



Descriptive Report and Test Results

MASTER CONTRACT: 215310

REPORT: 70187769

PROJECT: 70187769

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Issued by Jessie Lin

Contents: Certificate of Compliance - Page 1
Supplement to Certificate of Compliance - Page 1
Description and Tests - Pages 1 to 11
Att1 Figures - Page 1 to 10
Att2 Illustration - Page 1 to 14
Att3 Accepted CB certificate - Page 1
Att4 Accepted CB IEC 60745-1 test report - Page 1 to 61
Att5 Accepted CB IEC 60745-2-3 test report - Page 1 to 20
Att6 English Manual - 1 to 16

PRODUCTS

CLASS 3881 51 - TOOLS - Portable

CLASS 3881 81 - TOOLS - Portable - CERTIFIED TO U.S. STANDARDS

Straight Grinder, cord-connected, double-insulated. Model SG6, rated 115Vac, 11.8A, 60Hz, n= 4800 min-1; Ø 150 mm; 5/8".

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APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 60745-2-3-07 2 nd (UL 60745-2-3, 2nd Edition)	-Hand-Held Motor-Operated Electric Tools – Safety - Part 2-9: Particular Requirements for Grinders, Polishers and Disk-Type Sanders
CAN/CSA-C22.2 No. 60745-1-07 3 rd edition Upd.1+Upd.2+Upd.3(UL 60745-1, 4 th Edition)	-Hand-Held Motor-Operated Electric Tools – Safety - Part 1: General Requirements


MARKINGS

The manufacturer is required to apply the following markings:

- Products shall be marked with the markings specified by the particular product standard.
- Products certified for Canada shall have all Caution and Warning markings in both English and French.

Additional bilingual markings not covered by the product standard(s) may be required by the Authorities Having Jurisdiction. It is the responsibility of the manufacturer to provide and apply these additional markings, where applicable, in accordance with the requirements of those authorities.

The products listed are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and U.S. Standards) or with adjacent indicator 'US' for US only or without either indicator for Canada only.

- Submitter's name and/or Contract No 215310, adjacent to the CSA Monogram with the C US Indicator.
- Model designation.
- Complete electrical rating in Volts, symbol for AC supply, Hertz, Amps, n/min.
- The double insulation symbol .
- Date code or equivalent.
- Wording 'Made in Taiwan'.

For 60745-2-3,

- rated speed in revolutions per minute;
- rated capacity in mm
- indication of direction of rotation of the spindle. This shall be indicated by an arrow, raised or sunk, or by any other means no less visible and indelible
- tools provided with a threaded spindle shall be marked with spindle thread size;
- “WARNING — To reduce the risk of injury, always wear eye protection” or the sign M004 of ISO 7010;
- “WARNING — To reduce the risk of injury, use only accessories rated at least equal to the maximum speed marked on the tool”.
- All grinders required to have a guard by Clause 19.101 shall be marked with the following warning:
- “WARNING — To reduce the risk of injury, always use proper guards when grinding”.

"WARNING: To reduce the risk of injury, user must read instruction manual" or the symbol M002 of ISO 7010.

Note: Minimum 2.4 mm high letters for "WARNING".

Nameplate adhesive label material approval information:

1. Yong Mei Printing Company, Limited (INT) CSA Certified. File no. 87277, UL Certified. File no. MH17252.

Model	Application Surface	Max Temp (°C)
YM-50	Metal and plastic groups III and VI	80
YM-S	Metal and plastic groups III and VI	80

INSTRUCTIONS

See standard CAN/CSA-C22.2 No. 60745-1-07 UP3(UL60745-1-4th Edition), CAN/CSA-C22.2 No. 60745-2-3-07 (UL 60745-2-3, 2nd Edition) for details.

An instruction manual and general safety instructions shall be provided with the tool and packaged in such a way that is noticed by the user when the tool is removed from the packaging. The general safety instructions may be separate from the instruction manual. They shall be written in the official language(s) of the country in which the tool is sold.

Instructions shall be legible and contrast with the background.

The instruction manual shall include the name and address of the manufacturer or supplier of branded product and an explanation of the symbols used on the product.

The Safety Rules specified in this clause, if in English shall be verbatim and in the exact order as given and in any other official language to be equivalent.

Format or General Safety Instructions must differentiate, by font highlighting or similar means.

ALTERATIONS

- (a) Markings as noted above.

