

JAPANESE
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STANDARD

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JIS S 3033 : 1997

**Measurement method of NO_x
emission rate for open type natural
ventilating oil burning space heaters**

ICS 27.060.10

Descriptors : oil-fuelled devices, liquid fuel appliances, nitrogen oxides, combustion products

Reference number : JIS S 3033 : 1997 (E)

S 3033:1997

Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of International Trade and Industry through deliberations at Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law.

Now that the environmental standard value of nitrogen oxides emission concentration comes to the difficult level to be achieved, the Environment Agency has started to lay down and instruct "The NO_x reduction guiding principle" and "The low NO_x combustion appliance recognizing principle" for the purpose of reducing NO_x emitted from the facilities and appliances of small size not subjected to the restriction by the Air Pollution Control Law such as burning appliance for commercial service, household burning appliance, etc. in addition to the fixed origin of generation and mobile origin of generation restricted so far by the law. In the wake of this policy, for the household oil burning appliances, the autonomous criteria for nitrogen dioxide emission rate in the exhaust gas from open type forced ventilating oil burning space heater was determined in advance of other oil burning appliances to seek the reduction of nitrogen dioxide, and moreover in the aspect of air pollution, the reduction of NO_x rate emitted not only in indoor but also in outdoor has been required, so that Japan Industrial Association of Gas and Kerosene Appliances set up the voluntary criteria for the nitrogen oxide emission rate with regard to NO_x at a whole not limiting only to nitrogen dioxide. In addition, JIS S 3032 *Measurement method of NO_x emission rate for open type forced ventilating oil burning space heaters* was developed in 1994 to establish the measurement method.

The development at this time was aiming at contributing to the guarantee of the safety of national lives and the preservation of environment by setting up the measurement method of nitrogen oxide emission rate for the open type natural ventilating oil burning space heaters popularized widely in their number of units following the open type forced ventilating oil burning space heaters.

Date of Establishment: 1997-06-20

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Investigated by: Japanese Industrial Standards Committee

Divisional Council on Consumer Life

Technical Committee on Oil Burning Appliances

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the original JIS is to be the final authority.

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Measurement method of NO_x emission rate for open type natural ventilating oil burning space heaters

Introduction This Japanese Industrial Standard is developed in order to establish the measurement method of NO_x emission rate for open type natural ventilating oil burning space heaters for the purpose of seeking the reduction of NO_x emission rate.

1 Scope This Japanese Industrial Standard specifies the measurement method of NO_x emission rate emitted from the open type natural ventilating oil burning space heaters the fuel consumption⁽¹⁾ of which is 600 g/h or less (hereafter referred to as "space heater").

Note ⁽¹⁾ Fuel consumption is indicated with the maximum burning fuel rate per hour under the normal burning condition.

This shall be a rate of the fuel burning in one heat chamber or nozzle.

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards indicated below shall be applied.

JIS G 3459 *Stainless steel pipes*

JIS G 4305 *Cold rolled stainless steel plates, sheets and strip*

JIS K 2203 *Kerosine*

JIS Z 8703 *Standard atmospheric conditions for testing*

3 Measurement method

3.1 Measuring condition

3.1.1 Laboratory

- a) **Temperature in laboratory** The temperature in the laboratory shall be 20 °C ±10 °C.
- b) **Humidity in laboratory** The humidity in the laboratory shall be the [Standard humidity condition, Grade 20 : (65±20) %] specified in Table 2 of **JIS Z 8703**.
- c) **Atmosphere in laboratory** The ambient atmosphere in laboratory shall be that the concentration of the carbon dioxide included in the air in the laboratory before starting the test and during the test is 0.2 % or under, the concentration of the carbon monoxide is 0.002 % or under, the concentration of NO_x is 0.6 ppm or under and the concentration of the nitrogen dioxide is 0.06 ppm or under. In this case, there shall not be the air flow affecting the burning.

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3.1.2 Fuel for test The fuel for the test shall be No. 1 kerosine specified in **JIS K 2203** or the fuel the manufacturer designates.

