

# Power-Pipe™ Selection and Installation Guide For Home Retrofit

## A) Background

### The Power-Pipe™ Drain-water Heat Recovery Unit

RenewABILITY Energy's patent-pending Power-Pipe™ is a heat exchanger that is comprised of standard plumbing components: Type "L" copper fresh water coils wrapped very tightly around an inner Type "DWV" copper drainpipe. As fresh water flows up the multiple fresh water coils, warm to hot drainwater flows down the inside wall of the drainpipe as a falling film. This counter-flow design maximizes the amount of energy that can be recovered from the drainwater while minimizing pressure loss. The Power-Pipe™ is a passive energy saving device. It has no moving parts and will require no maintenance. The high quality construction provides a life of 40 years or more. Its self-cleaning design assures maintenance-free operation.

### Power-Pipe™ Compatibility

The Power-Pipe™ is compatible with all water heating systems (e.g., natural gas, electrical, oil, propane, heat pump, solar, tank, and on-demand) as well as all drainage and freshwater plumbing materials.

## B) Power-Pipe™ Selection Guide

### Diameter

The drainpipe and Power-Pipe™ nominal sizes must be the same. Typical residential drainpipes are either 2" or 3" in diameter. The Power-Pipe™ is currently available in 2", 3", 4" and 6" diameters.

### Length

It is critical to measure your available vertical length of continuous drainpipe. The Power-Pipe size that we recommend for you home would be this length less 5-1/4" and round down to the closest model. If it can fit, a 60" Power-Pipe™ is recommended (this requires a 65-1/4" section of drainpipe for proper installation and connection). The Power-Pipe™ is also available in shorter and longer lengths in 6" increments (48", 54", 66", 72", etc.). It is not recommended to install a Power-Pipe™ shorter than 30" and longer than 72", although they are available upon request.

## C) Site Evaluation

### Vertical Orientation

A Power-Pipe™ must be installed in a VERTICAL orientation. If the drainpipe is not vertical, additional plumbing based on site conditions and/or special connectors will be necessary to provide a vertical orientation.

### Clearance Requirement

A Power-Pipe™ and the drain connectors require approximately 3/8" clearance between the drainpipe and any adjacent structure or wall. If the clearance is less than 3/8" the Power-Pipe™ may not fit. Rerouting the drainpipe may be necessary.

### Drainpipe Support

If installing a Power-Pipe™ into a cast iron or copper drainpipe system, install structural supports for the drainpipe above where the Power-Pipe™ is to be installed, and below if necessary. Cutting an unsupported cast iron or copper drainpipe may damage the drain system. It is recommended that all drainpipe types be supported near the ceiling level of the room in which the Power-Pipe™ is to be installed.

## D) Plumbing Options

### Best Method of Installation

It is recommended to plumb all freshwater to the home through the Power-Pipe™ except the kitchen sink. This configuration provides highest Power-Pipe™ performance and maximum energy savings. If a water softener is present, plumb the Power-Pipe™ in the loop downstream of the softener.

### Alternative #1

If it is impractical to plumb all freshwater through the Power-Pipe™, then either Alternative #1 or #2 can be chosen, both yield about 75% of the savings as the Best Method. The first recommended alternative is to plumb the cold water input to the water heater through the Power-Pipe™.

### Alternative #2

The second recommended alternative is to plumb all the water supplying the cold side of all water fixtures through the Power-Pipe™, exclude the kitchen sink.

### **E) Installation Instructions**

Please read these instructions before installing any Power-Pipe™ unit.

Please Note:

- Only qualified persons should perform a Power-Pipe™ installation.
- A Power-Pipe™ must be installed in a VERTICAL orientation.
- A Power-Pipe™ must be the same nominal size as the drainpipe to which it is connecting.
- The Power-Pipe™ is not sold with freshwater fittings, which are the responsibility of the installer as determined by on-site conditions. The Standard Package includes 2 drain connectors: a Fernco sleeve connector for the bottom and a ProFlex™ connector for the top.
- A Power-Pipe™ may be installed on any level where there is access to a sufficiently tall section of vertical drainpipe that carries drain water. It is usually best to install at the lowest level possible.
- If the freshwater connections are not plumbed correctly, performance and energy savings will be substantially lower. Plumbing the Power-Pipe™ for counter-flow operation (waste flowing down, freshwater flowing up) is critical for maximum performance. INCOMING freshwater must be connected to the BOTTOM Power-Pipe™ coil header.

