

ThermoSetter™ Recirculation thermal balancing valve for disinfection



1162, 1163, 1166 Series 1/2" - 3/4"

Submittal Data 03301.01 NA — Issue Date 10/2021

Application

The ThermoSetter™ adjustable thermal balancing valve is used for automatic balancing of recirculation loops in domestic hot water systems, to speed hot water delivery, reduce water waste and save energy. The internal thermostatic balancing cartridge automatically modulates flow to ensure a constant temperature in the recirculation piping system. The 116A Series has an adjustment knob with 95°F to 140°F (35°C to 60°C) temperature scale indication. An integral dry-well holds a slide-in temperature gauge for local indication, or a sensor for remote temperature sensing. The optional check valve protects against circuit thermo-syphoning.

The 1162xx and 1166xx Series is available with a "disinfection" by-pass cartridge, for use in systems which are designed to perform thermal disinfection for prevention of Legionella. When the disinfection cartridge senses 160°F (70°C) -1162xx, or 140°F (60°C)-1166xx, water (2 available temperature options), indicating disinfection control mode, it automatically opens a by-pass flow path to allow sufficient flow for disinfection to occur. When the temperature drops back to normal range, the disinfection by-pass cartridge closes to return flow control to the balancing cartridge. The 1163xx Series is also available with a "disinfection" valve that is controlled by a 24V spring return thermo-electric actuator, rather than thermostatically, thus allowing thermal disinfection mode to be controlled remotely by an automation system.

The ThermoSetter 116A series is also available pre-assembled with the Caleffi NA108 series low-lead brass full-port ball valve for isolation. This can be ordered complete with two of these ball valves plus low-lead close nipples by adding a suffix "001" to the order code number.

Typical Specification

Furnish and install on the plans and describing herein, a Caleffi recirculation thermal balancing valve, as manufactured by Caleffi. Each balancing valve must be designed with a DZR low-lead brass body that complies with NSF/ANSI 372, as certified by ICC-ES, file PMG-1360. Complies with NSF/ANSI/CAN 61 (180°F/82°C Commercial Hot) as certified by ICC-ES, file PMG-1512. Stainless steel & copper adjustable cartridge; peroxide-cured EPDM seals, ABS adjustment knob. The balancing valve must include 1/2" or 3/4" NPT female connections. Each valve has 230 psi (16 bar) maximum working pressure and 95-140°F (35-60°C) adjustable temperature range. Equipped with outlet temperature gauge with 30-180°F (0-80°C) temperature scale, optional check valve, and optional pre-formed insulation shell. Provide with optional inlet and outlet low-lead brass full-port ball valves, NPT female x NPT female, for isolation, factory-assembled, or separately-sourced, Code NA108 series, with separately-sourced low-lead close nipples. Each valve shall be Caleffi model 116x or approved equal. (See product instructions for specific installation information.)

NSF/ANSI/CAN 61



Technical specifications

Materials

Body: DZR low-lead brass
Adjustable cartridge: stainless steel & copper
Springs: stainless steel AISI 302 (EN 10270-3)
Hydraulic seals: peroxide-cured EPDM
Adjustment knob: ABS

Performance:

Suitable fluid: water
Max. working pressure: 230 psi (16 bar)
Max. differential pressure: 15 psi (1 bar)
Max. inlet temperature: 195°F (90°C)
Adjustment temperature range: 95-140°F (35-60°C)
Flow Cv (Kv) max: 2.1 (1.8)
Flow Cv (Kv) min: 0.23 (0.2)
Flow Cv (Kv) design: 0.52 (0.45)

Disinfection performance:

Disinfection temperature: 1162xx: 160°F (70°C); 1166xx: 140°F (60°C)
Closing temperature: 1162xx: 170°F (75°C); 1166xx: 150°F (65°C)
Flow Cv (Kv) disinfection: 1.2 (1.0)
Maximum temperature setting must be less than 140°F for 1" & 1 1/4" sizes when using the 140°F disinfection temperature bypass cartridge.

