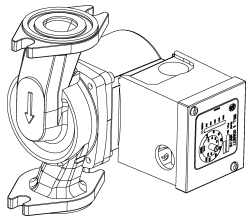
Bell & Gossett
a xylem brand

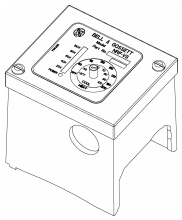
SUBMITTAL

A-131A

JOB:	**REPRESENTATIVE:**	
UNIT TAG:	**ORDER NO.**	**DATE:**
ENGINEER:	**SUBMITTED BY:**	**DATE:**
CONTRACTOR:	**APPROVED BY:**	**DATE:**



NRF-22VS



NRF-VS

Series NRF-VS

Variable Speed Control

c UL us LISTED

DESCRIPTION

The NRF-VS is a variable speed control for use in hydronic heating and cooling applications. The temperature of the water is controlled by regulating the speed of the pump which injects water from a different temperature water loop (Primary loop) into a controlled loop (Secondary loop). As the speed of the pump increases, more water is sent into the Secondary loop, resulting in a secondary loop water temperature change.

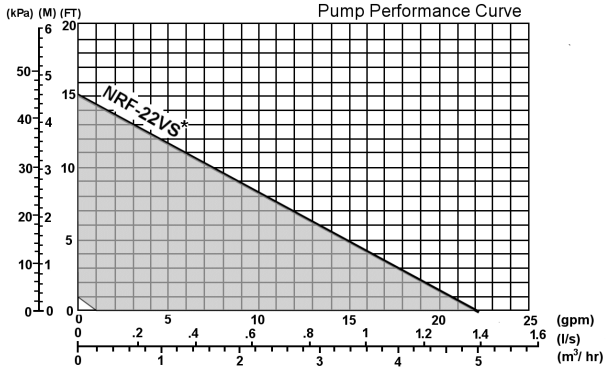
The NRF-VS can be used with an external analog signal (4-20mA or 2-10V) or with a sensor as a set point control.

CONSTRUCTION

The NRF-VS controls are solidly constructed, easy to mount units featuring printed circuit board design in a Noryl plastic electrical enclosure.

NRF-22VS

Pump Body:	Cast Iron
Impeller:	Noryl
Shaft:	Ceramic
Bearings:	Carbon



OPERATIONAL LIMITS

These controls are to be used on pumps designed to pump liquids compatible with their cast iron, bronze or stainless steel body constructions.

MAXIMUM OPERATING PRESSURE:

150 PSI (10 bars).

MAXIMUM OPERATING TEMPERATURE:

240°F cast iron body
230°F brass and stainless steel body

Electrical Rating:

115V, 60HZ, 1Ø.
0.80 Full Load Amps, 2940 RPM Full Speed

NRF-VS is suitable for NRF, NBF, and SSF pumps with less than 1.2 amps.

* To determine flow or head at speeds less than 100% use the following formulae:

$$Q_2 = \frac{RPM_2}{RPM_1} Q_1 \qquad H_2 = \left(\frac{RPM_2}{RPM_1}\right)^2 H_1$$

Where Q = GPM, H = Head, RPM = Pump Speed

SCHEDULE

MODEL NUMBER	PART NUMBER	DESCRIPTION	APPROX. SHPG. WT. Lbs. (Kg)	TAGGING INFORMATION	QUANTITY
NRF-VS	109410	Field mountable control with (1) sensor	1 (.45)		
NRF-22VS	103416	NRF-VS control installed on NRF-22 with (1) sensor	10.3 (4.67)		

