UDC 621.924.352-831-182.4

JIS

JAPANESE INDUSTRIAL STANDARD

Electric disc grinders

JIS C 9611—1990

Translated and Published

by

Japanese Standards Association

Printed in Japan

15 S

Documents
Document Sharing Hub

Full document details: JIS C 9611-1990

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

Documents
Document Sharing Hub
Full document details: JIS C 9611-1990

UDC 621.924.352-831-182.4

JAPANESE INDUSTRIAL STANDARD J I S

Electric Disc Grinders C 9611-1990

1. Scope

This Japanese Industrial Standard specifies portable disc grinders with rated frequencies 50 Hz/60 Hz in common which are used with the grinding wheel specified in JIS R 6213 or that of high strength (4300 m/min) specified in JIS R 6241 attached (hereafter referred to as "grinders").

Remarks 1. Applicable Standards are listed below.

JIS B 7503-Dial Gauges Reading in 0.01 mm

JIS C 0702-General Rules for Insulation Construction of Class II Electrical Appliances

JIS C 1502-Sound Level Meters

JIS C 2801-Commutator Bar

JIS C 3306-Polyvinyl Chloride Insulated Flexible Cords

JIS C 3312-600 V Grade Polyvinyl Chloride Insulated and Sheathed Portable Power Cables

JIS C 3327-600 V Rubber Insulated Flexible Cables

JIS C 8303-Plugs and Receptacles for Domestic and Similar General Use

JIS G 3101-Rolled Steel for General Structure

JIS G 3131-Hot-rolled Mild Steel Plates, Sheets and Strip

JIS G 5501-Gray Iron Castings

JIS K 7202-Method of Rockwell Hardness Test for Plastics

JIS R 6213-Depressed Center Wheels with Fabric Reinforcement

JIS R 6241-Maximum Operating Speed of Grinding Wheels

JIS Z 8731-Methods of Measurement and Description of A-weighted Sound Pressure Level

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

AVA Documents Document Sharing Hub

Full document details: JIS C 9611-1990

2. Class, Output and Maximum Rotational Speed of Grinding Wheel

Grinders are classified according to the outside diameter of grinding wheel to be used, and the output and the maximum rotational speed of grinding wheel shall be as given in Table 1 in correlation with the class. The time rating of the motors shall be 30 min.

Table 1. Class, Output and Maximum Rotational Speed of Grinder

Class (Nominal size of grinder wheel outside diameter) mm	100	125	150	180	205
Output W	150 min.	200 min.	300 min.	350 min.	500 min.
Maximum rotational speed min^{-1}{rpm}	12300	9900	8200	6800	6000

3. Rated Voltage and Driving Motor

The rated voltage of grinders shall be not more than single phase a.c. 300 V, and the driving motors shall be series commutator motors.

4. Performances

4.1 Starting The grinder shall start, irrespective of the position of the motor rotor, when subjected to the test of 7.2.

4.2 Voltage Fluctuation When the voltage fluctuation test is carried out as specified in 7.3, the grinder shall continue its running without any trouble.

4.3 Deflection of Grinding Wheel Mounting Shaft When a grinder is subjected to the test of 7.4, the deflection of its grinding wheel mounting shaft shall not exceed 0.03 mm.

4.4 Temperature When the test of 7.5 is carried out, the temperature of each part shall not exceed the relevant value of Table 2.

Table 2. Temperature

Unit: °C

Point of measurement		Temperature
Motor winding	Of Class A insulation	105
	Of Class E insulation	120
	Of Class B insulation	125
	Of Class F insulation	140
	Of Class H insulation	165
Knob of switch or the like, and push button	Made of metals, ceramics or glass	60
	Made of others	75

AVA Documents
Document Sharing Hub
Full document details: JIS C 9611-1990

Table 2. (Continued)

Unit: °C

Point of measurement		Temperature
Easily accessible enclosure (including gear case and bearing parts)	Made of metals, ceramics or glass	65
	Made of others	80
Handle operated by man in service	Made of metals, ceramics or glass	55
	Made of others	70

Remark: Reference ambient temperature is 30°C.

