Descriptive Report and Test Results

MASTER CONTRACT: 215310
REPORT: 70126793
PROJECT: 70147051

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Report Pages Reissued

Contents:

PRODUCTS

CLASS 3881 51 - TOOLS - Portable
CLASS 3881 81 - TOOLS - Portable - CERTIFIED TO U.S. STANDARDS

Tapper, cord-connected, double-insulated. Model T14; T16; PT14; ET14; T1416; PT1416; ET1416; 3860014; GSMPRO; **XLT TAPPER; GS18; T18**, rated 115Vac, 3.9A, 60Hz, FWD:280/REV:680 n0/min.

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APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 60745-2-9-04 2nd A1 (UL 60745-2-9, 2nd Edition)	-	Hand-Held Motor-Operated Electric Tools – Safety - Part 2-9: Particular Requirements for tappers
CAN/CSA-C22.2 No. 60745-1-07 3rd edition UP3 (UL 60745-1, 4th 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.

- Submittor'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 tappers, maximum diameter, in millimetres, of thread which can be cut.**

"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. 60745-2-9-04 (UL 60745-2-9, 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 ± 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:

a) 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.

b) 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.

c) 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.

The subject model is a double-insulated tapper with speed FWD 280 and REV 680 rpm. 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.

Tapper, cord-connected, double-insulated. Model T14; T16; PT14; ET14; T1416; PT1416; ET1416; 3860014; GSMPRO**; XLT TAPPER; GS18; T18**, rated 115Vac, 3.9A, 60Hz, FWD:280/REV:680 n0/min.

T14 is identical with T16; PT14; ET14; PT1416; ET1416; 3860014; GSMPRO**; XLT TAPPER; GS18; T18** except the model difference.

MODEL DIFFERENCES BY ITEM NO

Model	1	2	3	4	5	6	7	8	9	10	11	12	13	14
T14	X	X	X	X	X	X	X	X	X	X	X	X	X	X
T16	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PT14	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ET14	X	X	X	X	X	X	X	X	X	X	X	X	X	X
T1416	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PT1416	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ET1416	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3860014	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GSMPRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X
XLT TAPPER	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
GS18	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
T18	**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	Motor Enclosure	Nan Ya (E130155)	Polyamide 6 2210G6	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. Overall 140mm by 80mm by 90 mm by 2.5 mm thick, other dimension See Drawing 1.	UL
2	QMFZ2	Handle	Nan Ya (E130155)	Polyamide 6 2210G6	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. Dimension See Drawing 5. Provided with four ventilation openings at each side, three opening measured 35 mm long by 3.0 mm wide, one opening measured 15 mm long by 3.0 mm wide.	UL
3	QMFZ2	Baffle	Same as Handle	Same as Handle	Dimension See Drawing 6. 1.5mm thickness. Secured to motor housing and gear box.	QMFZ2
4	-	Gear Box	-	Aluminum Alloy	Dimension See Drawing 2 and 3. Combination with Gear housing and Gear Cover, secured together with screws and spring washers. Min. 3 mm thickness. Provided with a drive-pulley lock button.	-
5	-	Side handle	-	-	Combination with plastic handle, one metal stick to secure to gear box. With an adjustable rod for depth stop function. Not a part of enclosure.	-
6	ELBZ2	Power Supply Cord (INT)	TA AN (E200888)	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
7	-	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.	-
8	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.	QMFZ2
9	WOYR2	Tool Switch	ZheJiang Jiaben (E219444)	FA2-6D-1213B	Rated 13A, 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

No	UL CCN.	Component Description	Manufacturer	Material Cat. No.	Rating, Comment, Dimensions	Appr Agency
10	-	Brushes	-	Carbon	Two provided. 8 mm long by 7mm wide by 12mm 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.	-
11	-	Brush Holder Sleeves	-	Copper Alloy	Dimension see drawing 4. Secured to inside enclosure with screws.	-
12		Motor leads (INT)	Wonderful (E77981) MS#43774	TEW/1007/1015	18AWG. Rated 300V, 90°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
13	-	Stator	-	Laminated Steel	62mm OD by 36mm ID by 50mm stack. Class 120 insulation.	-
I	OBMW2	Stator Winding	PACIFIC ELECTRIC (E84081)	Polyester-imide Copper Wire, PEWH	180°C. 0.55mm diameter, 80 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	155°C. 0.55mm diameter, 80 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	Jindal (E176671)	JPELN	105°C, 0.25 mm thickness. Extends min. 1.5mm beyond stator laminations.	UL
III	AVLV2	Stator Leads (INT)	Yi Huan (E250011)	1007/1015	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
14	-	Armature	-	Laminated Steel	35.2mm OD by 50mm stack. 12 slots. Class 120 insulation.	-
I	OBMW2	Rotor Winding	PACIFIC ELECTRIC (E84081)	Polyester-imide Copper Wire, PEWH	180°C. 0.4mm diameter, 19 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 Rotor Winding	TA YA (E84201)	Polyester-imide Copper Wire, PEW	155°C. 0.4mm diameter, 19 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

