product innovation and development, Robur reserves the right to change product specifications without prior notice.

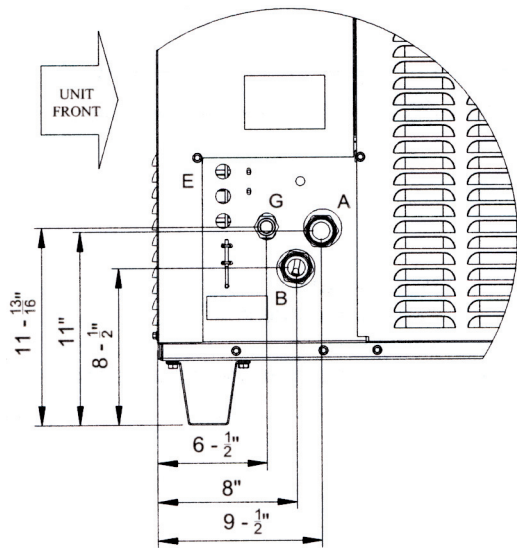
AY00-119 PRESSURE DROP



AY00-119 DIMENSIONS



AY SERVICE PLATE DIMENSIONS



- A** Water outlet $\phi 1$ " FPT
- B** Water inlet $\phi 1$ " FPT
- E** Electrical knockouts $\phi 7/8$ " FPT
- G** Gas connection $\phi 1/2$ " FPT

Water piping design and installation

Piping for the heater is to be designed and installed as a closed hydronic circuit.

The following items (not supplied) must be installed close to the unit:

- FLEXIBLE CONNECTIONS

to avoid vibration transmission to the heater water lines.

- PRESSURE GAUGES to measure inlet and outlet pressure.

- WATER FILTER/ STRAINER mounted in the water Inlet line to remove debris from the water line.

- WATER FLOW REGULATING VALVE for adjusting proper water flow rate.

- WATER PUMP properly sized for system.

- EXPANSION TANK properly sized according to the hydronic system size, maximum thermal expansion,

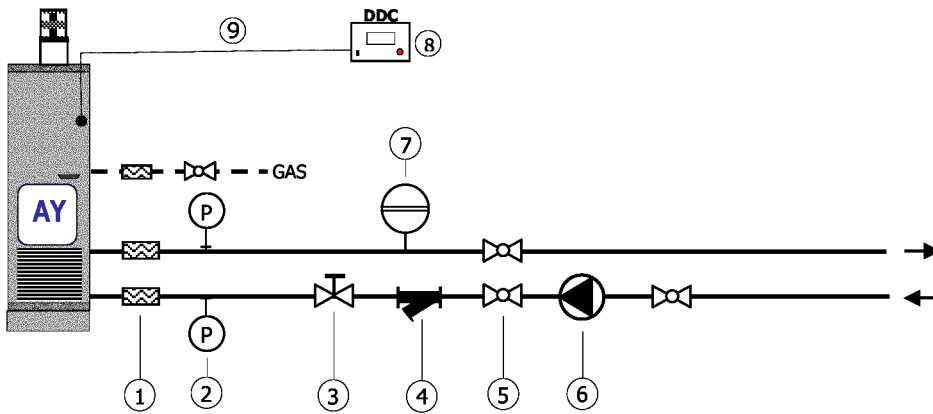
and maximum water pressure.

- FILL VALVE for filling, draining or flushing the hydronic system.

- SHUT-OFF VALVES, on gas and water lines.