FACTORY TESTS

Correct Operation Test

The safe operation shall be checked, for example, by electrical measurements, by verifying the functional devices, such as switches and manually-operated controls, and by verifying the direction of rotation of motors.

Electric Strength Test:

The insulation of the tools shall be checked by the following tests:

A voltage of substantially sine-wave form, having a frequency of 50 Hz or 60 Hz and the value shown in Table 1, is immediately applied, for 3 s, between live parts and:

- a) accessible metal parts which may become live in the event of an insulation fault or as a result of incorrect assembly;
- b) inaccessible metal parts.

The tests of item a) are made on the assembled tool; the test of item b) is made on the tool, either completely assembled, or in the production line.

The tests of item a) are made on all tools, the tests of item b) being only made on class II tools.

The high-voltage transformer used for the tests shall be so designed that, when the output terminals are short-circuited after the output voltage has been adjusted to the appropriate test voltage, the output current is at least 200 mA.

The overcurrent relay shall trip when the output current exceeds 5 mA.

Care shall be taken that the r.m.s. value of the test voltage applied is measured within $\pm 3\%$ and that the voltage measuring device or other indicator responds to the output voltage of the transformer.

Attention is drawn to the fact that the test described cannot always be used if the tool incorporates d.c. components; in such cases, tests with d.c. may be necessary.

The inherent resistance of the d.c. source shall allow a short-circuit current of at least 200 mA.

No flashover or breakdown shall occur during the tests.

Table 1 - Test voltages for the electric strength test

Application of test voltage	Test voltage V		
	Class III tools	Class II tools	Class I tools
Over basic insulation	400	1000	1000
Over double insulation or reinforced insulation	-	2500	-

WARNING: The factory test(s) specified may present a hazard of injury to personnel and/or property and should only be performed by persons knowledgeable of such hazards and under conditions designed to minimize the possibility of injury.

SPECIAL INSTRUCTIONS FOR FIELD SERVICES

1. Component descriptions marked with either the "(INT)" or "(INT*)" identifiers may be substituted with other components providing the requirements specified under the notes in the "Description" are complied with.

COMPONENT SPECIAL PICKUP

1. Component descriptions marked with the identifier "(CT)" are subject to annual pickup and Conformity Testing.

DESCRIPTION

Notes:

1. Component Substitution
 - a) Critical components (those identified by mfr name, cat no), which are NOT identified with either "INT" or "INT*" are not eligible for substitution without evaluation and report updating
 - b) The term "INT" means a "Certified" and/or "Listed" (or a "Recognized" and/or "Accepted") component may be replaced by one "Certified" and/or "Listed" by another certification organization accredited by the appropriate accreditation body or scheme requirements to the correct standard, for the same application; providing the applicable country identifiers are included and requirements in item "d" below are complied with.
 - c) The Term "INT*" means a "Recognized" and/or "Accepted" component may be replaced by one "Recognized" and/or "Accepted" by another certification organization accredited by the appropriate accreditation body or scheme requirements to the correct standard, for the same application, providing the applicable country identifiers are included, the component is **also** CSA Certified, the requirements in item "d" below are complied with and any "conditions of suitability" for the component (as recorded in this descriptive report) are complied with.
 - d) Components which have been substituted, must be of an equivalent rating, configuration (size, orientation, mounting) and the applicable minimum creepage and clearance distances are to be maintained from live parts to bonded metal parts and secondary parts.
 - e) Substitution of a "Certified" and/or "Listed" component with a component that is "Recognized" or "Accepted" is not permitted without evaluation and report updating.

The subject model is a double-insulated sander. Motor shaft is double-insulated. It is designed for use with APG accessories specified in the operating/safety instruction manual.

The following table itemizes this product covered along with its electrical ratings.

Straight Grinder, cord-connected, double-insulated. Model SG6, rated 115Vac, 11.8A, 60Hz, n= 4800 min-1; Ø 150 mm; 5/8”.

