

JIS

JAPANESE INDUSTRIAL STANDARD

Semi Closed Type Oil Burning Space Heaters

 **JIS S 2039**—1987

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In the event of any doubt arising,
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Semi Closed Type Oil Burning Space Heaters

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1. Scope

This Japanese Industrial Standard specifies the semi closed type⁽²⁾ oil burning space heaters of not more than 3200 g/h in fuel consumption⁽¹⁾, using kerosine, gas oil or fuel oil as fuel, hereinafter referred to as the "space heaters". However, the fuel consumption of forced exhaust gas type⁽²⁾ space heaters shall be not more than 2200 g/h.

Notes (¹) The fuel consumption means the amount of fuel to be burned when the oil control device is made the maximum expressed per one hour.

(²) The semi closed type and forced exhaust gas type mean the "semi closed type" and "forced exhaust gas type" specified in 3.2 Division of Appliances by Supply and Exhaust Gas System of JIS S 3030.

Remark: In this Standard the units and numerical values shown in { } are in accordance with the conventional units and appended for informative reference.

2. Classification

2.1 Classification According to Combustion System The classification of space heaters shall be of "pot type", "pressure spray type", "rotary atomizing type", "jet spray type" and "vaporizing type" specified in 3.1 Division According to Combustion System of Appliances of JIS S 3030.

2.2 Classification According to Supply-and-Exhaust Gas System The classification of space heaters shall be of all classes of semi closed type specified in 3.2 Division of Appliances According to Supply-and-Exhaust Gas System of JIS S 3030 (refer to Attached Figs. 2 to 6).

2.3 Classification According to Application Division System The classification of space heaters shall be of "natural convection type" and "forced convection type" specified in 3.3 Division of Appliances According to Heat Carrier and Application Division System of JIS S 3030.

3. Performance

3.1 Using Performance The using performance of space heaters shall be as follows:

- (1) The ignition is easy, dangerous articles of high inflammability such as alcohol and the like are not used, and dangerous operation is not required.

- (2) The working of each part is smooth, secure and free from defects harmful to use.
- (3) The knobs and the like shall be free from easy deformation during using and abnormalities during working.
- (4) The operation is easy, and there is no fear to cause danger at that time.
- (5) The operation of fire extinguishing is able to be carried out quickly and securely.
- (6) During the combustion by normal procedure, such condition where the combustion condition can not be affirmed due to adhesion of oil smoke on the peep window is not caused.
- (7) The space heater having a combustion control apparatus has no fear that at each combustion amount the flame becomes abnormally large, or remarkable smoke is generated, or other abnormal combustion is caused.

3.2 Performance on Material Quality The performance on material quality, when tested according to 9. Testing Method and JIS S 3031, shall comply with the specification of Table 1.

Table 1. Performance on Material Quality

Item		Performance on material quality	Applicable clause number of JIS S 3031
Combustion performance	(1) Surface temperature ⁽³⁾ of such part that the hand touches such as knob	The difference between the measured temperature and room temperature shall be 25°C max. for metals, ceramics and porcelains, and 35°C max. for plastics	5.1 and 5.2.1
	(2) Surface temperature ⁽⁴⁾ of parts having a fear of hand-touching	150°C max.	5.1 and 5.2.2
	(3) Surface temperature of rectifier	For one made of selenium 75°C max. For one made of germanium 60°C max. For one made of silicon 135°C max.	5.1 and 5.2.3
	(4) Surface temperature of separating point of power source wire	The one applied with heat resistant treatment for each wire core	5.1 and 5.2.4
		The one not applied with heat resistant treatment for each wire core	
	(5) Surface temperature of oil tank	The difference between the measured temperature and room temperature is 25°C max.	5.1 and 5.2.5
	(6) Surface temperature of wooden stand at under surface of space heater	80°C max.	5.1 and 5.2.6

Table 1 (Continued)

Combustion performance			Applicable clause number of JIS S 3031
Item	Performance on material quality		
(7) Surface temperature of wooden stand at periphery of space heater	In the case of natural vent type and forced vent type, 100°C max. In the case of forced exhaust gas type 90°C max.	5.1 and 5.2.6	
(8) Surface temperature of wooden wall at side surface of space heater	In the case of natural vent type and forced vent type, 100°C max. In the case of forced exhaust gas type 90°C max.	5.1 and 5.2.6	
(9) Surface temperature of wooden wall at upper surface of exhaust gas cylinder (exclusively for forced exhaust gas type.)	90°C max. However, it does not apply to ones in which set conditions are marked specially in handling marking, handling instruction, etc.	5.1 and 5.2.6	
(10) Surface temperature of exhaust gas cylinder at a part contacting the wall (exclusively for forced exhaust gas type.)	90°C max. However, it does not apply to ones in which set conditions are marked specially in handling marking, handling instruction, etc.	5.1 and 5.2.7	
(11) Temperature of windings of electric motor and electromagnetic pump	Ones of class A insulation 100°C max. Ones of class E insulation 115°C max. Ones of class B insulation 120°C max. Ones of class F insulation 140°C max. Ones of class H insulation 165°C max.	5.1 and 5.2.8	
(12) Oil temperature	The difference between the measured temperature and room temperature 25°C max.	5.1 and 5.2.9	

Table 1 (Continued)

