Variable Speed Variable Voltage "00" Circulator (00-VV)

EFFECTIVE: March 1, 2004
SUPERSEDES: New

OVERVIEW

Variable Speed Variable Voltage "00" Circulator (00-VV)

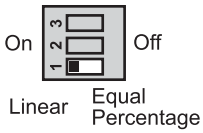
The Variable Voltage version of the Variable Speed "00" Circulator is a microprocessor-based pump designed to operate at different speeds based on an externally generated analog voltage signal input. Its reliable operation, ease of installation and integration to DDC or building management systems allows for a wide variety of HVAC applications, such as maintaining a pressure differential or a setpoint temperature. The control accepts a 0-10 V(dc), 0-20 mA, 2-10 V(dc), or 4-20 mA signal.

00-VV Operation

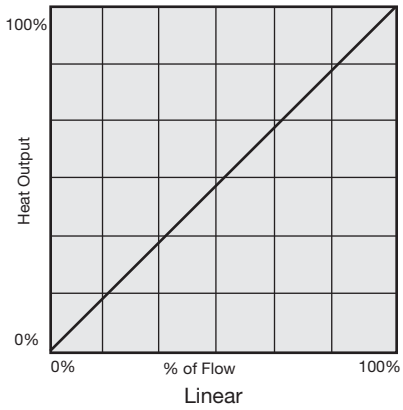
Whenever the 00-VV is powered up, the green power LED turns on and the pump operates based on an analog input signal. The percent output (% OUT) LED flashes at different rates based on the speed of the pump. As the % OUT LED flashes faster it indicates a faster speed of the pump. A fully on LED indicates the pump is at 100% capacity.

Output Characteristic (DIP switch 1)

The 00-VV accepts an analog signal in order to drive the pump at different speeds. The pump speed may be selected to change linearly or based on equal percentage characteristic. The output characteristic is selected via DIP switch 1.

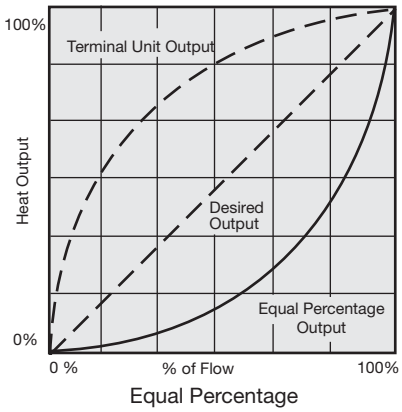


Linear Characteristic



The linear output characteristic assumes there is a linear relationship between percent of flow of the pump and heat output of the terminal unit. Linear operation is typically used in applications in which the pump injects into a constant circulating loop, which includes the terminal unit.

Equal Percentage Characteristic

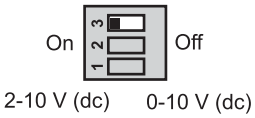


The equal percentage output characteristic assumes there is a non-linear relationship between percent of flow of the pump and heat output of the terminal unit. In order to achieve the desired linear output, the 00-VV provides an equal percentage output. Equal percentage operation is typically used in applications in which the pump injects directly into the terminal unit.

Features:

- **Available in all styles of "00" or "LM" pumps**
- **All-in-one pump / control**
- **Easy to wire**
- **UL approved**
- **Snap-in PC board**
- **Integral flow check**
  - **prevents gravity circulation**
  - **specially designed for variable speed systems**
  - **easy to service**
  - **patented**
- **4 signal voltage ranges (0-10 V dc, 0-20 mA, 2-10 V dc, or 4-20 mA)**
- **Internal LED's**
- **Manual operation switch**
- **Linear or logarithmic output**
- **Pump exercise (10 seconds after 3 days of no operation)**

Analog Signal (DIP switch 3)



The control accepts either a 0-10 V (dc) or 2-10 V (dc) signal. The signal range is selectable via the DIP switch number 3. Once a signal is applied, the pump speed varies based on the selected output characteristic.

0-10 V (dc) / 0-20 mA

Whenever the signal is 0 V (dc), the percent speed output of the pump is 0%, and it increases to 100% when a 10 V (dc) signal is present.

If a 0-20 mA signal is used, install the 500 ohm 1/4 W resistor across the (+) and (-) terminals as shown in Figure 2. Whenever the signal is 0 mA, the percent speed output of the pump is 0%, and it increases to 100% when a 20 mA signal is present.

2-10 V (dc) / 4-20 mA

Whenever 2 V (dc) is present, the control operates the pump at 0% and it increases to 100% whenever a 10V (dc) signal is present.