3.1.3 Exhaust gas sampling hood and exhaust gas sampling pipe The exhaust gas sampling hood and exhaust gas sampling pipe for sampling the exhaust gas in the exhaust tube shall not give influence to the components of exhaust gas and shall be of the material unlikely to be affected by the exhaust gas of high temperature using as a rule the following:

- a) **Exhaust gas sampling hood** For the exhaust gas sampling hood, SUS304 specified in **JIS G 4305** is used and the hood shown in Fig. 1 is used as a rule. The one shown in Fig. 2 may also be used.

Unit: mm

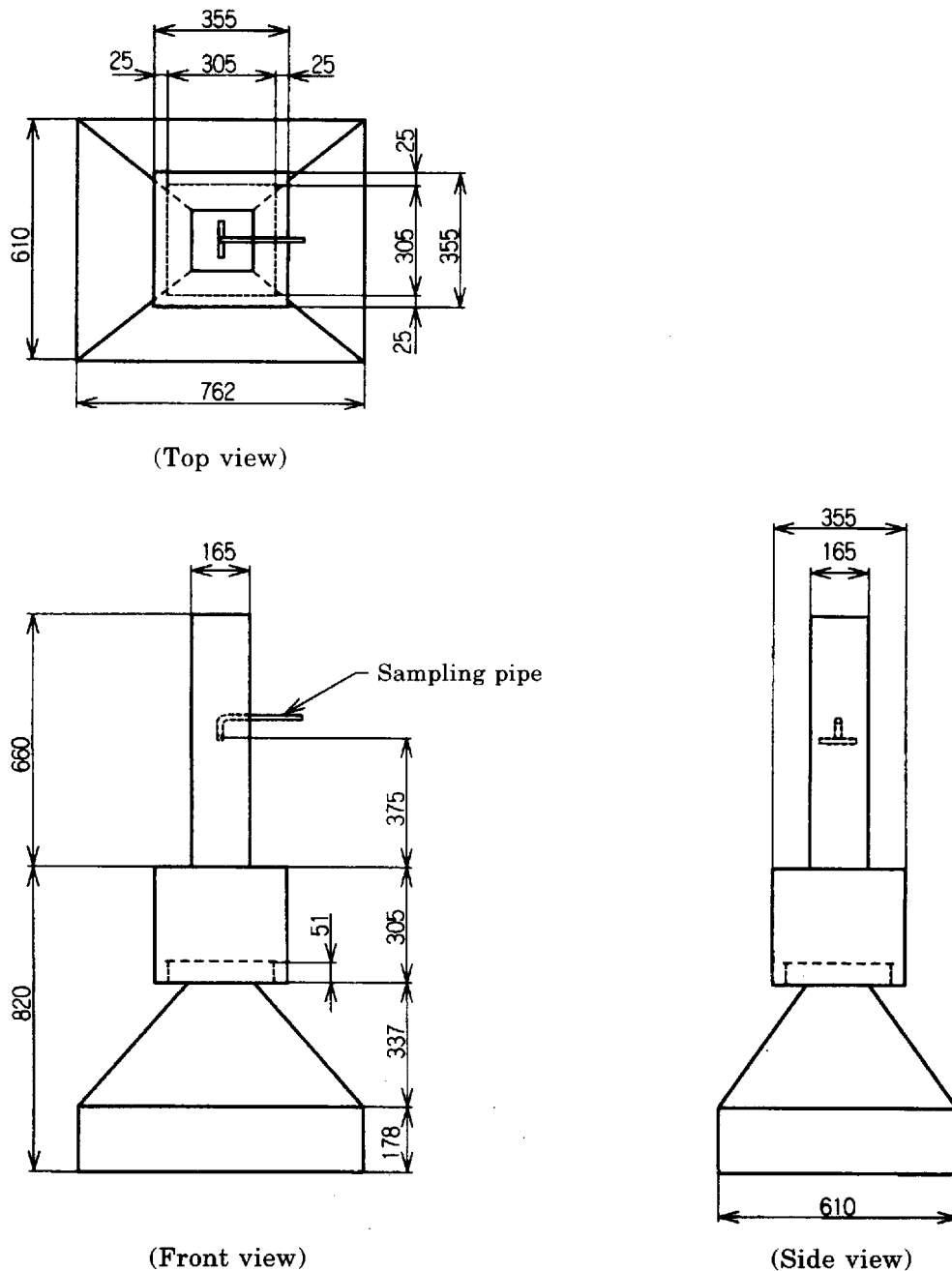


Fig. 1 Exhaust gas sampling hood