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Open type forced ventilating oil burning space heaters

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of International Trade and Industry through deliberations at Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law. Consequently, JIS S 2036 : 1992 has been revised and replaced with this Standard.

With regard to JIS S 3030, *General rules for construction of oil burning appliances* and JIS S 3031, *General rules for test methods of oil burning appliances* revised in 1996 which specify the construction as safety appliance and the test method taking account of the eight year actual performance of "unattended appliance automatic shut off device" employed voluntarily under the guidance of the related government offices since 1987 and safety-improvement of oil burning appliances, in this revision, requirements of quality performance and construction are additionally specified and review intending conformity with other standards has been done.

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Open type forced ventilating oil burning space heaters

Introduction Along with the development and popularization of the oil burning space heaters of forced ventilating type, the quality performance and structure relating to forced ventilating type specified so far in **JIS S 2019**, *Open type natural ventilating oil burning space heaters* was separately specified in **JIS S 2036** in 1992 under the necessity of dividing into natural ventilating type and forced ventilating type because, if largely different structure of oil burning space heater is specified in the same standard, its contents become complicated and difficult to be understood.

1 Scope This Japanese Industrial Standard specifies the open type forced ventilating⁽²⁾ oil burning space heaters of 1 500 g/h or under in fuel consumption⁽¹⁾, using kerosene or light oil as fuel (hereafter referred to as “space heaters”).

Notes (1) The fuel consumption means that has marked the quantity of fuel burnt per 1 h, when the oil quantity regulating device has been adjusted to the maximum.

(2) The open type of forced ventilation type means the “forced ventilation type” and “open type” specified in 3.2 of **JIS S 3030**.

2 Normative references The standards shown in Attached Table 1 contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards shall be applied.

3 Classes

3.1 Classes according to burning systems The classes of the space heaters according to the burning systems shall be the “pot type”, “pressure spraying type”, “rotary atomizing type”, “jet spraying type” and “vaporizing type” specified in 3.1 of **JIS S 3030** (see Attached Figs. 1 to 4).

3.2 Classes according to drafting systems The classes of the space heaters according to the drafting systems shall be the “forced ventilation type” of open type specified in 3.2 of **JIS S 3030** (see Attached Figs. 1 to 4).

3.3 Classes according to systems classified by uses The classes of the space heaters according to the systems classified by uses shall be the “forced convection type” and “radiation type⁽³⁾” specified in 3.3 of **JIS S 3030** (see Attached Figs. 1 to 4).

Note (3) The radiation type shall be limited to that of having a blower for convection.

4 Performances

4.1 Service performances The service performances of the space heaters shall be in accordance with the following:

- a) These shall be easy in lighting, and be not requiring the use of a large amount of dangerous substances such as alcohol and the like which are high in inflammability, nor dangerous operations.
- b) The actuations of respective parts shall be smooth and secure, and be free from harmful defects in use.
- c) Knobs and the like shall neither cause deformation easily during using, nor cause abnormality in actuation.
- d) Operations shall be easy, and be not liable to cause danger in operations.
- e) Extinguishing operations shall be performed rapidly and securely.
- f) The space heater having an inspection window, during burning by a normal handling, shall not present such a condition that the burning conditions are unable to be confirmed due to adhesion of smoke to the inspection window.
- g) The space heater having a burning regulating device, at each burning quantity, shall neither be liable to cause abnormal enlarging of flame, remarkable smoke, nor other abnormal burning.

4.2 Quality performances The quality performances of the space heater, when tested in accordance with 10, shall conform to the requirements of Table 1.

Table 1 Quality performances

Item		Quality performance	Applicable item number of JIS S 3031
Burning performances	a) Surface temperature ⁽⁴⁾ of parts which contact with hand, such as knobs and the like.	The difference between the measured temperature and the room temperature shall be 25 °C or under for metal and porcelain, and 35 °C or under for plastics.	5.1 and 5.2 (1)
	b) Surface temperature ⁽⁵⁾ of parts liable to touch hands.	150 °C or under	5.1 and 5.2 (2)
	c) Surface temperature of rectifier	75 °C or under for that made of selenium 60 °C or under for that made of germanium 135 °C or under for that made of silicon	5.1 and 5.2 (3)
	d) Surface temperature of contacting part of fuse clip	90 °C or under	5.1 and 5.2 (4)
	e) Surface temperature of oil tank	The difference between the measured temperature and the room temperature shall be 25 °C or under.	5.1 and 5.2 (5)
	f) Surface temperature of wooden stand at lower face of space heater	For that of fuel consumption of 600 g/h or under: 45 °C or under For that of fuel consumption exceeding 600 g/h: 80 °C or under	5.1 and 5.2 (6)
	g) Surface temperature of wooden stand at periphery of space heater	For that of fuel consumption of 600 g/h or under: 80 °C or under For that of fuel consumption exceeding 600 g/h: 90 °C or under	5.1 and 5.2 (6)
	h) Surface temperature of wooden wall at side face of space heater	90 °C or under	5.1 and 5.2 (6)
	i) Temperatures of windings of motor and electro-magnetic pump	100 °C or under for that of class A insulation 115 °C or under for that of class E insulation 120 °C or under for that of class B insulation 140 °C or under for that of class F insulation 165 °C or under for that of class H insulation	5.1 and 5.2 (8)
	j) Oil temperature	The difference between the measured temperature and the room temperature shall be 25 °C or under.	5.1 and 5.2 (9)
	k) Burning conditions and service performances	During burning, there shall not be such abnormalities as enlarging of flame, back firing, generation of visible smoke, oil leakage and breakage, and these shall conform to the requirements of 4.1.	5.3 and 31.1
	l) Warm wind temperature	80 °C or under	5.4
	m) Ratio of carbon monoxide to carbon dioxide in burnt exhaust gas (CO/CO ₂)	0.002 or under	5.7
	n) Odor	Four persons out of five persons shall not detect odor.	5.10
	o) Extinguishing time	Within 20 s	5.14
	p) Fuel consumption (max.)	The difference between the marked value and the actually measured value shall be ± 10 %.	5.15.1