Connections:

Main connections: 1/2" and 3/4" NPT female
Temperature gauge/sensor dry-well: Ø 10 mm metric

Temperature gauge code 116010

Scale: 30 - 180°F (0-80°C)
Diameter: 1 1/2" (40 mm)
Stem diameter: 0.35" (9 mm)

Technical specifications of insulation, code CBN116140

Materials: closed cell expanded PE-X
Thickness: 1/2 inch (13 mm)
Density: -internal part: 1.9 lb/ft³ (30 kg/m³)
-external part: 5.0 lb/ft³ (80 kg/m³)
Thermal conductivity (DIN52612):
- at 32°F (0°C): 0.82 BTU · in/hr · ft² · °F (0.0345 W/(m · K))
- at 105°F (40°C): 0.94 BTU · in/hr · ft² · °F (0.0398 W/(m · K))
Coefficient of resistance to the diffusion of vapor: > 1,300
Working temperature range: 32-212°F (0-100°C)
Flammability (ASTM D 635): Class VO

Certifications:

- Complies with codes IPC and UPC and standard NSF/ANSI/CAN 61(180°F/82°C Commercial Hot), as certified by ICC-ES, file PMG-1512.
- Complies with NSF/ANSI 372, low lead, as certified by ICC-ES, file PMG-1360.

Technical specifications of isolation ball valves

Materials

Body and end connection: high tensile strength forged low-lead brass C28500
Ball and stem: low-lead brass C28500
Stem nut: steel (CL04)
Seats (2): PTFE
90° stop: hot rolled steel (DD11)
O-ring stem seals (2): nitrile butadiene rubber (NBR) & fluoro-elastomer (FKM)
Thrust washer and packing ring: PTFE
Black T-handle: polyamide thermal plastic (PA6.6)
Handle top cap: acrylonitrile butadiene styrene (ABS)

Performance

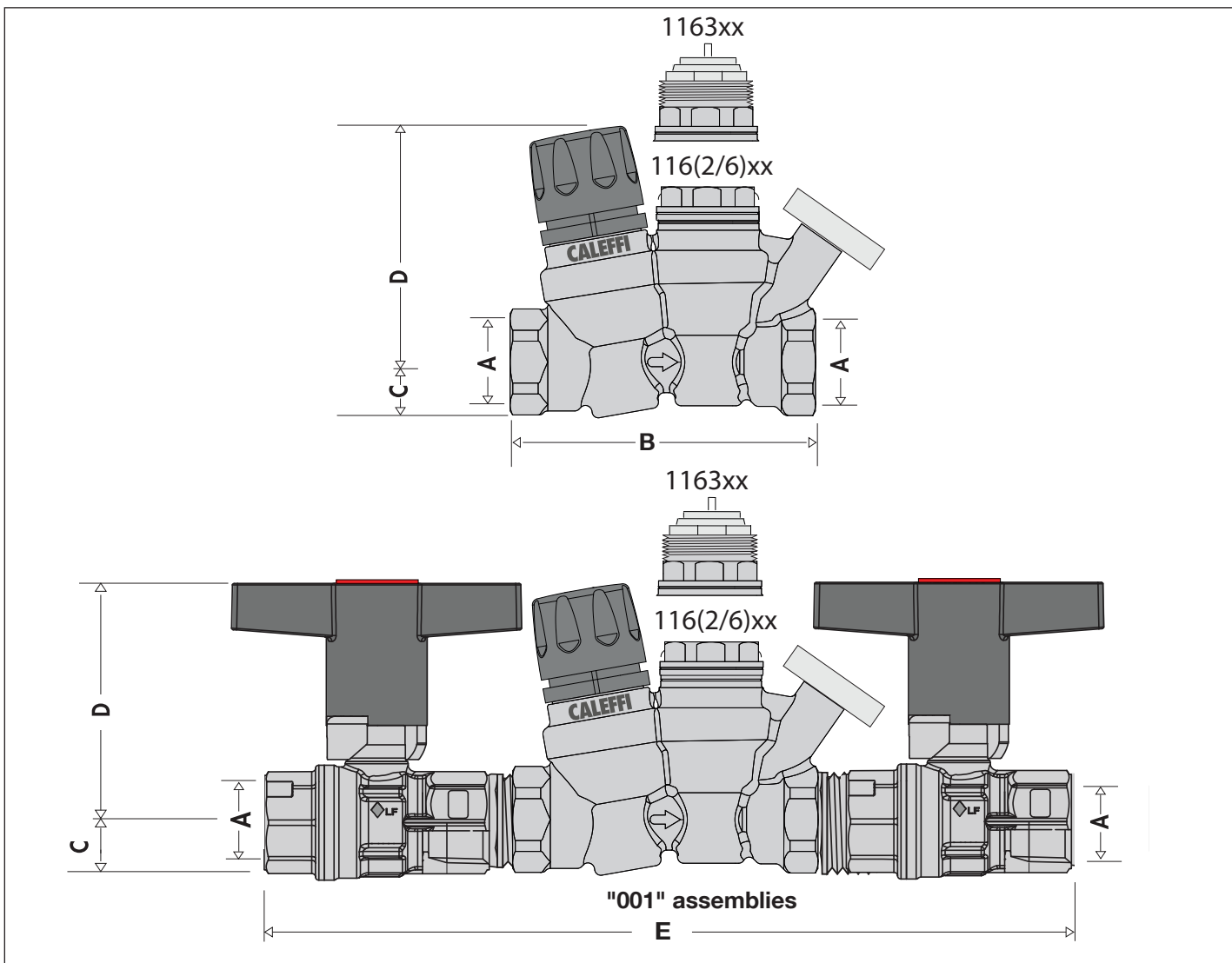
Suitable Fluids: water, glycol solutions
Max. percentage of glycol: 50%
Pressure rating: 600 WOG-150WSP
Working temperature range: -4 - 366°F (-20 - 186°C)
Shutoff performance: bubble tight

