

# EVOLUTION<sup>®</sup>

Higher Efficiency Heating Equipment

## PREMIUM COPPER-FIN TUBE BOILER CONSTRUCTION AND DESIGN

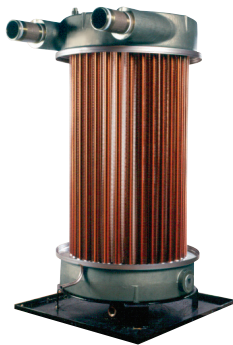
- **Rugged Heat Exchanger Design**
  - Gasketless headers
  - Water-backed tube sheets
  - 20-Year thermal shock warranty
- **Robust Copper-Fin Tubes**
  - .072" Wall thickness
- **Advanced Combustion**
  - <10 ppm ultra-low NOx emissions
  - <50 dBA noise levels
- **Maintenance-Free Burner**
  - 10 year warranty
- **Unmatched Fireside Heating Surface**
- **Small Footprint**
  - 6 sq. ft / 11 sq. ft.
- **Up to 87% Efficiency**
- **UL Certified Boiler Package**



**THERMAL<sup>®</sup>**  
**SOLUTIONS**  
Innovative Equipment for Hot Water Systems

**T**hermal Solutions designed its Evolution high efficiency copper-fin tube boiler to meet the complexities of today's building systems. For nearly two decades, the Evolution boiler has been the industry benchmark for quality, reliability, and performance.

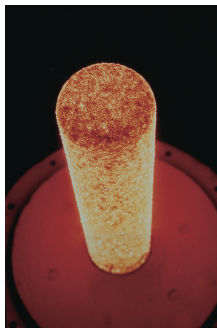
The Evolution takes copper-fin tube boiler technology to the next level by incorporating a list of unique design features. These include rugged heat exchanger design, advanced maintenance-free combustion and ease of installation and service. **The Evolution boiler truly is a step above the rest!**



**Heat Exchanger**

### **Rugged Heat Exchanger Design**

Central to the boiler's design is its heat exchanger, which boasts twice as much heating surface than our competition. The rolled copper fin-tube, patent H/F Trufin is extruded from a solid piece of copper, resulting in a high quality component, and unsurpassed heat transfer. The gasket-less header design allows for easy inspection, cleaning, and individual tube replacement. Completely enclosed in a stainless steel compartment, the combustion chamber effectively handles short-term condensing periods (cold start) to protect the boiler. The Evolution heat exchanger has thicker tubes (.072") and more robust heads than any other hot water boiler product (compare the weights), making it very forgiving, more durable, and built to last!



**Ceramic Radiant Burner**

### **Advanced Maintenance-Free Combustion**

**The ceramic radiant burner never requires inspection or maintenance!** Designed to operate with NOx emissions less than 10 ppm, the whisper-quiet burner (<50 dBA) runs at minimal excess air levels providing high efficient, trouble-free operation. The burner features a larger surface area and lower flux that allows for higher heat transfer and more uniform heating that extends the life of the copper tubes. A rugged cast-aluminum blower assembly, fitted with a replaceable combustion air filter that is 99% efficient to one micron, is used to keep the burner free of contaminants. A commercial-grade microprocessor based flame safeguard with LED diagnostic display, proven spark ignition and a UV flame scanner complete the Evolution's unsurpassed combustion system for safety and reliability. The Evolution boiler can be operated with its jacket panels removed during inspection to avoid nuisance problems associated with pressurized compartments.



### **Ease of Installation and Service**

All rear connections and complete front and rear access to the unit's components, permitting space-saving side-by-side modular arrangements. The Evolution's flexible venting options include sealed or room air combustion, direct vent or conventional venting for multiple boiler common stack arrangements. Quick setup and low maintenance make the Evolution boiler an ideal choice for either retrofit or new construction projects.

