

# ThermoSetter™ Recirculation thermal balancing valve



116A Series 1" and 1¼"

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## 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), for sizes 1", 1¼". 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 116A series ThermoSetter is available pre-assembled with Caleffi low-lead brass full-port ball valve for isolation. Fitting sizes 1" and 1¼" are pre-assembled with the Caleffi NA108 series low lead ball valve. Product codes for 116A ThermoSetters pre-assembled with isolation valves can be found on page 2.

The valve complies with standards NSF/ANSI/CAN 61 (180 °F/82 °C Commercial Hot), NSF/ANSI/CAN 372 and with codes IPC, IRC, UPC and NPC as certified by ICC-ES.

**NSF/ANSI/CAN 61**  
**NSF/ANSI/CAN 372**



## 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" or 1¼" NPT female connections. Each valve has 230 psi (16 bar) maximum working pressure and 95–150 °F (35–65 °C) adjustable temperature range. Provide with optional outlet temperature gauge with 32–180 °F (0–80 °C) temperature scale, 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 1161 or approved equal; model 1162 or 1166 with thermostatic by-pass valve for thermal disinfection function (disinfection temperature 160 °F (70 °C) for 1162 series, 140 °F (60 °C) for 1166 series); or model 1163 with by-pass valve for thermal disinfection function with optional code 656 series thermo-electric actuator (disinfection temperature 160 °F (70 °C)). (See product instructions for specific installation information.)

## Technical specifications of NA108 ball valve

### 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

## 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

\* Meets the "lead free" requirement of Section 1417 of the Safe Drinking Water Act (SDWA). This product has a weighted average lead content of less than 0.25% for its wetted surfaces contacted with consumable water.

### 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)

### Connections:

Main connections: 1" & 1¼" integral NPT female

Temperature gauge/sensor dry-well: Ø 10 mm metric

### Temperature gauge code 116010

Scale: 32 - 180 °F (0 - 80 °C)

Diameter: 1½" (40 mm)

Stem diameter: 0.35" (9 mm)

### Technical specifications of insulation, code CBN116160

Materials: closed cell expanded

PE-X

Thickness:

½ 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:

1. 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.

2. Complies with NSF/ANSI 372, low lead, as certified by ICC-ES, file PMG-1360.

### Technical specifications of NA108 ball valve (continued)

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

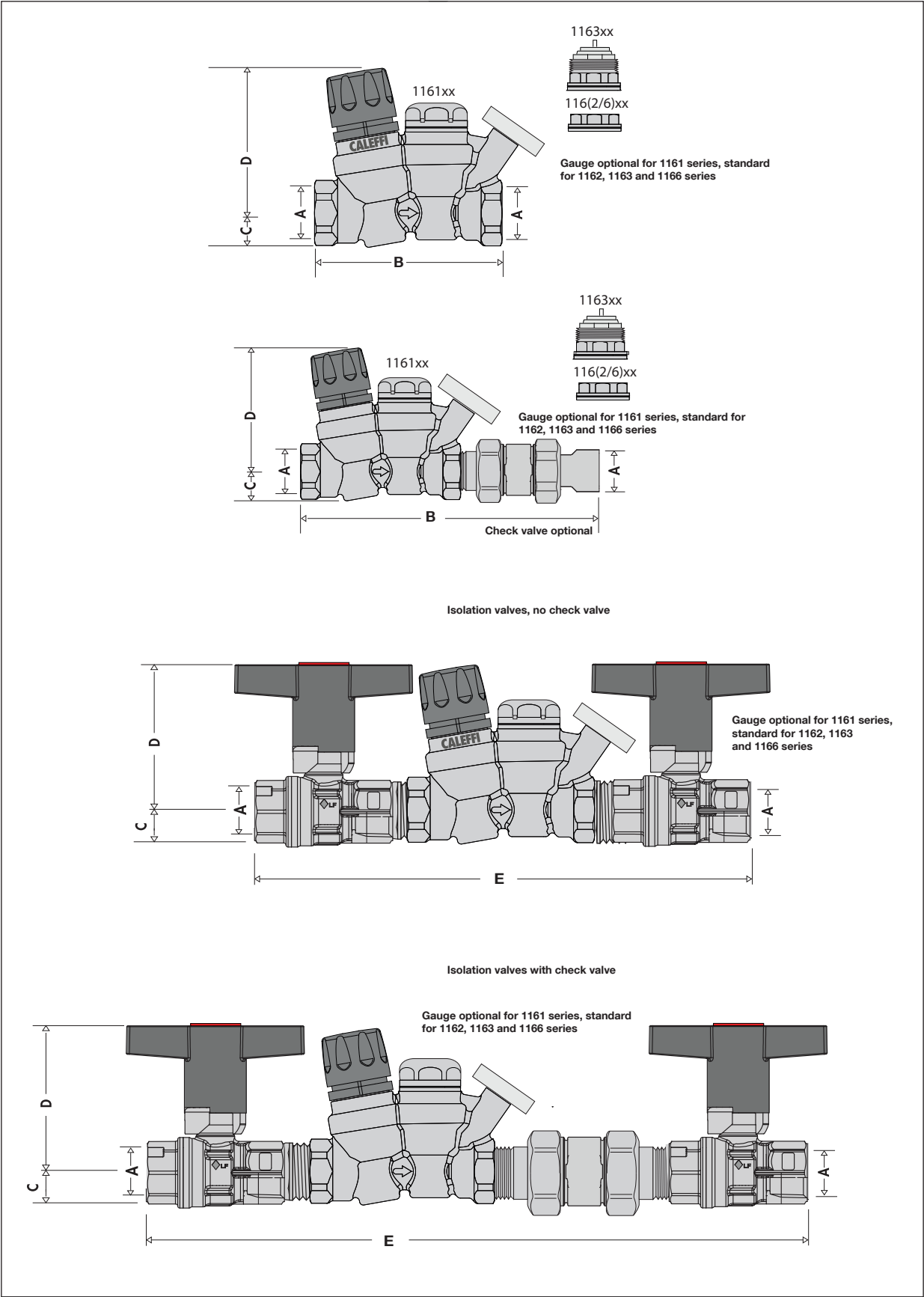
### Connections:

Main connections for 116A series:

1", 1-1/4", NPT female inlet and outlet

Dimensions

ThermoSetter 116A series 1" & 1¼" with & without outlet check



## Dimensions

### ThermoSetter 116A series 1" & 1¼" without outlet check

Code (see note 1)	Code (see note 2)	A	B	C	D	E	Wt w/o ball valves (lb/kg)	Wt with ball valves (lb/kg)
<b>116160A</b>	<b>116D60A</b>	1" NPT F	4½"	1"	4 ⅜"	--	2.1 / (0.95)	--
<b>116160A 001</b>	<b>116D60A 001</b>	1" NPT F	--	1"	4 ⅜"	12"	--	4.1 (1.8)
<b>116161A*</b>	--	1" NPT F	4½"	1"	4 ⅜"	--	2.2 / (1.00)	--
<b>116161A 001*</b>	--	1" NPT F	--	1"	4 ⅜"	12"	--	4.2 (1.9)
<b>116170A</b>	<b>116D70A</b>	1¼" NPT F	4½"	1"	4 ⅜"	--	2.1 / (0.95)	--
<b>116170A 001</b>	<b>116D70A 001</b>	1¼" NPT F	--	1"	4 ⅜"	13 ⅞"	--	5.6 (2.5)
<b>116171A*</b>	--	1¼" NPT F	4½"	1"	4 ⅜"	--	2.2 / (1.00)	--
<b>116171A 001*</b>	--	1¼" NPT F	--	1"	4 ⅜"	13 ⅞"	--	5.7 (2.6)

### ThermoSetter 116A series 1" & 1¼" with outlet check

Code (see note 1)	Code (see note 2)	A	B	C	D	E	Wt w/o ball valves (lb/kg)	Wt with ball valves (lb/kg)
<b>116160AC</b>	<b>116D60AC</b>	1" NPT F	9 ½"	1"	4 ⅜"	--	2.3 / (1.0)	--
<b>116160AC 001</b>	<b>116D60AC 001</b>	1" NPT F	--	1"	4 ⅜"	15 ¾"	--	4.3 (1.9)
<b>116161AC*</b>	--	1" NPT F	9 ½"	1"	4 ⅜"	--	2.4 / (1.1)	--
<b>116161AC 001*</b>	--	1" NPT F	--	1"	4 ⅜"	15 ¾"	--	4.4 (2.0)
<b>116170AC</b>	<b>116D70AC</b>	1¼" NPT F	9 ¾"	1"	4 ⅜"	--	2.3 / (1.0)	--
<b>116170AC 001</b>	<b>116D70AC 001</b>	1¼" NPT F	--	1"	4 ⅜"	17 ⅜"	--	4.1 (1.8)
<b>116171AC*</b>	--	1¼" NPT F	9 ¾"	1"	4 ⅜"	--	2.4 / (1.1)	--
<b>116171AC 001*</b>	--	1¼" NPT F	--	1"	4 ⅜"	17 ⅜"	--	4.2 (1.9)

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

(1) Models without disinfection function

\* with integral outlet temperature gauge.

(2) 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, in this column come complete with integral outlet temperature gauge.

We reserve the right to change our products and their relevant technical data, contained in this publication, at any time and without prior notice. Contractors should request production drawings if prefabricating the system

Job name \_\_\_\_\_  
 Job location \_\_\_\_\_  
 Engineer \_\_\_\_\_  
 Mechanical contractor \_\_\_\_\_  
 Contractor's P.O. No. \_\_\_\_\_  
 Representative \_\_\_\_\_

Size \_\_\_\_\_  
 Quantity \_\_\_\_\_  
 Approval \_\_\_\_\_  
 Service \_\_\_\_\_  
 Tag No. \_\_\_\_\_  
 Notes \_\_\_\_\_