# Heavy Duty Water Heaters

## Heavy Duty Electric commercial water heaters are available in 50 through 175 gallon capacities. All models 'quick ship' from Ruud warehouses – no deposit required

### Features & Benefits

- 50, 85, 120 and new 175 gallon model can be shipped to your location in just a few days, no deposit required and Ruud pays shipping charges
- Ideal for general commercial use and point-of-use applications like eyewash stations, or used as a booster
- Inputs: 3 through 108 kW
- Voltages: 208, 240, or 480 VAC in either single phase or 3-phase; 277 VAC single phase
- Element wattages: 2000, 3000, 4000, 4500, 5000 and 6000 in the four voltages; 9000 watt element at 480 VAC
- Choose 1, 3, 6, 9 or 12 element models for your specific application
- Elements are Lifeguard™ stainless steel, screw-in type that resist burn out and corrosion
- ASME construction is available on 50, 85 and 120 gallon models and comes standard on 175 gallon
- Long life tank design: proprietary steel formulation with high temperature porcelain enamel to maximize corrosion resistance resulting in a superior tank design
- Two anode rods are installed to ensure long life and corrosion resistance

### Efficiency

- 98% thermal efficiency
- Thick foam insulation for minimal standby heat loss

### Performance

- Recovery rate: Up to 438 gallons GPH at a 100 degree rise
- 190° F maximum delivered temperature

### Capacity & Shipping Weight

- 50 Gal/270 lbs./320 lbs. ASME
- 85 Gal/350 lbs./380 lbs. ASME
- 120 Gal/430 lbs./460 lbs. ASME
- 175 Gal/700 lbs. ASME only

### Easy Installation & Service

- Control box is located at the front of unit for easy wiring during installation – Multiple knockout holes accommodate a variety of conduit sizes
- **Exclusive!** System Sentinal™ provides a diagnostic panel with LEDs that correspond to the number, location and status of each element
- **Exclusive!** Full-port, full-flow, brass drain valve for faster draining
- Minimum distance to combustible is zero inches from jacket and 18 inches from access door
- All models approved for installation on combustible flooring

### Plus

- Temperature and pressure relief valve at top of 175 gallon model and side on all other models
- Water connections: hot and cold water inlets are 2-1/2" NPT dielectric nipples on the 175 gallon model and 1-1/2" on all other models

### Warranty

3-Year limited tank warranty, 1-year limited parts warranty

See Commercial Warranty Certificate for complete information.

**Efficiency |** These models have been tested according to DOE test procedures, and exceed the minimum energy factor requirements of current ASHRAE Standards (Part of the federally mandated Energy Policy Act (EPact). Also exceeds energy efficiency codes of all states including California Energy Commission (CEC).

**Safety and Construction |** Safety and Construction: These products are design certified by Underwriters Laboratories (UL) to meet UL standard 1453 and UL/NSF 005 as electric storage tank water heaters. All models are North Carolina and Massachusetts Code compliant. **Certified for a 150 PSI Maximum Working Pressure. (160 PSI maximum for ASME models)**

**Ruud Heavy Duty**

50, 85, 120 & 175-Gallon Capacities
ASME Construction Option
3-Year Limited Warranty
Electric

(With Optional Seal Kit)



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## ELECTRICAL CHARACTERISTICS