Installation Instructions:

1. Measure and mark 4" up from the bottom of the drainpipe. This will be the BOTTOM CUT.
2. Starting from the BOTTOM CUT, measure up and mark the length of the Power-Pipe™. This will be the TOP CUT.
3. At the BOTTOM CUT and TOP CUT markings cut and remove the drainpipe section.
4. De-burr drainpipe openings.
5. Wet inside of supplied Fernco™ sleeve coupling and slide over the bottom section of drainpipe.
6. Remove the ProFlex™ steel band. Wet the inside of the ProFlex™ and slide the large side of the coupling over the TOP CUT and onto the drainpipe.
7. Loosen the band and put it back onto the ProFlex™ coupling.
8. Push the Power-Pipe™ up into the ProFlex™ coupling and then tighten both bands.
9. Move the (bottom) Fernco™ sleeve up onto the bottom of the Power-Pipe™ and then tighten clamps on both connectors.
10. Connect the INCOMING cold water to the BOTTOM Power-Pipe™ coil header.
11. Connect the TOP Power-Pipe™ coil header to supply the rest of the home.
12. Check and tighten all connections.

Insulation:

- Insulate pipes and supply lines as desired to minimize heat loss and to eliminate condensation.
- REI recommends "spiral wrap" or equivalent insulation.

