

JIS

JAPANESE INDUSTRIAL STANDARD

Gun Type Oil Burners

JIS B 8404—1982

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Gun Type Oil Burners

B 8404-1982

1. Scope

This Japanese Industrial Standard specifies the gun type oil burners of pressure jet type having the oil pump of cogwheel type, hereinafter referred to as the "burners", mainly used for boiler, warm air heater, industrial furnace, etc., using kerosene or gas oil as fuel with the fuel oil consumption of 3 to 200 kg/h.

2. Definitions

The definitions of main terms used in this standard shall be in accordance with JIS B 0113 and other definitions shall be as follows:

- (1) safety time The safety time means the maximum time capable of supplying fuel with combustion safety and control system under the state with no flame.
- (2) safety time at ignition The safety time at ignition means the time from the instance of sending the start signal of supplying fuel to the instance of sending the stop signal of fuel supply when burner cannot ignite after sending the start signal of fuel supply at starting the ignition of burner.
- (3) safety time during the state of operation The safety time during the state of operation means the period of time from the instant when flame detector detects the state of combustion stop due to the generation of abnormal combustion to the instant when the combustion safety and control system starts to send the stop signal of fuel supply.

Applicable Standards and Reference Standards: See page 20.

3. Classes and Symbols

The burners shall be classified according to the fuel oil consumption the shape and the spray angle, and the classes and symbols of burners shall be as follows:

- (1) Fuel Oil Consumption The fuel oil consumption shall be expressed by the maximum fuel oil consumption of burner, and be classified into the 9 classes given in Table 1.

Table 1

Fuel oil consumption kg/h	Symbol	Reference oil nozzle number	Reference rated output of motor kW
8	G 8	1	0.2
15	G 15	1 or 2	0.4
30	G 30	1 or 2	0.4
45	G 45	1 or 2	0.75
60	G 60	1 or 2	1.5
90	G 90	2 or 3	1.5
120	G 120	2, 3 or 4	2.2
150	G 150	2, 3 or 4	3.7
200	G 200	2, 3 or 4	5.5

- (2) Shape The shape of burner shall be classified into the 3 classes given in Table 2 according to its construction.

Table 2

Shape	Symbol
Stand form	S
Flange form	F
Hinge form	H

- (3) Spray Angle The spray angle means that from oil nozzle, and shall be classified into the 3 classes given in Table 3.

Table 3

Spray angle (degree)	Symbol
45	45
60	60
80	80

4. Performances

The performances of burner shall be tested in accordance with the specifications in 9. and conform to the requirements given in Table 4.

Table 4

Item	Standard	Test method
Range of fuel oil consumption	The combustion shall be capable within the following range of fuel oil consumption.	
	Symbol of fuel oil consumption	Range of fuel oil consumption kg/h
	G 8	3 to 8
	G 15	8 to 15
	G 30	15 to 30
	G 45	23 to 45
	G 60	30 to 60
	G 90	45 to 90
	G 120	60 to 120
	G 150	75 to 150
	G 200	100 to 200
		9.4

Table 4 (Continued)

Item	Standard	Test method
Spray angle	The spray angle shall be within the following range:	9.5
	Symbol	
	45	
	60	
Ignitionability	Spray angle (degree)	9.6
	45	
	60	
	80	
Combustion state	To be capable of certainly igniting with electricity easily.	9.7
	Having no abnormal combustion such as intermission, vibration and eccentricity of flame.	
	The excess air ratio shall be not more than the value given in Fig. 7.	
	The smoke density shall be not more than No. 3 in Bacharach scale.	
CO concentration in dry waste gas	The CO concentration in dry waste gas shall be not more than 0.1 volume %.	

Table 4 (Continued)

Item	Standard			Test method
Safety time	Symbol of fuel oil consumption	Safety time (sec.) (maximum value)		9.8
		At ignition	During the state of operation	
	G 8, G 15, G 30	16.5	17.5 (¹) or 4	
	G 45, G 60, G 90, G 120, G 150, G 200	7.7	4	
Accuracy of fuel oil consumption	The accuracy of fuel oil consumption shall be $\pm 5\%$ of the value given in Table 1, or of the maximum one marked on the burner.			9.9
Noise	Symbol of fuel oil consumption			9.10
	G 8 to G 30	Not more than 70 dB (A)		
	G 45 to G 90	Not more than 75 dB (A)		
	G 120 to G 200	Not more than 85 dB (A)		

Table 4 (Continued)

Item	Standard	Test method
Vibration	Having no strong vibration.	9.11
Oil leakage	No oil leakage at each part.	9.12
Oil dripping	There shall not be any oil dripping injurious to practical use. Furthermore, the oil dripping amount after the stop of combustion, shall be not more than 0.1 % of the maximum fuel oil consumption.	9.13
Combustion stoppage	Such state injurious to practical use as vibration and generation of smoke shall not be generated after the stop of combustion.	9.14

Note (1) The safety time described herein means the sum of the safety time (1 sec. max.) during the state of operation in the case where the operation after the stop of combustion corresponds to RL of 4. (6) in JIS B 8412 and of the subsequent starting safety time at ignition (16.5 sec. max.).