

EVOLUTION[®]

High Efficiency Heating Equipment



 **THERMAL[®]**
SOLUTIONS
www.thermalsolutions.com

HIGH EFFICIENCY HEATING EQUIPMENT

MODEL EVA

Thermal Solutions has designed the Evolution® high efficiency copper-finned boilers to meet the needs of today's commercial heating requirements.

The Evolution takes the very best of existing copper-finned boiler technology to the next level by incorporating a list of design features not found in competitors products. *Real-life serviceability, innovative heat exchanger design, clean and efficient advanced combustion, and unique timesaving controls* are all combined in a compact quick-connect package with efficiencies of up to 88%. The Evolution is truly a step above the rest.



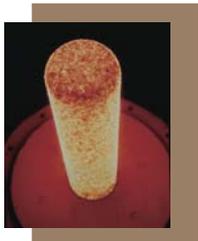
Heat Exchanger

Real-Life Serviceability

The Evolution is adaptable to virtually any installation. Rear connection ports and complete front and rear access to the unit's components and controls simplify side-by-side modular applications. When venting is a concern, the Evolution offers sealed (direct vent) and power vent options so that the need to construct a costly chimney is eliminated. In addition, the easy setup and even easier maintenance makes the Evolution boilers ideal for either retrofit or new construction projects.

Innovative Heat Exchanger Design

Central to the Evolution's highly efficient operation is the design of its copper-tube heat exchanger. Not only does it efficiently maintain heat transfer, but the innovative gasketless carbon steel header provides for easy inspection, cleaning and individual tube replacement. The combustion chamber is also completely enclosed in a stainless steel compartment and features collection/evaporation components to effectively handle cold-start condensate. Combining these features, the Evolution offers state-of-the-art heat transfer properties while effectively dealing with start-up condensate.



Ceramic Radiant Burner

Clean and Efficient Advanced Combustion

Designed to operate at 88% thermal efficiency with NOx ratings less than 9.9 ppm, the Evolution's noiseless ceramic radiant burner runs at minimal excess air levels creating highly efficient, trouble-free operation. The rugged industrial cast aluminum blower and fan wheel are equipped with a replaceable combustion air filter (99% efficient to one micron) to create excellent combustion characteristics and even air distribution. There's no need for tricky pressurized compartments...the Evolution can even be operated with its jacket panels removed for easy inspection or maintenance.

Unique Timesaving Controls

Instead of using a series of relays, the Evolution utilizes state-of-the-art microprocessor flame safeguard controls to provide extensive diagnostic information including first-out fault annunciation using an LED diagnostic display. The proven spark-to-pilot ignition system ensures that the pilot is lit before allowing the main gas valve to open. The optional display unit, as shown at the left, can be easily incorporated to provide additional operational information and history.



Honeywell RM 7896

EVOLUTION FEATURES

Models 250,000 -
2,000,000 BTU Boiler

Optional 2-stage or
full modulation firing

NOx less than 9.9 ppm

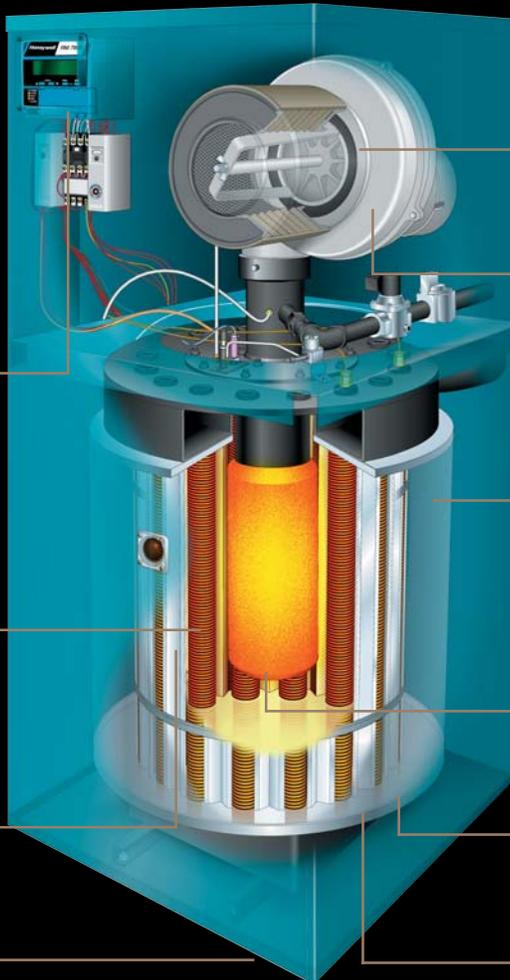
Flame Safeguard

Heavy 16-gauge negative
pressure steel jacket,
protected with a
powder coated finish

