

American Society of Sanitary Engineering
PRODUCT (SEAL) LISTING PROGRAM
Factory Audit Inspection Test Report



ASSE STANDARD #1016 - REVISED: 2011
**Automatic Compensating Valves for Individual
Showers and Tub / Shower Combinations**

LABORATORY FILE NUMBER: _____

LISTEE: _____

SEAL #: _____

MODEL # TESTED: _____

MODEL SIZE: _____

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

NUMBER OF SAMPLES SUBMITTED: _____ NUMBER OF SAMPLES TESTED: _____

DATE TESTING BEGAN: _____

DATE TESTING COMPLETED: _____

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.



FIRST SAMPLE TEST RESULTS

SECTION IV

4.2.2 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

4.6 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

4.9 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



SECOND SAMPLE TEST RESULTS*

*A second sample shall only be tested if the first sample failed the necessary test sections.

SECTION IV

4.2.2 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

4.6 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

4.9 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



TESTING AGENCY: _____

ADDRESS: _____

PHONE: _____ FAX: _____

TEST ENGINEERS: _____

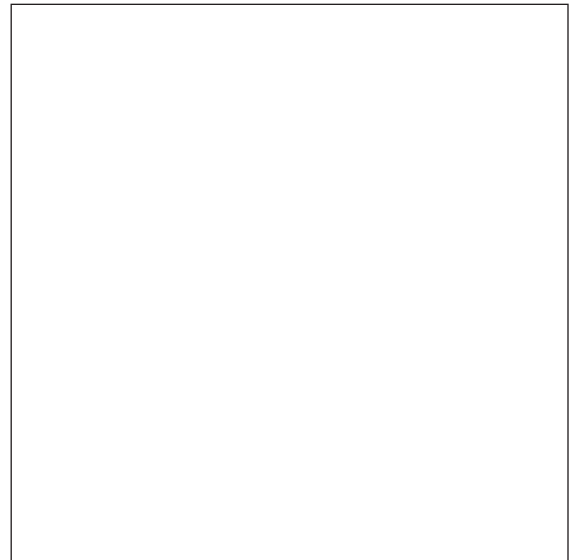
We Certify that the evaluations are based on our best judgements and that the test data recorded is an accurate record of the performance of the device on test.

SIGNATURE OF THE OFFICIAL OF THE AGENCY: _____

TITLE OF THE OFFICIAL: _____ DATE: _____

SIGNATURE AND SEAL OF THE REGISTERED PROFESSIONAL ENGINEER SUPERVISING THE LABORATORY EVALUATION:

SIGNATURE: _____



PE SEAL

*To insert images into document (PE seal and signatures)

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COMMENTS: