

HydroMixer™ motorized temperature mixing unit

167 series



Function

The 167 series HydroMixer™ provides a modulating three-point floating type non-spring return motorized three-way mixing valve to regulate the fluid temperature in heating and air conditioning systems in response to a separately-sourced outdoor reset controller. It comes complete with onboard three-speed or variable-speed pump, motorized three-way mixing valve, check valve, supply and return temperature gauges, secondary circuit shut-off ball valves and pre-formed insulation shell. Versions are available with either the three-speed Grundfos UPS 15-58 pump or the variable-speed Alpha 25-55U pump.

The unit can be ordered with supply flow and pump on the right or left side. The adjustable differential pressure by-pass valve, code 519600 and wall bracket code 165001 are optional. The unit comes with male union connections which require separately purchased, 1 inch sweat or NPT, top outlet and bottom inlet fitting kits.

Product Range

Code 167600A	Motorized temperature mixing valve with Grundfos UPS 15-58 pump on right side.....connections 1" sweat or NPT union*
Code 167610A	Motorized temperature mixing valve with Grundfos UPS 15-58 pump on left side.....connections 1" sweat or NPT union*
Code 167602A	Motorized temperature mixing valve with Grundfos Alpha 25-55U pump on right side.....connections 1" sweat or NPT union*
Code 167612A	Motorized temperature mixing valve with Grundfos Alpha 25-55U on left side.....connections 1" sweat or NPT union*

*Fitting sets sold separately

Technical characteristics

Materials

Motorized three-way valve

Body:	brass
Valve plug:	brass
Seals:	EPDM

Connecting pipes

Material:	steel
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Check valve

Body:	brass
Shutter:	PPAG40

Shut-off ball valves

Body:	brass
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Actuator (three point floating type non-spring return)

Synchronous motor	
Supply voltage:	24 VAC
Power consumption:	6 VA
Micro-switch contact rating:	6 (2) A (24 V)
Time to rotate 90° both directions:	50 s
Max. ambient temperature:	14 – 130°F (-10°C – 55°C)
Wire lead length:	31 in. (79 cm)

Performance

Suitable fluids:	water, glycol solution
Max. percentage of glycol:	30%
Max. working pressure:	145 psi (10 bar)
Primary inlet temperature range:	40–212°F (5–100°C)

Connections:

	male union threads
- top outlets:	1-1/4" male straight
- bottom inlets:	1-1/2" male straight
- inlet/outlet center distance:	5 inches (125 mm)

Pump

Three-speed pump:	Grundfos: UPS 15-58-130;
Variable-speed pump:	Grundfos: ALPHA 25-55U;
Body material:	cast iron
Power supply:	115V 50/60 Hz
Protection class:	Class F
Pump center distance:	5-1/8" (130 mm)
Pump connections:	1 1/2" male straight

Temperature gauges

Dual scale:	32 – 176°F (0 – 80°C)
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Technical specification of insulation

Material:	EPP
Thickness:	1 1/8" (30 mm)
Density:	3 lb/ft³ (45 kg/m³)
Working temperature range:	25–250°F (-5–120°C)
Thermal conductivity:	0.037 W/(m·K) at 10°C
Fire resistance (UL94):	class HBF

Adjustable Differential by-pass valve code 519006 (optional)