Connections:

Main connections: 1/2" and 3/4" NPT female inlet and outlet

Dimensions

ThermoSetter 116A series without check valves



Code	A	B	C	D	E	Wt w/o ball valves (lb/kg)	Wt with ball valves (lb/kg)
116D40A	1/2" NPT F	4"	3/4"	3"	--	1.6 / (0.7)	--
116D40A 001	1/2" NPT F	--	3/4"	3"	11 1/4"	--	2.6 (1.1)
116D50A	3/4" NPT F	4"	3/4"	3"	--	1.6/ (0.7)	--
116D50A 001	3/4" NPT F	--	3/4"	3"	10 9/16"	--	3.1 (1.4)

Codes with suffix '001' come assembled with NA108 ball valves on the inlet and outlet.

Models with disinfection function

D=2 for models with 160°F (70°C) disinfection temperature.

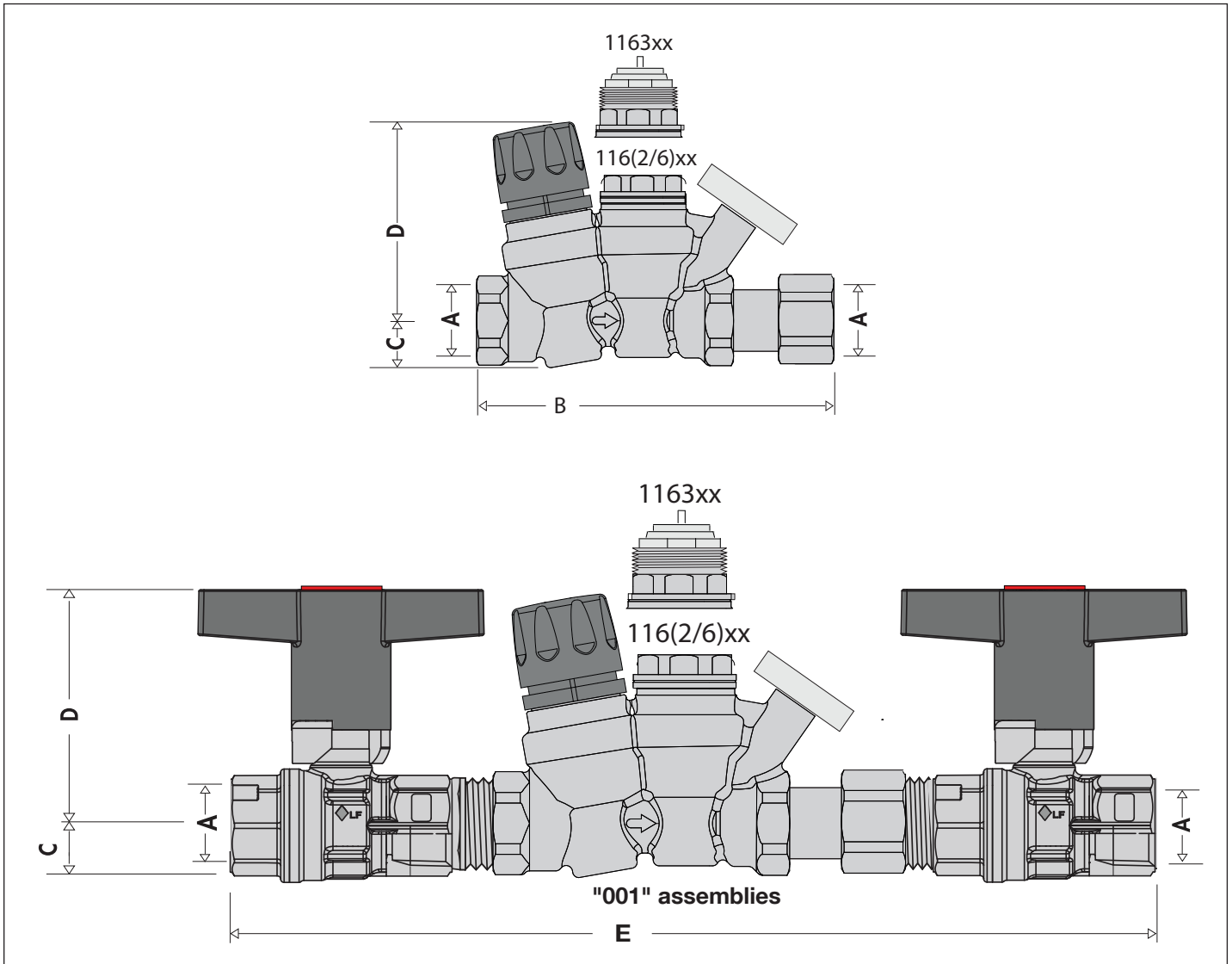
D=6 for models with 140°F (60°C) disinfection temperature.

D=3 for models with actuator disinfection function.

NOTE: All models, come complete with integral outlet temperature gauge.

Dimensions

ThermoSetter 116A series with check valves



Code	A	B	C	D	E	Wt w/o ball valves (lb/kg)	Wt with ball valves (lb/kg)
116D40AC	1/2" NPT F	5 7/16"	3/4"	3"	--	1.8 / 0.8	--
116D40AC 001	1/2" NPT F	--	3/4"	3"	12 15/16"	--	2.8 (1.3)
116D50AC	3/4" NPT F	5 5/8"	3/4"	3"	--	1.8 / 0.8	--
116D50AC 001	3/4" NPT F	--	3/4"	3"	13 1/8"	--	3.1 (1.4)

Models with disinfection function
 D=2 for models with 160°F (70°C) disinfection temperature.
 D=6 for models with 140°F (60°C) disinfection temperature.
 D=3 for models with actuator disinfection function.
 NOTE: All models come complete with integral outlet temperature gauge.

Codes with suffix '001' come assembled with NA108 ball valves on the inlet and outlet.

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Job name _____	Size _____
Job location _____	Quantity _____
Engineer _____	Approval _____
Mechanical contractor _____	Service _____
Contractor's P.O. No. _____	Tag No. _____
Representative _____	Notes _____

ThermoSetter™ Recirculation thermal balancing valve for disinfection



1162, 1163, 1166 Series 1" - 1 1/4"

Submittal Data 03301.03 NA — Issue Date 10/2021

Application

The ThermoSetter™ adjustable thermal balancing valve is used for automatic balancing of recirculation loops in domestic hot water systems, to speed hot water delivery, reduce water waste and save energy. The internal thermostatic balancing cartridge automatically modulates flow to ensure a constant temperature in the recirculation piping system. The 116A Series has an adjustment knob with 95°F to 150°F (35°C to 65°C) temperature scale indication. An integral dry-well holds a slide-in temperature gauge for local indication, or a sensor for remote temperature sensing. The optional check valve protects against circuit thermo-syphoning.