MODEL DIFFERENCES BY ITEM NO

Model	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
SG6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

No	UL CCN.	Component Description	Manufacturer	Material Cat. No.	Rating, Comment, Dimensions	Appr Agency
1	QMFZ2	Handle	Nan Ya (E130155)	Polyamide 6 2210G6	Drawing 1 and 2. HB, 0.75mm, all colour, HAI-0, HWI-4, CTI-0, 100 °C. Glow wire (550°C) tested at 2.5mm thick by CB report. Two-piece construction, secured together with screws. Provided with 6 ventilation openings at each side, each 36.5 mm long by 2.9 mm wide.	UL
2	QMFZ2	Motor Enclosure	Nan Ya (E130155)	Polyamide 6 2210G6	Drawing 3, HB, 0.75mm, all color, HAI-0, HWI-4, CTI-0, 100 °C. Glow wire (550°C) tested at 2.5 mm thick by CB report. One piece construction.	UL
3	QMFZ2	Baffle	Same as Handle	Same as Handle	Drawing 4. 1.5mm thickness. Secured to motor housing and gear box.	UL
4	-	Gear Box and base	-	Aluminum Alloy	Drawing 5 and 6. Combination with Gear housing and Gear base, secured together with screws and spring washers. Min. 3 mm thickness. Covered by plastic part for handling, min 3 thickness, not part of enclosure.	-
5	-	Spindle	-	Steel	Drawing 7. 5/8"	-
6	-	Guard and bracket	-	Metal	Drawing 8 and 9. Provide with an arrow for rotation direction. Secured to gear box with bracket by two screws.	-
7	-	Flange	-	Steel	Drawing 10 (inner) and 11 (outer). 5/8"	-
8	-	Mandrel arbor	-	Steel	Drawing 12. 5/8"	-
9	ELBZ2	Power Supply Cord (INT)	TA AN (E300888)	Type SJTW	300Vac, 16/2 AWG, min. 105°C. 1.8m long min. Provided with NEMA 1-15P plug, polarized. Line/Neutral connects with switch by a screw. Type Y attachment.	UL CUL
10	-	Cord Guard Bushing	-	Rubber	Overall 72mm long with a 23mm OD by 5.4mm thick lip at one end, 15mm OD by 3mm thick lip at the other end. Projected outside the tool beyond the inlet opening of 60mm (at least 5 times the overall diameter of power supply cord). Fitted over Power Supply Cord and trap-fitted in Handle.	-
11	QMFZ2	Strain Relief	Same as Handle	Same as Handle	Overall 22mm by 9.2mm by 4.6mm. Secured to integral U-shaped boss on Handle with two screws.	UL
12	WOYR2	Tool Switch	ZheJiang Jiaben (E219444)	FA2-6/1BE	Rated 14A, 125Vac. Momentary contact type with optional lock-on button. DPST. Screw type Terminal. Disconnects both conductors of power supply cord. Secured to enclosure by mechanicals.	CUL UL
13	-	Brushes	-	Carbon	Two provided. 10.9 mm long by 7mm wide by 14.2mm long. Spring loaded. Connected with two copper alloy blade terminals for electrical connection. Provided with limited length shunt wire which is shorter than brush holder sleeve to limit brush travel at end of brush life for brush spring retention feature.	-
14	-	Brush Holder Sleeves	-	Copper Alloy	Drawing 13. Secured to inside enclosure with screws.	-

