ULTRA FORCE™

UP TO 96% EFFICIENT COMMERCIAL GAS WATER HEATERS

The UItra Force™ SUF product line is the most efficient State commercial water heater line ever built. With a storage tank of up to 130 gallons, high BTU input and up to 96% thermal efficiency, these models deliver more hot water for every energy dollar. A single Ultra Force unit is an ideal energy-saving choice for restaurants and other mid-sized commercial applications. Multiple Ultra Force water heaters can be manifolded together to meet the demands of large commercial and industrial applications.

Down-Fired Low NOx Power Burner Design

- Top-mounted radial burner design ensures optimum combustion efficiency.

Fully Submerged, Spiral-Shaped Condensing Heat Exchanger

- Spiral shaped heat exchanger coils keeps hot flue gases swirling through the heat exchanger maximizing heat transfer and efficiency.
- Spiral shaped heat exchanger reduces the accumulation of lime scale; maintains higher efficiency performance over time.

Standard Power Vent or Power Direct Vent Flexibility

- Vertical or sidewall power-venting
- Vertical or sidewall powered-direct vent draws all combustion air from outside the building.
- Vents using inexpensive PVC, ABS or CPVC pipe. Canadian installations require ULC S636 listed PVC or CPVC pipe for intake and exhaust.
- Air intake and vent runs can be up to 120 equivalent feet.

Space-Saving Design, with Zero Clearance to Combustibles

- Approved for installation on combustible flooring.

All Controls Including Gas Valve and Combustion Air Blower Located on Top

- Provides easy access during installation and service.
- Protects against high water damage.
- Protected from dirt and incidental damage.

Advanced Electronic Control System

- Microprocessor controls all water heater functions including ignition and temperature regulation.
- Precise temperature control adjustable from 90° F to 180° F.
- Large LCD display provides detailed operational and diagnostic information in plain English for ease of operation and service.
- Ultra Force water heaters are iCOMM™ compatible and can be monitored from remote locations. Call 1.888.WATER02 for more information.

Powered Anodes (Standard on All Models)

- Provide long-lasting tank protection
- Non sacrificial anodes never need replacing unless damaged.

ASME Construction

- Optional on all models

Maximum Hydrostatic Working Pressure: 160 psi

CSA Certified and ASME Rated T&P Relief Valve

For more information on Ultra Force™ contact:

State Water Heaters,
500 Tennessee Waltz Parkway
Ashland City, TN 37015
800-365-0024 Toll-free USA
www.statewaterheaters.com

SOLID.STATE.

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Other Ultra Force™ Features:

Commercial Grade Glass-Lined Tank and Heat Exchanger for Long-Term Protection Against Corrosion

- Heat exchanger glasslined on both water and vent sides to protect against corrosive flue gases and condensate inside the coil

Handhole Cleanout

- For easy inspection and cleaning

Compliance

- Meets theThermal Efficiency and Standby Loss Requirements of the U. S. Department of Energy and Current Edition of ASHRAE/IESNA 90.1
- Complies with SCAQMD Rule 1146.2 and other air quality management districts with similar requirements for NOx emissions
- The 120-250K BTU models are design-certified by CSA International, according to ANSI Z21.10.3 - CSA 4.3 Standards governing storage-type water heaters
- The 300-500K BTU models are design-certified by Underwriter's Laboratories (UL), Inc., according to ANSI Z21.10.3-4.3 CSA Standards governing storage-type water heaters
- Design-certified by Underwriter's Laboratories (UL), Inc., to NSF Standard 5

Three-Year Limited Tank Warranty

- For complete warranty information, consult written warranty shipped with water heater or contact State Water Heaters

SUF 60 120NE (A) - SUF 100 250NE (A) Models

ASME (OPTIONAL)

SUF 130 300NE (A) - SUF 130 500NE (A) Models

ASME

ASME (OPTIONAL)

