



# Polaris® High-Efficiency Commercial Gas Water Heater

**3-Year Limited Tank/1-Year Limited Parts Warranty\***

The Polaris® has a high grade 444 stainless steel tank with brass connections for years of dependable, trouble-free service - no anode required. A submerged combustion chamber with spiral flue provides up to 96% thermal efficiency and ultra-low standby heat loss of approximately 1%.

## POLARIS



- **Sealed Combustion with Woven Fiber Premix Burner**

Metal fiber burner is designed for homogenous combustion in high-intensity blue flame mode. Manufactured of refractory steel that resists corrosion. Excellent resistance to thermal and mechanical shock, even at extreme temperatures. Uniform combustion provides excellent heat transfer. Meets Low NOx requirements for California and Texas.

- **Whisper Quiet Operation**

Ultra quiet blower and burner minimize noise. Requires 120 volt 60Hz power supply. Draws less than 5 Amps.

- **Power/Direct Vent Using 2" or 3" Plastic Pipe**

Direct vents up to 120' using PVC, CPVC, or ABS, either Thru-the-Wall or Thru-the-Roof. Optional concentric vent kit available for use Thru-the-Roof or Wall.

- **"Plug-and-Play" Technology**

No special adjustments are required at initial startup. Connect air inlet, exhaust outlet, water, electricity, and gas. Set the temperature and the system functions properly.

- **External Temperature Adjustment Knob Up to 185°F**

- **Self-Diagnostic Control System**

Three external LED lights indicate operational status of water heater. Microprocessor monitors nine critical functions. An LED trouble-shooting light, visible through view port, signals heater operation status.

- **Full Serviceability from the Front**

Removal of two front-located access panels exposes all serviceable components. Modular components are easily removed.

- **Multiple 1" Tank Connections - Brass**

- **Certified to Current Edition of ANSI Z21.10.3/CSA 4.3**

- **Other Features**

- Thermister Temperature Sensor
- Hot Surface Ignition
- Meets or Exceeds ASHRAE/IESNA 90.1 - Current Standard
- Complies with California Title 24
- Factory Installed T&P Valve
- 24-Volt Thermostat Control
- Full Flow Brass Drain Valve
- Zero Clearance to Combustibles
- Factory Provided Condensate Trap
- Lightweight with Small Footprint



*\*For complete warranty information consult the written warranty of American Water Heaters found at [www.americanwaterheater.com](http://www.americanwaterheater.com), or call (800) 456-9805.*



## Up to 96% Efficient

1. The quiet, brushless DC blower prepurges the submerged combustion chamber for 8 seconds and turns off.
2. The hot surface igniter is energized and glows red hot.
3. The blower turns on, precisely mixing air and gas for combustion. The mixture is forced through the metal fiber burner and is ignited by the hot surface igniter. A blue flame is evenly distributed across the entire burner, resulting in clean combustion with low nitrous oxide emissions.
4. The combustion chamber wall efficiently transfers high temperature heat from the flame to the water.
5. The blower pushes hot combustion gases through the spiral coil, which scrubs the remaining heat from the hot gases.
6. As combustion gas exits the bottom of the spiral coil, it is barely warm to the touch. Up to 96% of the heat from the flame is transferred to the water.
7. Combustion gases are vented through PVC, CPVC or ABS plastic pipe.
8. Condensation formed by cooled combustion air is captured by a condensate trap and drained through a drain line.

## The Quiet Way to Efficiently Heat Water

An ultra quiet radial blower is combined with a submerged burner for whisper quiet operation. Indicator lights illuminate when the power is on and when the igniter and burner are operating.



