American Society of Sanitary Engineering

PRODUCT (SEAL) LISTING PROGRAM

ASSE STANDARD #1016 - REVISED: 2017

Automatic Compensating Valves for Individual Showers and Tub / Shower Combinations

MANUFACTURER: _____

CONTACT PERSON: _____ **E-MAIL:** _____

ADDRESS: _____

LABORATORY FILE NUMBER: _____

MODEL # TESTED: _____

MODEL SIZE: _____

ADDITIONAL MODELS REPORT APPLIES TO: _____

ADDITIONAL MODEL INFORMATION (i.e. orientation, series, end connections, shut-off valves): _____

_____

DATE MODELS RECEIVED BY LABORATORY: _____ **DATE TESTING BEGAN:** _____

DATE TESTING WAS COMPLETED: _____

IF MODELS WERE DAMAGED DURING SHIPMENT, DESCRIBE DAMAGES: _____

PROTOTYPE OR PRODUCTION: _____

WERE ALL TESTS PERFORMED AT THE SELECTED LABORATORY? ○ Yes ○ No

If offsite, identify location and tests involved: _____

General information and instructions for the testing engineer:

The results within this report apply only to the models listed above.

There may be items for which the judgment of the test engineer will be involved. Should there be a question of compliance with that provision of the standard, a conference with the manufacturer should be arranged to enable a satisfactory solution of the question.

Should disagreement persist and compliance remain in question by the test agency, the agency shall, if the product is in compliance with all other requirements of the standard, file a complete report on the questionable items together with the test report, for evaluation by the ASSE Seal Board. The Seal Board will then review and rule on the question of compliance with the intent of the standard then involved.

Documentation of material compliance must be furnished by the manufacturer. The manufacturer shall furnish to the testing agency, a bill of material which clearly identifies the material of each part included in the product construction. This identification must include any standards which relate thereto.

SECTION I

1.1 Scope

Is this device intended for point-of-use installation? ○ Yes ○ No ○ Questionable

Does this device provide the bather or bather's attendant access to the final flow and temperature control? ○ Yes ○ No ○ Questionable

Does this device indicate that further mixing downstream of the device is required? ○ Yes ○ No ○ Questionable

1.2 Does this device comply with the requirements of this section? ○ Yes ○ No

SECTION III

3.1.1 Indicate the type of the individual control valve:

○ Type P
○ Type T
○ Type P / T

3.2 Accessible Design

Is this device intended for use in accessible designs? ○ Yes ○ No

3.3 Minimum Rated Flow

What is the minimum flow rate as stated by the manufacturer?

_____ GPM (_____ L/min)

3.4 Pressure

What is the rated design pressure as stated by the manufacturer?

_____ psi (_____ kPa)

3.5 Temperature

What are the incoming hot and cold water temperature requirements as stated by the manufacturer?

Hot Water:

_____ °F to _____ °F (_____ °C to _____ °C)

Cold Water:

_____ °F to _____ °F (_____ °C to _____ °C)

Is the device equipped with an adjustable means to limit the setting of the device towards the hot position? ○ Yes ○ No

Is the device intended to be the final temperature control? ○ Yes ○ No

SECTION IV

4.1 General

Were all tests conducted on the same device and were the tests conducted in the order listed in this Standard? ○ Yes ○ No

4.2 Conditioning

Was the device conditioned at ambient laboratory conditions for not less than 12 hours? ○ Yes ○ No

High-Temperature Conditioning

Was the device set-up in accordance with Figure 1 with shut-off valves V1 and V2 and valve V#3 in the full open position? ○ Yes ○ No

Incoming hot water pressure _____ psi (_____ kPa)
Incoming cold water pressure _____ psi (_____ kPa)
Incoming hot water temperature _____ °F (_____ °C)
Incoming cold water temperature _____ °F (_____ °C)

Maximum allowable outlet temperature _____ °F (_____ °C)

Valve V3 was adjusted to reduce the flow rate to _____ GPM (_____ L/min)

Water at these conditions was then allowed to flow through the device for _____ min

4.3 Working Pressure Test

With the device's valve in the fully open position and the outlet blocked, the device was
subjected to pressures of _____ psi (_____ kPa)
and _____ psi (_____ kPa)
at a temperature of _____ °F (_____ °C)
for _____ minutes each,
and then to pressures of _____ psi (_____ kPa)
and _____ psi (_____ kPa)
at a temperature of _____ °F (_____ °C)
for _____ minutes each.