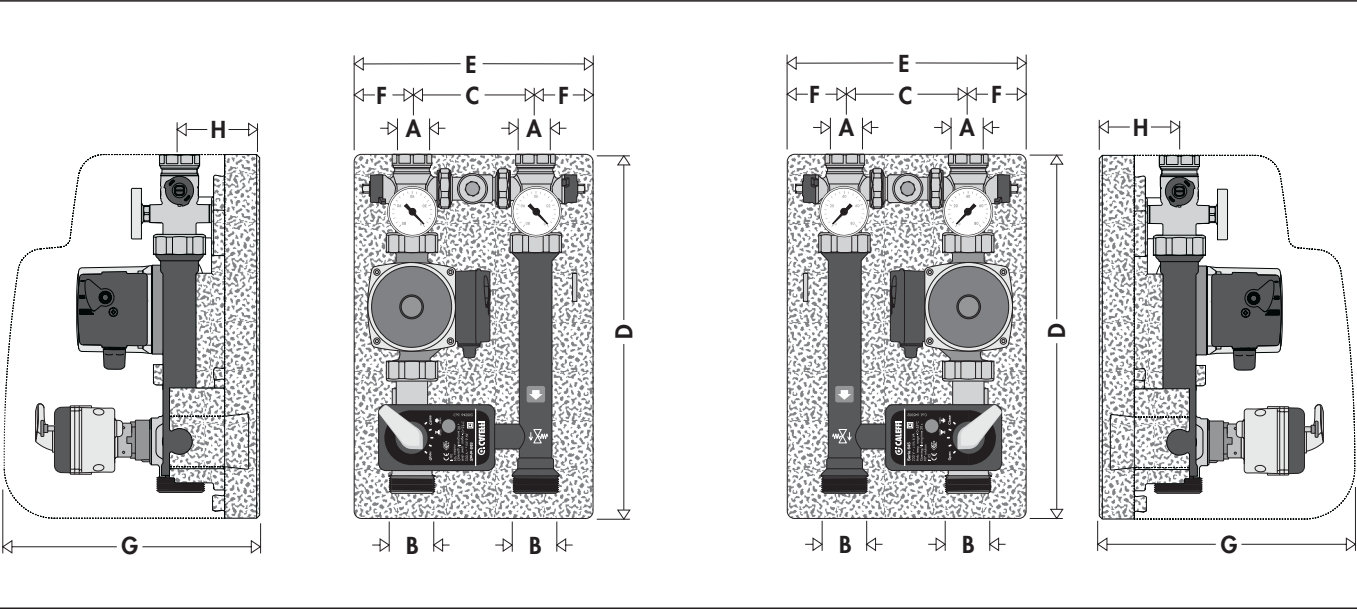
Body:	brass
Valve plug:	EPDM
Spring:	stainless steel
Seals:	EPDM
Max. working pressure:	145 psi (10 bar)
Max. working temperature:	212°F (100°C)
By-pass differential pressure setting range:	0.3 – 4.3 psi (2 – 30 kPa)

Connections:	1" male x 1" male (straight)
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Wall bracket code 165001 (optional)

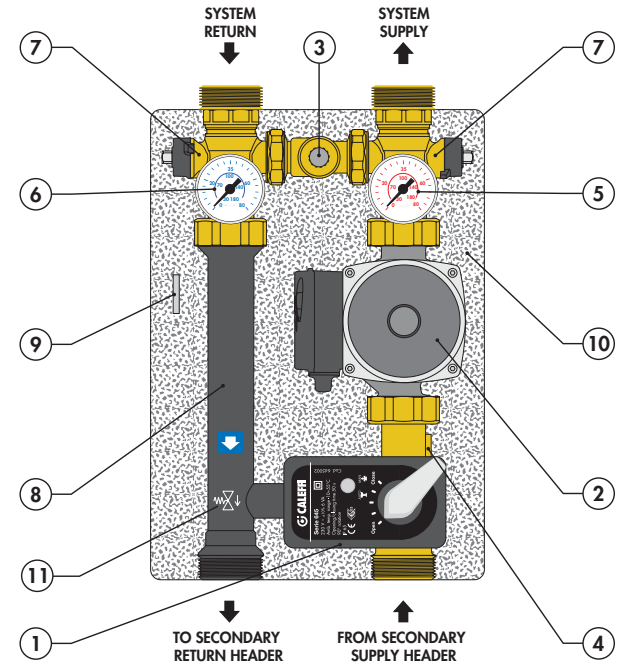
Material:	stainless steel
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Dimensions



A	B	C	D	E	F	G	H	Weight(lb)
1 1/4"	1 1/2"	5"	14 1/4"	9 3/4"	2 7/8"	10"	3 3/16"	23

Code	Description
167600A	Motorized temperature mixing unit with Grundfos15-58 pump on right
167610A	Motorized temperature mixing unit with Grundfos15-58 pump on left
167602A	Motorized temperature mixing unit with Grundfos Alpha 25-55U pump on right
167612A	Motorized temperature mixing unit with Grundfos Alpha 25-55U pump on left