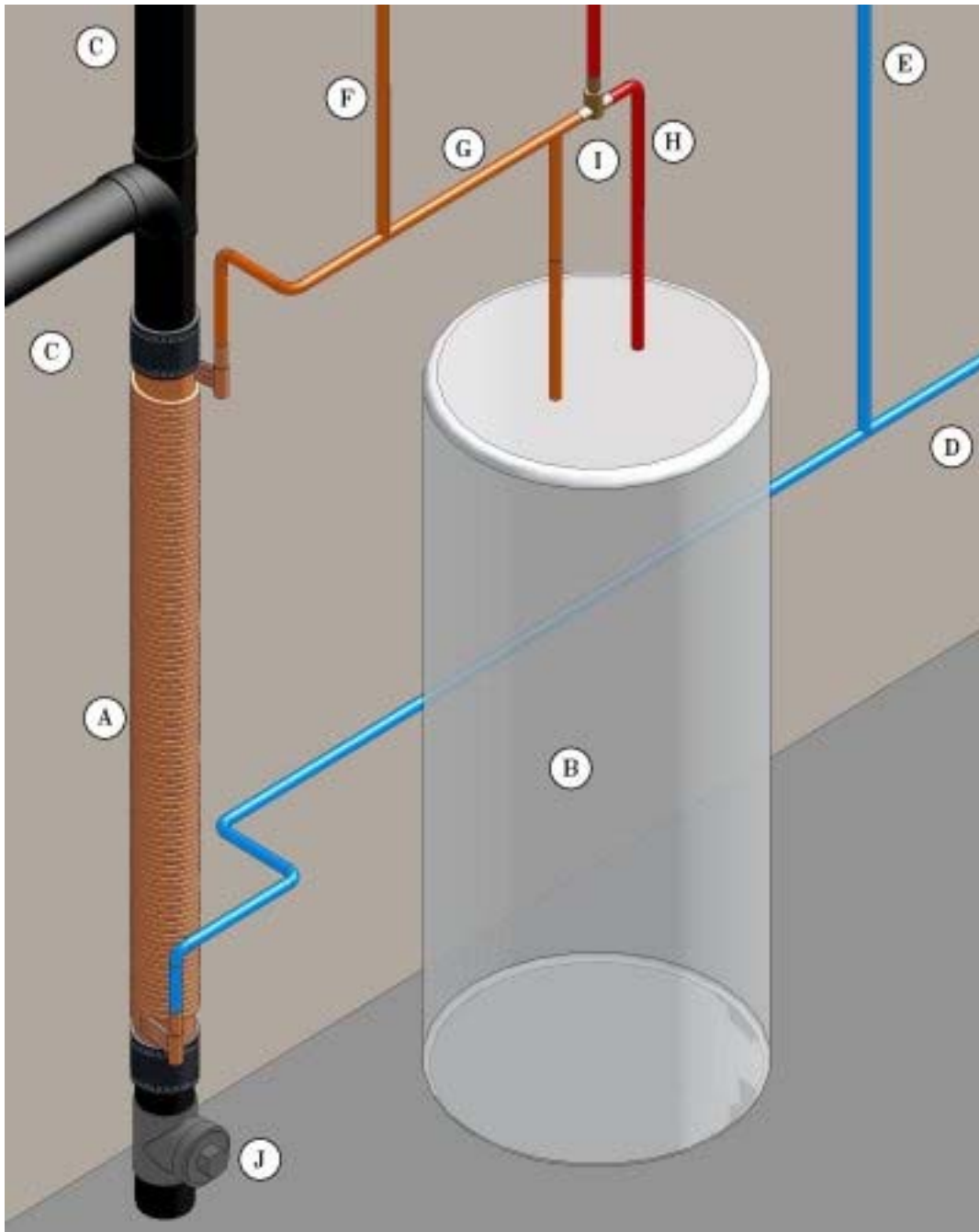


Figure 1: Plumbing Configuration

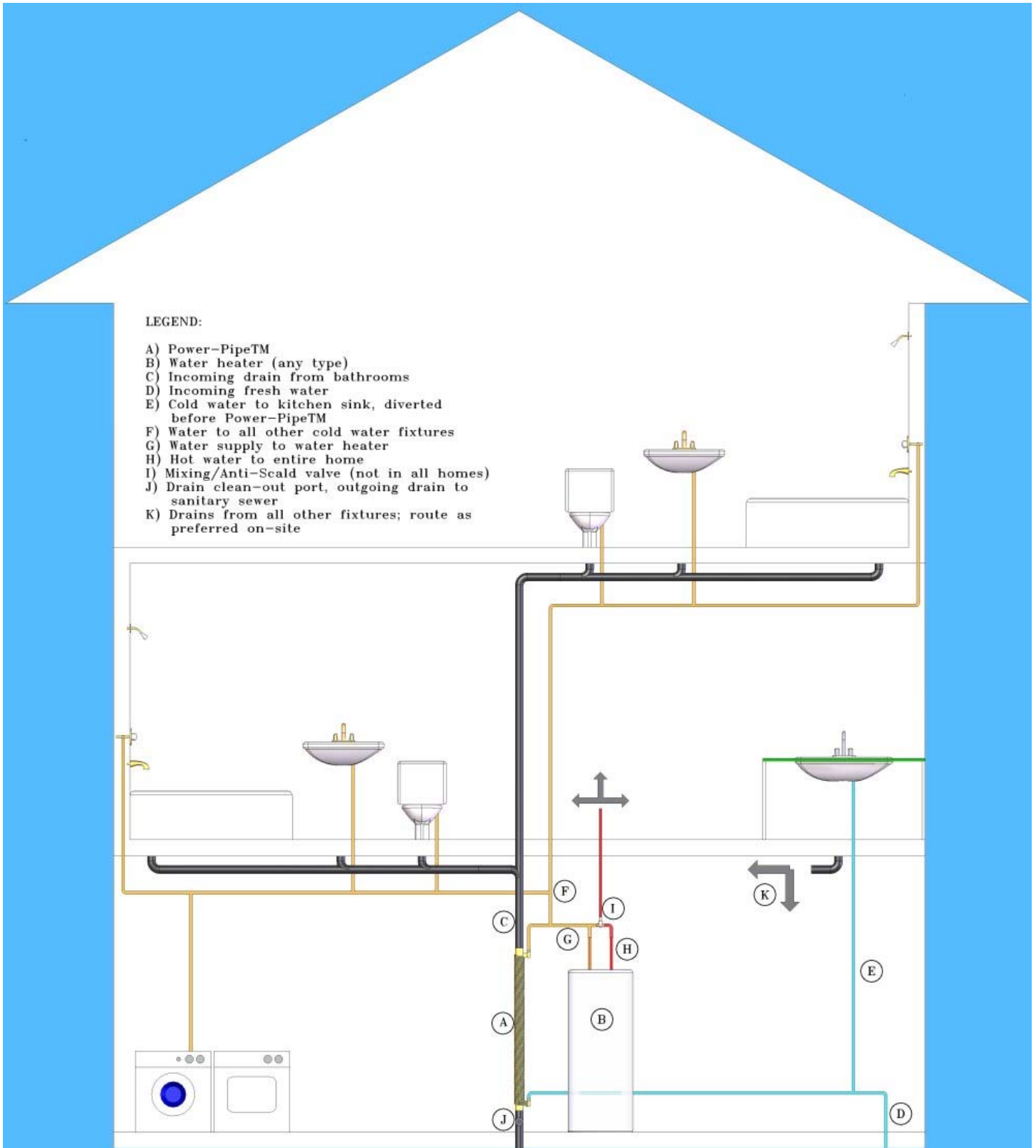


Figure 2: Preferred Plumbing Layout for a Power-Pipe™ Drain-water Heat Recovery Unit