| INPUT KW | NO. OF ELEMENTS | ELEMENT WATTAGE | FULL LOAD CURRENT IN AMPERES | | | | | | | SURFACE MOUNTED | | | IMMERSION THERMOSTATS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 208V PHASE | | 240V PHASE | | 277V PHASE | 480V PHASE | | NO. OF T'STATS | NUMBER OF FUSES | NUMBER OF CONTACTORS | NUMBER OF FUSES | STAGED T'STATS | |
| | | | 1 | 3 | 1 | 3 | 1 | 1 | 3 | | | | | NO. OF T'STATS | KW STEP SIZE |
| 3 | 1 | 3000 | 15 | – | 13 | – | 11 | – | 6 | – | – | – | 2 | N/A ONE T'STAT STD. | 3 |
| 6 | 3 | 2000 | 29 | 17 | 25 | 14 | 22 | 13 | 7 | 1 | 6 | 2 | 6 | | 6 |
| 9 | 3 | 3000 | 43 | 25 | 38 | 22 | 33 | 19 | 11 | 1 | 6 | 2 | 6 | | 9 |
| 12 | 3 | 4000 | 58 | 33 | 50 | 29 | 43 | 25 | 15 | 1 | 6 | 2 | 6 | | 12 |
| 15 | 3 | 5000 | 72 | 42 | 63 | 36 | 54 | 31 | 18 | 1 | 6 | 2 | 6 | | 15 |
| 18 | 3 | 6000 | – | – | 75 | 43 | 65 | 38 | 22 | 1 | 6 | 2 | 6 | | 18 |
| 18 | 6 | 3000 | 87 | 50 | – | – | – | – | – | 1 | 12 | 4 | 12 | 2 | 9 |
| 24 | 6 | 4000 | 116 | 67 | 100 | 58 | 87 | 50 | 29 | 1 | 12 | 4 | 12 | 2 | 12 |
| 27 | 6 | 4500 | 130 | 75 | 113 | 65 | 98 | 56 | 33 | 1 | 12 | 4 | 12 | 2 | 13.5 |
| 30 | 6 | 5000 | 144 | 84 | 125 | 73 | 108 | 63 | 36 | 1 | 12 | 4 | 12 | 2 | 15 |
| 36 | 6 | 6000 | – | – | 150 | 87 | 130 | 75 | 43 | 1 | 12 | 4 | 12 | 2 | 18 |
| 36 | 9 | 4000 | 173 | 100 | – | – | – | – | – | 1 | 18 | 6 | 18 | 3 | 12 |
| 45 | 9 | 5000 | 217 | 125 | 188 | 109 | 163 | 94 | 54 | 1 | 18 | 6 | 18 | 3 | 15 |
| 54 | 9 | 6000 | 260 | 150 | 225 | 130 | 195 | 113 | 65 | 1 | 18 | 6 | 18 | 3 | 18 |
| 60 | 12 | 5000 | 288 | 166 | 250q | 144 | 217 | 125 | 72 | – | – | – | 24 | 4 | 15 |
| 72 | 12 | 6000 | – | 200 | – | 172 | 260 | 150 | 87 | – | – | – | 24 | 4 | 18 |
| 81 | 9 | 9000 | – | – | – | – | – | 169 | 98 | – | – | – | 18 | 3 | 27 |
| 108* | 12 | 9000 | – | – | – | – | – | – | 130 | – | – | – | 24 | 4 | 27 |

*175-Gallon model only

**Thermostat Staging –** On all immersion thermostat models, 24 kW and above (18 kW for 208V), additional thermostats can be provided so that the maximum element input will not exceed 18 kW - 27 kW per step. Temperature differential between steps can be set as desired.