No	UL CCN.	Component Description	Manufacturer	Material Cat. No.	Rating, Comment, Dimensions	Appr Agency
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 2 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, 0.23mm 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	-	-	27.8mm OD, 15.3mm long, including 24 integrally moulded copper alloy commutator bars.	-
VIII	-	Commutator Insulation	-	Phenolic	1.0mm thick min. Basic insulation.	-
IX	-	Fan	-	Plastic	Radial type. 70mm dia. by 10 mm high. Provided with 14 pitched blades, 22mm long.	-

TEST HISTORY

Edition 1: Project 70126793

No test was considered necessary to comply with CAN/CSA-C22.2 No. 60745-1-07 UP3(UL60745-1-4th Edition), CAN/CSA-C22.2 No. 60745-2-9-04 (UL 60745-2-9, 2nd Edition) .

Refer to Att4 Accepted IEC 60745-2-9 in conjunction with IEC 60745-2-9 test report.

Main model T14; alternate model: T16; PT14; ET14; T1416; PT1416; ET1416; 3860014; GSMPRO. All models are identical.

Test items:
All tests are provided by CB report and perform additional testing Cl. 17.2 conducted at in submittor's test laboratory located at No. 2 Kejia Rd, Douliu City, Yunlin County, 64057, Taiwan.

[] Marking – Cl. 8
Label Adhesion - Cl. 8.13
[X] Protection Against access to live parts
[X] Auxiliary Handles – Cl. 9.4
Mechanical Strength (Cl. 20.4)
[] Capacitor Discharge - Cl. 21.21
[X] Starting - Cl. 10
[X] All tools
[] Additional tests for centrifugal or other automatic starting switches
[X] Input and Current - Cl. 11
[X] Heating - Cl. 12
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.
[X] Moisture Resistance – Cl. 14
[] Spillage - 14.2
Electric Strength (Cl. 15.2)
[X] Humidity Conditioning - Cl. 14.3; 48 hours; 93 ± 2%
Electric Strength (Cl. 15.2)
[X] Endurance - Cl. 17
[X] Tools – Cl. 17.2
Electric Strength (Cl 15.3) **[]** 50 %, **[X]** 75 % or **[]** 100 % at after conditioning
[] Centrifugal/Automatic Switches – Cl. 17.3
Electric Strength (Cl 15.3) **[]** 50 %, **[]** 75 % or **[]** 100 % at after conditioning

[X] Abnormal Operation – Cl. 18
- **[X]** Motor Overvoltage - Cl. 18.7
  - Leakage Current (Cl. 13) after conditioning
- **[]** Electronic Device, Motor Overvoltage - Cl. 18.10
  - Leakage Current (Cl 13) after conditioning
- **[]** Reversing Switches - Cl. 18.11
- **[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

[X] Mechanical Hazards Cl. 19
- **[]** Cl. (19.101)
- **[]** Cl. (19.102)
- **[]** Cl. (19.103)
- **[]** Cl. (19.104)
- **[]** Cl. (19.105)

[X] Mechanical Strength Cl. 20;
- **[X]** 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
- **[X]** Brush Torque/Impact - Cl. 20.4
  - Inspection by (Cl. 9)and (Cl. 27.1) after drops

[X] Construction - Cl. 21
- **[]** Aging of Rubber Cl. 21.13

[X] Component Test Cl. 23
- **[]** Capacitor Overvoltage Cl. 23.1
- **[X]** Switch Overloading Cl. 23.1.10

