

JJG

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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Verification Regulation of Automatic Standard Pressure Generators (English Translation)

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1 Scope

This Regulation applies to the initial verification, subsequent verification, and in-service inspection of -0.1 ~ 250MPa automatic standard pressure generators (hereinafter referred

to as "pressure generators").

2 Normative references

This Regulation references the following documents.

JJG 875-2005 Verification Regulation of Digital Pressure Gauges

JJF 1001-2011 General Terms in Metrology and Their Definitions

JJF 1008-2008 Pressure Metrological Terms and Their Definitions

For dated references, only the versions with the dates indicated are applicable to this Regulation. For undated references, the latest versions (including all the amendments) are applicable to this Regulation.

3.1.1 Automatic standard pressure generator

It refers to the digital pressure gauge that can realize automatic control and display output target pressure.

3.1.2 Control stability

It refers to the ability of pressure generators whose output pressure can maintain within the limited boundary within a certain time limit.

3.1.3 Overshoot of pressure control

It refers to the maximum level for the pressure generators to exceed the target pressure value in the process of controlling the pressure-increase.

3.1.4 Undershoot of pressure control

It refers to the maximum level for the pressure generators to be lower than the target pressure value in the process of controlling the pressure-decrease.

3.1.5 Stable duration of target pressure

It refers to the time for the pressure generators to maintain the stable output target

7 Control of metrological instruments

The control of metrological instruments includes initial verification, subsequent verification, and in-service inspection.

7.1.1.1 Selection of the standard pressure gauges with measurement function

SELECT the standard pressure gauge with measurement function for verifying the pressure generators from the following instruments.

- a) Piston gauges (including single and double piston type pressure vacuum gauges, and gas piston gauges);
- b) Float-type manometers;
- c) Liquid manometers;
- d) Automatic standard pressure generators;
- e) Digital pressure gauges.

The measuring range of the selected standard pressure gauge shall be greater than or equal to that of the pressure generators. The absolute value of the maximum permissible error of standard gauges shall be less than $1/3$ of the absolute value of the maximum permissible error of the indicating values of the under-verification pressure generators.

For those pressure generators with above class-0.05 (including 0.05), when the piston gauge is selected to be standard gauge, the absolute value of the maximum permissible error of standard gauges shall be less than $1/2$ of the absolute value of the maximum permissible error of the indicating values of pressure generators.

7.1.1.2 Selection of the standard gauges with control function

Respectively SELECT the standard pressure gauge with control function and the test system with control function (hereinafter referred to as "test system") for verifying the pressure generators from the following instruments and systems.

- a) Digital pressure gauges with high resolution;
- b) The system composed of measuring transducer, acquisition system, and display.

The measuring range of the selected test system shall be greater than or equal to that of the pressure generators. The absolute value of the maximum permissible error of test systems shall not be greater than that of the indicating values of pressure generators, while the resolution shall be greater than $1/10$ of the absolute value of the maximum permissible error of the indicating values of the under-verification pressure generators.

For those above class-0.01, the sampling frequency of the test system shall not be lower than 10Hz. For those below class-0.02 (including 0.02), the sampling frequency of the test system shall not be lower than 20Hz.

7.1.2 Auxiliary equipment

7.1.2.1

Insulation resistance tester. DC 100V, DC 500V, 10 levels.

7.1.2.2

Withstand voltage tester. The output voltage shall be AC 0~1.5kV. The frequency is 45~55Hz. The output power shall not be lower than 0.25kW.

7.1.2.3

Pressure source. cylinders, manual pressure (vacuum) pumps, air compressors, vacuum pumps, booster pumps, etc.

7.1.2.4

Other equipment. stopwatch, etc.

7.1.3 Conditions of verification environment

7.1.3.1

Ambient temperature.

For the pressure generators with above class-0.1 (including 0.1). $(20 \pm 2) ^\circ\text{C}$; For the pressure generators with below class-0.2 (including 0.2). $(20 \pm 5) ^\circ\text{C}$.

7.1.3.2

Relative humidity. not greater than 85%.

7.1.3.3 No obvious mechanical vibration or external magnetic field (excluding the geomagnetic field) shall exist near the standard gauges and the under-verification pressure generators.

7.2 Verification items

See Table 4 for the verification items of pressure generators.

Table 4 Table for Verification Items

Verification Items Initial Verificatio

Subsequent

Verification

In-service

Verification