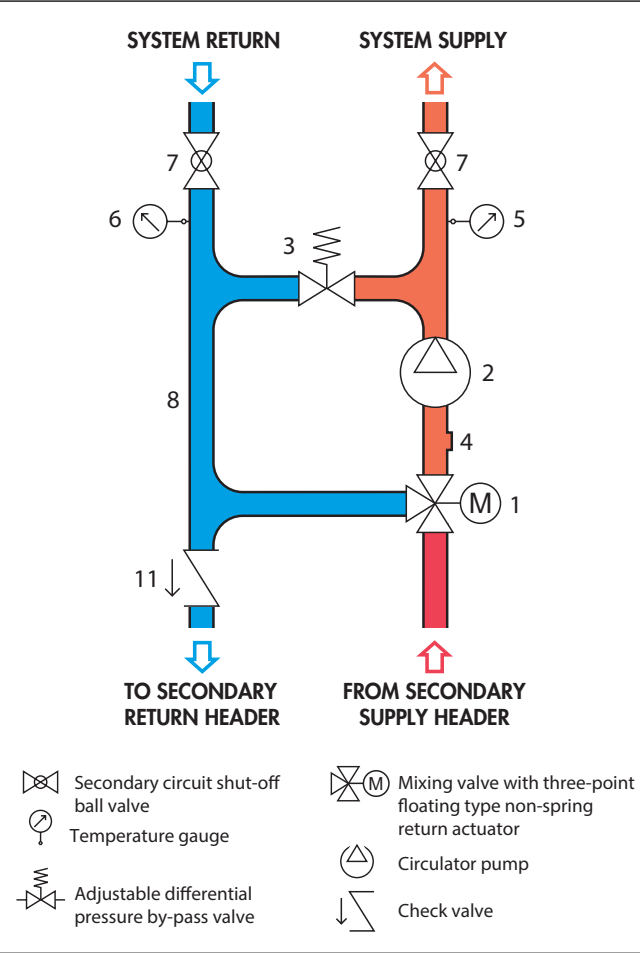


Component characteristics

- 1 Mixing valve with three-point floating non-spring return actuator
- 2 Three-speed pump: Alpha 25-554, UPS 15-58
- 3 Adjustable differential pressure by-pass valve (Optional - shown in this view)*
- 4 Sensor well
- 5 Supply temperature gauge
- 6 Return temperature gauge
- 7 Secondary circuit shut off ball valves
- 8 Connecting pipes
- 9 Wrench to adjust secondary circuit shut-off ball valves
- 10 Insulation
- 11 Check valve

*Factory set-up includes a blind spacer (no flow-path)

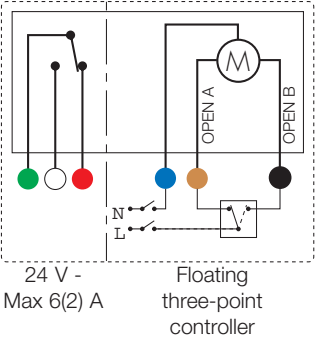
Hydraulic Diagram



Electrical connections

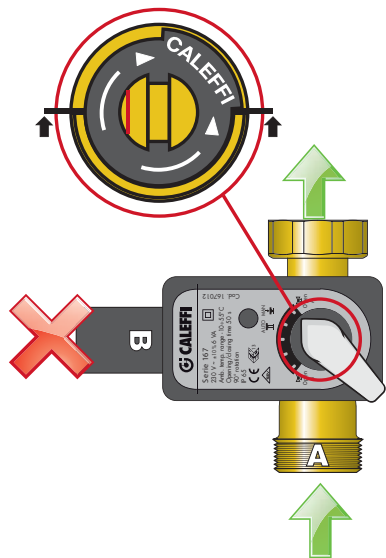
Wiring diagram for upward flow version, pump on right side.