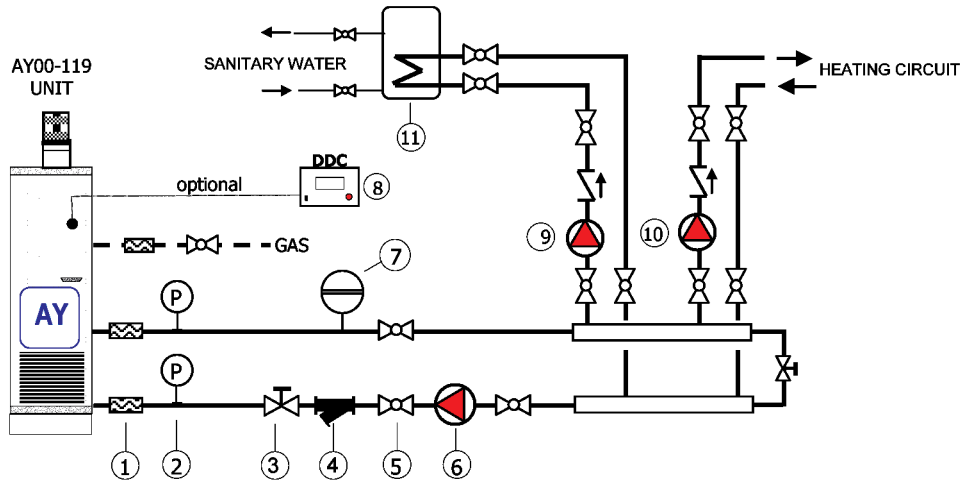
- AIR BLEED set at the highest point in the hydronic system for removal of air.

AY00-119 HYDRONIC SYSTEM: Typical Installation Arrangement (External Components not included with Robur Unit)



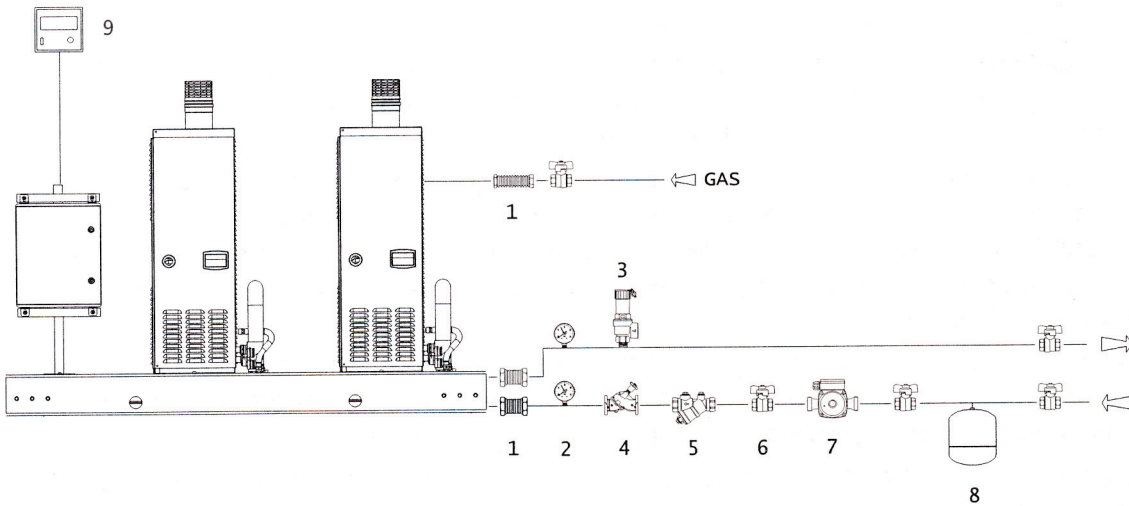
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|--------------------------------|---------------------------------------|
| 1 Antivibration flexible hoses | 6 Circulating water pump |
| 2 Pressure gauge | 7 Expansion tank |
| 3 Flow regulating valve | 8 DDC (optional from Robur) |
| 4 Water filter | 9 Can Bus cable (optional from Robur) |
| 5 Shut-off valve | |

AY00-119 HYDRONIC SYSTEM: Typical Piping Layout with Domestic Hot Water



- | | |
|--------------------------------|----------------------------------|
| 1 Antivibration flexible hoses | 7 Expansion tank |
| 2 Pressure gauge | 8 DDC (optional from Robur) |
| 3 Flow regulating valve | 9 Domestic Hot Water Pump |
| 4 Water filter | 10 Heating loop circulating pump |
| 5 Shut-off valve | 11 Domestic hot water storage |
| 6 Circulating water pump | |