RECOVERY CAPACITY

MODEL	TYPE OF GAS	INPUT		Thermal Efficiency	U.S. Gallons/Hr and Litres/Hr at TEMPERATURE RISE INDICATED													
		BTUH	KW		Approx. Capacity	F°	30 F°	40 F°	50 F°	60 F°	70 F°	80 F°	90 F°	100 F°	110 F°	120 F°	130 F°	140 F°
						C°	17 C°	22 C°	28 C°	33 C°	39 C°	44 C°	50 C°	56 C°	61 C°	67 C°	72 C°	78 C°
SUF 60 120 NE	NATURAL/ PROPANE	120,000	35	95%	60 U.S. Gals.	GPH	461	345	276	230	197	173	154	138	126	115	106	99
					227 Litres	LPH	1744	1308	1046	872	747	654	581	523	476	436	402	374
SUF 100 150 NE	NATURAL/ PROPANE	150,000	44	95%	100 U.S. Gals.	GPH	576	432	345	288	247	216	192	173	157	144	133	123
					379 Litres	LPH	2179	1635	1308	1090	934	817	726	654	594	545	503	467
SUF 100 199 NE	NATURAL/ PROPANE	199,900	58	95%	100 U.S. Gals.	GPH	767	575	460	384	329	288	256	230	209	192	177	164
					379 Litres	LPH	2904	2178	1743	1452	1245	1089	968	871	792	726	670	622
SUF 100 250 NE	NATURAL/ PROPANE	250,000	73	95%	100 U.S. Gals.	GPH	960	720	576	480	411	360	320	288	262	240	221	206
					379 Litres	LPH	3632	2724	2179	1816	1557	1362	1211	1090	991	908	838	778
SUF 130 300 NEA	NATURAL/ PROPANE	300,000	88	96%	130 U.S. Gals.	GPH	1164	873	699	582	499	436	388	349	318	291	269	250
					492 Litres	LPH	4406	3304	2644	2203	1888	1652	1469	1322	1201	1102	1017	945
SUF 130 400 NEA	NATURAL/ PROPANE	399,900	117	96%	130 U.S. Gals.	GPH	1552	1164	931	776	665	582	517	465	423	388	359	332
					492 Litres	LPH	5875	4406	3525	2938	2518	2203	1958	1750	1602	1469	1356	1259
SUF 130 500 NEA	NATURAL/ PROPANE	499,900	146	95%	130 U.S. Gals.	GPH	1919	1439	1151	959	822	720	640	576	523	480	443	411
					492 Litres	LPH	7263	5447	4358	3631	3113	2724	2421	2179	1981	1816	1676	1556

Recovery capacities are based on heater performance at 95% and 96% thermal efficiency.
Add "A" to model number when ordering ASME. Optional on all Models.
Maximum gas supply pressure for 120 - 250: 10.5″ w.c. natural gas 14″ w.c propane. Maximum gas supply pressure for 300 - 500 10″ w.c. natural gas 13″ w.c. propane.
Manifold pressure: 4″ w.c. natural gas 10″ w.c. propane. Electrical requirements: 120/60Hz VAC, Blower 2.2 Amps FL, Igniter 4.0 Amps.

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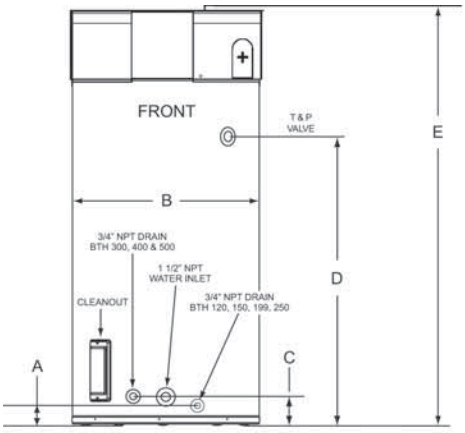
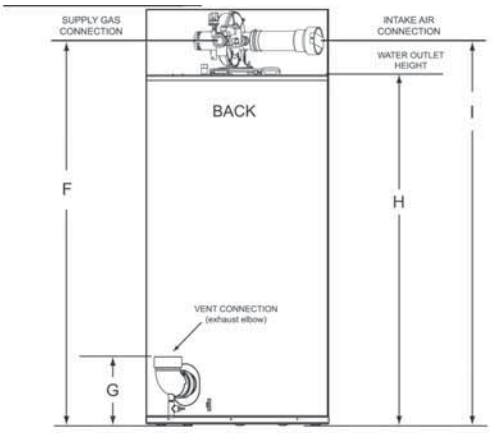
DIMENSIONS AND SHIPPING WEIGHTS