**Note:** Thermostat staging recommended on 81 and 108 kW models.

## RECOVERY CAPACITIES Recovery in U.S. Gallons/Hr. (GPH) and Liters/Hr. (LPH) at Various Temperature Rises

| INPUT KW | EQUIVALENT BTU/HR. | UNITS | 40°F (22°C) | 50°F (28°C) | 60°F (33°C) | 70°F (39°C) | 80°F (45°C) | 90°F (50°C) | 100°F (56°C) | 110°F (61°C) | 120°F (67°C) | 130°F (72°C) | 140°F (78°C) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 10,236 | GPH | 31 | 25 | 20 | 17 | 15 | 14 | 12 | 11 | 10 | 9 | 9 |
| | | *LPH* | *117* | *95* | *76* | *64* | *57* | *53* | *45* | *42* | *38* | *34* | *34* |
| 6 | 20,473 | GPH | 62 | 50 | 41 | 35 | 31 | 28 | 25 | 23 | 21 | 19 | 18 |
| | | *LPH* | *235* | *188* | *157* | *134* | *117* | *104* | *94* | *85* | *78* | *72* | *67* |
| 9 | 30,709 | GPH | 93 | 74 | 62 | 53 | 47 | 41 | 37 | 34 | 31 | 29 | 27 |
| | | *LPH* | *352* | *282* | *235* | *201* | *176* | *157* | *141* | *128* | *117* | *108* | *101* |
| 12 | 40,946 | GPH | 124 | 99 | 83 | 71 | 62 | 55 | 50 | 45 | 41 | 38 | 35 |
| | | *LPH* | *470* | *376* | *313* | *268* | *235* | *209* | *188* | *171* | *157* | *145* | *134* |
| 15 | 51,183 | GPH | 155 | 124 | 103 | 89 | 78 | 69 | 62 | 56 | 52 | 48 | 44 |
| | | *LPH* | *587* | *470* | *391* | *335* | *294* | *261* | *235* | *213* | *196* | *181* | *168* |
| 18 | 61,420 | GPH | 186 | 149 | 124 | 106 | 93 | 83 | 74 | 68 | 62 | 57 | 53 |
| | | *LPH* | *705* | *564* | *470* | *403* | *352* | *313* | *282* | *256* | *235* | *217* | *201* |
| 24 | 81,893 | GPH | 248 | 199 | 165 | 142 | 124 | 110 | 99 | 90 | 83 | 76 | 71 |
| | | *LPH* | *939* | *751* | *626* | *537* | *470* | *417* | *376* | *342* | *313* | *289* | *268* |
| 27 | 92,129 | GPH | 279 | 223 | 186 | 160 | 140 | 124 | 112 | 102 | 93 | 86 | 80 |
| | | *LPH* | *1057* | *845* | *705* | *604* | *528* | *470* | *423* | *384* | *352* | *325* | *302* |
| 30 | 102,366 | GPH | 310 | 248 | 207 | 177 | 155 | 138 | 124 | 113 | 103 | 95 | 89 |
| | | *LPH* | *1174* | *939* | *783* | *671* | *587* | *522* | *470* | *427* | *391* | *361* | *335* |
| 36 | 122,839 | GPH | 372 | 298 | 248 | 213 | 186 | 165 | 149 | 135 | 124 | 115 | 106 |
| | | *LPH* | *1409* | *1127* | *939* | *805* | *705* | *626* | *564* | *512* | *470* | *434* | *403* |
| 45 | 153,549 | GPH | 465 | 372 | 310 | 266 | 233 | 207 | 186 | 169 | 155 | 143 | 133 |
| | | *LPH* | *1761* | *1409* | *1174* | *1006* | *881* | *783* | *705* | *640* | *587* | *542* | *503* |
| 54 | 184,259 | GPH | 558 | 447 | 372 | 319 | 279 | 248 | 223 | 203 | 186 | 172 | 160 |
| | | *LPH* | *2114* | *1691* | *1409* | *1208* | *1057* | *939* | *845* | *769* | *705* | *650* | *604* |
| 60 | 204,723 | GPH | 620 | 496 | 414 | 354 | 310 | 276 | 248 | 226 | 206 | 190 | 178 |
| | | *LPH* | *2347* | *1878* | *1567* | *1340* | *1173* | *1045* | *939* | *856* | *780* | *719* | *674* |
| 72 | 245,678 | GPH | 744 | 596 | 296 | 426 | 372 | 330 | 298 | 270 | 248 | 230 | 212 |
| | | *LPH* | *2816* | *2256* | *1120* | *1615* | *1408* | *1249* | *1128* | *1022* | *939* | *871* | *803* |
| 81 | 276,388 | GPH | 838 | 670 | 558 | 479 | 419 | 372 | 335 | 305 | 279 | 258 | 239 |
| | | *LPH* | *3174* | *2540* | *2116* | *1814* | *1587* | *1410* | *1270* | *1154* | *1058* | *977* | *907* |
| 108* | 368,518 | GPH | 1094 | 875 | 730 | 625 | 547 | 486 | 438 | 398 | 365 | 337 | 313 |
| | | *LPH* | *4141* | *3312* | *2763* | *2366* | *2071* | *1840* | *1658* | *1507* | *1382* | *1276* | *1185* |