Table 1 (continued)

Item			Quality performance	Applicable item number: of JIS S 3031
Overload burning [Limited to that of having oil control valve ⁽⁶⁾ .]			It shall conform to the requirements of burning performances (except fuel consumption). In addition, that having the wind amount control device for burning which is capable of operating from outside, even though it is adjusted to the maximum or minimum, explosion, abnormal burning and the like shall not take place.	6
Inclination	Inclined burning		Enlarging of flame and generating of remarkable smoke shall not take place.	10.1
	10 degrees inclination		When inclined by 10 degrees, there shall be no oil leakage.	10.2
	30 degrees inclination		When inclined by 30 degrees, there shall be no such change as falling-off of the main parts ⁽⁷⁾ , and the space heater body shall not be overturned. However, for that of which tensile overturn value is 14 N·m or over, and of which mass not filled with fuel of the space heater exceeding 20 kg shall be 25 degrees, and for that of which tensile overturn value is 18 N·m or over shall be 20 degrees.	10.3
Overturn	Tensile overturn value		5.9 N·m or over	12.1
	Overturn oil leakage		50 g or under. However, for that of which tensile overturn value is 16 N·m or over and of hard to be overturned shall be 300 g or under.	12.2
	Overturn extinguishing		It shall be extinguished within 10 s.	12.3
Actuation of overheat preventing device			It shall actuate without hindrance.	14
Actuation of incomplete combustion preventing device	Tightly sealed condition	Ratio of carbon monoxide to carbon dioxide of gas in the room (CO/CO ₂)	It shall actuate at 0.005 or under.	44.1
		Burning conditions	During burning, the flame shall not get out of the space heater, and remarkable smoke shall not be generated.	
	Insufficient charging condition	Ratio of carbon monoxide to carbon dioxide in burnt exhaust gas (CO/CO ₂)	It shall actuate at 0.005 or under.	44.2
		Burning condition	During burning, the flame shall not get out of the space heater, and remarkable smoke shall not be generated.	
Semi-clogging resistance ⁽⁸⁾			The overheat preventing device shall be actuated, and the gauze shall not catch fire, flame shall not get out of the space hater and other dangerous conditions shall not take place. Furthermore, for that of which overheat preventing device does not actuate, the warm wind temperature (gauze surface) shall not exceed 180 °C, and surface temperature of casing shall no exceed 150 °C.	15

Table 1 (continued)

Item		Quality performance	Applicable item number of JIS S 3031
Wind resistance		At respective wind velocities of 2 m/s, 3 m/s, and 5 m/s, it shall be extinguished while being blown by the wind and within 5 min after stopping the wind or the flame shall not get out of the space heater and guard. However, exclusively in the case of the flame which getting out to the front of the space heater or to the outside of the guard, that corresponds to one of the following shall be excluded. a) The flame of about 10 cm or under. b) The getting out time of the flame shall be within 2 s, and the intermittent flame of 10 times or less per minute and of approximately 30 cm or under in length.	20
Electric lighting		It shall be lighted smoothly and securely.	24
Power consumptions	That of 100 W or under in rated power consumption	$\pm 15\%$ in difference with respect to rated power consumption.	25
	That of exceeding 100 W in rated power consumption	$\pm 10\%$ in difference with respect to rated power consumption.	
Noise	That of 500 g/h or under in fuel consumption	45 dB or under	26.1 and 26.2
	That of over 500 g/h up to and including 1 000 g/h in fuel consumption	50 dB or under	
	That of over 1 000 g/h in fuel consumption	60 dB or under	
Power suspension resistance		It shall be not liable to generate danger.	27
Insulation	Insulation resistance	1 M Ω or over	28.1
	Withstand voltage	It shall withstand to test voltage for 1 min.	28.2
Vibration		At respective periods of 0.3 s, 0.5 s and 0.7 s, a) When subjected to vibration at 100 cm/s ² , the extinguishing device shall not be actuated within 10 s. b) When subjected to vibration at 200 cm/s ² , it shall be extinguished within 10 s. Furthermore, no abnormal burning shall take place until it is extinguished. Damage and deformation also shall not arise on each part.	29.1 and 29.2
Pressure resistance of oil tank		When the hydraulic pressure of 150 kPa has been applied for 2 min, no leakage shall take place.	32.1
Thermal resistance (Exclusively for the constituting materials of rubber and plastics to be used for the parts liable to be inflicted by thermal influence during ordinary service.)		There shall be no abnormality.	34