Rinnai Hydronic Furnace and Tankless Heating System
Hydronic Air Handler

• Heating device used instead of furnace

• Uses hot water supplied by a Rinnai to heat air
  – Hot water runs through coil, fan blows air through coil, hot air distributes to home through ducts

• First HVAC product developed by Rinnai America
  • NOT our first air heating product: Rinnai started selling space heaters in the US 30 years ago and currently sells direct vent, vent-free, infrared heaters and fireplaces

• Launched Dec. 2007
Using Tankless to Heat Your Home

• The Rinnai Tankless Heating System connects a Rinnai Tankless Water Heater with a Rinnai Hydronic Air Handler to deliver comfortable heat to your home while providing endless hot water for your lifestyle.

• Unique in the Industry:
  – Rinnai is the only tankless company to offer a matched system for heating your home. One company, one system, one warranty.

• Installation Benefits:
  – Since the gas combustion takes place in the water heater only, the hydronic air handler requires no venting or gas supply. This allows for maximum placement flexibility and makes installation simple.

• Comfortable and Flexible Heat:
  – The Hydronic heat of the Tankless Heating System is a warm, comfortable heat, not the over-heated, dried-out heat found with furnaces. Plus, by changing the temperature of the water heater, you can change the temperature of the warm air itself. Try that with a furnace!
PRODUCT FEATURES
Key Features

Intelligent Microprocessor Control

• The Rinnai Hydronic Furnace includes domestic hot water priority control. This feature will turn off the pump and blower to prevent cold air from blowing into the structure and excessive wear on the internal pump components.

• During the non-heating season, the microprocessor will cycle the pump every six hours (for two minutes) to prevent the water in the system from becoming stagnant. This process will also cycle during the cooling season.
Product Features

• Four models covering nominal heating sizes from 45,000 to 90,000 BTU/hour

• Multi-position (upflow, downflow, horizontal left, horizontal right)
  • Modifiable for side-entry return air
  • NOTE: the unit is not designed to be installed on its back

• Low-flow, high-head pump designed to work with Rinnai’s tankless water heaters

• Single vent penetration for both water heater and hydronic furnace
Product Features

- Single support source for Water Heater, Hydronic Furnace, Hydronic Furnace circulation pump

- Strong pre-painted galvanized steel cabinet—fully insulated with foil lining

- Designed for serviceability with removable front panel to obtain access to pump, blower and control board

- Side filter rack (option)

- Control board connections for various field supplied accessories (Electronic Air Cleaner, Humidifier, UV Lamp, etc)
Key Features

AHB Hydronic Furnace are now equipped with ECM blowers

• Electronically Commutated Motors are ultra high efficiency brushless DC motors. Depending on individual settings and application, the AHB ECM blower can yield up to 48% better electrical efficiency than a comparable PSC (Permanent Split Capacitor) motor. Due to design, ECM motors are quieter and more durable than PSC motors as well.
PRODUCT INFORMATION
## Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>AH45</th>
<th>AH60</th>
<th>AH75</th>
<th>AH90</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>34&quot;</td>
<td>34&quot;</td>
<td>34&quot;</td>
<td>34&quot;</td>
</tr>
<tr>
<td>Width</td>
<td>14&quot;</td>
<td>17.5&quot;</td>
<td>21&quot;</td>
<td>24.5&quot;</td>
</tr>
<tr>
<td>Depth</td>
<td>22&quot;</td>
<td>22&quot;</td>
<td>22&quot;</td>
<td>22&quot;</td>
</tr>
<tr>
<td>Weight</td>
<td>92 lbs.</td>
<td>109 lbs.</td>
<td>118 lbs.</td>
<td>136 lbs.</td>
</tr>
</tbody>
</table>
### Performance Specification Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>Heating CFM</th>
<th>Water Temperature Nominal Heating Outputs (BTU/h)*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>120°</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AH45</td>
<td>800</td>
<td>32,000</td>
</tr>
<tr>
<td>AH60</td>
<td>1200</td>
<td>38,500</td>
</tr>
<tr>
<td>AH75</td>
<td>1400</td>
<td>50,000</td>
</tr>
<tr>
<td>AH90</td>
<td>1600</td>
<td>55,000</td>
</tr>
</tbody>
</table>