Code 167600A
Code 167602A

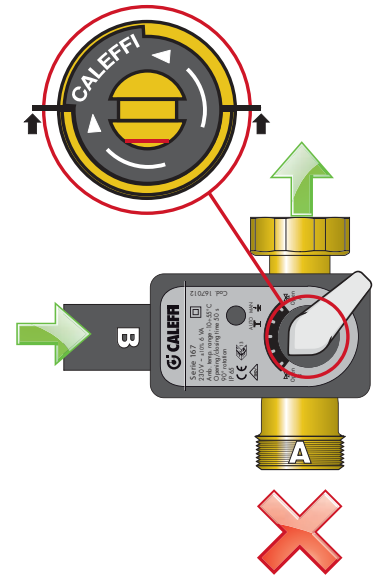


Mixing valve actuator operating principle

Open A

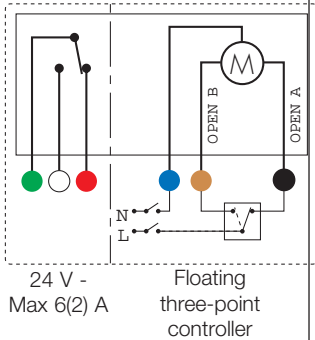


Open B



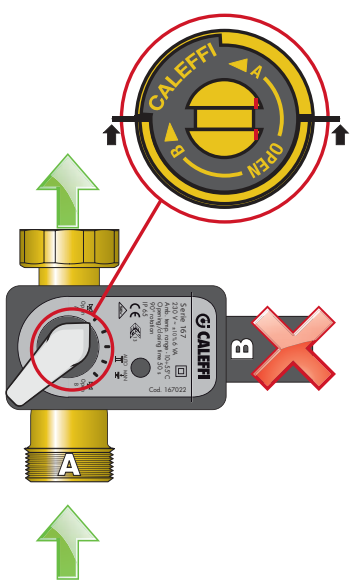
Wiring diagram for upward flow version, pump on left side.

Code 167610A
Code 167612A

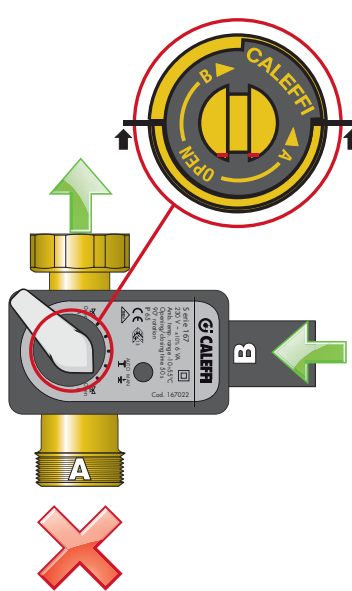


Mixing valve actuator operating principle

Open A



Open B



Wall bracket

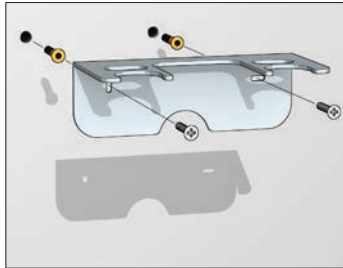


165001

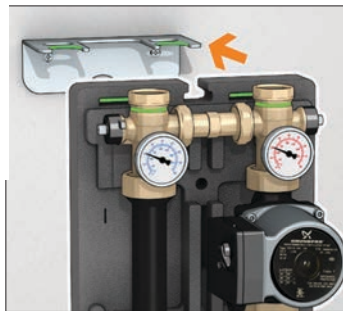
Wall mounting bracket for 167 series units. Stainless steel.

Bracket installation

The mounting bracket for wall placement must be attached with dowels, using the special holes in the base.



The HydroMixer™ 167 series unit is applied to the bracket using the slots under the hex part of the shut-off ball valves.



Adjustable differential pressure by-pass valve



519006

Differential pressure by-pass valve for 167 series.

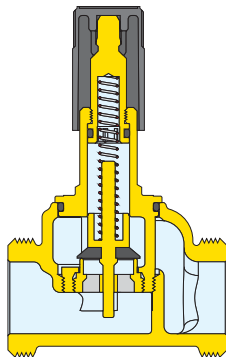
Max. operating pressure: 145 psi (10 bar)

Max. operating temperature: 212°F (100°C)

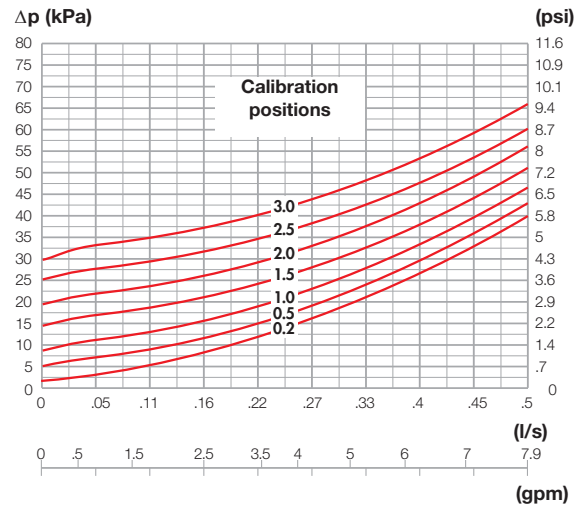
By-pass differential pressure setting range: 0.3 – 4.3 psi (2 – 30 kPa)

Connections: 1" male x 1" male (straight)

The adjustable differential pressure by-pass valve ensures the head pressure of the pump is proportional to the number of two-way on/off, modulating or thermostatic valves being closed in the secondary circuit, preventing pump overheating and excessive fluid velocity.



