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JAPANESE INDUSTRIAL STANDARD

**Test Methods for
Performance and Accuracy of
Spindle Moulding Machines**

JIS B 6510—1989

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

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Test Methods for Performance and Accuracy
of Spindle Moulding Machines

B 6510-1989

1. Scope

This Japanese Industrial Standard specifies the test methods related to the functions, running performances and rigidity and inspection methods on static accuracies and machining accuracies of the spindle moulding machines of 100 mm or under in effective cutting height for the spindle shaper moulding machines, and of 100 mm or under in effective cutting height and 100 mm or over to 680 mm or under in the distance between the main spindle centres for the double-spindle moulding machines, among the spindle shaper moulding machines specified in No. 6321 and the double spindle moulding machines specified in No. 6322 of JIS B 0114, hereinafter these are generically referred to as the "spindle moulding machines".

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

2. Methods for Functional Tests

The functional tests on the spindle moulding machines shall be in accordance with Table 1.

Applicable Standards:

JIS B 0114-Glossary of Terms for Wood Working Machinery

JIS B 6507-General Code of Safety for Wood Working Machinery

JIS B 6521-Methods of Measurement for Noise Emitted by Wood Working Machinery

JIS B 6602-Safety Standards for Construction of Spindle Shapers

Corresponding International Standard:

ISO 7009-Woodworking machines-Single spindle moulding machines-Nomenclature and acceptance conditions

Reference Standards:

JIS B 6501-Test Code for Performance and Accuracy of Wood Working Machinery

JIS Z 8203-SI Units and the Use of their Multiples and of Certain Other Units

Table 1. Functional Tests

No.	Test item	Test method
1	Electrical equipment	Before and after the running test, examine the insulating condition once each.
2	Start, stop and running operations of main spindle	At an appropriate main spindle speed of rotation, carry out 10 times of start and stop continuously to examine the smoothness and reliability of actions.
3	Changing operation of main spindle speed of rotation	Change the main spindle speed of rotation over entire marked speeds of rotation to examine the smoothness of actions and the reliability of indications of the operating device.
4	Manual feed operation	Examine the smoothness and uniformity of actions throughout overall length of movement by the manual feed handle, and rotate the sensitive feed handle several times to examine the smoothness and uniformity.
5	Ascending and descending and clamping operations of main spindle, and operation of automatic stopping device	Allow the main spindle to ascend and descend to examine the smoothness and uniformity of actions throughout overall length of the motions, and examine the reliability of clamping and the smoothness of actions of the clamping device at the both ends and centre of motions. In addition, examine the smoothness and reliability of actions of the automatic stopping device at the both ends of motions.
6	Ascending and descending and clamping operations of table	Ascend and descend the table to examine the smoothness and uniformity of actions throughout the overall length of motions. In addition, examine the reliability of clamping and the smoothness of actions of the clamping device at the both ends and centre of motions.
7	Attaching and detaching of cutter	Examine the reliability and smoothness of the attaching, detaching and clamping screw of the cutter.
8	Safety device	Examine the reliability of the safety functions for operators and protective functions for machine [see JIS B 6507 and JIS B 6602].
9	Lubricating device	Examine the reliability of such functions as oil tightness and proper distribution of quantity of oil.

Table 1 (Continued)

No.	Test item	Test method
10	Oil hydraulic pressure equipment	Examine the reliability of such functions as oil tightness and pressure regulation.
11	Pneumatic pressure equipment	Examine the reliability of such functions as air tightness and pressure regulation.
12	Accessories	Examine the reliability of functions.

Remark: For a spindle moulding machine which is not provided with any functions concerned, the test items corresponding to these in Table 1 are to be omitted.

3. Methods for Running Tests

3.1 No Load Running Test Rotate the main spindle, continue running for 30 to 60 minutes, measure required electric powers and noise after bearing temperatures have been stabilized, record on respective items specified in Table 2 Record Format 1, and observe, at the same time, by the sense of touch that no abnormal vibration exists.

Furthermore, the measurement of the noise shall be in accordance with JIS B 6521.

Table 2. Record Format 1

No.	Time of measurement O'clock minute	Speeds of rotation of main spindles min ⁻¹ {rpm}				Temperatures °C				Room temperature	Required electric powers						Noise dB (A)	Description
						Main spindle bearings					Left			Right				
		Left		Right		Left		Right			Voltage V	Current A	Input kW	Voltage V	Current A	Input kW		
		Marking	Actual measure- ment	Marking	Actual measure- ment	Upper	Lower	Upper	Lower									

Remarks 1. Regarding the spindle shaper moulding machine, records shall be filled in the left side columns of Record Format 1.

2. For a spindle moulding machine provided with the speed change device of the main spindle speed of rotation, records shall be taken on at least 2 levels of speeds of rotation including the maximum speed of rotation.

3. Regarding the measuring conditions of noise, these shall be recorded in the description column.

3.2 Load Running Test Carry out the cutting of the test material, measure required electric powers and noise, take records on respective items specified in Table 3 Record Format 2, and observe, at the same time, by the sense of touch that no abnormal vibration exists and the conditions of the cut surface.