*175-Gallon model only

## WATER TEMPERATURE RATINGS

| MODEL NUMBER | TANK CAPACITY | | THERMOSTAT TYPE | MINIMUM DELIVERED TEMPERATURE | MAXIMUM DELIVERED TEMPERATURE | HIGH TEMPERATURE LIMIT |
|---|---|---|---|---|---|---|
| | GALLONS | LITERS | | | | |
| ES50(A) | 50 | 189 | Surface | 90°F | 160°F | 180°F |
| | | | | *32.2°C* | *71.1°C* | *82.2°C* |
| ES85(A) | 85 | 322 | Surface | 120°F | 160°F | 190°F |
| | | | | *48.8°C* | *71.1°C* | *87.8°C* |
| ES120(A) | 119.9 | 454 | Surface | 120°F | 160°F | 190°F |
| | | | | *48.8°C* | *71.1°C* | *87.8°C* |
| E50(A) | 50 | 189 | Immersion | 90°F | 190°F | 200°F |
| | | | | *32.2°C* | *87.8°C* | *93.3°C* |
| E85(A) | 85 | 322 | Immersion | 90°F | 190°F | 200°F |
| | | | | *32.2°C* | *87.8°C* | *93.3°C* |
| E120(A) | 119.9 | 454 | Immersion | 90°F | 190°F | 200°F |
| | | | | *32.2°C* | *87.8°C* | *93.3°C* |
| E175A | 175 | 662 | Immersion | 90°F | 190°F | 200°F |
| | | | | *32.2°C* | *87.8°C* | *93.3°C* |

## MODEL NUMBERS **Fast delivery from Rheem warehouses – no deposit – no shipping charges**

| INPUT KW | SURFACE MOUNTED THERMOSTATS | | | IMMERSION THERMOSTATS | | | |
|---|---|---|---|---|---|---|---|
| | TANK CAPACITY IN GALLONS | | | TANK CAPACITY IN GALLONS | | | |
| | 50 | 85 | 120 | 50 | 85 | 120 | 175 |
| 3 | N/A | N/A | N/A | N/A | N/A | N/A | E175A-3-G |
| 6 | ES50-6-G | ES85-6-G | ES120-6-G | E50-6-G | E85-6-G | E120-6-G | E175A-6-G |
| 9 | ES50-9-G | ES85-9-G | ES120-9-G | E50-9-G | E85-9-G | E120-9-G | E175A-9-G |
| 12 | ES50-12-G | ES85-12-G | ES120-12-G | E50-12-G | E85-12-G | E120-12-G | E175A-12-G |
| 15 | ES50-15-G | ES85-15-G | ES120-15-G | E50-15-G | E85-15-G | E120-15-G | E175A-15-G |
| 18 | ES50-18-G | ES85-18-G | ES120-18-G | E50-18-G | E85-18-G | E120-18-G | E175A-18-G |
| 24 | ES50-24-G | ES85-24-G | ES120-24-G | E50-24-G | E85-24-G | E120-24-G | E175A-24-G |
| 27 | ES50-27-G | ES85-27-G | ES120-27-G | E50-27-G | E85-27-G | E120-27-G | E175A-27-G |
| 30 | ES50-30-G | ES85-30-G | ES120-30-G | E50-30-G | E85-30-G | E120-30-G | E175A-30-G |
| 36 | ES50-36-G | ES85-36-G | ES120-36-G | E50-36-G | E85-36-G | E120-36-G | E175A-36-G |
| 45 | ES50-45-G | ES85-45-G | ES120-45-G | E50-45-G | E85-45-G | E120-45-G | E175A-45-G |
| 54 | ES50-54-G | ES85-54-G | ES120-54-G | E50-54-G | E85-54-G | E120-54-G | E175A-54-G |
| 60 | N/A | N/A | N/A | N/A | N/A | N/A | E175A-60-G |
| 72 | N/A | N/A | N/A | N/A | N/A | N/A | E175A-72-G |
| 81 | N/A | N/A | N/A | N/A | E85A-81-GS | E120A-81-GS | E175A-81-G |
| 108 | N/A | N/A | N/A | N/A | N/A | N/A | E175A-108-G |

