

Micro-Mix II

Instantaneous Steam Water Heaters



- Simple Pre-piped Package
- Fail-safe, Accurate
- Compact and Economical



Count on Graham for proven reliability.

Graham is one of the world's foremost designers and manufacturers of vacuum and heat transfer equipment – with over a half-century of proven experience. Our in-house resources include research, engineering, design, manufacturing and testing capabilities. This expertise is reflected in our industrial installations worldwide ... and in our advanced heat exchange equipment in: commercial buildings ■ industrial plants ■ hospitals ■ schools ■ hotels ■ restaurants ■ laundries ■ multi-residences ■ ships ■ military facilities.



MicroMix II Instantaneous Steam Water Heater

Feed-Forward system yields unlimited hot water on demand, anywhere there is a 2 to 250 PSIG of steam available! Compact. Reliable. Economical. Fail-safe. Efficient. Versatile.

- Instant hot water
 - Feed-Forward system
 - unlimited supply
 - accurate to +/- 4°F
- Efficient, pre-piped packaged systems
 - low-cost installation and maintenance
 - up to 40% more efficient than "U" tube systems
- Reliable and fail-safe
 - a proven reliable design for over 25 years
 - potential failure results in cooler water or no water at all
- Compact and economical
 - needs only 6 sq. ft. of floor space
 - mounted or suspended
 - utilizes low or high pressure steam (2-250 PSIG)
 - operates on demand only
 - no storage tank required

Graham adds its technology, experience, and special engineering design features to a proven concept – making a good idea exceptional!

Now, produce all the hot water you want, when you want it.

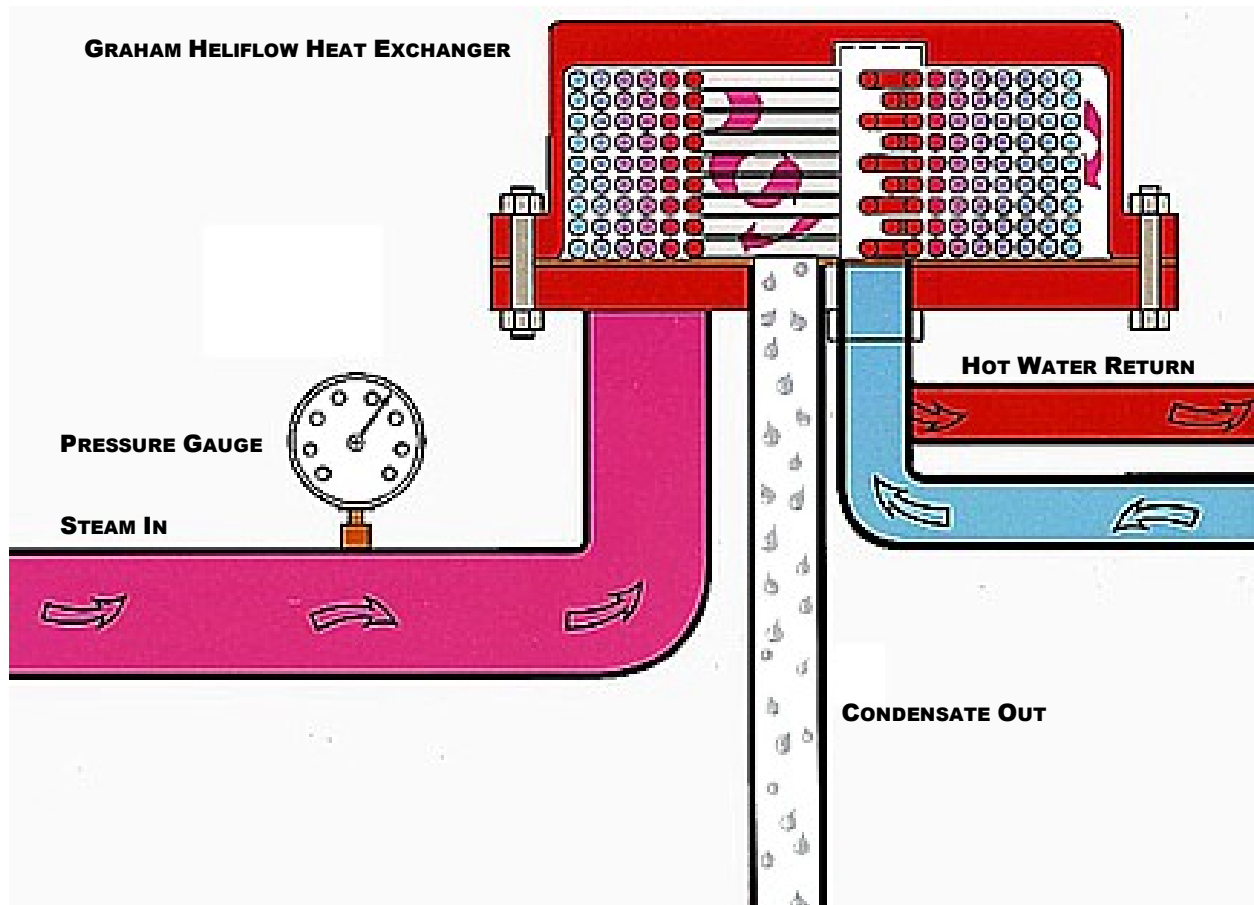
Instantly! Automatically! At exact, adjustable, pre-set temperatures!
All in 6 sq. ft. of floor space!