Vertical two-pass copper
tube configuration

Corrosion-resistant
stainless steel condensate
collection/evaporation
components

Small footprint and
lightweight mobility



All rear connections

Replaceable combustion
air filter 99% efficient
to one micron

Industrial cast
aluminum blower

Built in accordance
with the requirements
of the ASME Boiler and
Pressure Vessel Code

UL certified for
sealed (direct vent),
power vent or
conventional venting

Non-corroding ceramic
radiant burner with
no moving parts

Stainless steel
enclosure surrounds
combustion chamber

Fully water-backed
tube sheet

- Efficiencies up to 88%
- Non-proprietary parts
- Factory fire-test every unit
- Single-point electrical hook-up for all voltage options
- Standard sealed combustion
- Standard UL/FM/CSD-1 controls and gas train (optional IRI or IRI w/ proof of closure)
- Quiet operation (<60db)

- Electric spark-to-pilot-ignition system
- Aluminum non-sparking fan assembly
- Filtered combustion air
- Jacket design lends itself to complete access to all components for easy serviceability
- Quick-connect compact package
- Reduced stack sizes—multiple venting options

Firing Modes

Evolution boilers are available in three firing modes:

- Standard On-Off
- 2-Stage
- Full Modulation

The 2-stage model uses a variable frequency drive (VFD) to control combustion air along with a double-seated 2-stage gas control valve to vary the firing rate. 2-stage control is available on models 750-2000 MBH input.

Full modulation is achieved using a VFD and an air-fuel ratio modulating control valve. The control valve is actuated by an air signal from the fan—as the fan varies so does the gas valve. It is truly a linkage-less system and allows for a safe fuel-air combustion. Full modulation is available in models 500-2000 MBH input.

The Evolution boiler is available as a single or multi phase electric input, both 50 and 60 hertz. With no requirement for step-down transformers, the Evolution package comes complete and ready for single point electrical connection.

	MBH In	1-Stage	2-Stage	Modulating	Elect. 1-Phase	3-Phase
EV-250	250	yes	no	no	120/208/230	no
EV-500	500	yes	no	yes	120/208/230	208/230/460
EV-750	750	yes	yes	yes	120/208/230	208/230/460
EV-1000	1000	yes	yes	yes	120/208/230	208/230/460
EV-1500	1500	yes	yes	yes	120/208/230	208/230/460
EV-2000	2000	yes	yes	yes	120/208/230	208/230/460

Outdoor Model

A specially designed, fully UL-approved outdoor jacket enclosure allows outdoor placement and all-weather operation.

In a response to industry demand, the Evolution outdoor unit enters the scene with the same robust design as the superior indoor model. The Evolution outdoor boiler is also designed to operate at 88% efficiency with NOx ratings as low as 9.9 ppm. Manufactured in six sizes from 250,000 to 2,000,000 BTU, the outdoor unit is available in on/off, 2-stage, and full modulation firing modes. It is also available in both single and three-phase voltages. The outdoor model occupies the same footprint as the indoor unit and its specially designed, fully UL-approved outdoor jacket enclosure allows outdoor placement and all-weather operation with lockable panel.



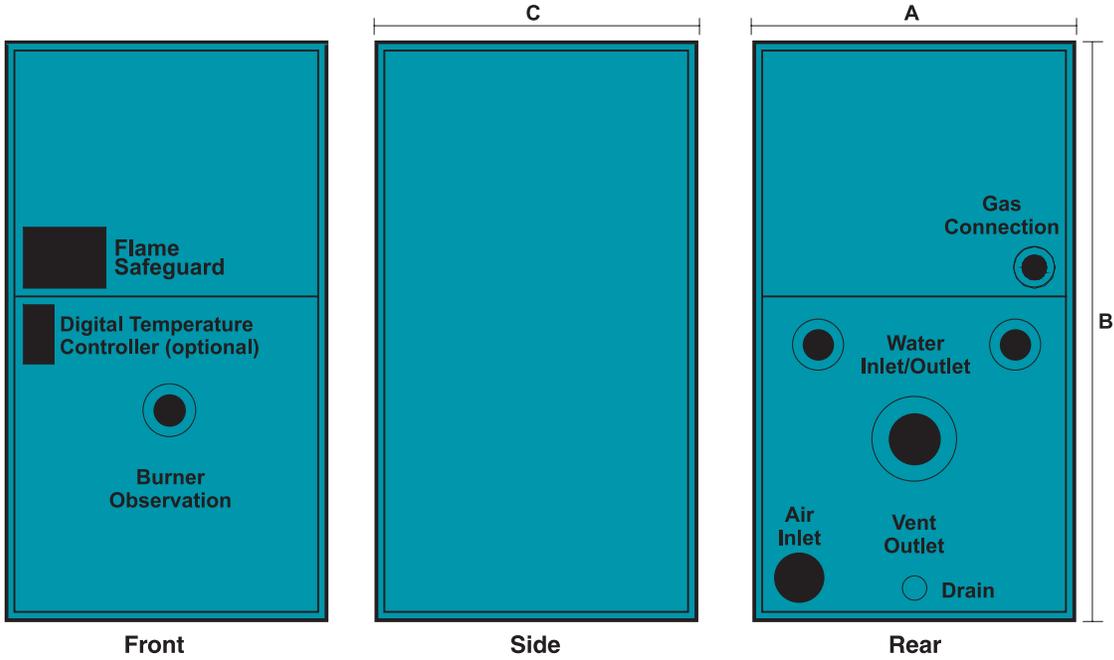
**Evolution
Outdoor Unit**



EVOLUTION[®]

High Efficiency Heating Equipment

Ratings and Dimensional Data



	EV-250	EV-500	EV-750	EV-1000	EV-1500	EV-2000
Input-High Fire BTUH	250,000	500,000	750,000	1,000,000	1,500,000	2,000,000
Output-High Fire BTUH	220,000	440,000	660,000	880,000	1,320,000	1,760,000
Input-2-Stage Low Fire BTUH	N/A	N/A	375,000	500,000	750,000	1,000,000
Output-2-Stage Low Fire BTUH	N/A	N/A	330,000	440,000	660,000	880,000
Input-Mod Low Fire BTUH	N/A	166,666	250,000	333,333	500,000	666,667
Output-Mod Low Fire BTUH	N/A	146,666	220,000	293,333	440,000	586,667
Sq. Ft. per BHP	9.9	9.4	6.6	6.7	6.7	6.7
Width-dim A (cm)	28.25" (717.55)	28.25" (717.55)	28.25" (717.55)	28.25" (717.55)	28.25" (717.55)	28.25" (717.55)
Depth-dim C (cm)	30.25" (768.35)	30.25" (768.35)	30.25" (768.35)	30.25" (768.35)	30.25" (768.35)	30.25" (768.35)
Height-dim B (cm)	56.75" (1441.45)	71.188" (1808.18)	60.938" (1547.81)	65.188" (1655.76)	79.438" (2017.71)	91.813" (2332.04)
Gas Connection	1" NPT	1-1/4" NPT	1-1/2" NPT	1-1/2" NPT	1-1/2" NPT	1-1/2" NPT
Water Connection	2" NPT	2" NPT	3" NPT	3" NPT	3" NPT	3" NPT
Air Inlet Connection	3" (76.2)	4" (101.6)	6" (152.4)	6" (152.4)	7" (177.8)	7" (177.8)
Vent Connection	3" (76.2)	4" (101.6)	4" (101.6)	6" (152.4)	6" (152.4)	6" (152.4)
Shipping Weight (lbs.)	500	552	955	1110	1215	1350