No	UL CCN.	Component Description	Manufacturer	Material Cat. No.	Rating, Comment, Dimensions	Appr Agency
15		Motor leads (INT)	Yi Huan (E250011) MS#114612	TEW/1015/3321	16AWG. Rated 600V, 105°C. One end soldered to Printed Wiring Board; the other terminated in a recognized Crimp type connector to motor or bare wire type terminal to switch.	CSA UL
16		PCB board	--	--	Min V-0, provide the function for speed control by adjustable wheel. Consist of the following component. Schematics see Figure 10.	UL
a	FOWX2	Capacitor (XC2) (INT)	CARLI (E120045)	MPX	275 ac, 0.22 uF, -40~+100C.	UL CSA
b	FOWX2	Capacitor (XC1) (INT)	CARLI (E120045)	MPX	275 ac, 0.1 uF, -40~+100C.	UL CSA
c	--	IC (IC1)	Microchip	PIC12F629/675	<ul style="list-style-type: none"> Standby Current: - 1 nA at 2.0V, typical Operating Current: - 8.5 μA at 32 kHz, 2.0V, typical - 100 μA at 1 MHz, 2.0V, typical 	--
17	-	Stator	-	Laminated Steel	73mm OD by 42mm ID by 45mm stack. Class 120 insulation.	-
I	OBMW2	Stator Winding	PACIFIC ELECTRIC (E84081)	Polyester-imide Copper Wire, PEWH (MW 30-C)	180°C. 1.0 mm diameter, 48 turn. Formed and held with metal strap with polyester film coated electrical paper insulation to space min. 2.5mm from laminations. Varnish impregnated, 'ELANTAS', E171184, min. 180°C.	UL
-	OBMW2	Alternate Stator Winding	TA YA (E84201)	Polyester-imide Copper Wire, PEW (MW 5-C)	155°C. 1.0 mm diameter, 48 turn. Formed and held with metal strap with polyester film coated electrical paper insulation to space min. 2.5mm from laminations. Varnish impregnated, 'ELANTAS', E171184, 155°C.	UL
II	QMFZ2	Stator Slot Liner	PUCARO (E163779)	Triflexil M, Triflexil M/VL, Triflexil M/VL-UE, Triflexil NMN/50, Triflexil NMN/80	155°C, 0.23mm thick. Extends min 1.5mm beyond lamination. Slot liner is double folded to retain winding.	UL
III	AVLV2	Stator Leads (INT)	Yi Huan (E250011)	1015	18AWG, 300V, 80°C. One end is mechanically secured and welded to the coil end, and sleeved with a certified silicone coated fiberglass tube; the other end is connected to tool switch terminal and for connection to carbon brush terminal.	UL CUL
18	-	Armature	-	Laminated Steel	42mm OD by 45mm stack. 12 slots. Class 120 insulation.	-
I	OBMW2	Rotor Winding	PACIFIC ELECTRIC (E84081)	Polyester-imide Copper Wire, PEWH (MW 30-C)	180°C. 0.75mm diameter, 7 turn. Formed and held with metal strap with polyester film coated electrical paper insulation to space min. 2.5mm from laminations. Varnish impregnated, 'ELANTAS', E171184, min. 180°C.	UL

No	UL CCN.	Component Description	Manufacturer	Material Cat. No.	Rating, Comment, Dimensions	Appr Agency
-	OBMW2	Alternate Rotor Winding	TA YA (E84201)	Polyester-imide Copper Wire, PEW (MW 5-C)	155°C. 0.75mm diameter, 7 turn. Formed and held with metal strap with polyester film coated electrical paper insulation to space min. 2.5mm from laminations. Varnish impregnated, 'ELANTAS', E171184, 155°C.	UL
II	-	Shaft	-	Steel	Double insulated.	-
III	QMFZ2	Shaft Insulation	BMC China (E253513)	Unsaturated Polyester BMC FTI901	130°C. Extends through centre of armature laminations, windings and commutator. Min 1mm thick under laminations and commutator as supplementary insulation. Min 1.5 mm thick under windings as reinforced insulation. Extends minimum 2.5mm beyond commutator support and 5mm beyond windings at fan end. Bearing is spaced 8mm from commutator bars.	UL
IV	OBJS2	Armature Slot Liner	PUCARO (E163779)	Triflexil M, Triflexil M/VL, Triflexil M/VL-UE, Triflexil NMN/50, Triflexil NMN/80	155°C, 0.25mm thick. Extends min 1.5mm beyond lamination. Slot liner is double folded to retain winding.	UL
V	QMFZ2	Armature Slot Wedge	-	Vulcanized Fibre	1.0 mm thick. Extends min. 1.5mm beyond lamination.	UL
VI	QMTS2	Armature End Spider	-	Vulcanized Fibre	Minimum 1.5mm thick at spider.	UL
VII	-	Commutator	-	-	28mm OD, 19mm long, including 24 integrally moulded copper alloy commutator bars.	-
VIII	-	Commutator Insulation	-	Phenolic	1.0mm thick min. Basic insulation.	-
IX	-	Fan blade	-	Plastic	Drawing 14. Radial type. 70mm dia. by 10 mm high. Provided with 28 pitched blades, 22mm long.	-

TEST HISTORY

Edition 1 : Project 70187769

No test was considered necessary to comply with CAN/CSA-C22.2 No. 60745-1-07 Upd1+Upd2+Upd.3UP3 (UL60745-1-4th Edition), CAN/CSA-C22.2 No. 60745-2-3-07 (UL 60745-2-3, 2nd Edition) .

Refer to Att4 Accepted IEC 60745-1 and Att5 IEC 60745-2-3 test report.

Test items:

All tests are provided by CB report at CBTL DEKRA Testing and Certification (Shanghai) Ltd.