Was there any leakage or other failure of the seals during the working pressure test? ○ Yes ○ No

4.3.2 What were the pressures used with closed valves?
Cold Inlet: _____ psi (_____ kPa)
Hot Inlet: _____ psi (_____ kPa)
What was the duration for each? _____ minutes

4.4 Maximum Operating Torque or Force Adjustment Test

What was the maximum allowable force or torque specified in ASME A112.18.1/CSA B125.1 to open, operate and close a device?

Rotary Torque: _____
Axial Force: _____

The ASME A112.18.1/CSA B125.1 Clause 5.5 tests were run at pressures and temperatures of:

_____ psi (_____ kPa) and _____ °F (_____ °C)
_____ psi (_____ kPa) and _____ °F (_____ °C)
_____ psi (_____ kPa) and _____ °F (_____ °C)
_____ psi (_____ kPa) and _____ °F (_____ °C)

Following the tests specified in Clause 5.5 of ASME A112.18.1/CSA B125.1, was the device set up and tested as specified in items (a) to (f) of Section 4.6.3 of this Standard? ○ Yes ○ No

Was the adjusting mechanism of the device moved through its full operating range during this testing? ○ Yes ○ No

What was the maximum actual torque or force required to adjust the device per Clause 5.5 of ASME A112.18.1/CSA B125.1 and during testing of (a) to (f) of Section 4.6.3 of this Standard?

Rotary Torque: _____
Axial Force: _____

Was the maximum operating torque or force required to adjust the device equal to or less than the maximum allowed in ASME A112.18.1/CSA B125.1? ○ Yes ○ No

4.5 Life Cycle Tests

For operating controls:
Prior to starting the test, the following conditions were established:

_____ psi (_____ kPa) flowing as measured at the inlets
_____ °F (_____ °C) measured at the outlet
_____ GPM (_____ L/m) flow rate
Device's maximum outlet temperature adjusted to _____ °F (_____ °C)

Type of temperature and volume control: _____

The temperature and volume control mechanism was cycled for _____ cycles at a rate of _____ cycles per min.

For internal elements:
Prior to starting the test, the following conditions were established:

_____ psi (_____ kPa) flowing as measured at the inlets
_____ °F (_____ °C) measured at the outlet
_____ GPM (_____ L/m) flow rate

Were the conditions in Table 1, Step 1 and Step 2 followed? ○ Yes ○ No

Each step was maintained for _____ seconds

The internal elements were tested for _____ cycles

Was the device then retested to Section 4.3, Working Pressure Test, following the Life Cycle Test? ○ Yes ○ No

In Compliance? ○ Yes ○ No

Was the device then retested to Section 4.4, Maximum Torque or Force Adjustment Test? ○ Yes ○ No

In Compliance? ○ Yes ○ No

Was the device in complete compliance with Section 4.5? ○ Yes ○ No

4.6 Pressure and Temperature Variation Test

Was the device installed in accordance with Figure 1 and the instructions of Section 4.6.2? ○ Yes ○ No

For all types of devices:

Inlet hot water supply pressure (G1) _____ psi (_____ kPa)
Inlet cold water supply pressure (G2) _____ psi (_____ kPa)
Inlet hot water supply temperature (T1) _____ °F (_____ °C)
Inlet cold water supply temperature (T2) _____ °F (_____ °C)
Temperature differential between T1 and T2 _____ °F (_____ °C)

Were the inlet temperatures then maintained within ±2.0 °F (±1.0 °C)? ○ Yes ○ No

Outlet temperature at T3 _____ °F (_____ °C)
Flow rate as measure at V3 _____ GPM (_____ L/min)
Water was flowed through the device for _____ min
Initial outlet set temperature _____ °F (_____ °C)

For Type P devices:

Hot water supply pressure was decreased to _____ psi (_____ kPa)
Temperature changes at T3 were recorded for _____ sec
Largest temperature variation from the initial outlet set temperature
_____ °F (_____ °C)

Hot water supply pressure was increased to _____ psi (_____ kPa)
Temperature changes at T3 were recorded for _____ sec
Largest temperature variation from the initial outlet set temperature
_____ °F (_____ °C)

