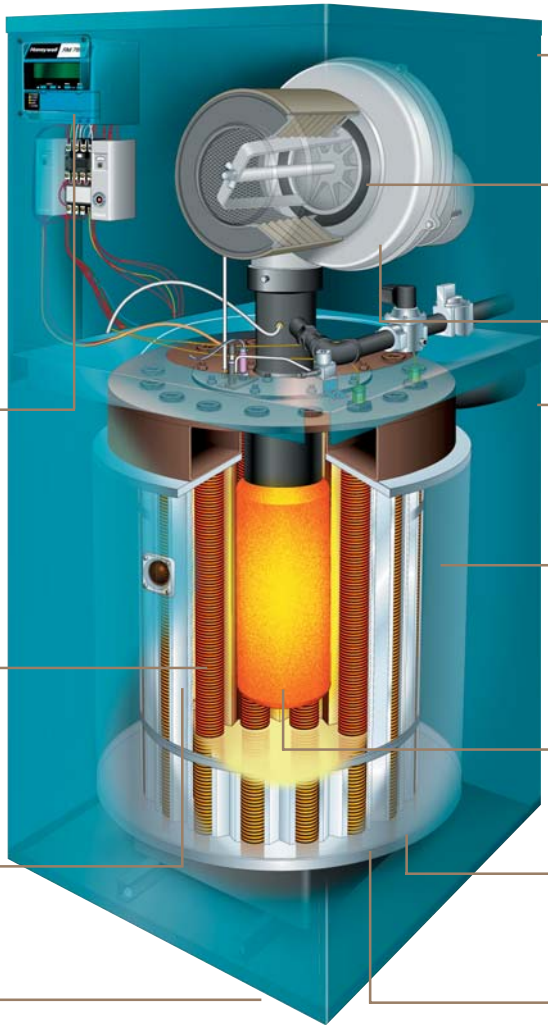
EVOLUTION®

High Efficiency Domestic Hot Water Heating

HIGH EFFICIENCY DOMESTIC WATER HEATING
MODEL EVAW



Models 250,000 - 2,000,000 BTU

Full modulation firing (Keeps cycling to a minimum)

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

Solid bronze headers built in accordance with the requirements of ASME

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

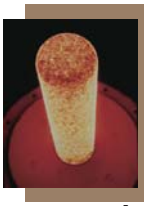
- Efficiencies up to 88%
- Non-proprietary parts
- Factory fire-test every unit
- Single-point electrical hook-up for all voltage options (120/208/230 1-phase, 208/230/460/575 3-phase)
- Standard sealed combustion
- Standard UL/FM/CSD-1 controls and gas train (optional IRI or IRI w/ proof of closure)
- 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

The Thermal Solutions Evolution® Water Heater raises the standard by which other commercial water heaters shall be measured. The Evolution Water Heater combines a host of industry leading features along with an easy to service design that ensures long-term, dependable operation. And with the Thermal Solutions Products name behind it, you can trust the Evolution Water Heater to be a reliable, efficient source for hot water heating.

Heat Exchanger

Serviceable Efficiency, Exceptional Heat Transfer

Thermal Solutions' innovative gasket-less bronze header allows access to individual tubes for inspection and cleaning by mechanical or chemical methods. It also allows for individual tube replacement, unlike the "disposable" type heat exchangers already on the market. The combustion chamber is completely enclosed in a stainless steel compartment that includes collection/evaporation components to effectively handle cold-start condensate.



Ceramic Radiant Burner

Clean and Efficient, Advanced Combustion

Designed to operate at 88% efficiency with NOx ratings less than 9.9 ppm, the Evolution's ceramic radiant burner runs at minimal excess air levels creating clean burning, highly efficient, trouble-free operation. Our rugged industrial cast aluminum blower and fan wheel are equipped with a replaceable combustion air filter 99% efficient to one micron, creating excellent combustion characteristics with insured even air distribution.

Honeywell

Troubleshooting, Timesaving Diagnostic Controls

State-of-the-art microprocessor flame safeguard controls provide extensive diagnostic information – including first out fault annunciation – using a LED diagnostic display. Each water heater undergoes complete factory fire testing to fully calibrate the fuel/air mixture to pre-set precise combustion set-up and operation.

