# HydroMixer<sup>™</sup> 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**

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

<b>Motorized three-way valve</b> Body: Valve plug: Seals:	brass brass peroxide-cured EPDM
<b>Connecting pipes</b> Material:	steel
<b>Check valve</b> Body: Shutter:	brass PPAG40
Shut-off ball valves Body:	brass
Actuator (three point floating type no	on-spring return)
Synchronous motor Supply voltage: Power consumption: Micro-switch contact rating:	24 VAC 6 VA 6 (2) A (24 V)

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 solutior
Max. percentage of glycol:	30%
Max. working pressure:	145 psi (10 bar
Primary inlet temperature range:	40–212°F (5–100°C

#### Connections:

	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:

Variable-speed pump: Body material: Power supply: Protection class: Pump center distance:

Pump connections:

#### **Temperature gauges**

Dual scale:

#### Technical specification of insulation

Material: EPP Thickness: 1 1/8" (30 mm) 3 lb/ft<sup>3</sup> (45 kg/m<sup>3)</sup> Density: 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:

male union

1" male x 1" male (straight)

Grundfos: UPS 15-58-130;

Grundfos: ALPHA 25-55U;

cast iron

Class F 5-1/8" (130 mm)

115V 50/60 Hz

1 1/2" male straight

32 -176°F (0 - 80°C)

#### Wall bracket code 165001 (optional) Material:

stainless steel

#### Dimensions



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	1 1/4″	1 1/2″	5″	14 1/4"	9 3/4"	2 7/8″	10″	3 3/16"	23	
[	Code Description									
ſ	167	600A	Motorized temperature mixing unit with Grundfos15-58 pump on right							
ľ	167	610A	Motorized temperature mixing unit with Grundfos15-58 pump on left							
ĺ	167	602A	Motorized temperature mixing unit with Grundfos Alpha 25-55U pump on right							
	167	612A	Motorized temperature mixing unit with Grundfos Alpha 25-55U pump on left							



- 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)







#### Wall bracket



### **165**001

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



## **519**006

Differential pressure by-pass valve for 167 series.

Max. operating pressure: 145 psi (10 bar) 212°F Max. operating temperature: (100°C)

By-pass differential pressure setting range: 0.3 - 4.3 psi (2 - 30 kPa) 1" male x 1" male (straight)

Connections :

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:





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.





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**











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#### **SPECIFICATION SUMMARY**

#### HydroMixer<sup>™</sup> 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.



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