[X] Supply Connections and External Flexible Cables and Cords
- **[X]** Strain Relief Abnormal - Cl. 24.14
- **[X]** Excessive Cord Bending - Cl. 24.13
- **[X]** Cord Flexing/Cord Guard - Cl. 24.12

[X] Terminals and External Conductors – Cl. 25

[] Earthing Connections, Cl. 26
- Resistance; Cl. 26.5

[X] Screw and Connections - Cl. 27

[X] Resistance to Heat, Fire, and Tracking Cl. 29
- **[X]** Ball Pressure - Cl. 29.1
- **[X]** Mold Stress - Cl. 29.1
- **[]** Resistant to Flame - Cl. 29.2
- **[]** Resistant to Tracking Test - Cl. 29.3

[] Resistance to Rusting - Cl. 30.1
- **[]** Resistance to Rusting - Cl. 30.1

[] Thermal Cutouts; Appendix A
- **[]** Operate Reliably – Cl. Al.
- **[]** Resistant to Heating, vibration and etc. - Cl. A2.

[] Electronic Faults; Appendix B
- **[]** Insulation Resistance and Electric Strength - Cl. B15.1
- **[]** Endurance - Cl. B16
- **[]** Abnormal Operation - Cl. B17.101

[] Accessories/Attachments; Appendix F
[] Resistant to Overspeed - Cl. F19.102
[] Sharp Edge - Cl. F20.101
[] Resistant to Tipping - Cl. F20.102

ENDURANCE TEST: Cl. 17
[X] Operated per Part 1; 24 hours at 1.1 times rated voltage then 24 hours at 0.9 times rated voltage
[X] Operated in cycles comprising an "on" period of 100 sec and an "off" of 20 sec.
[ ] Tools for short-time or intermittent operation per standard 60745-2-____.

During the test, the tool is placed in three different positions, the operating time, at each test voltage, being approximately 8 h for each position.

Tools provided with a centrifugal or other automatic starting switch is started 10,000 times under normal load, and at a voltage equal to 0.9 times rated voltage, the operating cycle being that specified in 17.2.

Electric strength, after above test, conducted at 75 % of the specified values, per Cl. 17.1.

Data Observation:						
Electric strength, Cl. 15.2						
CLASS	III	Test	II	Test	I	Test
Points of application:	Test voltage					
1. Between live parts and parts of the body that are separated from live parts by:						
- Basic insulation only	375	**[]**	---		938	**[]**
- Reinforced insulation	---		2813	**[X]**	2813	**[]**
2. For parts with double insulation, between metal parts separated from live parts by basic insulation only, and						
- Live parts			938	**[X]**	938	**[]**
- The body			1875	**[X]**	1875	**[]**
3. Between metal enclosures or covers lined with insulating material and metal foil in contact with the inner surface of the lining, if the distance between live parts and these metal enclosures or covers, measured through the lining, is less than the clearances in Cl. 28.1	---		1875	**[]**	938	**[]**
4. Between metal foil in contact with handles, knobs, grips, and the like and their shafts, if these shafts can become live in the event of an insulation fault.	---		1875	**[X]**	1875	**[]**
5. Between accessible parts and internal diameter of cord guard wrapped with metal foil	---		1875	**[X]**	938	**[]**
6. Between the point where a winding and a capacitor are connected together, if a resonance voltage U occurs between this point and any terminal for external conductors, and						
- accessible parts 1)						
- insulation only metal parts separated from live parts by basic	--- ---		--- 1.5U+750	 **[]**	1.5U+750 ---	**[]**

1) The test between the point where a winding and a capacitor are connected together, and accessible parts or metal parts, is only made where the insulation is subjected to the resonance voltage under normal running conditions. Other parts are disconnected, and the capacitor is short-circuited.

Data Observation:			
Was insulation system damaged?	Did the overload protection operate?	Did connection come loose?	Were there other conditions that impaired safety?
[ ] Yes **[X]** No	**[ ]** Yes **[X]** No **[ ]** N/A	**[ ]** Yes **[X]** No	**[ ]** Yes **[X]** No

Cl.	Requirement - Test	Result - Remark	Verdict
17	All Tools	See Data Observation	**[X]** P **[ ]** F **[ ]** N/A

Edition 2: Project 70147051

Update report to include alternate new models name XLT TAPPER and GS18 and T18 are identical with T14 except the model difference.

---End of Report---