The 1162xx and 1166xx Series is available with a "disinfection" by-pass cartridge, for use in systems which are designed to perform thermal disinfection for prevention of Legionella. When the disinfection cartridge senses 160°F (70°C) -1162xx, or 140°F (60°C)-1166xx, water (2 available temperature options), indicating disinfection control mode, it automatically opens a by-pass flow path to allow sufficient flow for disinfection to occur. When the temperature drops back to normal range, the disinfection by-pass cartridge closes to return flow control to the balancing cartridge. The 1163xx Series is also available with a "disinfection" valve that is controlled by a 24V spring return thermo-electric actuator, rather than thermostatically, thus allowing thermal disinfection mode to be controlled remotely by an automation system.

The ThermoSetter 116A series is also available pre-assembled with the Caleffi NA108 series low-lead brass full-port ball valve for isolation. This can be ordered complete with two of these ball valves plus low-lead close nipples by adding a suffix "001" to the order code number.

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Materials

Body: DZR low-lead brass
Adjustable cartridge: stainless steel & copper
Springs: stainless steel AISI 302 (EN 10270-3)
Hydraulic seals: peroxide-cured EPDM
Adjustment knob: ABS

Performance:

Suitable fluid: water
Max. working pressure: 230 psi (16 bar)
Max. differential pressure: 15 psi (1 bar)
Max. inlet temperature: 195°F (90°C)
Adjustment temperature range: 95-150°F (35-65°C)
Flow Cv (Kv) max: 4.4 (3.8)
Flow Cv (Kv) min: 1.0 (0.9)
Flow Cv (Kv) design: 1.9 (1.6)

Disinfection performance:

Disinfection temperature: 1162xx: 160°F (70°C); 1166xx: 140°F (60°C)
Closing temperature: 1162xx: 170°F (75°C); 1166xx: 150°F (65°C)
Flow Cv (Kv) disinfection: 1.2 (1.0)
Maximum temperature setting must be less than 140°F for 1" & 1 1/4" sizes when using the 140°F disinfection temperature bypass cartridge.

Connections:

Main connections: 1" and 1 1/4" NPT female
Temperature gauge/sensor dry-well: Ø 10 mm metric

Temperature gauge code 116010

Scale: 30 - 180°F (0-80°C)
Diameter: 1 1/2" (40 mm)
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Technical specifications of insulation, code CBN116140

Materials: closed cell expanded PE-X
Thickness: 1/2 inch (13 mm)
Density: -internal part: 1.9 lb/ft³ (30 kg/m³)
-external part: 5.0 lb/ft³ (80 kg/m³)
Thermal conductivity (DIN52612):
- at 32°F (0°C): 0.82 BTU · in/hr · ft² · °F (0.0345 W/(m · K))
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Coefficient of resistance to the diffusion of vapor: > 1,300
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Performance