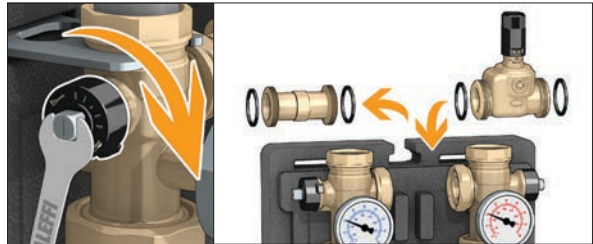
Hydraulic characteristic of code 519006 Differential pressure by-pass valve



Hydraulic characteristics shown account for the presence of ball valves

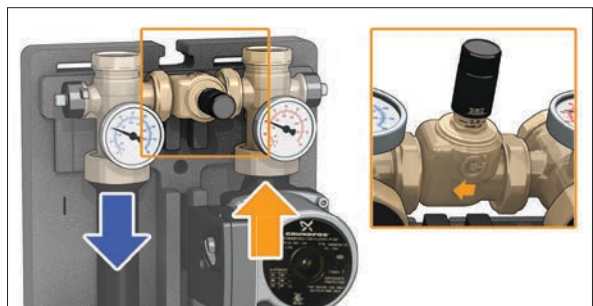
Installation of adjustable differential pressure by-pass valve

To mount the differential pressure by-pass valve, insert it in place of the standard spacer. After closing the ball valves using the wrench provided, remove the spacer, as shown in the following figure.

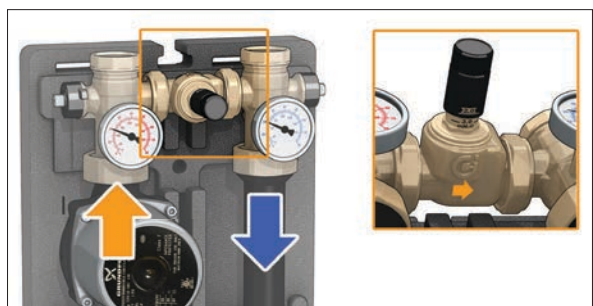


The mounting is different depending on the direction of the discharge flow:

- By-pass valve installed with flow direction as indicated below for unit with pump and upward discharge flow to secondary circuit on the right side:



- By-pass valve installed with flow direction as indicated below for unit with pump and upward discharge flow to secondary circuit on the left side:



Accessories



Top outlet fitting set fits 165 series.
includes (2) union nuts, (2) tail pieces
and (2) washers. Will not fit bottom inlet
thread.

Code	Description
NA16069	1" sweat outlet union fitting



Bottom Inlet fitting set fits 165 series.
Includes (2) union nuts, (2) tail pieces and
(2) washers. Will not fit top outlet thread.

Code	Description
NA16169	1" sweat inlet union fittings



Top outlet fitting set fits 165 series.
includes (2) union nuts, (2) tail pieces
and (2) washers. Will not fit bottom inlet
thread.