*Average values based on 68° F return air and external static pressure of 0.5” W.C. without evaporator coil; Exact values will depend on which tankless water heater is used (see installation guide for details)

**NOTE:** Values above are net heating outputs—to compare to the input of another product, multiply that product’s BTU/hr input by its efficiency rating.
Inside the Rinnai Hydronic Furnace

- Foil-Faced Insulated Cabinet
- Coil Assembly
- Hydronic Pump
- Blower Assembly (multi-speed motor)
- Control Box and Control Board
- Filter
SEQUENCE OF OPERATION
The thermostat calls for heat and engages the hydronic furnace pump.
The water flow from the pump causes the Rinnai tankless water heater to ignite and begin heating.
Hot water passes through the hydronic heating coil.
After 25 seconds of pump operation, the blower moves heated air into the structure.
Water continues to circulate through the tankless water heater and hydronic heating coil as long as there is a call for heat (Note the integrated check valve in the pump housing).
The air separator ensures the circulation loop is purged.
Water also flows to domestic hot water fixtures if there is demand. An installed tempering valve reduces the potential of scalding.
If domestic demand increases to effect heating capability, the hydronic furnace flow sensor* sends signal to turn pump and blower off until domestic flow has decreased.
When the hydronic furnace pump stops (either due to domestic demand or a satisfied thermostat), the blower will continue for 30, 60, 90, or 120 seconds depending on preferred settings.

*Flow sensor can be substituted with AH Control Switch (model dependent)
When the thermostat calls for cooling from the A/C, circulation occurs from the condenser through the evaporator coil.

Air is blown across the evaporator coil moving cool air into structure (no time delay).

Similarly, when the thermostat calls for heating from the heat pump, circulation occurs from the evaporator-coil through the condenser.

Air is blown across the evaporator-coil moving warm air into structure (no time delay).

If the heat pump cannot adequately heat the structure, the thermostat will call for emergency heating and initiate flow from the water heater, engaging the hydronic furnace.

While the hydronic system is in use, the flow sensor* again monitors water usage to ensure adequate heat is delivered.

When the hydronic furnace pump stops (either due to domestic demand or a satisfied thermostat), the blower will continue for 30, 60, 90, or 120 seconds depending on preferred settings.

*Flow sensor can be substituted with AH Control Switch (model dependent)
Support
And
Warranty
When pairing a Rinnai Tankless Water Heater and Hydronic Furnace, there is one point of service for the Tankless Water, the Hydronic Furnace, and the circulation pump for the Hydronic Furnace—no concerns of being shuffled from one manufacturer to the next. Rinnai Service is available 24/7/365 days a year for the technician on site.
The hydronic furnace should be installed by a state qualified or licensed contractor(s).

Improper installation may void the warranty.

In order to receive full warranty coverage the hydronic furnace when connected to any other type or brand of product than a Rinnai tankless water heater, the flow rate through the hydronic furnace must not exceed a maximum of 5 GPM.

All repair parts must be genuine Rinnai parts. All repairs or replacements must be performed by an individual or servicing company that is properly trained, state qualified or licensed to do that type of repair.


### RINNAI HYDRONIC FURNACE HANDLER WARRANTY

<table>
<thead>
<tr>
<th>Item</th>
<th>Period Coverage (from date of purchase)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parts</td>
<td>5 Years</td>
</tr>
<tr>
<td>Reasonable Labor</td>
<td>1 Year</td>
</tr>
</tbody>
</table>

### RINNAI TANKLESS WATER HEATER WARRANTY

when installed with a Rinnai Hydronic Furnace

<table>
<thead>
<tr>
<th>Item</th>
<th>LS, HP, and V53 Models</th>
<th>C42, C53, C85, C98</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Exchanger</td>
<td>10 Years</td>
<td>5 years</td>
</tr>
<tr>
<td>Parts</td>
<td>5 Years</td>
<td>5 Years</td>
</tr>
<tr>
<td>Reasonable Labor</td>
<td>1 Year</td>
<td>1 Year</td>
</tr>
</tbody>
</table>

Hydronic heating is not approved for the R42, R53, R85, or R98 (non-LS) models.

Hydronic Furnace

Frequently Asked Questions
FAQ’s

1. **What is the efficiency rating of the Hydronic Furnace?**
   - The efficiency is based on the heat source’s efficiency (in most cases, Rinnai’s tankless water heater). The efficiency of the heat source will be dependent on overall system design (delta T of the water heater and hydronic furnace, system loop, etc).