**Fuse type –** "G" in the model number represents Class G fuses.

**Thermostat staging** – E models (Immersion thermostat) 24 kW and above (18 kW for 208V), may be ordered with additional thermostat(s) for staging. Add "S" after fuse type designation. Recommended on 81 and 108 kW models. Example: E175A-81-G becomes E175A-81-GS.

**ASME Construction** – E models (Immersion Thermostat) may be ordered with ASME certified construction. Add "A" after capacity designation. Example: E85-36-G becomes E85A-36-G.

**UL Sanitation Compliance** – all models except E175A are UL Sanitation (NSF5) compliant when equipped with the optional ring seal kits. E(S)50 – AS38355, E(S)85 – AS38356, E(S)120 – AS38357.

**Solid State Low Water Cut-off** – E models (Immersion Thermostat) may be ordered with probe type cut-off for field installation (AP8408).

**Integral Fusing** – all models have integral fusing for each element.

**Anode Rods** – two (2) magnesium anodes are installed in each tank to ensure long life and corrosion resistance.

**Temperature and Pressure Relief Valve** – CSA/ASME rated and factory installed.

**Electrical Connections** – pre-wired, accessible control box with multiple knock-outs on side in size selections to match the National Electric Code. Sizes range from 1/2" to 2-1/2". A grounding screw is provided for attaching an equipment grounding conductor.

**Terminal Block** – all models are equipped with U.L. listed terminal blocks for simplicity of installation. The terminal block will accept either copper or aluminum field connect wire.

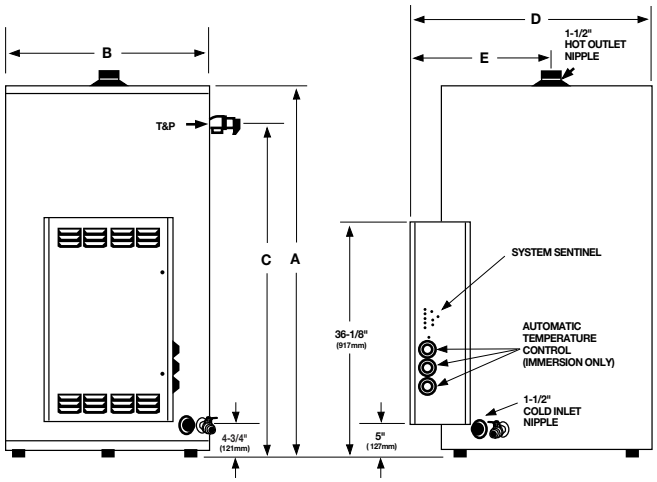
**120 Volt Control Circuit** – all units are furnished with a fused 120 volt control circuit. All controls (thermostats, high temperature limit, etc.) are operated off of this basic 120 volt control circuit. This circuit is created by an internal multi-tap transformer of unique design that has four (4) taps for the primary voltages, 208, 240, 277 and 480.

**Water Connections** – hot outlet and cold inlet for the 50-120 gallon capacity models are 1-1/2" (175 gallon models are 2-1/2") NPT dielectric nipples which prevent excessive turbulence of heated water and results in optimum tank draw.