If a 4-20 mA input signal is used, install the 500 ohm 1/4 W resistor across the (+) and (-) terminals as shown in figure 2. Whenever a 4 mA signal is present the pump operates at 0% output and it increases to 100% whenever a 20 mA signal is present.

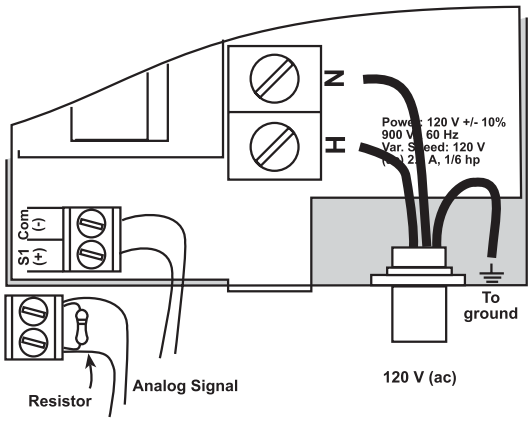
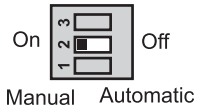


Figure 2

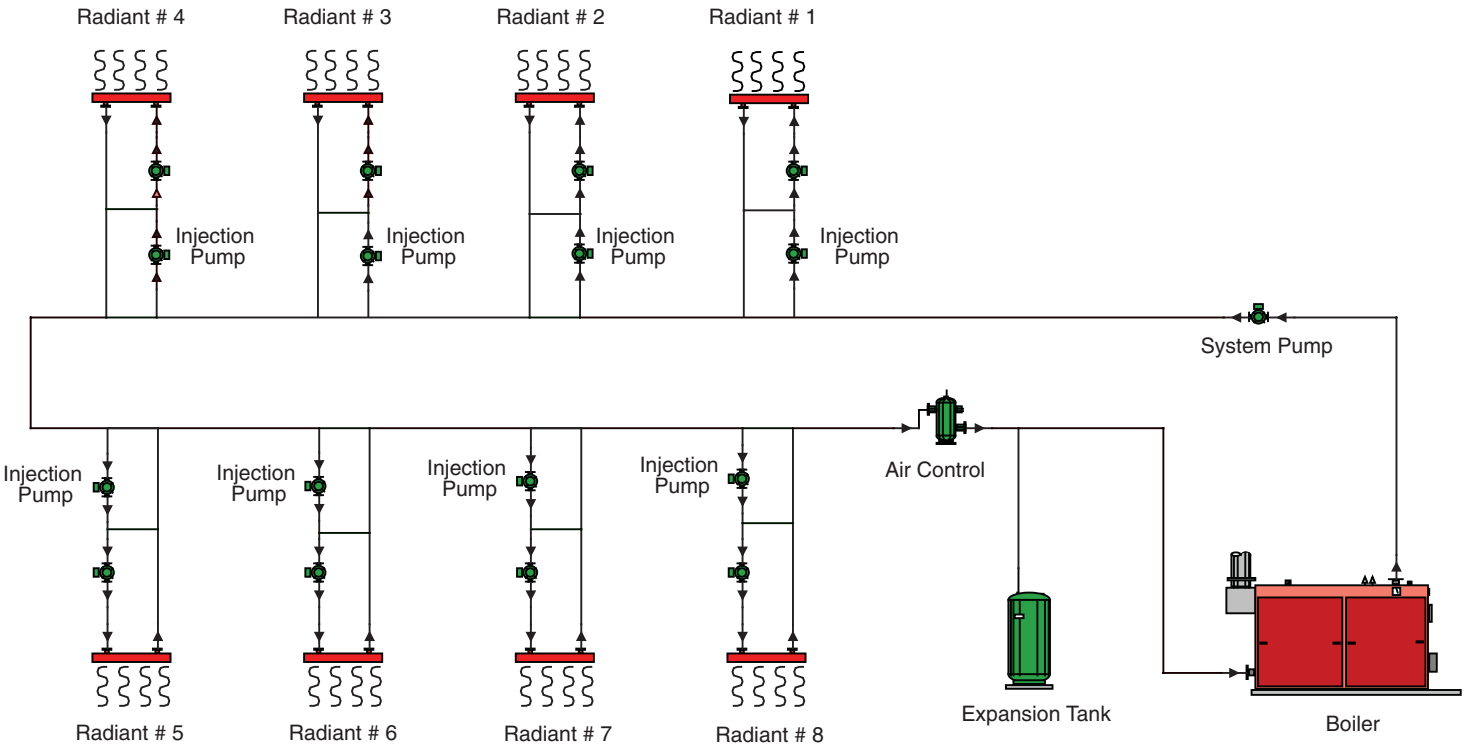
Manual/Automatic Operation (DIP switch 2)



