

Test Certificate

**for fire safe tests carried out on block and bleed valve ball needle made by SAMI Instruments S.r.l. in relation to the requirements of:
Standard API 6FA Ed. 1999 Ed. – Errata 2006-08 and API 607 6th Ed.**

Date: **April 20, 2016**

Test Report reference No.: **P 287 16 101 Rev.0**

Applicant: **SAMI Instruments S.r.l.
Via Botte, 8
I-35011 Reschigliano di Campodarsego (PD)**

Manufacturer: **SAMI Instruments S.r.l.
Via Botte, 8
I-35011 Reschigliano di Campodarsego (PD)**

Test Location: **SAMI Instruments S.r.l.
Via Botte, 8
I-35011 Reschigliano di Campodarsego (PD)**

Reference Codes: **API 6FA Ed. 1999 Ed. – Errata 2006-08 and API 607 6th Ed.**

Item tested: **Needle valve bar stock body Type 1/2" ANSI 6000, material
ASTM A182 F316L manufactured by SAMI Instruments S.r.l.,
drawing no. A9082-0006-001 rev. A.**

Purpose of test: **To evaluate the pressure-containing performance of the above-
mentioned valve when exposed to fire, according to Standard API
6FA Ed. 1999 Ed. – Errata 2006-08 and API 607 6th Ed.**



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Test Location: SAMI Instruments S.r.l.
Via Botte, 8
I-35011 Reschigliano di Campodarsego (PD)

Test Period: April 2016

Requirements: See Section 4 "Test Conditions and Performance" of standard API 6FA Ed. 1999 Ed. Errata 2006-08 and Section 6 "Performance" API 607 6th Ed.

Item tested: Needle valve bar stock body Type 1/2" ANSI 6000, material ASTM A182 F316L manufactured by SAMI Instruments S.r.l., drawing no. A9082-0006-001 rev. A.

Purpose of test: To evaluate the pressure-containing performance of the above-mentioned valve when exposed to fire, according to Standard API 6FA Ed. 1999 Ed. Errata 2006-08 and API 607 6th Ed.

Apparatus: For the test has been used the manufacturer's own test equipment

Test method: A closed valve completely filled with water under pressure is completely enveloped in flames with an environmental temperature in the region of the valve of 761 °C to 1000 °C for a period of 30 min.
The objective is to completely envelop the valve in flames to assure that the seat and sealing areas are exposed to the high burn temperature. The intensity of the heat input shall be monitored using thermocouples and calorimeter cubes. During this period the internal and external leakage is recorded.
After cool-down from the fire test, the valve is hydrostatically tested to assess the pressure-containing capability of the valve shell, seats and seals.



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Test procedure:

Mount the test valve in the test apparatus so that the stem and bore of the valve are in the horizontal position. Mount a valve that operates in only one direction (unidirectional) in their normal operating position. Locate the flame environment, body thermocouples and calorimeter cubes in the appropriate positions.

With the test valve in the partially open position, open the water supply valve, the shut-off valve, the vent valves and the shut-off valve to flood the system and purge the air. When the system is completely filled with water, close the shut-off valve, the vent valves and the water supply valve. Pressurize the system with water to a test pressure of $311 \pm 10\%$ at $20\text{ }^{\circ}\text{C}$, the actual test pressure may be rounded up to the next highest bar. Check for leaks in the test apparatus and eliminate as necessary. Release the pressure, close the test valve and open the shut-off valve.

If the valve under test is of the upstream sealing type, determine the volume of water that is trapped between the upstream seat seal and the downstream seat seal when the valve is closed. Record this volume. It is assumed that, during the fire type-test, this volume of water will flow through the valve and pass the downstream seat seal to be collected in the container. Since this volume has not actually leaked through the upstream seat seal, it is deducted from the total volume collected in the downstream container when determining the through-seat leakage. Pressurize the system to the other of the appropriate pressures.

Maintain this test pressure during the burn and cool-down periods, momentary pressure losses of up to 50% of the test pressure being permitted provided that the pressure recovers within 2 min and the cumulative duration is less than 2 min.

Record the reading on the calibrated sight gauge or device. Empty the container.

Adjust the test system, excluding the test valve, during the test period to maintain the temperatures and pressures required.

Open the fuel supply, establish a fire and monitor the flame environment temperature throughout the burn period of 30 min. Check that the average temperature of the two flame environment thermocouples reaches $761\text{ }^{\circ}\text{C}$ within 2 min from the start of the burn period, i.e. from ignition of the burners. Maintain the average temperature between $761\text{ }^{\circ}\text{C}$ and $1000\text{ }^{\circ}\text{C}$, with no reading less than $704\text{ }^{\circ}\text{C}$ for the remainder of the burn period of 30 min.

The average temperature of the calorimeter cubes shall be $650\text{ }^{\circ}\text{C}$ within 15 min of starting the burn period. For the remainder of the burn period, maintain the minimum average temperature of $650\text{ }^{\circ}\text{C}$, with no temperature falling to less than $565\text{ }^{\circ}\text{C}$.

Immediately determine the amount of water collected in the container and establish the total through-seat leakage during the burn period. If the test valve is an upstream sealing type, deduct the volume of water trapped between the upstream seat seal and the downstream seat seal. Continue collecting water in the container for use in establishing the external leakage rate of the test valve during the burn and cool-down periods.

Within 5 min of extinguishing the fire, force-cool the test valve with water so that its external surface temperature remains below $100\text{ }^{\circ}\text{C}$; the time for cooling shall not exceed 5 min. record the time taken to force-cool the external surface of the valve below $100\text{ }^{\circ}\text{C}$.



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Test result: The leakage rates are within the range established by Standard API 6FA Ed. 1999 Ed. Errata 2006-08 and API 607 6th Ed.

Place: **Milan**

Date: **20.04.2016**

Test laboratory for the pressure
equipment



Appendices:

We have saved important object data and the address for order settlement. Protection of data is ensured.

The test and inspection results refer exclusively to the test object described herein. It is forbidden to make copies of extracts of this test report without the prior approval of the test laboratory.