- **No storage tanks!**
- **No wasted space!**
- **No electrical requirements!**
- **No costly installation or upkeep!**
- **No safety concerns!**

Pre-piped Package System

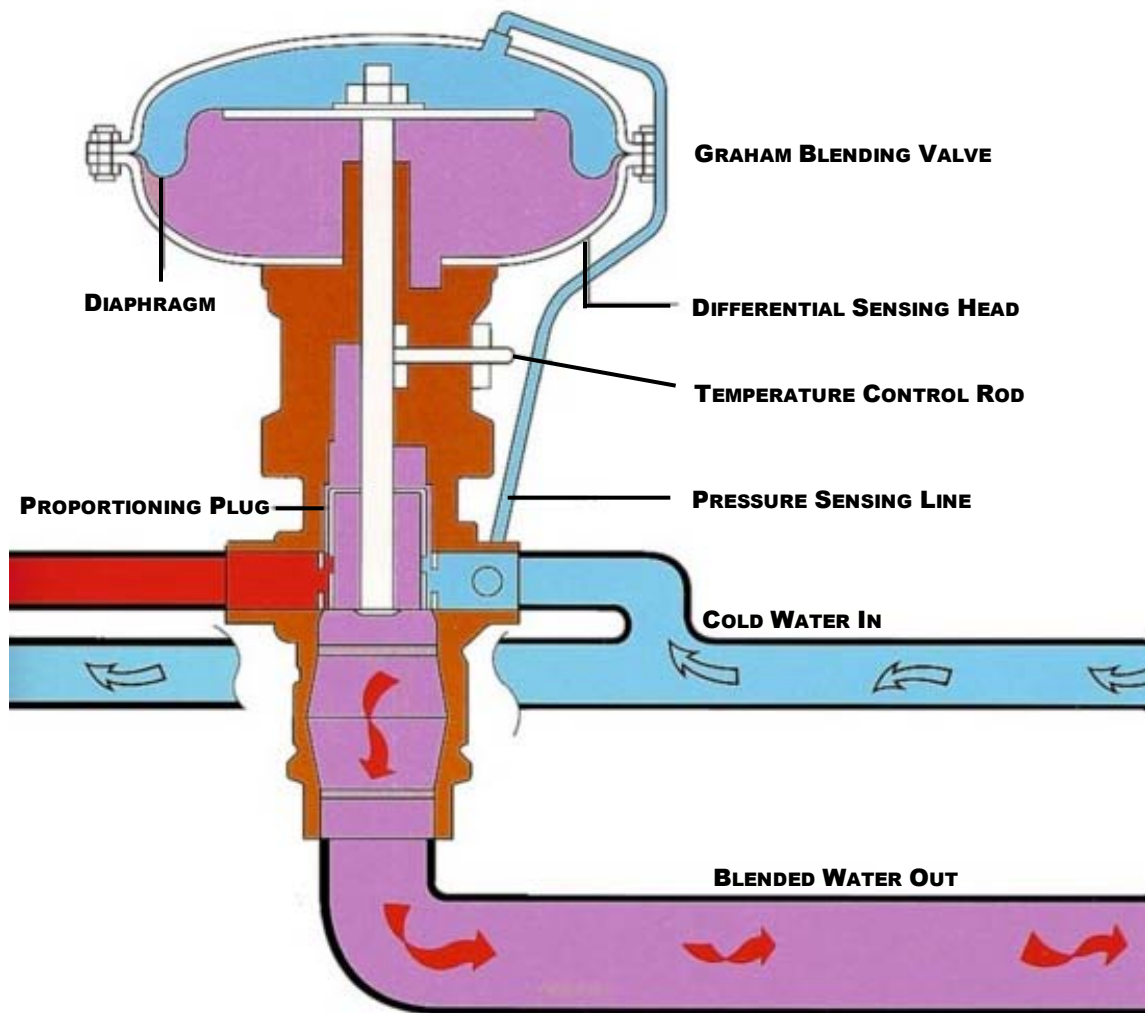
Heart of the Graham MicroMix II Instantaneous Steam Water Heater is a Graham Heliflow[®] Heat Exchanger, which we invented, patented over 50 years ago and continually improve. This compact Heliflow Heat Exchanger utilizes a spiral tube configuration through which water flows. Steam is introduced in the casing and flows 100% counter current to the water. Exceptionally high heat transfer efficiency is achieved in a very small space. Combining this Heliflow Heat Exchanger with the unique "Feed-Forward" Graham Blending Valve, yields an instantaneous water heater that constantly senses demand requirements, providing blended hot water at a preset limit through all rated flow capacities.