AY HYDRONIC SYSTEM: Typical Installation Arrangement (External Components not included with Robur Unit)



- | | |
|--------------------------------|-----------------------------|
| 1 Antivibration flexible hoses | 6 Shut-off valve |
| 2 Pressure gauge | 7 Circulating water pump |
| 3 Safety valve | 8 Expansion tank |
| 4 Flow regulating valve | 9 DDC (optional from Robur) |
| 5 Water filter | |

Location

The unit must be installed outdoors in an area of free natural air circulation; no combustible construction shall be over the boiler. The installation inside a room or a building is not allowed. There must be a minimum

clearance of 4 feet horizontally from electric meters, gas meters, regulators, and relief equipment and in no case located above or below these items unless a 4 foot horizontal distance is maintained. The unit can be installed at ground level, on a platform

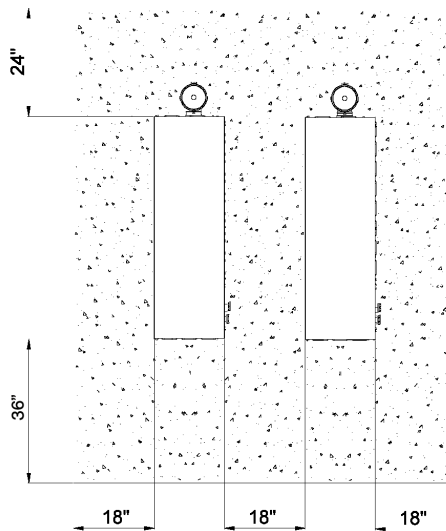
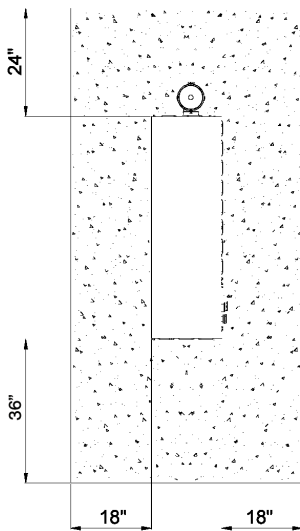
or on the roof (if it can withstand the weight).

Clearances

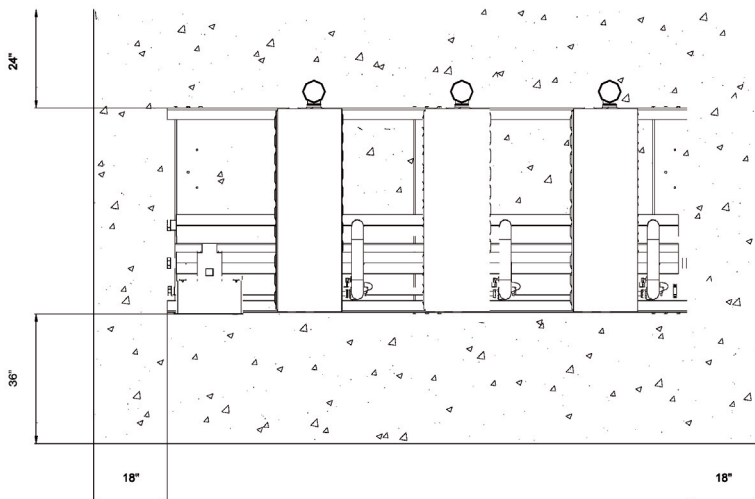
A free space is to be provided around the unit to allow for proper operation and for servicing. The minimum clearance from walls, obstructions and other units

must be as follows.
- right / left side: 18 inches;
- rear side: 24 inches;
- front side: 36 inches.

Observe all local and State codes.



Single unit



Multiple units