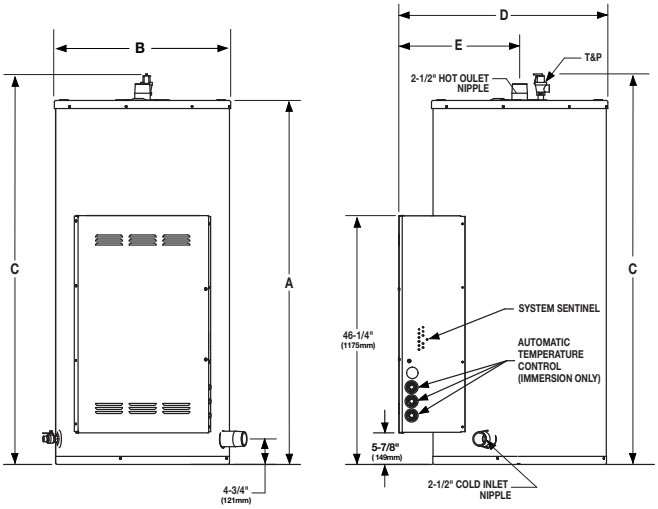
# Heavy Duty Water Heaters

## DIMENSIONAL INFORMATION All dimensions shown in English and Metric

| MODEL NUMBER | UNITS | A | B | C | D | E | APPROX. SHIPPING WEIGHT (LBS.) STD. | ASME |
|---|---|---|---|---|---|---|---|---|
| E(S)50(A) | inches | 43-5/8 | 26-1/4 | 36-1/4 | 32 | 19 | 270 lbs. | 320 lbs. |
| | *mm* | *1108* | *667* | *920* | *813* | *483* | *122 kgs.* | *145 kgs.* |
| E(S)85(A) | inches | 57-11/16 | 28-1/4 | 49-1/2 | 34 | 20 | 350 lbs. | 380 lbs. |
| | *mm* | *1465* | *718* | *1258* | *864* | *508* | *159 kgs.* | *172 kgs.* |
| E(S)120(A) | inches | 67-5/8 | 30-1/4 | 58-3/4 | 36 | 21 | 430 lbs. | 460 lbs. |
| | *mm* | *1718* | *768* | *1493* | *914* | *533* | *185 kgs.* | *209 kgs.* |
| E175A | inches | 69-1/2 | 32-1/4 | 72-1/2 | 38-1/2 | 22-1/4 | – | 700 lbs. |
| | *mm* | *1765* | *832* | *1842* | *826* | *565* | – | *318 kgs.* |




**50, 85 and 120 Gallon Models**




**175 Gallon Model**

## Recommended Specifications (for trade reference only)

Water heater(s) shall be model _____, manufactured by Ruud, having electrical input of _____ kW and a recovery rate of _____ GPH at a 100°F temperature rise. Water heater(s) shall have a storage capacity of _____ gallons. Water heater(s) shall have the UL seal of certification and be factory equipped with an CSA/ASME rated temperature and pressure relief valve. Tank(s) shall have a double coating of high temperature porcelain enamel and furnished with magnesium anode rods rigidly supported. Water heater(s) shall meet or exceed the standby loss requirements of ASHRAE. Tank(s) shall have a working pressure of 150 psi, and shall be completely assembled. Water heater(s) shall be approved-listed and constructed in accordance with UL Sanitation (NSF5). Water heater(s) shall be equipped with stainless steel “screw-in” type elements. Tank shall be insulated with thick polyurethane foam insulation. Water heater(s) shall be constructed with a System Sentinel element diagnostic panel utilizing light emitting diodes. Each LED will correspond to the number and location of the heating elements and monitor their on-off function. Water heater(s) shall be provided with internal power circuit fusing, control circuit fusing, magnetic contactors, 120 volt control circuit transformer and surface mounted thermostat or immersion thermostat(s) with manual reset high limit control. 1-1/2" inlet and outlet water connections for 80 through 120 gallon models and 2-1/2" for 175 gallon units shall be provided. Water heater(s) shall be covered by a three year limited warranty against tank leaks.

## When ordering ASME construction, place (A) after the model number (for trade reference only)

Water heater(s) shall be constructed in accordance with the requirements of the ASME Boiler and Pressure Vessel Code, Section IV Part HLW.

*In keeping with its policy of continuous progress and product improvement, Ruud reserves the right to make changes without notice.*



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