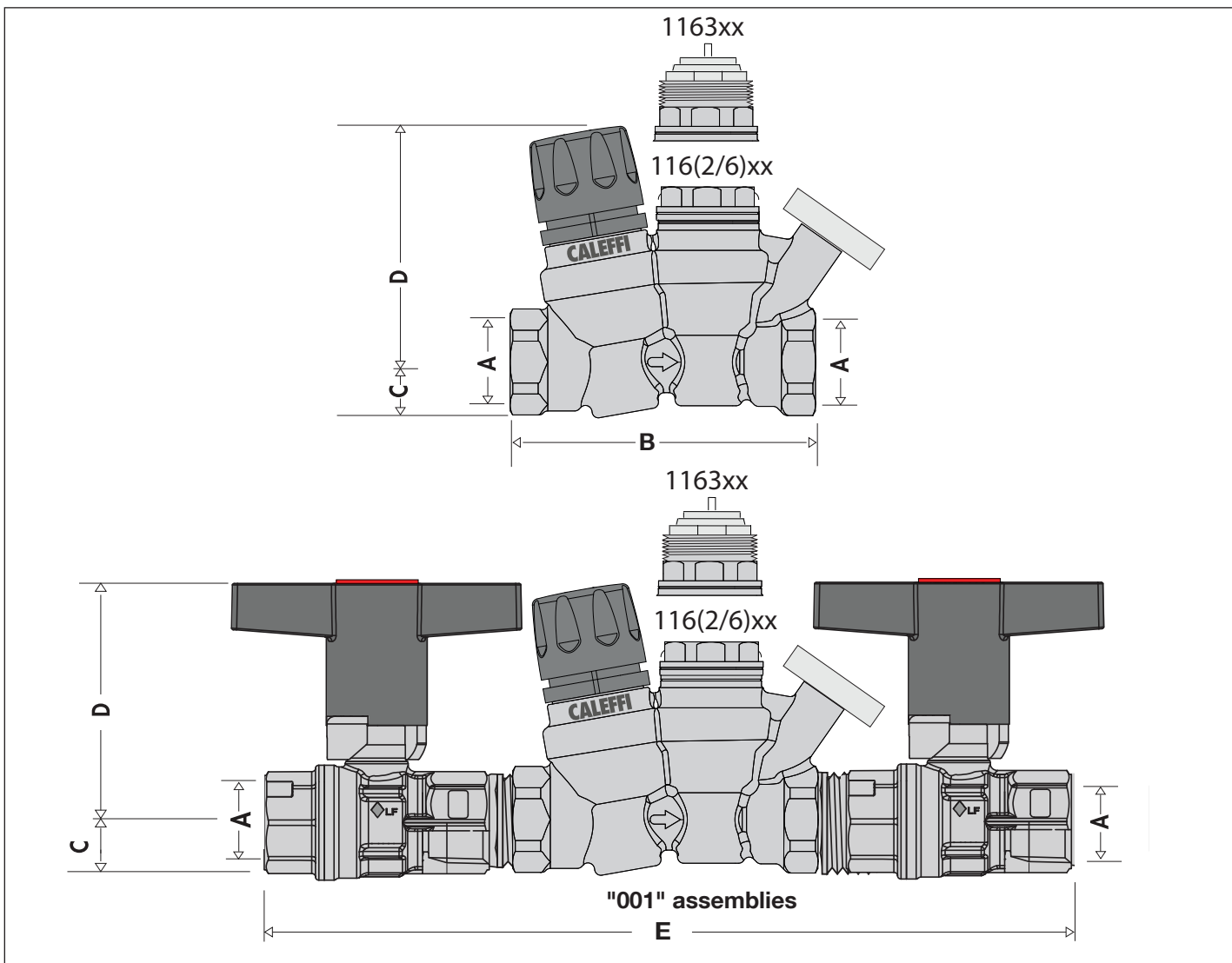
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Pressure rating: 600 WOG-150WSP
Working temperature range: -4 - 366°F (-20 - 186°C)
Shutoff performance: bubble tight

Connections:

Main connections: 1" and 1 1/4" NPT female inlet and outlet

Dimensions

ThermoSetter 116A series without check valves



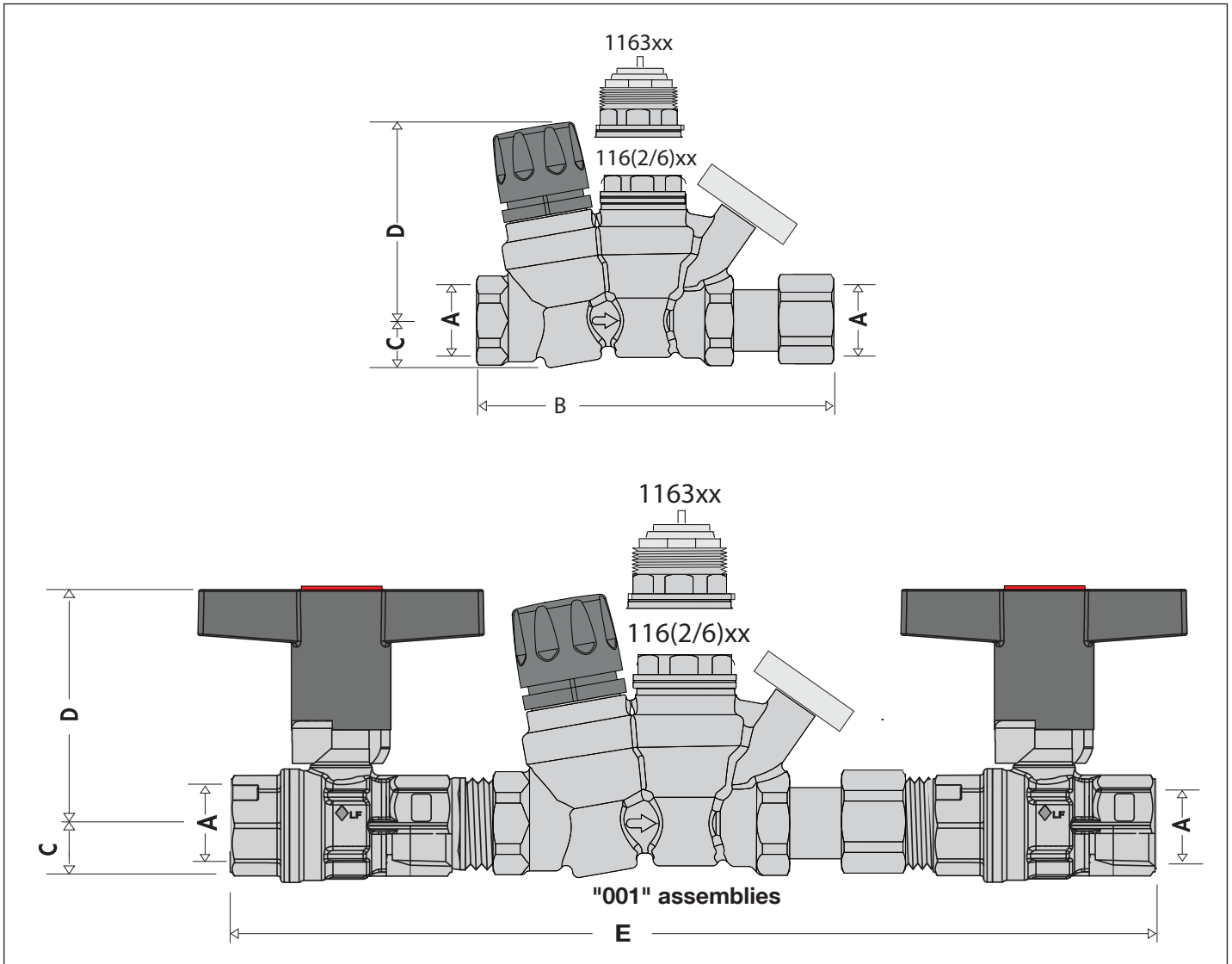
Code	A	B	C	D	E	Wt w/o ball valves (lb/kg)	Wt with ball valves (lb/kg)
116D60A	1" NPT F	4½"	1"	4 3/8"	--	2.1 / (0.95)	--
116D60A 001	1" NPT F	--	1"	4 3/8"	12"	--	4.1 (1.8)
116D70A	1¼" NPT F	4½"	1"	4 3/8"	--	2.1 / (0.95)	--
116D70A 001	1¼" NPT F	--	1"	4 3/8"	13 7/8"	--	5.6 (2.5)

Codes with suffix '001' come assembled with NA108 ball valves on the inlet and outlet.

Models with disinfection function
 D=2 for models with 160°F (70°C) disinfection temperature.
 D=6 for models with 140°F (60°C) disinfection temperature.
 D=3 for models with actuator disinfection function.
 NOTE: All models, come complete with integral outlet temperature gauge.

Dimensions

ThermoSetter 116A series with check valves



Code	A	B	C	D	E	Wt w/o ball valves (lb/kg)	Wt with ball valves (lb/kg)
116D60AC	1" NPT F	9 1/2"	1"	4 3/8"	--	2.3 / 1.00	--
116D60AC 001	1" NPT F	--	1"	4 3/8"	15 3/4"	--	4.3 (1.9)
116D70AC	1 1/4" NPT F	9 3/4"	1"	4 3/8"	--	2.3 / 1.00	--
116D70AC 001	1 1/4" NPT F	--	1"	4 3/8"	17 3/8"	--	4.1 (1.8)

Models with disinfection function
 D=2 for models with 160°F (70°C) disinfection temperature.
 D=6 for models with 140°F (60°C) disinfection temperature.
 D=3 for models with actuator disinfection function.
 NOTE: All models come complete with integral outlet temperature gauge.

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