Test listed in IEC 60745-1:

Check (X)	Cl	Main clause	Test Item	Comment
X	8	Marking	Label Adhesion - Cl. 8.13	Comply with UL969
X	9	Protection Against access to live parts	Auxiliary Handles – Cl. 9.4	
X	10	Starting	All tools	
			Additional tests for centrifugal or other automatic starting switches	Not an auto. Starting switch.
X	11	Input and Current		
X	12	Heating	Temperature Rise – Cl. 12.1 Leakage Current (Cl. 13) after Heating - Cl. 12.2	
			Windings exceeds temperatures specified in Table in Cl. 12.5 - Cl. 12.6 Oven Aging Check for Interturn Shorts Circuits Electric Strength (Cl. 15.2) after Oven Aging. Humidity (Cl. 14.3) Electric Strength (Cl. 15.2) after humidity.	Not exceed temperature table.
	14	Moisture Resistance	Spillage - 14.2 Electric Strength (Cl. 15.2)	No liquid design.
X			Humidity Conditioning - Cl. 14.3; 48 hours; 93 ± 2% Electric Strength (Cl. 15.2)	
			Liquid system leakage -14.4	No liquid design.
			Liquid system pressure -14.5	No liquid design.
	16	Transformer overload protection		No transformer.
X	17	Endurance	Tools – Cl. 17.2 Electric Strength (Cl 15.3) 75 % at after conditioning	
			Centrifugal/Automatic Switches – Cl. 17.3 Electric Strength (Cl 15.3) 75 %at after conditioning	No such component.
	18	Abnormal Operation	Heating element 18.3-4	
X			Motor Overvoltage - Cl. 18.7	
			3 phase motor with one phase disconnected- Cl.18.9	Single phase
X			Electronic Device, Motor Overvoltage - Cl. 18.10	Cl.18.10.4

			Leakage Current (Cl 13) after conditioning	
			Reversing Switches - Cl. 18.11	No such design.
X			Extreme Overloads - Cl. 18.12 Leakage Current (Cl. 13) monitored during and after the overload Electric Strength (Cl. 15.2) after cooled to room temperature	
	19	Mechanical Hazards	No load speed. Cl.19.6	Covered by 60745-2-3 19.106.
X	20	Mechanical Strength	1 meter Drop - Cl. 20.3 Inspection by (Cl. 9)and(Cl. 27.1)after drops Electric Strength (Cl. 15.2) after drops	
X			Switch Actuator Impact - Cl. 20.2 Inspection by (Cl. 9)and (Cl. 27.1) after drops	
			Brush Torque/Impact - Cl. 20.4 Inspection by (Cl. 9)and (Cl. 27.1) after drops	No brush cap.
	21	Construction	Aging of Rubber Cl. 21.13	No rubber.
X			Capacitor Discharge - Cl. 21.21	
	23	Component Test	Capacitor Overvoltage Cl. 23.1.9	
X			Switch Overloading Cl. 23.1.10	
X	24	Supply Connections and External Flexible Cables and Cords	Cord Flexing/Cord Guard - Cl. 24.12	
X			Excessive Cord Bending - Cl. 24.13	
X			Strain Relief Abnormal - Cl. 24.14	
X	25	Terminals and External Conductors		
	26	Earthing Connections	Resistance; Cl. 26.5	Double insulation.
X	27	Screw and Connections		
X	29	Resistance to Heat, Fire, and Tracking	Ball Pressure - Cl. 29.1	
X			Resistant to Flame - Cl. 29.2	
X			Resistant to Tracking Test - Cl. 29.3	

Test listed in IEC 60745-2-3:

Check (X)	Cl	Main clause	Test Item	Comment
X	12	Heating	Temperature Rise – Cl. 12.1 Leakage Current (Cl. 13) after Heating - Cl. 12.2	
X	18	Abnormal Operation	Electronic Device, Motor Overvoltage - Cl. 18.10 Leakage Current (Cl 13) after conditioning No over rated speed 120%.	
X	19	Mechanical Hazards	centre of the spindle shall be less than 0,3 mm. Cl.19.103	
X			Torques for testing flanges Cl.19.105	
X			No load speed 110% . Cl.19.106	

X	20	Mechanical Strength	Cl. 20.101.1	
X			Cl. 20.101.2	
X			Cl. 20.101.3	
X			Cl. 20.101.4	
X			Cl. 20.101.5	

Construction Review:

Construction review performed with satisfactory results.

---End of Report---