Domestic Hot Water Sizing Requirements

Commercial buildings have different domestic hot water needs. The building type will be the major variable and the following chart shows the demand based on the fixture method.

[Gallons of hot water per hour per fixture, calculated at a final temperature of 140°F]

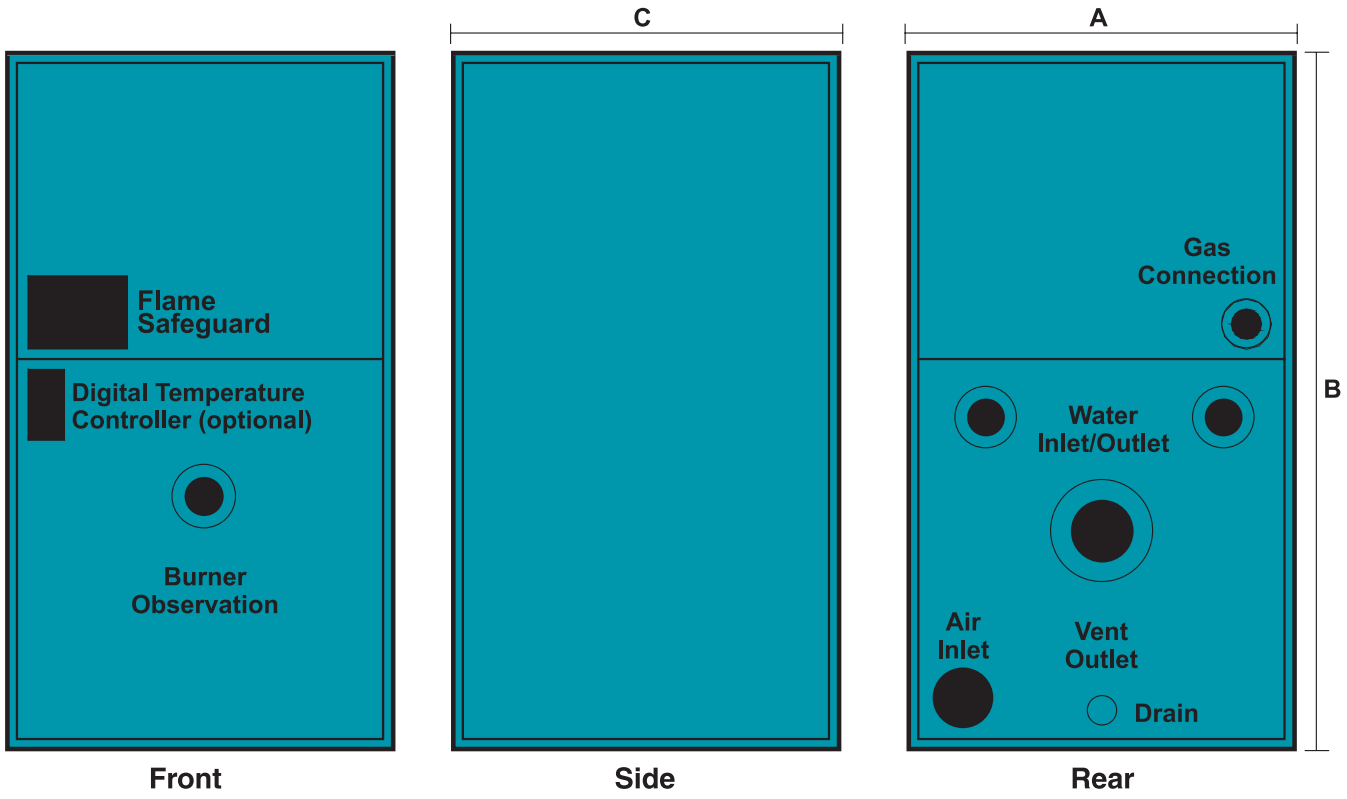
	Apt. House	Club	Gym	Hospital	Hotel	Ind. Plant	Office Bldg.	Priv. Res.	School	YMCA
1. Basins, private lavatory	2	2	2	2	2	2	2	2	2	2
2. Basins, public lavatory	4	6	8	6	6	12	6	—	15	8
3. Bathtubs	20	20	30	20	20	—	—	20	—	30
4. Dishwashers	15	50-150	—	50-150	50-200	20-100	—	15	20-100	20-100
5. Foot basins	3	3	12	3	3	12	—	3	3	12
6. Kitchen Sink	10	20	—	20	30	20	20	20	20	20
7. Laundry, stationary tubs	20	28	—	28	28	—	—	20	—	28
8. Pantry sink	5	10	—	10	10	—	10	5	10	10
9. Showers	30	150	225	75	75	225	30	30	225	225
10. Slop sink	20	20	—	20	30	20	20	15	20	20
11. Hydrotheapeutic showers				400			20			
12. Circular wash sinks				20	20	30	20		30	
13. Semicircular wash sinks				10	10	15	10	15		
14. DEMAND FACTOR	0.30	0.30	0.40	0.25	0.25	0.40	0.30	0.30	0.40	0.40
15. STORAGE CAPACITY FACTOR	1.25	0.90	1.00	0.60	0.80	1.00	2.00	0.70	1.00	1.00