# EVOLUTION® FEATURES

## Wide range of sizes

500,000–3,000,000 BTU/HR

## Commercial-grade microprocessor based flame safeguard

Provides combustion management and safety

## Heavy 16-gauge negative pressure steel jacket

Protects the boiler and eliminates nuisance problems associated with pressurized compartments

## Gasketless header design

Allows for easy tube inspection and cleaning

## Thick tubes (0.72") and robust headers

Provide durability

## Vertical two-pass copper-fin tube configuration

Provides symmetrical heating for improved heat transfer

## Small footprint (6 sq. ft / 11 sq. ft.)

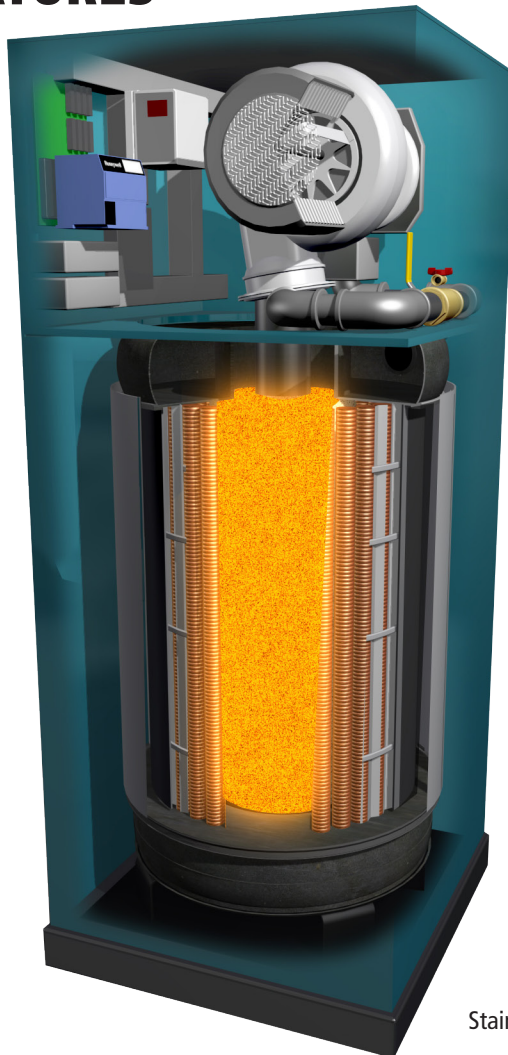
For space-saving multiple unit installation

### Pressure Vessel Design

- Copper fin-tube construction
- Carbon steel or cast iron header design
- Gasketless heat exchanger
- ASME Section IV certified "H" stamp
- MAWP 160 PSIG 240°F & max temp 250°F
- Five year heat exchanger warranty
- 20-year thermal shock warranty

### Combustion Design

- Ceramic radiant burner, non-corroding
- Maintenance-free burner design
- Ultra-low NOx emissions (to <10 ppm)
- Whisper-quiet operation (<50 dBA)
- Combustion air filter, 99% efficiency
- Industrial cast aluminum blower assy.
- Variable frequency drive (modulation only)
- Electric spark-to-pilot ignition system
- 10-year burner warranty



### Boiler Equipment

- Siemens RWF-40 operating control (modulation only)
- High limit w/manual reset safety temperature control
- Water flow switch
- Low water cut-off w/manual reset safety controller
- Outlet temperature sensor
- Combustion air switch
- Pressure and temperature gauge
- Safety relief valve (available settings 30 to 150 PSI)
- Single point electrical supply (available in 1 or 3 phase)

### Venting

- Sealed or room air combustion
- Direct vent (sidewall or vertical) up to 50 feet (Cat IV)
- Conventional venting (Cat II)

**All rear connections**  
Allows minimal side-to-side clearances

**Replaceable combustion air filter 99% efficient to one micron**  
Ensures burner reliability and trouble-free maintenance

**Industrial cast-aluminum non-sparking blower assembly**  
Contributes to whisper-quiet (<50 dBA) operation

**Fully water-backed tube sheet and unmatched fireside heating surface**  
(6.6 sq.ft. / 9.7 sq. ft to boiler horsepower) provides longevity

