

## Variable Speed “00” Circulators

Effective: November 1, 2003

Supersedes: NEW

Job: \_\_\_\_\_ Engineer: \_\_\_\_\_ Contractor: \_\_\_\_\_ Rep: \_\_\_\_\_

ITEM NO.	MODEL NO.	

### General Variable Speed “00” Circulator Features

- Available in all Styles of 003-0014
- All-in-One Pump / Control
- Sensors Included
- Easy to Wire
- UL Approved
- Snap-in PC Board
- Fuse Protected
- Plug-in Low Voltage Wiring Terminal
- Optional Integral Flow Check
  - Prevents Gravity Circulation
  - Specially Designed for Variable Speed Systems
  - Easy to Service
  - Patented

### Additional 00-VR (Outdoor Reset) Features

- Adjustable Heating Curve (0.2 to 2.2)
- Selectable Maximum Supply Temperature (110°F, 130°F, 150°F, or Off)
- Selectable Minimum Boiler Return Temperature (120°F, 135°F or Off)
- Minimum Supply Temperature (85°F or Off – Default to Heating Curve)
- System and/or Boiler Pump Contact (Line Voltage, 5 amp max.)
- LED Status Panel
- Pump Exercise (10 Seconds After 3 Days of No Operation)
- Post Purge (20 Seconds)
- Fail Safe Mode (Assumes Outdoor Temp of 32°F)
- 2 Second Start Delay Prevents Short Cycling

### Additional 00-VS (Set Point) Features

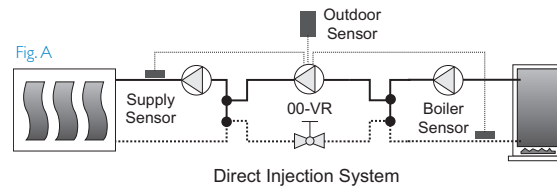
- Adjustable Setpoint (30° - 210°F)
- Adjustable Temperature Difference ( $\Delta T$ ) (5° - 50°F)
- Boiler Protection (135°F)
- Boiler Protection as a Limit Control (75° - 165°F)
- LED Status Panel
- Direct or Reverse Acting
- Selectable Output Response Speed
- Linear or Logarithmic Output
- Pump Exercise (10 Seconds After 3 Days of No Operation)

### Additional 00-VV (Variable Voltage) Features

- 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)

### Variable Speed Outdoor Reset “00” Circulator (00-VR) Application

Outdoor reset controls the hot water supply temperature, so that the heat supplied to the building equals the heat loss by the building. The 00-VR modulates the circulator to inject hot water from the boiler loop into the radiant or reduced temperature loop while providing Outdoor Reset to a heating system (see figure A). Available in any style 003 – 0014, the 00-VR also comes with a boiler sensor to protect against low return temperatures. The 00-VR is the ultimate for protection, control, ease of installation, and trouble free operation.

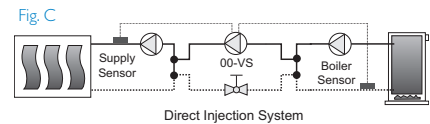
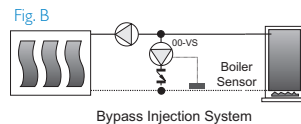


See applications brochure for additional schematics.

### Variable Speed Setpoint “00” Circulator (00-VS) Application

The versatile Setpoint version of the Variable Speed “00” can be set up to deliver a fixed temperature, maintain a specific temperature drop between sensor locations ( $\Delta T$ ), used as a bypass / shunt pump or integrated into a fan coil package to vary the speed of the pump based on supply air temperature.

The 00-VS can be either direct acting (speed increases on a temperature decrease) or reverse acting (speed increases on a temperature increase). A typical direct acting (limiting setpoint) application would be for boiler protection, where the 00-VS is installed on a bypass loop (see figure B). If the return temperature starts to drop below the set temperature (75° - 165°F) then the speed of the pump will be increased, bypassing hot water to protect the boiler.



See applications brochure for additional schematics.

The 00-VS can be used in radiant injection mixing systems where you want to set a fixed supply water temperature (see figure C). Through the use of the setpoint dial on the PC board any temperature from 30°-210°F can be selected. If desired, a boiler protection sensor can be installed to protect the boiler from flue gas condensation.

In the  $\Delta T$  mode the pump speed is varied to maintain a set temperature drop (5°-50°F) across a boiler or heat exchanger, ideal for snowmelt applications.

### Variable Speed Variable Voltage “00” Circulator (00-VV) Application

The Variable Voltage version of the Variable Speed “00” Circulator is designed to operate the pump 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 4-20mA signal.

