

JIS

JAPANESE INDUSTRIAL STANDARD

**Manually operated gas valves
for gas appliances**

JIS S 2150—1993

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by

Japanese Standards Association

In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

1. Scope This Japanese Industrial Standard specifies the manually operated gas valves to be used for the gas appliances using liquefied petroleum gas⁽¹⁾ or city gas⁽²⁾ having gas pressures of 3.3 kPa {330 mmH₂O} or less, which are to be connected by gas supply line of external diameter of 35 mm or less (hereafter referred to as "manual gas valves").

Notes ⁽¹⁾ The liquefied petroleum gas means the gas described in the "Standard for liquefied petroleum gas" of enforcement regulations (1968, Ordinance of Ministry of International Trade and Industry No. 14) based on the Law Concerning the Security of Safety and Optimization of Transaction of Liquefied Petroleum Gas (1967, Law No. 149).

⁽²⁾ The city gas means the gas of gas group described in the ministerial ordinance concerning the verification of gas appliance and material (1971, Ordinance of Ministry of International Trade and Industry No. 27) based on the Gas Utility Industry Law (1954, Law No. 51).

Remarks 1. The Standards cited in this Standard are shown in Attached Table 1.

2. The units and numerical values given in { } in this Standard are based on the traditional units and are appended for informative reference.

2. Classification The classification of the manual gas valves shall be as Table 1 and Table 2.

Table 1. Classification by use

Use	Details of classification
For appliance valve	Type capable of being used as appliance valve
For non appliance valve	Type incapable of being used as appliance valve

Table 2. Classification by type of open/close

Type of open/close	Details of classification
Sliding type	Type which opens and closes the gas passage by the sliding of plug (cylindrical, spherical or plate, etc.) to main body.
Valve type	Type which opens and closes the gas passage by the contact and release of valve to valve seat.

3. Performance

3.1 Performance of manual gas valves The performance of the manual gas valves, when tested by 7., shall conform to the specification of Table 3.

Table 3. Performance of manual gas valve

Item			Performance	Main test condition	Applied test item
Air-tightness	For appliance valve	Pass leakage	0.03 l/h max.	4.2 kPa {420 mmH ₂ O} 0.5 kPa {50 mmH ₂ O}	7.5
		Outer leakage			
	For non-appliance valve	Pass leakage	0.3 l/h max.		
		Outer leakage	0.03 l/h max.		
Strength for negative pressure (Only for valve type)			No interference with regular use and conform to the requirement of air tightness.	On the state of making a manual gas valve close, and the gas outlet side close, apply negative pressure of 50 kPa {0.5 kgf/cm ² } on the gas inlet side for 1 min.	7.6
Operating physical force			Operating physical force specified by the manufacturer or less.	-	7.7

Table 3. (continued)

Item	Performance	Main test condition	Applied test item
Strength of stopper	Free from breakage and remarkable deformation of the stopper.	Apply the force of 5 times the operating physical force specified by the manufacturer.	7.8
Repeated use	Conform to the requirements of air tightness and operating physical force, and no interferences with use.	At the operating rate of 5 to 20 times/min, make repeating operations for 12000 times.	7.9
Low-temperature atmospheric test	Conform to the requirements of airtightness and operating physical force, and no interferences with use.	Leave in the atmosphere of $-20 \pm 2^{\circ}\text{C}$ for 24 h.	7.10
High-temperature atmospheric test	Conform to the requirements of airtightness and operating physical force, and no interferences with use.	Leave in the atmosphere specified by the manufacturer for 24 h.	7.11
Thread fastening resistance (Only for the type having a screwed connection part)	Free from deformation, breakage or crack, and conform to the requirements of air-tightness.	By the specified thread fastening force, make the connection and removing operation.	7.12
Static load resistance (Only for the type having a screwed connection part)	Free from deformation, breakage or crack, and conform to the requirements of air-tightness.	Apply the specified static load for 15 min.	7.13

3.2 Parts performance The performance of the parts to be used for the manual gas valves, when tested by 7.14, shall conform to the specification of Table 4.

Table 4. Performances of parts

Name of part	Item	Performance	Main test conditions	Applied test item
Packings	Gas resistance	(1) Packings of rubber or plastics shall be within 20 % in mass-change, and free from fragility, swellings and softenings which interfere with practical use.	(1) Dip in <i>n</i> -pentane for more than 72 h.	7.14.1 (1)
		(2) Packing of rubber shall be 0.005 g/h or less in permeability of <i>n</i> -pentane. However, except for the samples conforming to JIS B 2401.	(2) Fixing the sample to the specified appliance, leave it for 24 h, in the atmosphere of the temperature $23 \pm 2^{\circ}\text{C}$, then for 7 days in the atmosphere of $100 \pm 2^{\circ}\text{C}$.	7.14.1 (2)
Sealing materials	Gas resistance	Mass change shall be within 10 % at gas temperature of $20 \pm 1^{\circ}\text{C}$ and, within 25 % at $4 \pm 1^{\circ}\text{C}$.	Leave for 1 h, in butane gas of pressure 5 kPa {500 mmH ₂ O} and of temperature $20 \pm 1^{\circ}\text{C}$ and $4 \pm 1^{\circ}\text{C}$.	7.14.2
Grease	Corrosion resistance	No greening or blacking of copper plate.	Follow the B method of 5.5 in JIS K 2220.	7.14.3 (1)
	Water resistance	No muddiness and precipitate in water.	Dip in distilled water of ordinary temperature for 72 h min.	7.14.3 (2)
	Gas resistance	Mass change shall be within: 10 % at gas temperature of $20 \pm 1^{\circ}\text{C}$. 25 % at $4 \pm 1^{\circ}\text{C}$.	Leave for 1 h, in butane gas of pressure of 5 kPa {500 mmH ₂ O} and of temperature $20 \pm 1^{\circ}\text{C}$ and $4 \pm 1^{\circ}\text{C}$.	7.14.3 (3)
	Heat resistance	Evaporation loss: 1 % max.	Follow the A method of 5.6 in JIS K 2220.	7.14.3 (4)

4. Construction

4.1 General construction Each part of the manual gas valve shall withstand mechanical, chemical and thermal loads, which are liable to be received in normal use and maintenance conditions, and shall conform to each following item.

- (1) The valve shall have no potential of dangers in the normal use state, and the figure shall be correct and assembly shall be in good condition.
- (2) The screws to be used for fitting of each part, shall be effective for fastening, and the parts needed to be removed for maintenance check shall be usable repeatedly.
- (3) Open/close of the gas passage can be made smoothly and correctly.
- (4) In the sliding type manual gas valve, in the state of all the gas passages closed, sealing length on the sliding surface shall be effective to keep air-tightness.
- (5) In the valve type manual gas valve, valve and valve seat shall make a secure and close contact, and keep air-tightness.
- (6) The manual gas valve which has a limiting mechanism for the operating range, shall be equipped with a stopper to stop, or with a locking mechanism to stop once, at the position of full close.
- (7) In the manual gas valve which is opened/closed by a rotating operation, direction of "open" operation shall be, as a rule, anti-clockwise.

4.2 Gas inlet part The gas inlet part which is to be the gas supply inlet of the gas appliance, shall be conform to the following each item.

- (1) In the gas inlet part with screw connection, the screws specified in JIS B 0203 shall be used, and their connection work can be made by usual tools, and loosings or deformings which harm air-tightness on the connection shall not be caused.
- (2) The gas inlet part (rubber hose connection) to connect rubber hose, shall not cause the loosings or deformations which impair air-tightness by detaching and attaching of the rubber hose.
- (3) The gas inlet part to connect quick coupling unit (appliance quick connected fitting), shall not cause loosings or deformations which impair air-tightness by detaching and attaching and normal using operations.

5. Shape and dimension of connection part

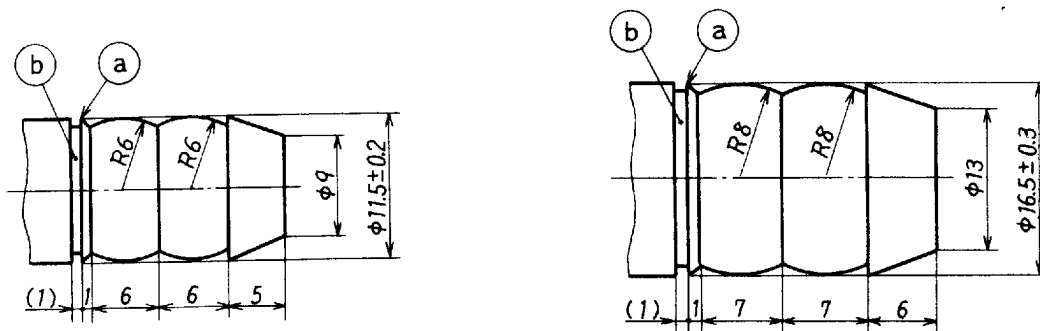
5.1 Rubber hose connection The rubber hose connection shall conform to either (1) or (2) in Fig. 1.

Fig. 1. Rubber hose connection

Unit: mm

(1) For 9.5 mm rubber hose

(2) For 13 mm rubber hose



Remarks 1. Round off the edge of part (a).

2. Groove part (b), and coat the groove with red.

3. For the reinforcement, on the internal angle part R may be formed.

4. The tolerances of dimension, unless otherwise specified, shall comply with the tolerance class coarse in JIS B 0405. However, dimension R and dimensions in parenthesis are informative reference values.

5.2 Appliance quick connected fitting Appliance quick connected fitting shall conform to either (1) or (2) of Fig. 2.

Fig. 2. Appliance quick connected fitting

Unit: mm

(1) 16 mm receptacle

(2) 11 mm plug