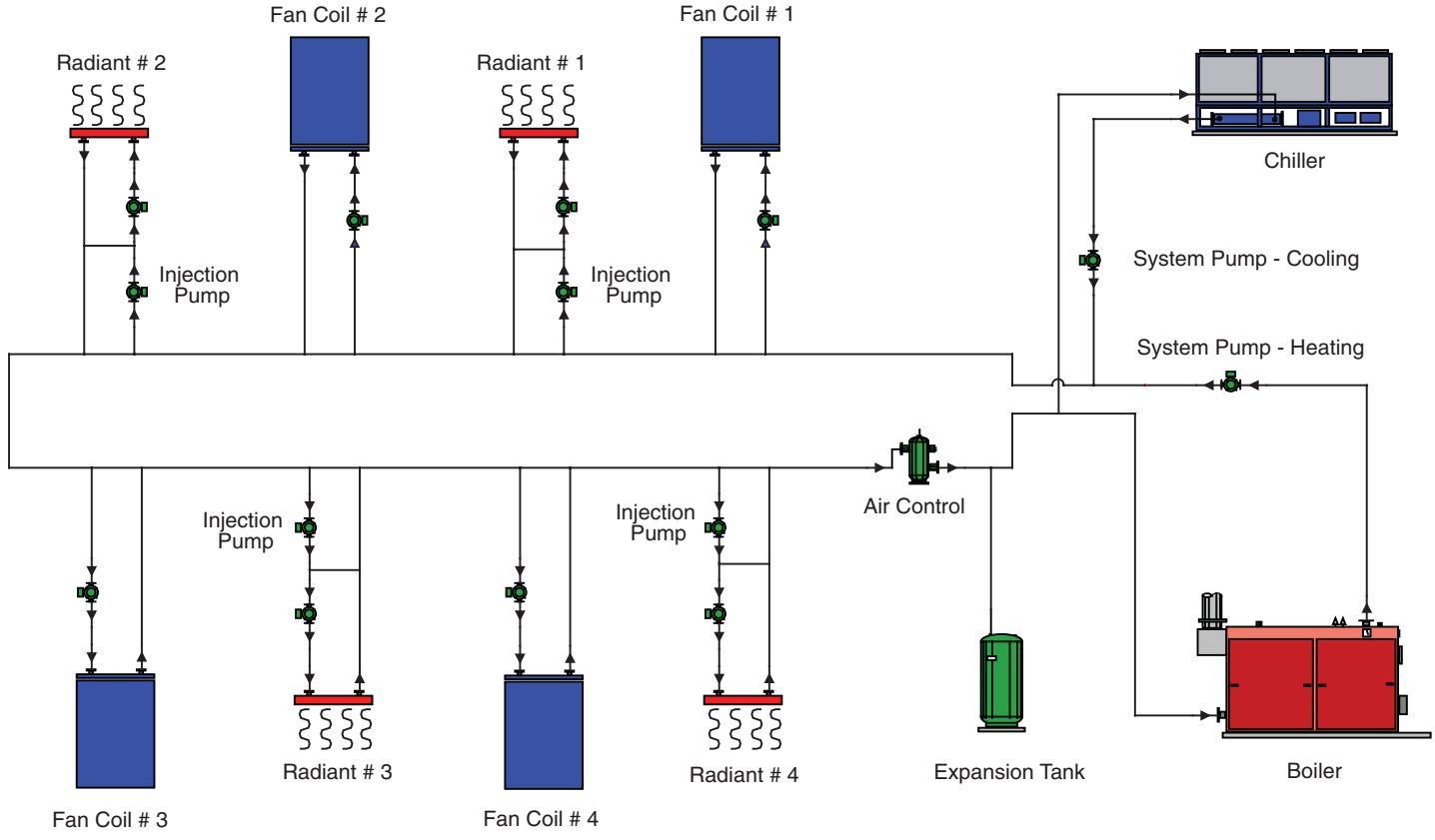
The 00-VV allows the user to manually turn on the pump at full flow without an analog signal. This function is enabled by switching the DIP switch number 2 on.

Exercising

During long periods of no operation, the 00-VV is designed to exercise the pump for 10 seconds every 3 days of no operation in order to prevent precipitate build-up in the pump. The % OUT LED turns on during the exercising function.



LoadMatch Single Pipe Heating System



LoadMatch Single Pipe Heating and Cooling System

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