The Feed-Forward principle of control is the only system that can provide instant hot water on demand. Sensing demand requirements, the blending valve immediately positions itself to automatically proportion the mix of the hot and cold water, resulting in a constant supply of hot water at +/-4°F of the preset temperature, regardless of flow rate – a feature that cannot be achieved with conventional feedback systems.



Feedback systems rely on signals from temperature sensing devices that respond too slowly to produce hot water safely and accurately through variant flow demand. Inherent reaction lags may generate slugs of scalding hot or cold water. Damage or malfunction of any feedback system components may result in a "runaway" condition; thereby compromising the reliability of electrically controlled safety devices and jeopardizing the safety of the water user.

The Graham MicroMix II Instantaneous Water Heater incorporates an integral nonelectric fail-safe system, blending hot and cold water to achieve the desired output temperature. Potential failure or damage to the unit will produce cooler water, or no water at all. The Graham MicroMix II is controlled by pressure differentials induced by flow, and delivers hot water when you want it, safely and accurately.



Graham designed and constructed for reliability.



Exclusive Graham Heliflow Heat Exchanger

Graham MicroMix II models use Graham's proven Heliflow Heat Exchangers, which we designed, patented, and continually improve. Its spiral tube design has many advantages over traditional "U" or straight-tube water heaters.

- 100% counterflow for heat transfer rates up to 40% greater than equivalent straight-tube exchangers.
- Pressure drops are minimized.
- Greater turbulence cleans and enhances heat transfer.
- Bourdon tube configuration allows entire assembly to expand and contract without localized stresses. Failure from thermal shock or mechanical process is rare.
- No baffles.
- ASME Section VIII Div. 1 Certification is standard.
- Available in a variety of materials to suit specific applications.
- Compact.
- Ease of maintenance.
- Parts in stock.

Graham Blending Valve.

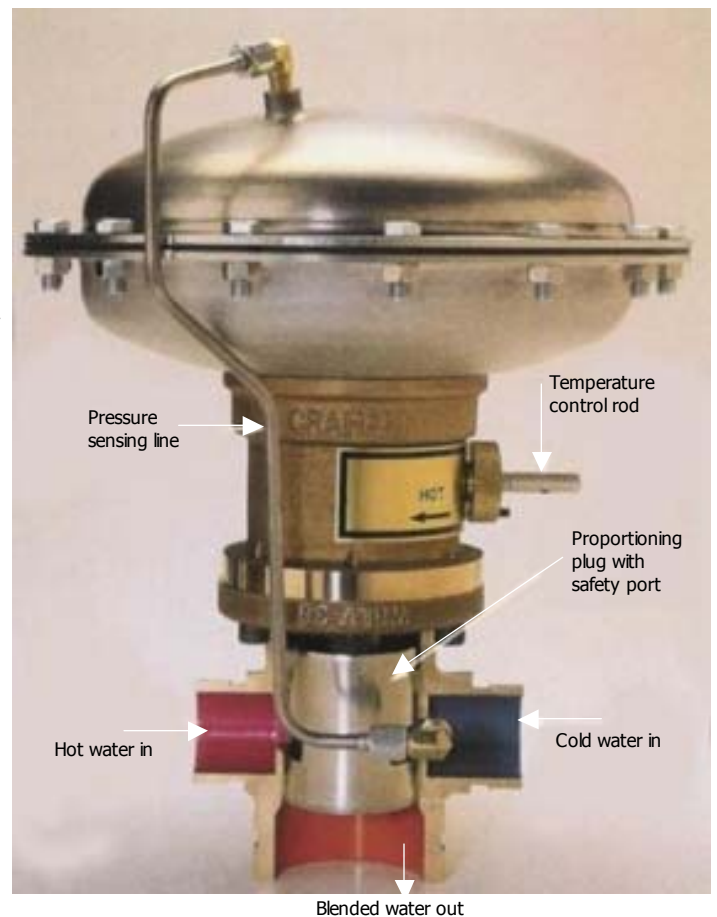
Graham has produced and tested its "Feed-Forward" blending valve assembly to assure safe and accurate temperature control of the heated water through all rated flow capacities. Controlled by the flow demand, no thermostatic sensing devices are utilized.