Combustion performance		Item	Performance on material quality	Applicable clause number of JIS S 3031
(13)	Combustion condition and using performance	Combustion condition and using performance	There are no abnormalities such as enlargement of fire flame, backfire, generation of visible smoke, oil leak, rupture, etc. and these comply with specification of 3.1.	5.3
		Temperature of warm wind	80°C max.	5.4
		Ratio of carbon monoxide to carbon dioxide in combustion exhaust gas (CO/CO ₂)	0.02 max.	5.7
		Smoke concentration	In the case of natural vent type and forced vent type, smoke scale "6" max. In the case of forced exhaust gas type, smoke scale "5" max.	5.9
		Heating output	90 % min. of rated output (max.)	5.11.1
		Heat efficiency	Relative to input, in the case of natural vent type and forced vent type, the minimum heat efficiency 50 % min. the maximum heat efficiency 60 % min.	5.12.1
			Relative to input, in the case of forced exhaust gas type, the minimum heat efficiency 50 % min. the maximum heat efficiency 70 % min.	
			Relative to marked heat efficiency 90 % min.	

Table 1 (Continued)

Item	Performance on material quality	Applicable clause number of JIS S 3031
(19) Fire extinguishing time	Pot type 600 s max. Pressure spray type 10 s max. Rotary atomizing type 50 s max. Jet spray type 10 s max. Vaporizing type 20 s max.	5.14
(20) Fuel consumption	The difference relative to the marked fuel consumption (max.), $\pm 10\%$	5.15.1
Overload combustion [exclusively for one having an oil control device ⁽⁵⁾ .]	It complies with the specification of combustion performance (excluding heat efficiency, fuel consumption and smoke concentration of natural vent type and forced vent type.) Further, the one having a wind-amount control device for combustion capable of operating from outer part, even though it is made maximum and minimum, does not generate explosion, abnormal combustion, etc.	6.
Natural vent combustion performance (exclusively for space heater which does not stop the combustion at service interruption.)	It complies with the specifications of combustion performance (temperature rise of each part, combustion condition and using performance, CO/CO ₂ , smoke concentration.)	8.

Table 1 (Continued)

Item		Performance on material quality	Applicable clause number of JIS S 3031
Combustion performance according to excessive fuel (exclusively for pot type.)	Combustion condition and using performance	There are not change of position of each part, extrusion of flame outsides the space heater during combustion, oil leak, and damage and these comply with the specifications of 3.1.	9.
	Surface temperature of wooden wall at side surface of space heater.	100°C max.	
Humidifying capacity		The humidifying amounts of built-in humidifiers are for that of rated heating output of not more than 8372 kJ/h{2000 kcal/h}, 70 g/h min.; for that of rated heating output exceeding 8372 kJ/h{2000 kcal/h}, 100 g/h min.	13.
Overheat preventive apparatus working		It works without interference.	14.
Semi-close resistance (exclusively for forced convection type.)		The superheating preventive apparatus actuates and further the ignition of gauge, extrusion of flame outsides the space heater and other dangerous condition are not caused. Further, that of which superheating preventive apparatus does not actuate, does not exceed 180°C in warm wind temperature (gauge surface) and not exceed 150°C in outer plate surface temperature.	15.

Table 1 (Continued)

Item	Performance on material quality	Applicable clause number of JIS S 3031
Wind speed resistance (exclusively for forced exhaust gas type.)	(1) During applying wind speed respectively 5, 10, 20 m/s and within 5 min after stopping wind, raw gas or exhaust gas does not intrude in the room and the flame does not extrude from combustion chamber in the space heater or outside it. Further, when reignited, explosive combustion is not caused. (2) For that which extinguishes fire due to wind, after stopping wind, explosive combustion due to retaining heat energy in combustion chamber is not caused. Further, at reignition, the explosive combustion is not caused.	21.1 and 21.2
Wind pressure resistance (exclusively for forced exhaust gas type.)	(1) To be ignited. (2) Not to be fire-extinguished. (3) Abnormal combustion is not caused. (To comply with the specifications of smoke concentration and CO/CO₂ of combustion performance of this table.) (4) At wind pressure of 59 Pa {6 mm H₂O}, the space heater output does not change. Further, at wind pressure of 245 Pa {25 mm H₂O},	22.

Table 1 (Continued)

Item		Performance on material quality	Applicable clause number of JIS S 3031
(Continued)			
Back wind pressure (exclusively for natural vent type and forced vent type.)		the change of space heater output is not more than 20 % of that when pressure is not applied.	
Electrical ignition		Explosive combustion such as to cause danger is not generated.	9.1(°)
Power consumption		To ignite smoothly and securely.	24.
Power consumption	That of not more than 100 W in rated power consumption	The difference relative to the rated power consumption is ± 15 %	27.
	That of exceeding 100 W in rated power consumption	The difference relative to the rated power consumption is ± 10 %	
Noise		For rated space-heater output of not more than 20930 kJ/h {5000 kcal/h}. Strong combustion 45 dB (A) max. Weak combustion 40 dB (A) max. For rated space-heater output exceeding 20930 kJ/h {5000 kcal/h} and not more than 41860 kJ/h {10000 kcal/h}. Strong combustion 50 dB (A) max. Weak combustion 45 dB (A) max. For rated space-heater output exceeding 41860 kJ/h {10000 kcal/h}. Strong combustion 55 dB (A) max. Weak combustion 50 dB (A) max.	28.1 and 28.2