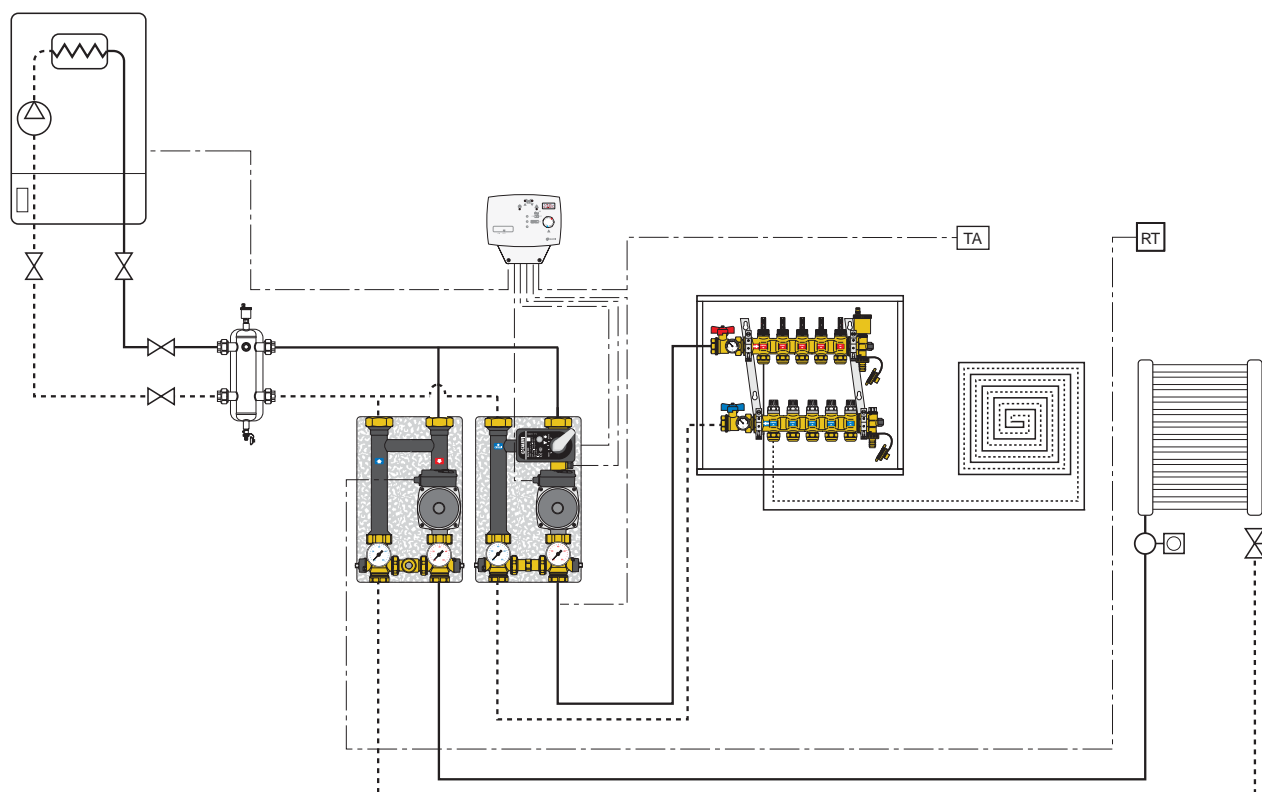
Code	Description
NA16060	1" NPT M outlet union fitting