The operation is as follows:

1. The proportional valve plug is regulated by movement of the diaphragm, induced by pressure differentials in the sensing head.
2. A sensing line "loads" the top portion of the diaphragm with supply line cold water pressure while blended water outlet pressure is being sensed below.
3. Flow demand imparts a pressure imbalance above (+) and below (-) the diaphragm, resulting in movement of the diaphragm and proportioning plug.
4. The movement aligns ports in the plug with supply ports in the valve body, introducing the correct proportion of hot and cold water.
5. This action automatically generates blended hot water through all rated flow capacities at the chosen preset temperature (+/-4°F).

Integral fail-safe system permits stem travel in the event of plug restriction or parts failure, opening an auxiliary cold water port. Cold water flooding yields cooler water, or in parts failure, no water at all.

Temperature is easily adjusted by side-to-side movement of the control rod in the valve body. Stabilization adjustments are made during initial startup by rotation of the control rod. All settings are locked in with a locking ring and set screw.



Options and recommendations.

1. Optional Accessories:

- Graham Heliflow Heat Exchanger casings are available in: Cast iron (standard), Cast steel, Cast bronze.
- Heliflow tubes and manifolds are available in: Copper (standard), Admiralty, Copper nickel, Stainless steel.
- Protective cabinet – fabricated of heavy gauge galvanized steel to protect the heater from accidental contact or tampering, see bulletin PC-100.
- Recirculation packages – self-contained thermostatically controlled system, see Bulletin RS-109.

2. Specifications:

See separate "Selection and Capacity Tables" pages for specifications and dimensional data.

3. Parts:

All standard parts are in stock, ready for immediate shipment.

4. Miscellaneous:

Inlet water pressures of 40 to 150 PSIG are required for optimal performance of Graham MicroMix II. For pressures below 40 PSIG, consult your Graham representative.

Water hardness exceeding 120 ppm can precipitate scale buildup reducing efficiency. Coils can be cleaned in place with a special kit. Consult your Graham representative. To reduce downtime, keep a spare coil on hand. Coils are easily changed in about 2 hrs.

5. Warranty:

Graham Corporation will repair, replace or make a fair allowance for any MicroMix II Instantaneous Steam Water Heater that is proven to be defective in material and workmanship for a period of 1 year. See full warranty for applicable terms and conditions.



Graham designed, manufactured, tested and guaranteed.
A real Graham Advantage.



MicroMix II

Instantaneous Steam Water Heater

Specification

Furnish and install where shown on plans: _____

Graham MicroMix II Instantaneous Water Heater(s), Model # _____ as manufactured by Graham Corporation, Batavia, New York. The heater(s) shall be a factory assembled package with the capacity to heat _____ GPM of water from _____ degrees F. to _____ degrees F. without the use of thermostatic control devices or storage tanks. The heater(s) shall be capable of maintaining the set temperature within +/- 4 degrees F. over a flow range of a few percent to 100% rated capacity. The heating coil shall be _____