Notes:
A. #1 thru #13 - Possible Maximum Demand
B. #14 (Demand Factor) - Probable Maximum Demand
C. #15 Ratio of Storage Tank Capacity to Probable Max. Demand per hour

Example:
50 Unit Apartment Building

50 lavatories x 2	= 100 GPH
50 showers x 30	= 1500 GPH
50 kitchen sinks x 10	= 500 GPH
10 laundry tubs x 20	= 200 GPH
A) Possible Maximum Demand	= 2300 GPH
Demand Factor	x .30
B) Probable Maximum Demand	= 690 GPH
Storage Capacity Factor	x 1.25
C) Storage Tank Size	= 863 Gal

Ratings and Dimensional Data



	EVAW-250	EVAW-500	EVAW-750	EVAW-1000	EVAW-1500	EVAW-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
GPH Heating Based on 40-140° F	264	528	792	1056	1584	2112
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

Hard working Quality. Built to Last.
Without question, the Evolution Water Heater is the most advanced, best-designed water heater on the market. Thermal Solutions designed the Evolution Water Heater to address the realities of today's operational environment. You can trust the Evolution Water Heater to be your reliable, efficient source of hot water for years to come.

Packaged Water Heater Systems
Thermal Solutions also offers two types of factory-assembled Packaged Water Heater Systems – Direct and Indirect Systems. Each system includes a boiler or water heater, a vertical storage tank, pump, controls and all necessary components for a totally operational, skid mounted and factory certified package.

The ASME Section VIII tanks are certified at 150 psi MAWP. They are available with a cement or epoxy lining and all connections are 150 psi design stainless steel.

The Direct System incorporates an EVAW bronze water heater with an all bronze pump, vertical storage tank, and controls. The Indirect System uses an EVA series boiler with a cast iron pump and a heat transfer tube bundle installed in the tank. This system features a closed loop operation with the water circulating between the boiler and the heat transfer bundle.

This fully assembled, pre-packaged equipment gives the owner and designer the ease and confidence of a single-source responsibility that meets their domestic water needs.

Which system should be used?
When specifying or selecting a water heating system, it is important to consider the water in your area. If water quality is questionable or if the water hardness level is 8.5 grains or more, the Indirect System should be used. The Indirect System prevents any scale from building up on the inside of the boiler tubes. This keeps the system maintenance free and prolongs the life of the water heater.