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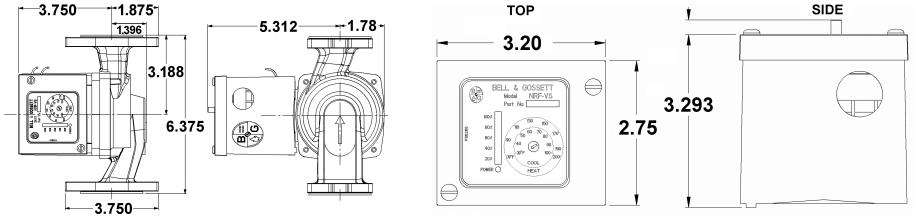
Let's Solve Water

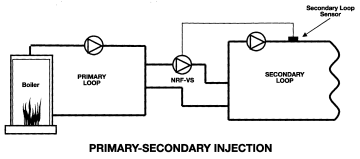
Series NRF-VS
Variable Speed Control

A-131A

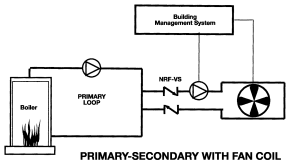
Dimensions - Inches (mm)



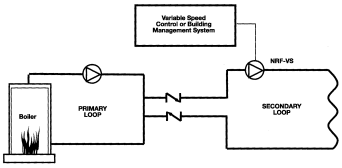
TYPICAL APPLICATIONS



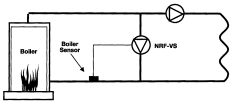
PRIMARY-SECONDARY INJECTION



PRIMARY-SECONDARY WITH FAN COIL



PRIMARY-SECONDARY



BYPASS BOILER INJECTION

TYPICAL SPECIFICATIONS

NRF-VS

Furnish and install NRF-VS variable speed control as shown on plans and in accordance with the following specifications.

1. The control will regulate the speed of the pump motor relative to the external input signal.

2. The control shall be UL Listed when assembled on an NRF series pump and suitable for operation of a single circulator pump.

3. The control shall include a pre-wired printed circuit board that can be easily field mounted to Bell & Gossett pump model _____(choose from NRF, NBF and SSF circulators with 1.2 amp rating on nameplate or less).

4. The control shall include a dip switch to select operation with an external 4-20mA / 2-10V signal or as a setpoint control for heating or cooling with a factory supplied sensor.

5. The control shall include dip switches for linear or logarithmic output, normal or fast gain (response time to temperature changes) and pump exercise on or off.

6. The control shall include a green power LED light that indicates power to the NRF-VS and red LED output lights to indicate pump speed.

All models shall be Bell and Gossett Model NRF-VS. When the control is mounted to a single circulator pump, the pump/control assembly will be UL listed.

NRF-22VS

Furnish and install NRF-22VS as shown on plans and in accordance with the following specifications.

1. The pump shall include the NRF-VS control factory installed onto the NRF-22 pump.

   a) The control will regulate the speed of the pump motor relative to the external input signal.

   b) The control shall be UL Listed when assembled on the NRF-22.

   c) The control shall include a pre-wired printed circuit board.

   d) The control shall include a dip switch to select operation with an external 4-20mA / 2-10V signal or as a setpoint control for heating or cooling with a factory supplied sensor.

   e) The control shall include dip switches for linear or logarithmic output, normal or fast gain (response time to temperature changes) and pump exercise on or off.

   f) The control shall include a green power LED light that indicates power to the NRF-VS and red LED output lights to indicate pump speed.

2. The pump shall be of the horizontal system lubricated type specifically designed and guaranteed for quiet operation.

3. Pump shall be suitable for 240°F (115°C) operation at 150 psig (10.3 Bar) working pressure.

4. The pump shall have a ceramic shaft supported by carbon bearings. Bearings are to be lubricated by the circulating fluid.

5. Motor stator to be isolated from circulating fluid through use of stainless steel can. Rotor to be sheathed in stainless steel.

6. Motors shall be non-overloading at any point on the pump curve. Motors to have built-in impedance protection.

7. The pump manufacturer shall be ISO-9001 certified. The capacity of the pump (flow and head) will vary relative to the external input signal that is fed to the control.

All pumps to be Bell & Gossett NRF-22VS.

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