This water heater design has been tested by CSA International and complies with ANSI Z21.10.1, Section 2.35 Flammable Vapor Resistance



## An Excellent Choice for Replacing Standard Water Heaters

### **Polaris® vs. Standard Commercial Gas Water Heater**

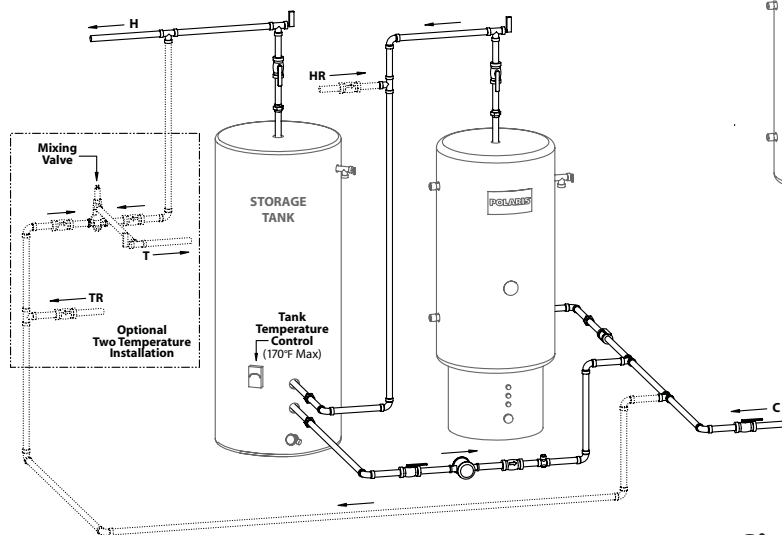


	<b>Polaris® Water Heater</b>	<b>Standard Gas Water Heater</b>
Tank	Stainless Steel	Glass Lined
Warranty - Tank/Parts (Years)	3/1	3/1
Gallon Capacity	50	100
BTU Input	199,000	199,000
Thermal Efficiency	95%	80%
BTU Output	189,050	159,200
GPH 100°F Rise	230	194
First Hour Availability	270	274
Diameter	22"	26"-30 1/2"
Shipping Weight (lbs.)	180	609
Minimum Installed Height	Approx. 67"	Approx. 96"
Vent Diameter	3"	6"
Side Wall Vent Option	Standard	Power Vent Kit Required
Vent Type	ABS/PVC/CPVC Plastic	Type B Metal
Sealed Combustion	Yes	No
Self-Diagnostic Control	Yes	No
Resists Negative Building Pressure	Yes	No
Maximum Temperature Setting	185°F	180°F
Insulation Thickness	2"	1-2"
Low Nox	Standard	Optional

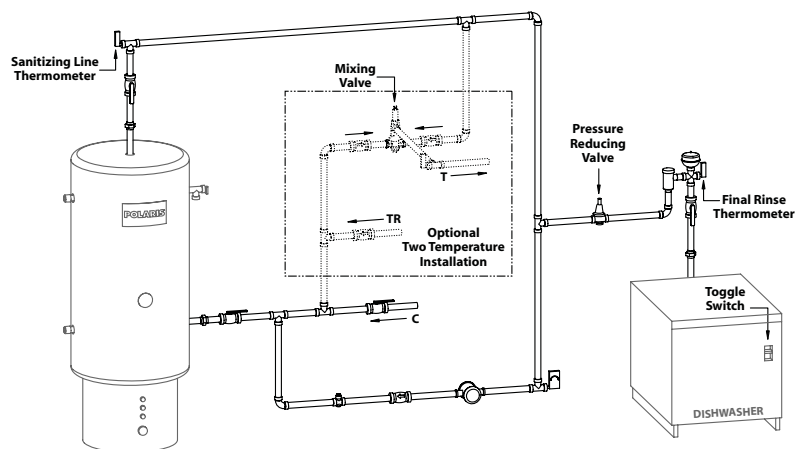
# Piping Diagrams

## Single Heater Installation

### Single Heater with Storage Tank



### Single Heater with Dishwasher



**H** = Hot Water Outlet    **C** = Cold Water Inlet    **T** = Temperated Water Outlet  
**HR** = Hot Water Recirculating Line Return (if used)  
**TR** = Temperated Water Recirculating Line Return (if used)

**NOTE:** All installations are one or two temperature, with or without recirculation.

For additional piping diagrams, call (800)456-9805, Fax (800)999-5210  
or visit [www.americanwaterheater.com](http://www.americanwaterheater.com) on the world wide web.