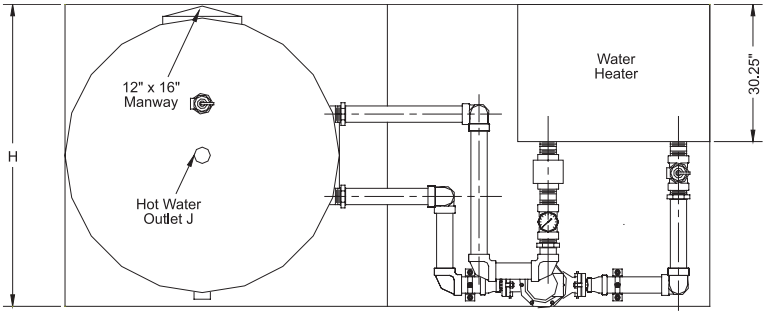
Storage Tank/Skid Dimension (in inches)

Tank Model No.	Storage Capacity	A	B	C	D	E	F	G	H	J
*TSV220	220	30	78	94	15	17	46	87	46	2
*TSV271	271	36	68	84	16	20	52	93	46	2
*TSV322	322	36	80	96	16	20	52	93	46	2
*TSV378	378	42	70	86	17	23	58	99	46	2
*TSV508	508	48	74	90	19	26	64	105	52	2
*TSV693	693	48	98	114	19	26	64	105	52	2
TSV837	837	60	78	94	21	32	76	117	64	3
TSV1041	1041	66	82	98	23	35	82	123	70	3
TSV1480	1480	72	96	112	24	38	88	129	76	3
TSV2098	2098	84	103	119	28	44	100	141	88	3

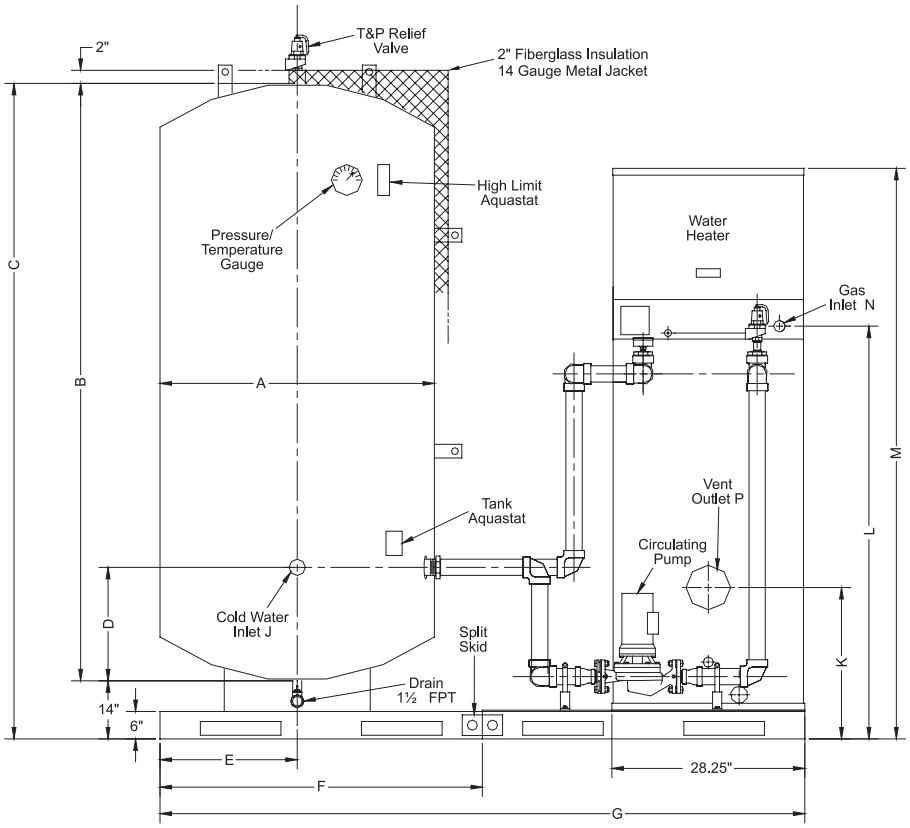
*Stock sizes
Other tank sizes available — consult factory

Water Heater Dimension (in inches)

Model No.	K	L	M	Gas Inlet N	Vent Outlet P
EVAW250	23	41	63	1	3
EVAW500	23	55	77	1-1/4	4
EVAW750	24	45	67	1-1/2	4
EVAW1000	24	49	71	1-1/2	6
EVAW1500	24	64	85	1-1/2	6
EVAW2000	24	76	98	1-1/2	6



Top View



Back View

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