2. **Does the Rinnai Hydronic Furnace qualify for any rebates related to high efficiency furnaces?**
   - Some municipalities may offer incentives for HVAC equipment with ECM blowers installed. Also note when pairing with an Energy Star qualified Rinnai tankless water heater, various rebates will likely be available for those products.

3. **Can the Hydronic Furnace be used with Rinnai’s condensing water heater?**
   - Yes, total application design must be considered as the return temperature from the hydronic furnace could reduce the water heater’s efficiency. Contact Rinnai’s Engineering Department if needed.

4. **Is the Hydronic Furnace AHRI or ETL Certified?**
   - AHB models are ETL Certified. ETL Testing Laboratories has been conducting electrical performance and reliability tests since 1896. The ETL Listed Mark is accepted throughout the United States and Canada when denoting compliance with nationally recognized standards such as ANSI, IEC, UL, and CSA.
   - AHA models are AHRI Certified. AHRI Certification programs help ensure HVAC products perform as rated. In order for a piece of equipment to be certified, its rating and performance must meet or exceed the applicable AHRI Standard for rating. The AHRI standard that Rinnai’s hydronic furnace adheres to (Standard 430) currently does not address ECM motors—this is why the AHB models are not AHRI Certified—yet.
5. Can the Rinnai Hydronic Furnace be paired with Rinnai’s condensing boiler?
   - Rinnai’s engineering department is finalizing specific application drawings and specifications for this combination. If needed, contact Rinnai Engineering for more details.

6. What is the pump’s flow rate?
   - The pump’s flow rate will vary between 3 and 5 gallons per minute primarily depending on the length and design of the plumbing loop between the AH and water heater.

7. What is the delta T across the Hydronic Furnace’s coil?
   - This will vary between 30 to 50°F depending on total system design (total static pressure of the air flow system, CFM setting, water temperature entering the AH, etc.)

8. Is a drain pan installed under the Hydronic Furnace required?
   - Since water is moving through the Hydronic Furnace, we recommend the installation of a drain pan. Local codes and standard HVAC/Plumbing practices should dictate the installation and drainage of this pan.

9. Does an installer have to be certified by Rinnai to purchase a Hydronic Furnace?
   - Rinnai ultimately cannot control who purchases and installs our products. However, it is the installer’s responsibility to ensure each of our products are installed to the specifications and guidelines stated in the accompanying installation guide. Furthermore, all national, state, and local codes must be followed.
   - Each product’s warranty states the above as well as the need for each installer to be qualified and licensed by his/her governing authority (state, province, etc). Failure to comply could of course void the warranty of a product.
   - Rinnai highly recommends every installer attend a Rinnai-sponsored installation class before installing any Rinnai product.
10. Does Rinnai offer engineering and sizing support for the Hydronic Furnace?
   • Our Engineering department can offer sizing support. However, it is the installer’s responsibility to accurately perform Btu heat loss and heat gain calculations on a potential installation site.

11. Does Rinnai sell the Hydronic Furnace without an integrated pump
   • No. The Rinnai hydronic furnace is designed to be paired specifically with our tankless water heaters—therefore the pump was customized for this application. The hydronic furnace can be used with other heating sources. To maintain full warranty, the flow rate through the integrated pump must not exceed 5 gpm.

12. Is the AHB blower motor variable speed?
   • No. The AHB’s ECM motor is multi-speed—meaning the speeds for heating and cooling can be adjusted by the installer at the point of installation depending on needs.

13. What is the difference between variable speed and multi-speed
   • Variable speed motors will change speeds during operation based on the PCB’s input parameters
   • Multi-speed is adjustable by the installer by changing the connection points to the fan itself—performed during the installation of the product

14. Does the Hydronic Furnace have integrated freeze protection?
   • Not yet but Rinnai Engineering is finalizing a method of freeze protection
   • To ensure a hydronic furnace does not freeze:
     • Ensure all pipes in unconditioned space are insulated—this also improves the unit’s efficiency
     • Ensure the thermostat is set to heat mode at all time during freezing conditions
     • If needed, drain the system during extended periods of non use
Thank You for Being a Part of
Rinnai’s Product Expansion -
Hydronic Furnace

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