

## Technical Data Sheet

# Brigade<sup>®</sup>

## Water Heater

A breakthrough in smart design, PVI's Brigade is a powerful, gas-condensing, firetube water heater that delivers safe, reliable hot water for demanding commercial applications. Brigade's semi-instantaneous hybrid design consists of an integrated buffer that can handle brief high-spike draws, with burner modulation delivering thermal efficiencies up to 99% under routine hot water demands. Constructed with AquaPLEX<sup>®</sup> duplex stainless steel, the compact Brigade delivers unmatched durability, providing owners and facility managers with a dependable domestic hot water system that lasts much longer than the typical 3-4 year glass-lined water heaters.

The ultra-compact footprint of the Brigade allows it to easily fit through a standard doorway and takes up only 3 sq. ft., making it ideal for both retrofit and new construction projects.

Brigade's burner modulation and condensing design allow a thermal efficiency range of 95% to 99% with low standby losses. Touch screen electronic control with user friendly status and diagnostics help to ensure smooth operation.



## Features

- 199 MBH
- Up to 99% thermal efficiency
- 7:1 Turn Down Ratio with spark ignition
- 15" wide x 26" deep x 76" tall with no side or back connections
- 25 gallons buffer
- 233 gallons per hour from 40°F to 140°F
- 185°F maximum water temperature setpoint
- Constructed of AquaPLEX duplex stainless steel
- Industry leading 6-year full limited warranty



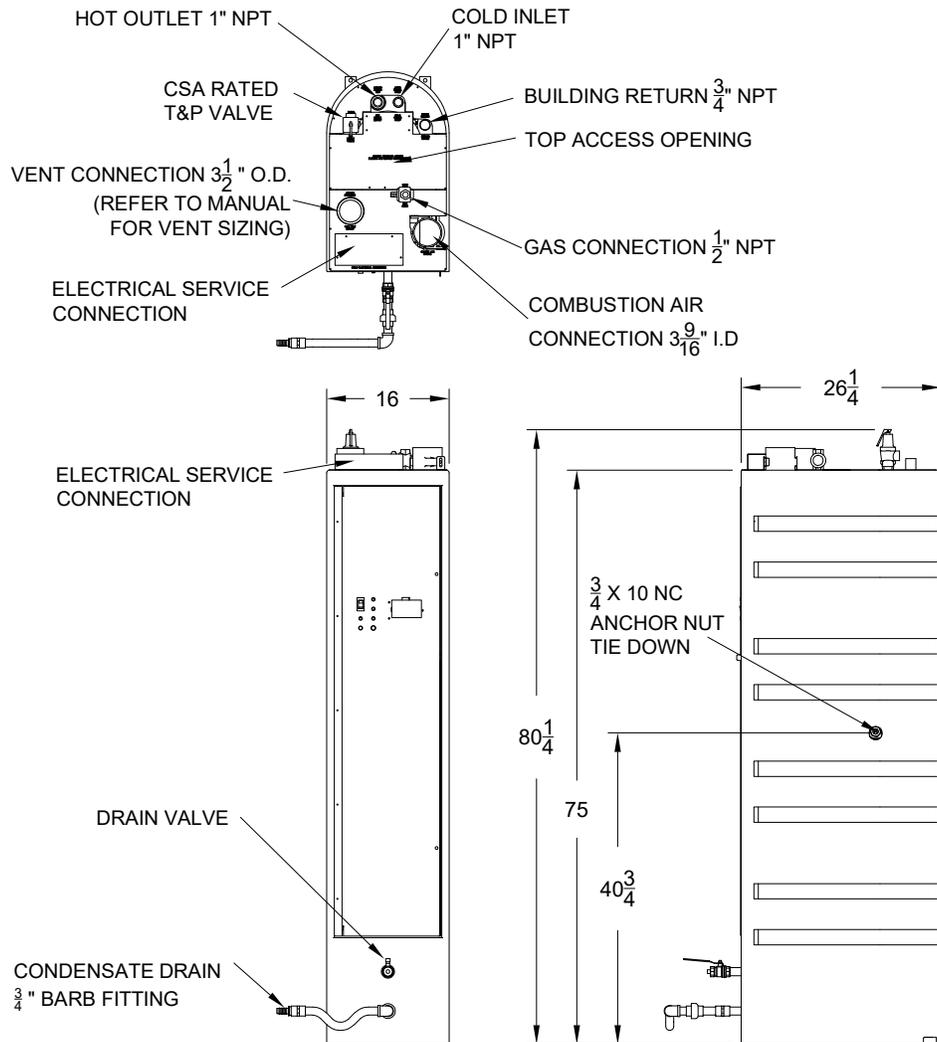
ASHRAE 90.1 compliant  
SCAQMD compliant

# Performance

Model ▼	Input (BTU)	Recovery (GPH) (Thermal Efficiency)		Gas Connection (NPT)*	Vent Diameter*	Operating Weight (lbs)
		70°F to 140°F ①	40°F to 140°F ②			
20 L 25-RGC	199,000	329 (96%)	233 (97.5%)	1/2	3" @ 100 eq. ft.	555

① Recoveries and thermal efficiency based upon DOE 10 CFR 431 testing per ANSI Z21.10.3 @ 70°F to 140°F.  
 ② Recoveries and thermal efficiency based upon 40°F entering water temperature.  
 Dimensions are in inches unless otherwise indicated.  
 For standard and optional equipment, refer to form PV 8693.  
 Empty weight is 348 pounds and shipping weight is 440 pounds.