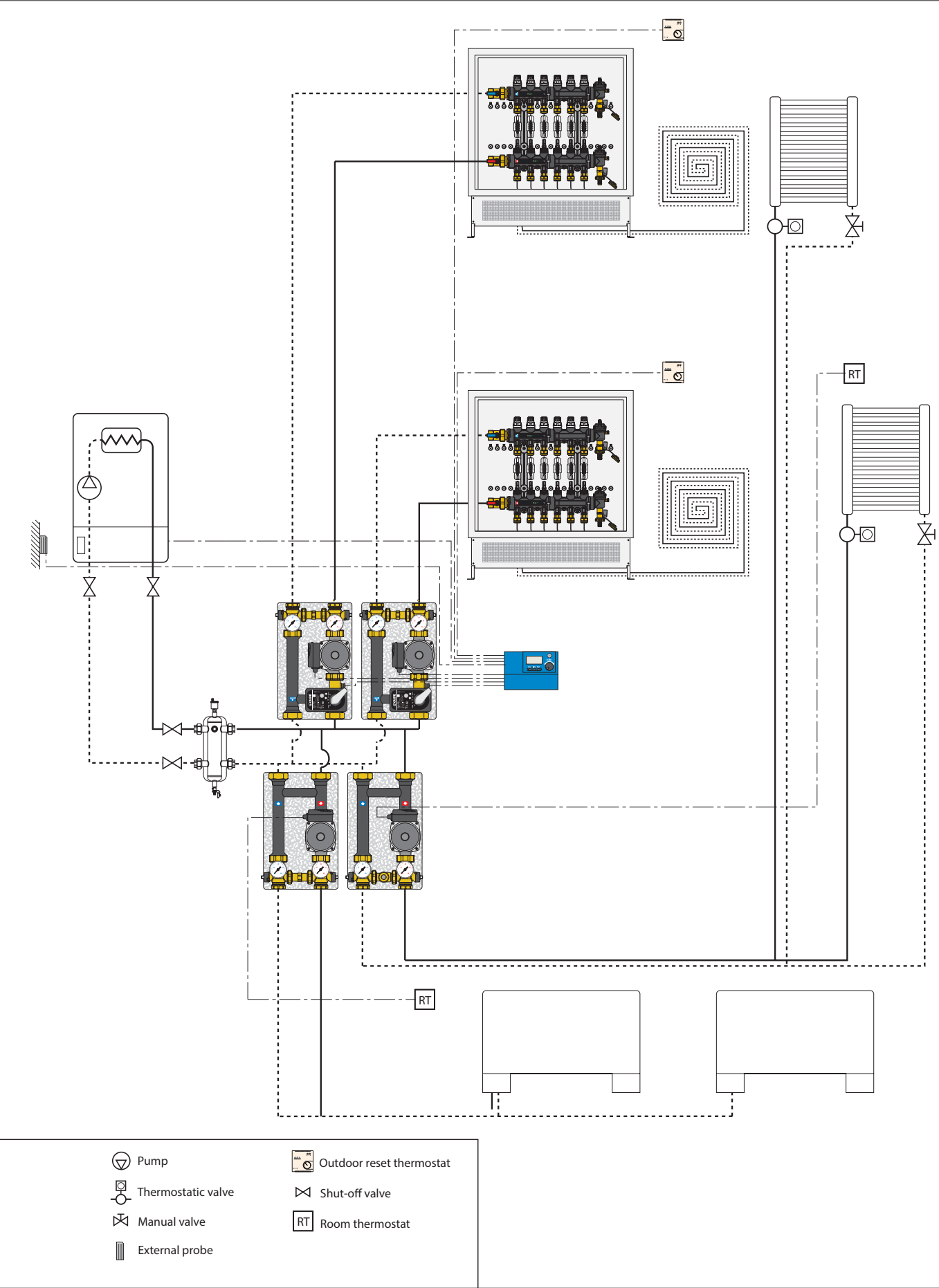
Bottom Inlet fitting set fits 165 series.
Includes (2) union nuts, (2) tail pieces and
(2) washers. Will not fit top outlet thread.

Code	Description
NA16160	1" NPT F inlet union fitting

Application drawing



Application diagram



SPECIFICATION SUMMARY

HydroMixer™ 167 series

Motorized temperature mixing unit with modulating 24 VAC three-point floating type non-spring return actuator for use with outdoor reset controller. Factory pre-assembled configurations selectable either with upward flow and discharge (pump mounting) on right side or left side. Union connections to the secondary supply and return header (bottom connections) 1 1/2" male straight threads. Union connections to the system supply and return circuit (top connections) 1 1/4" male straight threads. Center distance 5" (125 mm) between connections. Primary input temperature range 40 – 212°F (5 – 100°C). Maximum working pressure 145 psi (10 bar). Complete with motorized mixing valve 3-way valve, brass body, brass valve plug. Three-point floating type non-spring return actuator, power supply 24 VAC. Grundfos three-speed pump UPS 15-58 or variable-speed pump Alpha 25-55U, power supply 115 V 50/60 Hz, power consumption 6 VA, micro-switch contact rating 6 (2) A (24V), time to rotate 90° both directions 50 seconds, max. ambient temperature 14 – 130°F (-10 – 55°C), and wire lead length 31 in. (79 cm). Dual-scale temperature gauge 32 – 176°F (0 – 80°C). Brass secondary circuit shut-off ball valves. Connection pipe in steel. Check valve with brass body, shutter PPAG40. With pre-formed insulation shell in EPP. Provide with 1" sweat or NPT union inlet and outlet fittings code NA16 series.

Code 519006

Adjustable differential pressure by-pass valve. Brass body. Connections 1" male x 1" male straight threads. Stainless steel spring. Pressure range from 0.3 – 4.3 psi (2 – 30 kPa) . Maximum working pressure 145 psi (10 bar). Maximum working temperature 212°F (100° C).

Code 165001

Mounting bracket in stainless steel.

We reserve the right to change our products and their relevant technical data, contained in this publication, at any time and without prior notice.