## Performance Tables

### G.P.H. RECOVERY

MODEL NUMBER	TEMPERATURE RISE										
	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°
PGC3 34-130-2NV	378	303	252	216	189	168	152	138	126	116	108
PGC3 34-150-2NV	432	345	288	247	216	192	173	157	144	133	123
PGC3 50-130-3NV	374	299	249	214	187	166	150	136	125	115	107
PGC3 50-150-3NV	432	345	288	247	216	192	173	157	144	133	123
PGC3 50-175-3NV	509	407	339	291	255	226	204	185	170	157	145
PGC3 50-199-3NV	579	463	386	331	289	257	232	211	193	178	165

### FIRST HOUR GALLONS AVAILABLE

MODEL NUMBER	TEMPERATURE RISE										
	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°
PGC3 34-130-2NV	405	330	279	243	216	195	179	165	153	143	135
PGC3 34-150-2NV	459	373	315	274	243	219	200	184	171	160	151
PGC3 50-130-3NV	414	339	289	254	227	206	190	176	165	155	147
PGC3 50-150-3NV	472	385	328	287	256	232	213	197	184	173	163
PGC3 50-175-3NV	549	447	379	331	295	266	244	225	210	197	185
PGC3 50-199-3NV	619	503	426	371	329	297	272	251	233	218	205

### MAXIMUM G.P.H. FIRST HOUR (RECOVERY AND STORAGE)

MODEL NUMBER	TEMPERATURE RISE										
	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°
PGC3 34-130-2NV	6.8	5.5	4.7	4.1	3.6	3.3	3.0	2.8	2.6	2.4	2.3
PGC3 34-150-2NV	7.7	6.2	5.3	4.6	4.1	3.7	3.3	3.1	2.9	2.7	2.5
PGC3 50-130-3NV	6.9	5.7	4.8	4.2	3.8	3.4	3.2	2.9	2.8	2.6	2.5
PGC3 50-150-3NV	7.9	6.4	5.5	4.8	4.3	3.9	3.5	3.3	3.1	2.9	2.7
PGC3 50-175-3NV	9.2	7.5	6.3	5.5	4.9	4.4	4.0	3.7	3.5	3.3	3.1
PGC3 50-199-3NV	10.3	8.4	7.1	6.2	5.5	5.0	4.5	4.2	3.9	3.6	3.4

### MAXIMUM G.P.M. RECOVERY - CONTINUOUS OPERATION

MODEL NUMBER	TEMPERATURE RISE										
	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°
PGC3 34-130-2NV	6.3	5.1	4.2	3.6	3.2	2.8	2.5	2.3	2.1	1.9	1.8
PGC3 34-150-2NV	7.2	5.8	4.8	4.1	3.6	3.2	2.9	2.6	2.4	2.2	2.1
PGC3 50-130-3NV	6.2	5.0	4.2	3.6	3.1	2.8	2.5	2.3	2.1	1.9	1.8
PGC3 50-150-3NV	7.2	5.8	4.8	4.1	3.6	3.2	2.9	2.6	2.4	2.2	2.1
PGC3 50-175-3NV	8.5	6.8	5.7	4.8	4.2	3.7	3.4	3.1	2.8	2.6	2.4
PGC3 50-199-3NV	9.6	7.7	6.4	5.5	4.8	4.3	3.9	3.5	3.2	3.0	2.8

## Polaris® Pays for Itself

### How To Calculate Payback

1. Determine the cost of installing a standard commercial gas water heater.
2. Determine the cost of installing a commercial Polaris water heater.
3. If the cost to install a commercial Polaris is higher than the cost of installing a standard commercial gas water heater, subtract the cost found in Step 2 from the cost found in Step 1.
4. After determining the gallons of water heated per day and the appropriate temperature rise, use the table below to look up the cost savings per year.
5. To calculate the payback period in years, divide the cost difference found in Step 3 by the savings per year found in Step 4.