Cold water supply pressure was decreased to _____ psi (_____ kPa)
Temperature changes at T3 were recorded for _____ sec
Largest temperature variation from the initial outlet set temperature
_____ °F (_____ °C)

Cold water supply pressure was increased to _____ psi (_____ kPa)
Temperature changes at T3 were recorded for _____ sec
Largest temperature variation from the initial outlet set temperature
_____ °F (_____ °C)

Was there any temperature variation exceeding ±3.6 °F (±2.0 °C) from the initial outlet set temperature at the outlet temperature sensor T3? ○ Yes ○ No

For Type T devices:

Hot water supply pressure was decreased to _____ psi (_____ kPa)
Temperature changes at T3 were recorded for _____ sec
Largest temperature variation from the initial outlet set temperature
_____ °F (_____ °C)

Hot water supply pressure was increased to _____ psi (_____ kPa)
Temperature changes at T3 were recorded for _____ sec
Largest temperature variation from the initial outlet set temperature
_____ °F (_____ °C)

Cold water supply pressure was decreased to _____ psi (_____ kPa)
Temperature changes at T3 were recorded for _____ sec

Largest temperature variation from the initial outlet set temperature
_____ °F (_____ °C)

Cold water supply pressure was increased to _____ psi (_____kPa)
Temperature changes at T3 were recorded for _____ sec
Largest temperature variation from the initial outlet set temperature
_____ °F (_____ °C)

Hot water supply temperature was increased to _____ °F (_____ °C)
Temperature changes at T3 were recorded for _____ sec
Largest temperature variation from the initial outlet set temperature
_____ °F (_____ °C)

During the first 5 seconds following a temperature change at sensor T3, was there any temperature spike greater than +5.4 °F (+3.0 °C) for more than 1.5 sec or greater than -9.0 °F (-5.0 °C) for more than 1.0 sec? ○ Yes ○ No

After the initial 5 seconds following a temperature change at sensor T3, was there any temperature spike greater than ±3.6 °F (±2.0 °C)? ○ Yes ○ No

For Type T/P Devices:
Test data for both Type P and Type T Devices must be submitted.

Was there an outlet temperature variation exceeding ±3.6 °F (±2.0 °C) from the initial outlet set temperature at sensor T3? ○ Yes ○ No

Were all pressure changes specified in Section 4.6 accomplished in less than 1 second? ○ Yes ○ No

Was the device in complete compliance with the applicable criteria for type of device on test? ○ Yes ○ No

4.7 Water Supply Failure Test – All Types

Was the device set up as shown in Figure 1 and in accordance with item (a) to (f) of Section 4.6.3? ○ Yes ○ No

The cold water supply valve was closed within _____ sec

Was the outlet temperature at T3 and the flow rate recorded for 5 seconds after the cold water supply valve had been fully closed? ○ Yes ○ No

The flow rate was reduced to _____ GPM (_____L/min) within 5 seconds

The hot water supply valve was closed within _____ sec

Was the outlet temperature at T3 and the flow rate recorded for 5 seconds after the hot water supply valve had been fully closed? ○ Yes ○ No

The flow rate was reduced to _____ GPM (_____L/min) within 5 seconds

30% of the manufacturer's minimum rate flow is _____ GPM (_____ L/min)

Did the device reduce the flow to 0.5 GPM (1.9 L/min) or 30% of the manufacturer's minimum rated flow, whichever is less, within 5 seconds? ○ Yes ○ No

Upon cold water failure, did the device reduce the flow to 0.5 GPM (1.9 L/min) or 30% of the manufacturer's minimum rated flow, whichever is less, prior to the water temperature at T3 exceeding 120.0 °F (48.9 °C)? ○ Yes ○ No

4.8 Mechanical Temperature Limit Stop Test

Hot water inlet pressure _____ psi (_____ kPa)
Cold water inlet pressure _____ psi (_____ kPa)
Flow rate through the device _____ GPM (_____ L/min)
Hot water inlet temperature _____ °F (_____ °C)
Cold water inlet temperature _____ °F (_____ °C)
Limit stop was set to an outlet temperature of _____ °F (_____ °C)

With the device set at the full hot position and flowing for 1 minute, what was the outlet temperature at T3? _____ °F (_____ °C)

A torque of _____ LBf•in (_____ N•M)
was applied to the temperature control handle/valve stem for _____ sec

While applying the torque for 1 minute, what was the outlet temperature at T3?
_____ °F (_____ °C)