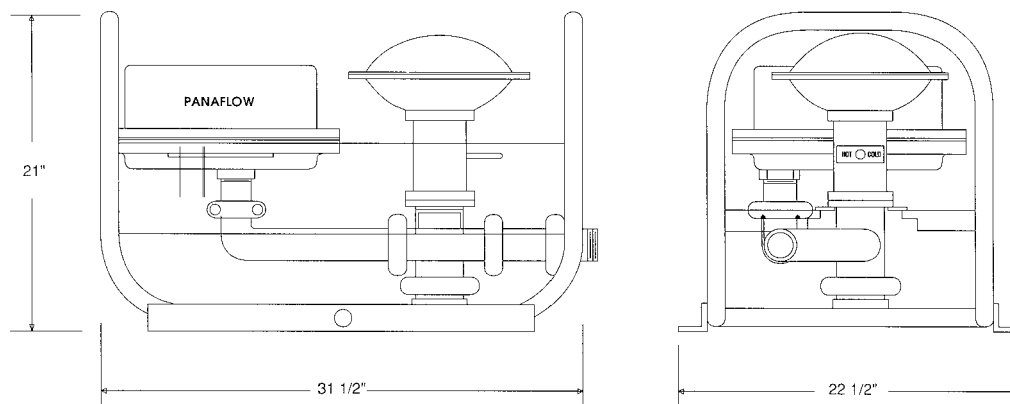
material

tubes spirally wound and brazed or welded into the manifold. No baffles

or other supports shall be used in the shell. The coil must be capable of being removed for inspection and service,

without breaking any threaded steam or water connections or removing the unit from its installed position.

Heater(s) shall incorporate an integral safety system that suppresses over temperature conditions without the use of electrically operated devices. Heat exchanger shall be ASME Section 8, Division 1 constructed and stamped. Package to include built in hot water relieving feature, traps, strainer pressure gauge and thermometer (field installed). *(For steam supply pressures in excess of 15 PSIG, package includes pressure reducing valve and strainer in addition to above.)*





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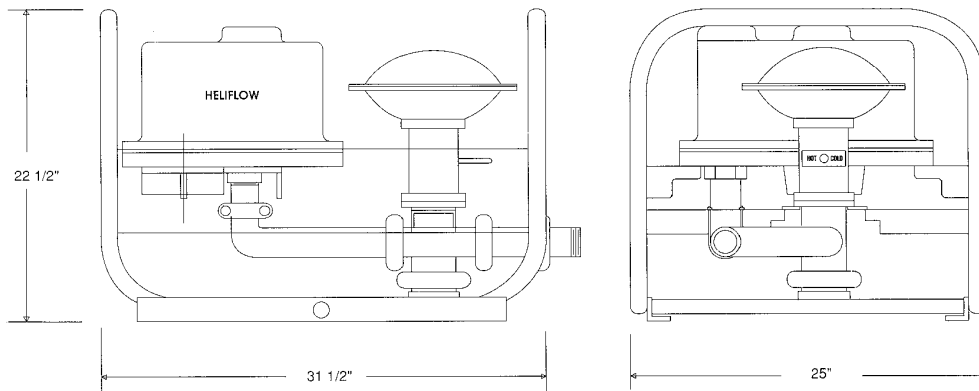
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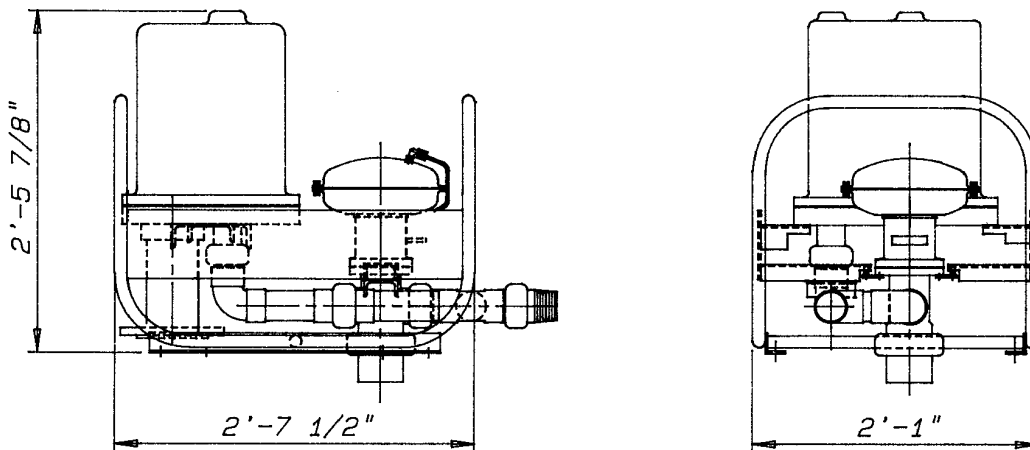
90 Gpm



Specification

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120 Gpm



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