**Example:** A customer can install a conventional 100-gallon commercial gas water heater with 199,000 BTUs operating at 80% thermal efficiency or a 50-gallon Polaris with 199,000 BTUs operating at 95% thermal efficiency. The customer will be heating approximately 500 gallons of water per day using a 100 degree temperature rise. The total installed cost of the water heater is \$4,100. The cost of the same installation using a Polaris water heater is \$4,500. What is the payback period in years?

1. \$4,100
2. \$4,500
3.  $\$4,500 - \$4,100 = \$400$
4. From the table below, the annual cost savings of heating 500 gallons per day at a 100 degree temperature rise is \$361 per year.
5. Payback Period =  $\$400 / \$361 = 1.1$  years

## Operating Cost Savings Per Year

TEMPERATURE RISE											
GALLONS HEATED PER DAY	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°
250	\$73	\$91	\$109	\$127	\$145	\$136	\$181	\$200	\$218	\$236	\$254
500	\$145	\$181	\$218	\$254	\$290	\$327	\$361	\$397	\$434	\$470	\$506
750	\$218	\$272	\$327	\$379	\$434	\$488	\$542	\$597	\$651	\$706	\$760
1000	\$290	\$361	\$434	\$506	\$579	\$651	\$724	\$797	\$869	\$942	\$1,014
1500	\$434	\$542	\$651	\$760	\$869	\$978	\$1,085	\$1,194	\$1,303	\$1,412	\$1,520
2000	\$579	\$724	\$869	\$1,014	\$1,158	\$1,303	\$1,448	\$1,593	\$1,738	\$1,881	\$2,027
2500	\$724	\$905	\$1,085	\$1,266	\$1,448	\$1,629	\$1,809	\$1,990	\$2,172	\$2,353	\$2,533
3000	\$869	\$1,085	\$1,303	\$1,520	\$1,738	\$1,954	\$2,172	\$2,390	\$2,605	\$2,823	\$3,041

Based on 80% thermal efficiency of standard gas water heater compared to 95% thermal efficiency for Polaris water heater and \$1.218/Therm natural gas cost. Standby losses are not included. Polaris has a standby heat loss of approximately 1% per hour versus 3-5% for standard gas water heaters.

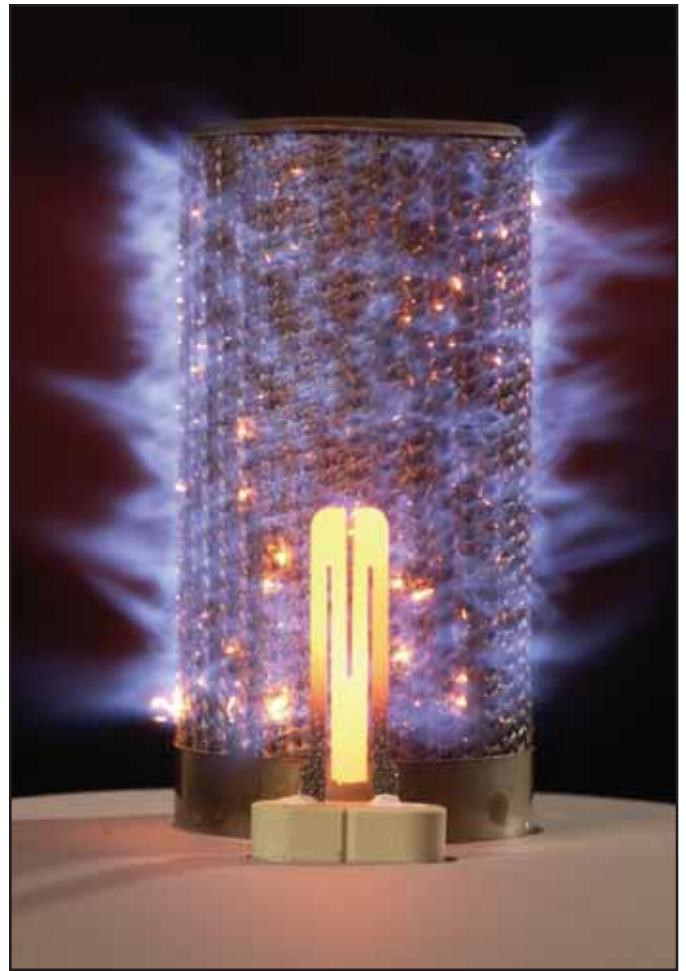


## Woven Metal Burner

- Low NOx emissions
- Resistant to thermal and mechanical shocks
- Woven material provides even heat distribution through uniform combustion
- Protects from flashback