4.5 Insulation The insulation shall comply with the following requirements:

(1) Insulation Resistance When the test of 7.6.1 is carried out, the insulation resistance shall be not less than 2 MΩ for grinders of other insulation construction than class II construction specified in 5.5 and not less than 7 MΩ for grinders of class II insulation construction.

When the measurement is made on the insulation of each kind for grinders of class II insulation construction, the insulation resistance shall be not less than the relevant value given in Table 3.

Table 3. Insulation resistance

Unit: MΩ

Kind of insulation	Insulation resistance
Basic insulation	2
Supplementary insulation	5
Reinforced insulation	7

(2) Dielectric Withstand Voltage When the dielectric withstand voltage test is carried out as specified in 7.6.2, the grinder shall withstand the test voltage.

4.6 Output The output shall comply with the following requirements:

(1) When the test of 7.7 (1) is carried out, the output shall be as specified in Table 1.

(2) When the test of 7.7 (2) is carried out, the current shall be not more than 110 % of the full load current (the value entered in nameplate).

4.7 Switch The switch shall comply with the following requirements:

(1) When the test of 7.8.1 is carried out, no trouble shall appear on each part of switch.

AVA Documents
Document Sharing Hub

Full document details: JIS C 9611-1990

(2) When the test of 7.8.2 is carried out, the temperature of contact shall not exceed the value specified in Table 4.

Table 4. Temperature of Contact

Unit: °C

Material of contact	Temperature
Copper or copper alloys	70
Silver or silver alloys	95

Remark: The reference ambient temperature is 30°C.

4.8 Bending of Cord

4.8.1 Bending of Joint between Appliance Body and Cord When the test for bending of joint between appliance body and cord is carried out as specified in 7.9.1, the relative breakage of component wires shall not exceed 10 % and no short circuit or other hazard shall take place.

4.8.2 Bending of Joint between Non-renewable Connector and Cord When the test for bending of joint between non-renewable connector and cord is carried out as specified in 7.9.2, the relative breakage of component wires shall not exceed 20 % and no short circuit or other hazards shall take place.

4.9 Resistance to Shock

4.9.1 Resistance to Shock by Fall of Grinder When the test of 7.10.1 is carried out the specimen shall comply with the following requirements:

(1) No live part shall be exposed. However, exposure of live part in such a degree that the live part can not be touched by the test finger shown in Attached Fig. 1 when tested by the test finger is an exception.

(2) No short circuit shall occur when the grinder is connected to the power supply.

(3) The insulation resistance between live parts and dead metal parts liable to be grounded measured with a d.c. 500 V insulation resistance tester shall be not less than 2 MΩ.

4.9.2 Resistance to Shock of Enclosure When the test of 7.10.2 is carried out, the resistance to shock of enclosure shall be such that flaws, cracks or other abnormalities which may result in risks of electric shock, fire, etc. shall not occur.

4.10 Endurance No practical trouble such as loosening of any part shall appear when the test of 7.11 is carried out.

4.11 Noise

4.11.1 Noise Under No-load When the test for noise under no-load is carried out as specified in 7.12.1, the average of measured values at 5 positions shall not exceed 90 dB.

AVA Documents
Document Sharing Hub

Full document details: JIS C 9611-1990

4.11.2 Noise under Load When the test for noise under load is carried out as specified in 7.12.2, the average of measured values at 4 positions shall not exceed 92 dB.

4.12 Overload The grinder, which has been subjected to the test of 7.13, shall withstand such voltage application that a substantially sinusoidal a.c. test voltage of 1000 V for grinders with rated voltage not exceeding 150 V or of 1500 V for that exceeding 150 V at a frequency 50 Hz or 60 Hz is continuously applied for 1 min to the parts given below.

(1) Between live parts and accessible dead metal parts

(2) Between non-accessible dead metal part and accessible dead metal parts.