Did the outlet temperature while applying the torque exceed the outlet temperature before applying the torque by 3.6 °F (2.0 °C) or greater? ○ Yes ○ No

Were there any observable fractures in the limit stop? ○ Yes ○ No

4.9 Outlet Temperature and Flow Capacity Test

Hot water inlet pressure _____ psi (_____ L/min)
Cold water inlet pressure _____ psi (_____ L/min)

During this test, were the inlet temperatures maintained within ±2.0 °F (±1.0 °C) without exceeding specified limits? ○ Yes ○ No

Valve V3 was adjusted to deliver _____ GPM (_____ L/min)

Cold inlet temperature was set to _____ °F (_____ °C)
Hot inlet temperature was set to _____ °F (_____ °C)

After setting the device to the full cold position, the device was adjusted to an outlet temperature of _____ °F (_____ °C)

After flowing for 1 minute, the outlet temperature was _____ °F (_____ °C)
and the flow rate was _____ GPM (_____ L/m)

Cold inlet temperature was set to _____ °F (_____ °C)
Hot inlet temperature was set to _____ °F (_____ °C)

After setting the device to the full cold position, the device was adjusted to an outlet temperature of _____ °F (_____ °C)

After flowing for 1 minute, the outlet temperature was _____ °F (_____ °C)
and the flow rate was _____ GPM (_____ L/m)

The temperature limit stop was set to _____ °F (_____ °C)

When the device was set to the full hot position and water flowed for 1 minute, the outlet temperature was _____ °F (_____ °C)

Cold inlet temperature was set to _____ °F (_____ °C)
Hot inlet temperature was set to _____ °F (_____ °C)

After setting the device to the full cold position, the device was adjusted to an outlet temperature of _____ °F (_____ °C)

After flowing for 1 minute, the outlet temperature was _____ °F (_____ °C)
and the flow rate was _____ GPM (_____ L/min)

The temperature limit stop was set to _____ °F (_____ °C)

When the device was set to the full hot position and water was flowed for 1 minute, the outlet temperature was _____ °F (_____ °C)

Cold inlet temperature was set to _____ °F (_____ °C)
Hot inlet temperature was set to _____ °F (_____ °C)
A minimum out temperature was maintained at _____ °F (_____ °C)

After flowing for 1 minute, the outlet temperature was _____ °F (_____ °C)
and the flow rate was _____ GPM (_____ L/m)

Did the device fail to flow a minimum of 2.25 GPM (8.5 L/min) or the manufacturer's minimum rated flow? ○ Yes ○ No

Was the device able to be adjusted to a minimum outlet water temperature of 100.0 °F (37.8 °C)? ○ Yes ○ No

Was the device able to limit the outlet temperature to a maximum of 120.0 °F (48.9 °C)? ○ Yes ○ No

4.10 Hydrostatic Pressure Test

With outlets blocked and seating members fully opened, The device's body was pressurized to _____ psi (_____ kPa)
for _____ min

Was there any leakage from the device? ○ Yes ○ No

SECTION V

5.0 Marking Packaging and Installation Instructions and Included Literature

Identify markings contained on the device: _____

_____

_____

Were markings clear, permanent and visible after installation? ○ Yes ○ No

Does the device have identifiable control settings? ○ Yes ○ No

Describe the settings: _____

_____

Were manufacturer's instructions for installation, adjustment and maintenance included in the packaging? ○ Yes ○ No

If the device is not equipped with an integral shut-off, was a warning included in the instructions to install check valves on the inlets? ○ Yes ○ No

Were instructions provided on how the handle position or the limit setting is to be adjusted? ○ Yes ○ No

Did the packing or literature specify the device's minimum flow rate, determined at a flowing pressure of 45.0 psi (310.3 kPa)? ○ Yes ○ No

LISTED LABORATORY: _____

ADDRESS: _____

PHONE: _____ FAX: _____

TEST ENGINEER(S): _____

If applicable:

OUTSOURCED LABORATORY: _____

ADDRESS: _____

PHONE: _____ FAX: _____

TEST ENGINEER(S): _____

Scope of outsourced testing: _____

We certify that the evaluations are based on our best judgments and that the test data recorded is an accurate record of the performance of the device on test.

Signature of the official of the listed laboratory: _____
Signature

Title of the official: _____ Date: _____