**Flexible venting options**  
Include sealed or room air combustion, direct vent, or conventional venting

**Non-corroding ceramic radiant burner with no moving parts**  
NOx emissions less than 10 PPM

**Combustion chamber enclosure**  
Stainless steel material protects against corrosive flue gases

**UL® Certified**  
Meets stringent test requirements

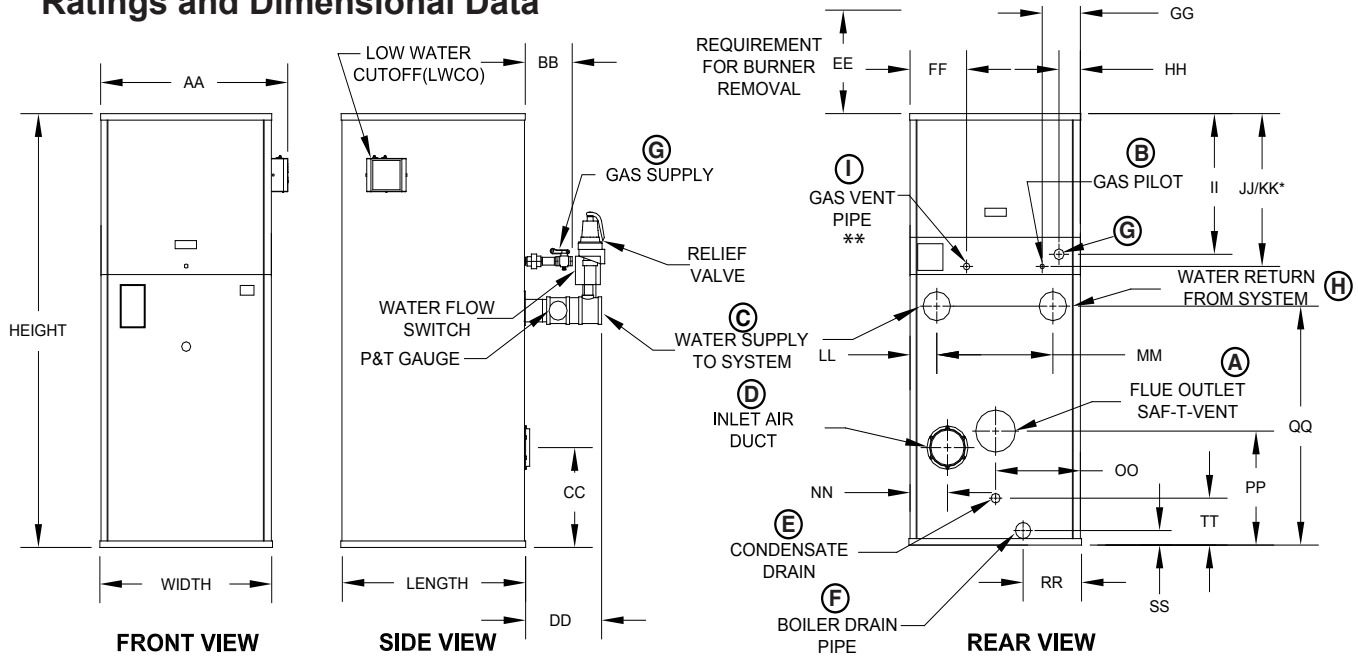
### Burner Equipment

- UL/FM/CSD-1 gas train
- On-off or full modulation with infinite proportional firing
- Natural or LP gas
- Inlet gas pressure available from 4" wc to 5 psig
- Pilot gas valve
- Pilot gas regulator
- Pilot/leak test cocks
- Main gas valve
- Low & high gas pressure switches w/manual reset

### Siemens RWF40 Operating Control Features (modulation only)

- Adjustable set point
- Remote set point (0-10v or 4-20 mA)
- Outdoor air temperature reset
- Remote system temperature