## Dimensions In inches



<b>Standard Electrical Service</b>
120VAC, 1Ø, 60 Hz, 5 amps.
<b>Venting</b>
Use a Category IV PVC, CPVC or ETL, UL, ULC or CSA listed stainless steel or Centrotherm InnoFlue SW Polypropylene vent, minimum vent length 5 eq. feet. Do not size vent based only upon connection diameter at the appliance. Refer to installation manual for sizing requirements.
<b>Inlet Combustion Air Duct</b>
Up to 100 eq. ft. using 3" PVC or galvanized vent pipe. Longer lengths are ETL listed through larger diameter pipe. Refer to installation manual.
<b>Gas Pressure - Natural</b>
Minimum inlet flow pressure 3.5" W.C. Maximum static pressure 14.0" W.C.
<b>Minimum Clearance from Combustibles</b>
Zero (0") clearance from sides and rear, and 8" from top. 3" from front of unit for closet installation. Can be installed directly on a combustible floor.
<b>Recommended Service Clearances</b>
18" from all sides, top and front. Check local and national codes for additional clearance requirements.
<b>Emissions</b>
< 20 ppm NOx

\*Do not size the entire length of gas pipe or vent based only upon connection size at the appliance. Refer to the installation manual for proper sizing.

PVI reserves the right to change the design and specification without notice.

# Standard and Optional Equipment

## Standard Features and Equipment

### Performance

- 96% thermal efficiency from 70°F to 140°F
- 97.5% thermal efficiency from 40°F to 140°F
- Low NOx compliant at <20 ppm
- Equipped for direct combustion air connection
- Vents through PVC, CPVC or Polypropylene
- Condensate “P” trap

### Pressure Vessel

- AquaPLEX construction (duplex stainless steel)
- CSA and ASME rated T&P relief valve
- Fiberglass insulation
- Durable polyethylene jacket (100% recycled material)
- Bottom drain valve

### Heat Exchanger

- AquaPLEX® combustion chamber and heating surfaces, patent-pending enhanced fire tubes, single pass, 100% submerged

### Burner, Operating Controls and Safeties

- Pre-mix, stainless steel burner with spark ignition
- Modulating burner with 7-to-1 turndown
- ANSI Z21.10.3 compliant gas train
- Electronic operating system with integrated ignition and operating controls
  - Programmable electronic operator with digital temperature readouts, adjustable from 80°F to 180°F
  - Plain text heater status and fault indication with fault history
  - Alarm with remote contacts
  - Visual modulation rate
  - Manual-reset temperature limiting device
  - Modbus RTU (RS-485)
  - BACnet MSTP (RS-485)<sup>2</sup>
- Electronic low water cutoff with manual reset and test switch
- Remote on/off terminals
- Louver or power venter relay and proving contacts

### Warranty

- 6-year vessel and heating surfaces warranty covering waterside and condensate corrosion, leakage, production of rusty water, material defects and workmanship (PV8696)<sup>1</sup>
- First Year Service Policy (PV551)<sup>1</sup>  
Startup form required

### Codes and Standards

- Listed in U.S. Department of Energy’s Compliance Certification Database
- Intertek / ETL Listed Mark
  - ANSI Z21.10.3 - CSA 4.3
  - NSF/ ANSI 372
  - NSF 5
  - PVC, CPVC or Centrotherm InnoFlue SW Polypropylene Category IV vent material
  - Zero-clearance and combustible floor installation
- Complies with ASHRAE 90.1
- Complies with SCAQMD Rule 1146.2 for ultra-low-NOx emissions
- ENERGY STAR® certified

### Optional Equipment

- Condensate Neutralization System (PN 150868)
- Pigtail Kit for 120V plug-in power cord, 14/3 AWG, 12 ft. length (PN 122042)
- Concentric Vent Kit
  - (PN# 124574 for 3” PVC), (PN# 127319 for 3” CPVC)
- Installation Kit, includes ball valves, unions, pipe nipples, y-strainer and check valve for hot-cold connections and building return (PN 151033)
- Tie Down Kit (PN 155151)

<sup>1</sup>See complete warranty and service policy for full details

<sup>2</sup>Conversion to BACnet IP requires field supplied and field installed router or gateway.



Hot Water Solutions

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