## Whisper Quiet Blower

A high capacity, quiet, brushless, DC motor is combined with an integrated gas/air control safety system resulting in excellent combustion with flexible venting options.

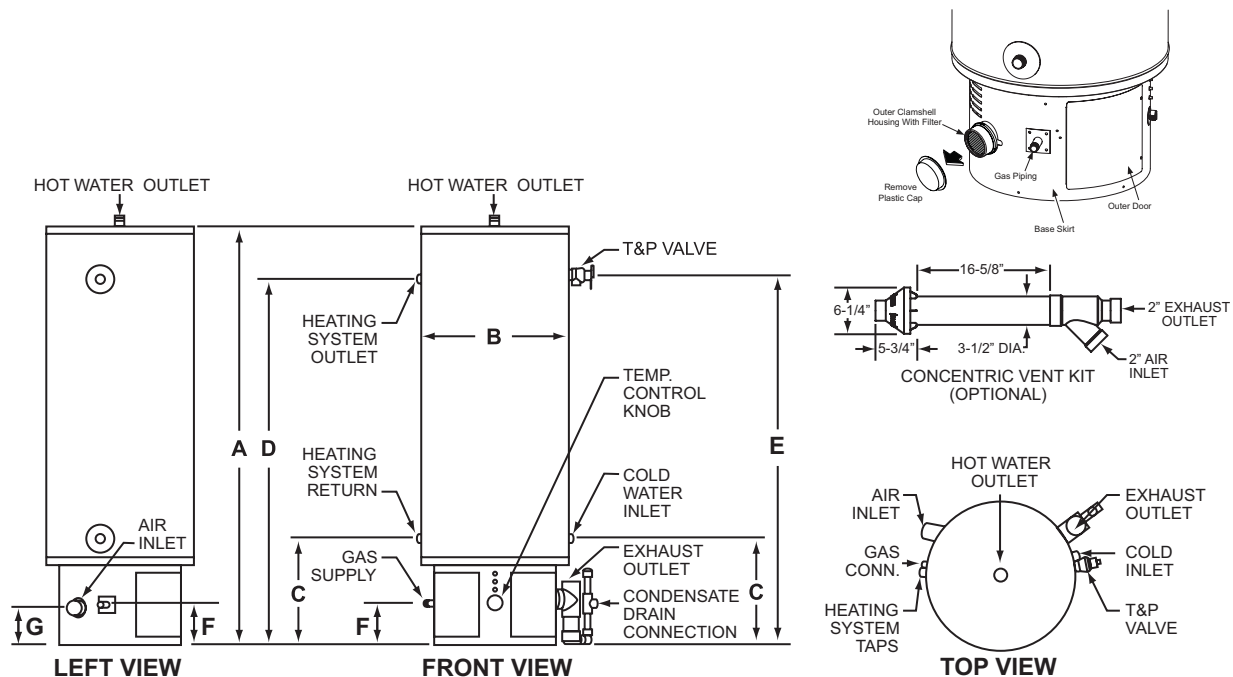


## Easy to Install and Service

- All gas valve and blower adjustments are factory preset.
- High altitude installations do not require adjustments or derating in the field.
- When optional concentric vent is used, only one hole is cut in the wall or roof.
- A self-diagnostic control automatically monitors all critical water heater functions and indicates the status of each using a flash code sequence.



