

FAQ

About the Kemper Flow-Splitter in Hot Water

What does the Flow-Splitter do? *The Flow-Splitter provides constant circulation into a room that might otherwise contain dead-legs and stagnant water.*

So what...*Circulating water into a room provides instant hot water at the fixture with no time-to-tap delays. It also minimizes stagnation.*

How does it do this? *The Flow-Splitter is positioned on the main riser or ceiling distribution pipe. It has two connections that are used to create a circulating loop into a room onto which multiple fixtures are connected. When water moves through the main distribution pipe (due to downstream consumption or due to a re-circulation pump), a portion of the flow is diverted through the connected loop into the room.*

So what...*It is one of few options available to plumbing designers for circulating water into a room.*

How does it work? *The Flow-Splitter contains an integrated, dynamic (moving) cartridge that works according to the Venturi principle to divert water through a parallel path (connected loop). Water flowing through the main pipe of the Flow-Splitter will pass through the Venturi insert cartridge causing a pressure difference which diverts water into the connected loop.*

So what...*The Venturi concept was developed over 250 years ago and is a proven principle of hydraulics. The incorporation of Kemper's patented dynamic Venturi insert has provided an enhanced adaptation of this principle for use in modern day plumbing design.*

How close are the fixture connections to the loop piping? *The Flow-Splitter loop allows for very close connections to the fixtures. The connections are made to the fixture stop and are typically less than 12".*

So what...*Connecting the hot water source piping close to the fixtures provides instant hot water and reduces non-circulating pipe lengths and stagnation.*

Does the loop piping qualify as the hot water source for the IEC 404.5.1 code? *Yes, the loop created from the Flow-Splitter is considered the hot water source piping to which the public lavatory fixtures are connected.*

So what...*This provides the designer with one of the best solutions available for complying with the IECC code 404.5.1.*

What diameter piping can be used for the loop piping? *The Flow-Splitter is configured with standardized connections for the loop piping based on the size of the main Flow-Splitter pipe. However, these pre-configured loop connections can be reduced as required, to accommodate all pipe size diameters.*

So what...*the designer is not restricted in his/her selection of loop pipe sizes.*

Why would I want to circulate water into a room? *Circulating water into a room provides instant hot water at the fixtures and reduces stagnation and non-circulating pipe lengths.*

So what...*This minimizes time-to-tap delays and helps reduce biofilm and bacteria growth. It also helps to circulate and move chemical treatments throughout the entire piping system.*

Some plumbing codes allow for 25' of non-circulating pipe lengths. Why would I design anything shorter? *To minimize stagnation and to provide hot water instantly at the fixtures.*

So what...*Non-circulating pipes allow water to become stagnant. Stagnant hot water will cool down and could provide an environment prone to growing biofilm and bacteria. The longer the non-recirculating pipe length...the longer the delays are for hot water to arrive at the fixtures.*

The IECC energy code 404.5.1 over-trumps the plumbing code requiring non-circulating pipe lengths to be kept under 24" for public lavatories. In some states, the code is being expanded to include all fixtures. The trend in plumbing design today is to reduce all non-circulating pipe lengths and potential dead legs.

How much does the Flow-Splitter add to plumbing costs compared to traditional plumbing layouts? *If designed properly, the Flow-Splitter will reduce piping, installation, and operating costs. In fact, there are few situations where a Flow-Splitter would be used if it did not lead to cost savings.*

So what...*Using the Flow-Splitter can save money on materials, labor, and energy.*

Where do the savings come from? *The pipe savings come from a reduction in the amount of return piping that would otherwise be necessary with a traditional design layout (return pipe in parallel with the distribution pipes). Less piping translates into energy savings due to gains in energy efficiency through reduced friction and surface area.*

So what...*saving money is an important consideration to be made in plumbing design.*

What calculations are necessary to be able to utilize the Flow-Splitter technology? *Standard calculations for flow rates, pressure drop, and heat loss will be required. Calculations will also be necessary to determine the flow characteristics through the connected loop.*

So what...*This means that there are no special requirements or additional skills needed for learning how to implement the Flow-Splitter technology into a building plumbing design.*

How do I make these calculations? *There will be an interactive tool on the Kemper website (available in March of 2021) that provides these calculations for Flow-Splitter loops. You will be able to input data such as pipe size, water temperature, ambient air temperature, distribution flow rate, loop length, fitting types, etc. This data will be used to provide an instant status overview of the loop flow and temperature loss characteristics, etc.*

So what...*The online tool saves you time and effort when making calculations related to the use of the Flow-Splitter.*

What sizes are available? *The size of the main pipe of the Flow-Splitter is important because this needs to be the same size of the main distribution pipe onto which it will be connected. There are 5 main pipe sizes including 1/2", 3/4", 1", 1 1/4", 1 1/2" and 2". The two loop connections are pre-configured based on the size of the main pipe and are 1/2", 1/2", 3/4", 3/4", 3/4", 1" and 1", respectively.*

So what...*This means that the Flow-Splitter will accommodate most project installations and designs.*

What connection types are available? *Currently all 4 connections on the Flow-Splitter are female NPT threads.*

So what...*If other connections are desired (press, solder etc.), adapters can be sourced separately.*

Are stop valves necessary? *Stop valves are not necessary but they are recommended on the loop connections so that the entire loop can be shut off for servicing and maintenance.*

So what...*A typical installation will include the stop valves so that the entire loop can be isolated, if needed.*

Is the Flow-Splitter certified for use in the US? *Yes, the Flow-Splitter meets the low lead requirement for potable water and has been certified for compliance with the UPC and the NPC of Canada. It complies with Section 1417(d) of the Safe Drinking Water Act and the lead content requirements of Section 116875 of the California Health & Safety Code. It is in compliance with the NSF/ANSI standard 372-2016; NSF/ANSI standard 61-2018 and NSF/ANSI standard 372-2016. It has also been approved for use in the states of Wisconsin, Illinois, and Massachusetts.*

So what...*The Flow-Splitter can be installed in all 50 states and Canada.*

Do these valves require maintenance or service of any kind? *No, the Flow-Splitter is a maintenance-free product.*

So what...*This will save money by eliminating maintenance costs and shutdowns.*

What types of buildings lend themselves to using the Flow-Splitter? *All types of buildings including nursing homes, hospitals, schools, universities, hotels, and office buildings.*

So what...*This means that you are not limited by the building type.*

What type of building design is best for using the Flow-Splitter? *A building design that can incorporate a large loop to serve as its primary distribution line will benefit from reduced return piping. Building designs that are highly branched and have wings that extend far from the heated water source may not prove as beneficial based on heat loss and the need for dedicated return lines.*

So what... *The building layout will need to be analyzed to determine the Flow-Splitter's suitability and confirmation of pipe, installation, and energy savings. Typically this is accomplished by minimizing the length of return piping.*

How do I get help incorporating this into a plumbing design? *Contact your local sales representative or Kemper for full, obligation-free support.*

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