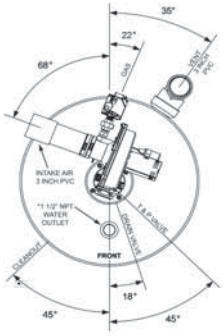
MODEL NUMBER	DIMENSIONS									APPROX. SHIPPING WEIGHT	
	A	B	C	D	E	F	G	H	I	STD.	ASME
SUF 120	3/7.62	27.75/70.5	6.3/16	35/88.9	55.5/141	48/121.9	11/27.9	42/106.7	47.5/120.6	460/208	490/222
SUF 150	3/7.62	27.75/70.5	6.3/16	55.5/141	75.5/191.8	68.5/174	11/27.9	63/160	69/175.3	555/252	595/270
SUF 199, SUF 250	3/7.62	27.75/70.5	6.3/16	55.5/141	75.5/191.8	75.5/191.8	11/27.9	63/160	69/175.3	555/252	595/270
SUF 300, 400 & 500	N/A	33.12/84.1	4.86/12.34	50.77/129	75.5/191.8	69/175.3	12/30.5	63/160	69/175.3	855/408	855/408

Water Connections: 1-1/2″

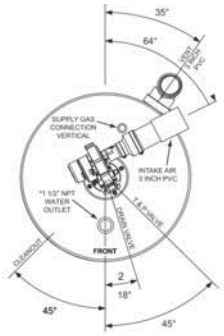


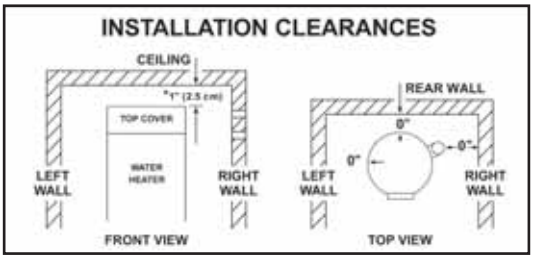


SUF 120 & 150



SUF 199 & 250

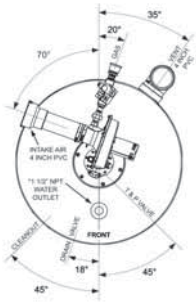




*Minimum clearance to remove top cover

MINIMUM SUPPLY GAS LINE SIZE		
MODEL	NATURAL GAS	PROPANE GAS
SUF 60 120 NE	1/2″ N.P.T.	1/2″ N.P.T.
SUF 100 150 NE	3/4″ N.P.T.	3/4″ N.P.T.
SUF 100 199 NE	3/4″ N.P.T.	3/4″ N.P.T.
SUF 100 250 NE	3/4″ N.P.T.	3/4″ N.P.T.
SUF 130 300 NE	1-1/4″ N.P.T.	1-1/4″ N.P.T.
SUF 130 400 NE	1-1/4″ N.P.T.	1-1/4″ N.P.T.
SUF 130 500 NE	1-1/2″ N.P.T.	1-1/4″ N.P.T.

SUF 300, 400 & 500



*Center line of water outlet on top of the water heaters is approximately 7 inches from the front edge of the water heater

MAXIMUM EQUIVALENT VENT LENGTHS SUF 120-250

*NUMBER OF 90° ELBOWS INSTALLED	3 INCH PIPE	4 INCH PIPE
	MAXIMUM FEET (METERS)	MAXIMUM FEET (METERS)
One (1)	45 feet (13.7 meters)	115 feet (35.0 meters)
Two (2)	40 feet (12.2 meters)	110 feet (33.5 meters)
Three (3)	35 feet (10.7 meters)	105 feet (32.0 meters)
Four (4)	30 feet (9.1 meters)	100 feet (30.5 meters)
Five (5)	------	95 feet (29.0 meters)
Six (6)	------	90 feet (27.4 meters)

* Maximum number of 90° elbows allowed for the vent (exhaust) pipe is four (4) when installing 3 inch pipe and six (6) when installing 4 inch pipe. Maximum number of 90° elbows allowed for intake air pipe is four (4) when installing 3 inch pipe and six (6) when installing 4 inch pipe. Two (2) 45° elbows equal one (1) 90° elbow.

MAXIMUM EQUIVALENT VENT LENGTHS SUF 300 - 500

*NUMBER OF 90° ELBOWS INSTALLED	4 INCH PIPE	6 INCH PIPE
	MAXIMUM FEET (METERS)	MAXIMUM FEET (METERS)
One (1)	65 feet (19.8 meters)	115 feet (35.0 meters)
Two (2)	60 feet (18.2 meters)	110 feet (33.5 meters)
Three (3)	55 feet (16.8 meters)	105 feet (32.0 meters)
Four (4)	50 feet (15.2 meters)	100 feet (30.5 meters)
Five (5)	45 feet (13.7 meters)	95 feet (29.0 meters)
Six (6)	40 feet (12.2 meters)	90 feet (27.4 meters)

* Maximum number of 90° elbows allowed for the vent (exhaust) pipe is six (6). Maximum number of 90° elbows allowed on the intake air pipe is six (6). Two (2) 45° elbows equal one (1) 90° elbow.