## Ratings and Dimensional Data



\* GAS PILOT DIMENSION ON MODELS 2000S, 2500, & 3000 ONLY  
 \*\* DB&B AND DD&B WITH PROOF OF CLOSURE OPTION ONLY

Boiler Ratings	AHRI CERTIFIED® <small>www.ahridirectory.org</small>	Dimensions and Specifications
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Model	Input MBH	Gross Output MBH	Net Ratings Water MBH*	SQ.Ft Per BHP	Footprint			Rear Connections										Shipping Wt. (lbs.)
					Height	Width	Depth	A	B	C	D	E	F	G	H	I		
EVA-500	500	431	375	9.4	71.2	28.3	30.3	4.0	1/4	2.0	4.0	5/8	1.0	1.0	2.0	3/4	772	
EVA-750	750	623	542	6.6	60.9	28.3	30.3	4.0	1/4	3.0	6.0	5/8	1.0	1.0	3.0	3/4	1,097	
EVA-1000	1,000	819	712	6.7	67.3	28.3	30.3	6.0	1/4	3.0	6.0	5/8	1.0	1.5	3.0	3/4	1,185	
EVA-1500	1,500	1,251	1,088	6.7	79.4	28.3	30.3	6.0	1/4	3.0	8.0	5/8	1.0	1.5	3.0	3/4	1,327	
EVA-2000	2,000	1,696	1,475	6.7	91.8	28.3	30.3	6.0	1/4	3.0	8.0	5/8	1.0	1.5	3.0	3/4	1,461	
EVA-2000S	2,000	1,732	1,506	9.6	70.5	38.1	40.1	6.0	1/4	4.0	8.0	5/8	1.0	1.5	4.0	3/4	1,835	
EVA-2500	2,500	2,170	1,887	9.7	77.5	38.1	40.1	8.0	1/4	4.0	8.0	5/8	1.0	2.0	4.0	1.0	2,052	
EVA-3000	3,000	2,610	2,270	9.7	84.5	38.1	40.1	8.0	1/4	4.0	8.0	5/8	1.0	2.0	4.0	1.0	2,193	

Model	AA	BB	CC	DD	EE	FF	GG	HH	II	JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT
EVA-500	31.0	10.0	14.4	10.8	16.0	9.3	6.3	3.5	21.8	23.6	23.6	8.1	11.3	5.5	14.1	17.1	41.1	13.3	2.4	6.1
EVA-750	31.0	8.8	15.4	11.8	16.0	9.3	6.3	3.5	21.8	23.6	23.6	4.4	19.0	6.1	13.9	17.9	30.6	9.6	2.3	7.0
EVA-1000	31.0	10.0	15.4	11.8	16.0	9.3	6.3	3.5	21.8	23.6	23.6	4.4	19.0	6.1	13.9	17.6	36.9	9.6	2.3	7.3
EVA-1500	31.0	10.0	27.4	11.8	19.0	9.3	6.3	3.5	21.8	23.6	23.6	4.4	19.0	6.1	13.9	17.9	49.0	9.6	2.3	7.0
EVA-2000	31.0	10.0	27.4	11.8	31.0	9.3	6.3	3.5	21.8	23.6	23.6	4.4	19.0	6.1	13.9	17.9	61.4	9.6	2.3	7.0
EVA-2000S	40.8	10.5	19.6	13.3	13.0	4.0	8.5	5.0	20.9	22.4	23.4	5.9	26.2	7.0	19.0	18.6	39.6	14.4	2.2	6.9
EVA-2500	40.8	11.5	19.6	13.3	20.0	4.0	8.5	5.0	20.9	22.4	23.4	5.9	26.3	7.0	19.0	18.6	46.6	14.4	2.2	6.9
EVA-3000	40.8	11.5	19.6	13.3	26.5	4.0	8.5	5.0	20.9	22.4	23.4	5.9	26.2	7.0	19.0	18.6	53.6	14.4	2.2	6.9

\*Net water ratings shown are based upon an allowance of 1.15. Dimensions are shown in Inches  
 The manufacturer should be consulted before selecting a boiler for installations having unusual piping and pickup requirements, such as intermittent system operation, extensive piping systems, etc. The ratings have been determined under the provisions governing forced draft boiler-burner units.