5. Construction

5.1 Construction in General The construction shall comply with the following requirements:

(1) Grinders shall have no possibility of causing hazards during normal use, shall be assembled to have correct style, shall be good in finishing of each part and smooth in operation.

(2) Grinders shall operate safely without remarkable vibration or abnormal sound during service.

(3) Each part shall not easily cause mechanical or electrical failure and also hazards.

(4) The switch shall be mounted on a position where it is easily operated and shall have no possibility unexpected start of grinder due to contact, vibration, etc.

(5) The motor shall not cause much spark and its brushes shall be easily replaced.

(6) The live parts shall not be exposed.

(7) The screws which fasten the conductive parts shall be equipped with any means to prevent loosening.

(8) Good finished surface shall be obtained when a material is ground by a grinder in normal service conditions.

(9) The switch for operation of motor shall be such that the operation is sure, it does not easily fail and the operation or state of switching is indicated on an easily visible place by means of letters, symbols or color codes. However, if the above indication is difficult, such a case is an exception.

(10) The strength of noise generated by a grinder with a rated power consumption not exceeding 1000 W shall comply with the following requirements:

(a) The noise power shall not exceed the value specified in Table 5, when measured with an absorption clamp. In this case, the decibel (dB) means the value calculated by assuming 1 pW as 0 dB.

AVA Documents
Document Sharing Hub

Full document details: JIS C 9611-1990

Table 5. Noise Power

Unit: dB

Frequency range	Rated power consumption	
	Up to and including 700 W	Over 700 W
30 MHz and over up to and including 300 MHz	55	59

(b) The noise terminal voltage shall not exceed the value specified in Table 6, when measured between a line and the earth. In this case, the decibel (dB) means the value calculated by assuming 1 μV as 0 dB.

Table 6. Noise Terminal Voltage

Unit: dB

Frequency range	Rated power consumption	
	Up to and including 700 W	Over 700 W
525 kHz and over up to and including 5 MHz	59	63
Over 5 MHz up to and including 30 MHz	64	68

5.2 Live Part The live parts shall comply with the following requirements:

(1) The test finger of Attached Fig. 1 shall not come in contact with the live parts with easily detachable parts of grinder removed. The force applied to the test finger shall be 10 N {1.02 kgf} for bottom surface and 30 N {3.06 kgf} for external surfaces and openings.

(2) The clearances (including creepage distances) between live parts of different polarity, between live parts and dead metal parts liable to be earthed, and between live parts and accessible non-metallic surfaces shall be as given in Table 7 in correlation with the portion of appliance body. The clearance shall be measured with a force of 30 N {3.06 kgf} or of 2 N {204 gf} to the relevant parts on the external surface or in the interior of the appliance body, respectively, to minimize the distance.

AVA Documents
Document Sharing Hub
Full document details: JIS C 9611-1990

Table 7. Clearance (Including Creepage Distance) Unit: mm

Insulation distance			Line voltage or voltage to earth		
			Up to and including 50 V	Over 50 V up to and including 150 V	Over 150 V up to and including 300 V
Mount of power supply wire	Between terminals connected by manufacturer		-	3	4
	Between terminals connected by manufacturer and dead metal part liable to be earthed or accessible. surface of non-metallic part		-	2.5	3
Other parts	Between live parts of different polarity (including wire mounting terminals of components having switching mechanism)	Fixed parts where ingress of dust and deposition of metal powder are not unticipated	1.2	1.5	2
		Other places	1.5	2.5	3
	Between live part and dead metal part liable to be earthed or accessible surface of non-metallic part	Fixed parts where ingress of dust and deposition of metal powder are not unticipated	1.2	1.5	2
		Other places	1.2	2	2.5
Commutator			1.6	1.6	1.6

(3) The components such as semiconductors, resistors, capacitors and printed circuits which are used in electronic circuits and in which decrease of clearance is unavoidable due to their construction are exempted from the requirements of (1) if they comply with the requirements given below as the results of tests.

AVA Documents
Document Sharing Hub

Full document details: JIS C 9611-1990