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INSTALLATION CONSIDERATIONS

1. Condensate Drain – This is a fully condensing water heater and should be located near a drain to permit proper disposal of condensate.
2. Vent Termination – Exhaust gases of this water heater are less than 140° F. In cold climates, water vapor in flue gases will condense into a cloud of vapor where the vent exits the building. This vapor can gradually discolor exterior building surfaces. Vent termination should be located where this vapor cloud and potential discoloration are not a concern. Extending the vent termination up to 6" from the wall helps vapor from being trapped along a building's face. To avoid this problem, the vent can be terminated on the roof. Always locate vent termination above the maximum snowline, and do not locate vent termination above a walkway.
3. Air Intake – In cold climates, air intake should be located at least four feet from the vent termination of the water heater and any other appliance vents that discharge moisture-laden air (such as clothes dryers). This will help prevent freeze-over of the intake screen required to prevent foreign objects from entering the intake pipe. Air intake should be located above the maximum snowline.
4. Blockage Sensors – The water heater is equipped with sensors to shut it down if blockage of vent or air intake occurs. The water heater control system will display detailed diagnostic information on the LCD screen to help service technicians quickly locate and correct the problem.
5. Noise – Vent terminal should be located away from bedroom windows or other areas where blower noise will be objectionable. Avoid venting into corners or confined areas, which will amplify sound. Anchoring intake or vent pipe walls or ceilings can cause noise to be transmitted to living areas, and isolation mounts should be used where anchoring is required.
6. Optional Concentric Vent Kit - Helps to minimize unsightly wall/roof penetrations.
   SUF 60 120NE - SUF 130 300NEA vent kit p/n 9006328005
   SUF 130-400-500 NEA vent kit p/n 9006144005

SUGGESTED SPECIFICATION

Gas water heater(s) shall be State Ultra Force™ Model _____, with a storage capacity of ____ gallons, an input rating of _____BTU/hr., a recovery rating of ____ GPH at 100º F temperature rise, and thermal efficiency of____%. Heaters shall meet the thermal efficiency and standby loss requirements of the U. S. Department of Energy and current edition of ASHRAE/IESNA 90.1 and comply with SCAQMD Rule 1146.2 and other air quality management districts with similar requirements for low NOx emissions. In addition, heater(s) shall: 1) Have a power burner that requires no special calibrations on start-up. 2) Have seamless glass lined tank construction in which the glass coating is applied to the water side surfaces of the tank after the tank has been assembled and welded. 3) Have a condensing flue coil that is coated on the flue gas side with acid-resistant glass lining designed for use in condensing heaters. 4) Have a control system that includes an integrated solid-state temperature and ignition control device with integral diagnostics, LCD fault display capability and a digital display of temperature settings. 5) Equipped with a CSA Certified and ASME Rated T&P Relief Valve. 6) Be approved for 0" clearance to combustibles. 7) Heater shall be supplied with maintenance free (unless damaged) powered anodes.

120K-250K BTU Input:

For Standard Power Venting: Water heater(s) shall be suitable for standard power venting using a (3" or 4") ____ diameter PVC pipe for a total distance of (50ft. or 120 ft.) ____ equivalent feet of vent piping.

For Power Direct Venting: Water heater(s) shall be suitable for power direct venting using a (3" or 4") ____ diameter PVC pipe for a total distance of (50 ft. or 120 ft.) ____ equivalent feet of vent piping and (50 ft. or 120 ft.) ____ equivalent feet of intake air piping.

300K - 500K BTU Input:

For Standard Power Venting: Water heater(s) shall be suitable for standard power venting using a (4" or 6") ____ diameter PVC pipe for a total distance of (70 ft. or 120 ft.) ____ equivalent feet of vent piping.

For Power Direct Venting: Water heater(s) shall be suitable for power direct venting using a (4" or 6") ____ diameter PVC pipe for a total distance of (70 ft. or 120 ft.) ____ equivalent feet of vent piping and (70 ft. or 120 ft.) ____ equivalent feet of intake air piping.

Water heater should incorporate the iCOMM™ system for remote monitoring, leak detection and fault alert.

For complete information on limited warranties, consult written warranty or contact the State Customer Care Center at 1-800-365-0024.

State Industries, Inc., reserves the right to make product changes or improvements without prior notice.

For more information on Ultra Force™, contact:

State Water Heaters
500 Tennessee Waltz Parkway,
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800-365-0024 Toll-free USA
www.statewaterheaters.com

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