# Polaris® High-Efficiency Commercial Gas Water Heater



MODEL NUMBER	GAL CAP.	INPUT BTU PER HR.	GPH RECOVERY 100° RISE	EXTERIOR A	EXTERIOR B	VENT DIAM.	1" WATER CONNECTIONS C	T&P HEIGHT E	GAS SUPPLY* F	THERMAL EFFICIENCY	APPROX SHIP WEIGHT
PGC3 34-130-2NV	34	130,000	151	48-1/2	22	2 or 3	15-3/4	40-1/2	41	6-1/8	150
PGC3 34-150-2NV	34	150,000	173	48-1/2	22	2 or 3	15-3/4	40-1/2	41	6-1/8	150
PGC3 50-130-3NV	50	130,000	150	62-1/2	22	2 or 3	15-3/4	54-1/2	55	6-1/8	176
PGC3 50-150-3NV	50	150,000	173	62-1/2	22	2 or 3	15-3/4	54-1/2	55	6-1/8	176
PGC3 50-175-3NV	50	175,000	204	63-3/4	22	3	15-3/4	55-3/4	56-1/4	6-1/8	180
PGC3 50-199-3NV	50	199,000	232	63-3/4	22	3	15-3/4	55-3/4	56-1/4	6-1/8	180

For propane, substitute "P" for "N" in the model number. 3" Concentric Vent Part #6911089 or 2" Concentric Vent Part #6911088. Specifications are subject to change without notice in accordance with our policy of continuous improvement. Input, output and recovery may vary depending upon air inlet and exhaust outlet installations. Length and number of bends in inlet and outlet pipes may reduce input and output. Consult installation, operation and service manual for details. Dimensions on all charts shown in inches. \*1/2" gas supply line can be used for up to 150,000 BTU units; units over 150,000 BTU's require a 3/4" gas supply line.

## Specification

Commercial gas-fired water heater(s) shall be a direct/power vent Polaris model \_\_\_\_\_ as manufactured by American Water Heaters and shall have a 3-year limited tank warranty and a 1-year limited parts warranty, as outlined in the written warranty. Units shall be designed to burn \_\_\_\_\_ (natural/propane) gas and be CSA International certified to the latest edition of ANSI standard Z21.10.3/CSA 4.3. Water heater(s) shall have a nominal storage capacity of \_\_\_\_\_ gallons and a recovery rate of \_\_\_\_\_ GPH @ 100°F rise with a rated input of \_\_\_\_\_ BTU/Hr. Water heater(s) shall be condensing type with a minimum thermal efficiency of 95-96%, power vented with PVC, ABS, or CPVC pipe. Water heater(s) shall have combined vent capabilities of up to 120' to the exhaust outlet with up to 120' to the air inlet. Water heater(s) shall have a low noise combustion system with a woven fiber steel burner capable of low NOx (less than 40 ng/j) in the blue flame mode and shall be manufactured of refractory steel, resistant to thermal and mechanical shock. The gas valve shall be a Honeywell CV1-r1 series gas valve with a matching 45.900 series venturi manifold using a 1:1 air/gas ratio. The combustion system shall be factory adjusted and require no field adjustment on startup. The tank shall be constructed of 444 stainless steel with a submerged combustion chamber and rated for 150 PSI working pressure and 300 PSI test pressure. The tank shall be surrounded by two inches of non-CFC foam insulation covered by an enamel coated metal jacket. Operating controls shall have a 24-volt integrated control circuit, an immersed thermistor temperature sensor, a recycling energy cut-off switch, external temperature adjustment up to 185°F and shall have LED lights that continuously indicate the operational status of the water heater(s). A microprocessor shall automatically monitor nine critical operating functions and signal the status of each. A factory installed temperature and pressure relief valve shall be provided on all models.

## Distributed By:

### Order Entry and Sales

500 Princeton Road (FEDEX, UPS)  
Johnson City, TN 37601-2030  
P.O. Box 4808 (Mailing)  
Johnson City, TN 37602-4808  
(800) 937-1037  
FAX (800) 581-7224

### Warranty and Service

500 Princeton Road (FEDEX, UPS)  
Johnson City, TN 37601-2030  
P.O. Box 1597 (Mailing)  
Johnson City, TN 37605-1597  
(800) 456-9805  
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