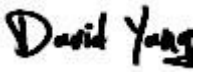
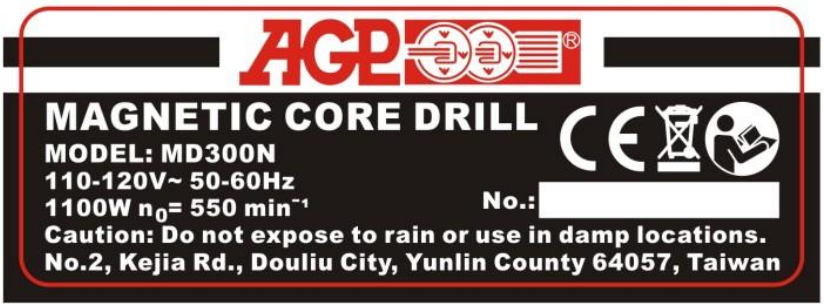
TEST REPORT
IEC 61029-1
Transportable motor-operated electric tools
Part 1: General requirements

Report Reference No.....:	3159615.50A
Compiled by (+ signature) .....:	David Yang 
Approved by (+ signature) .....:	Chris Feng 
Date of issue.....:	2014-12-01
CB Testing Laboratory.....:	DEKRA Testing and Certification (Shanghai) Ltd.
Address .....:	10F, #250 Jiangchangsan Road, Building 16, Headquarter Economy Park, Shibei Hi-Tech Park, Zhabei District, Shanghai, 200436, China
Testing location/procedure .....:	CBTL ☒ SMT ☐ TMP ☐
Address .....:	Same as above
Applicant's name.....:	LEE YEONG INDUSTRIAL CO., LTD.
Address .....:	No.2, Kejia Rd., Douliu City, Yunlin County 64057, Taiwan
Test specification:	
Standard .....:	IEC 61029-1: 1990 (First Edition)
Test procedure .....:	CB
Non-standard test method……..:	N/A
Test Report Form No.....:	IEC61029_1A
TRF Originator.....:	TÜV PRODUCT SERVICE GmbH
Master TRF.....:	2002-02-11

Test item description .....:	MAGNETIC CORE DRILL
Trade Mark……..:	AGP
Manufacturer……..:	LEE YEONG INDUSTRIAL CO., LTD.
	No.2, Kejia Rd., Douliu City, Yunlin County 64057, Taiwan
Model/Type reference.....:	MD300N, **MR- 3035.1100, MAGPRO 35 Semi Automatic, MB300 auto, HF-30A**, MD300, SMD351L, **MR- 3550.1100M, MD35, MAGPRO 35/1S ADJUST,** SMD351H, **MD0351,** SMD352**, MAGPRO 35/2S ADJUST,** SMD502**, ST50, R502, MMD50, MAGPRO 50/2S ADJUST, MB502E、16082605, AC50,** MD350N**, MD-35Q, KW1500380, MB351, HF-35, 35PM,** MD350, SMA300, SMA351L, SMA351H, SMA352, SMA502, 731-C, 742-C and 942-C
Ratings……..:	110-120 V or 220-240 V; 50-60 Hz; 1100 W; Class I

Copy of marking plate and summary of test results (information/comments):

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



The labels for other models are identical with these two labels except the model name and rated no-load speed. (See general product information for details)

Summary of testing:

All the tests were done on the main model MD300N (with a driving motor) except for the Noise and vibration tests were done on model SMD352 (highest no-load speed).

The models in this report are identical except the gear boxes of them are different.

See difference of models in general product information.

Noise and vibration tests were done at SMDERI test laboratory.

Testing and Calibration Laboratory of vibration and noise of SMDERI

No. 1, Lane 357 Gong Qing Road, Shanghai, 200090, P. R. China

Noise level: L_{pA}: 91,5 dB (A) L_{wA}: 102,5 dB (A) $L_{pC,peak}$: 104,0 dB (A) K = 3 dB (A)

Vibration level: a_h = 0,4 m/s^2 K = 1,5 m/s^2

Test item particulars ..... :	
Classification of installation and use ..... :	transportable
Supply Connection..... :	non-detachable cord
..... :	
..... :	
Possible test case verdicts:	
- test case does not apply to the test object..... :	N/A
- test object does meet the requirement ..... :	P(Pass)
- test object does not meet the requirement ..... :	F(Fail)
Testing ..... :	
Date of receipt of test item ..... :	2014-11-25
Date (s) of performance of tests ..... :	2014-11-26 to 2014-12-01

General remarks:

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

The tools also tested and complies with following standards:

IEC 61029:1990

EN 61029-1:2009 + A11 :2010

EN 62233:2008

Test report constituents:
- 3159615.50A covering IEC 61029:2009 and pictures (total 56 pages)
- 3159615.50B covering EU group differences to IEC 61029:1990 (total 11 pages)

Name and address of factory (ies):

LEE YEONG INDUSTRIAL CO., LTD.

No.2, Kejia Rd., Douliu City, Yunlin County 64057, Taiwan

This report was based previous report number 3120835.50, dated 2012-04-05 and replaces it. (CB certificate NL-23099, dated 2012-04-05)

General product information:

The models in this report are identical except the gear boxes of them and the position of grips are different.

See below table for details:

Model name	Rated input voltage	Rated input power	No-load speed	Auto feed
MD300N, **MR-3035.1100, MAGPRO 35 Semi Automatic, MB300 auto, HF-30A**	110-120 V/220-240 V	1100 W	550 min^{-1}	Yes
MD300	110-120 V/220-240 V	1100 W	620 min^{-1}	Yes
SMD351L, **MR-3550.1100M, MD35, MAGPRO 35/1S ADJUST**	110-120 V/220-240 V	1100 W	450 min^{-1}	No
SMD351H, **MD0351**	110-120 V/220-240 V	1100 W	730 min^{-1}	No
SMD352**, MAGPRO 35/2S ADJUST**	110-120 V/220-240 V	1100 W	450/730 min^{-1}	No
SMD502**, ST50, R502, MMD50, MAGPRO 50/2S ADJUST, MB502E、16082605, AC50**	110-120 V/220-240 V	1100 W	300/450 min^{-1}	No
MD350N**, MD-35Q, KW1500380, MB351, HF-35, 35PM**	110-120 V/220-240 V	1100 W	550 min^{-1}	No
MD350	110-120 V/220-240 V	1100 W	620 min^{-1}	No
SMA300	110-120 V/220-240 V	1100 W	550 min^{-1}	No
SMA351L	110-120 V/220-240 V	1100 W	450 min^{-1}	No
SMA351H	110-120 V/220-240 V	1100 W	730 min^{-1}	No
SMA352	110-120 V/220-240 V	1100 W	450/730 min^{-1}	No
SMA502	110-120 V/220-240 V	1100 W	300/450 min^{-1}	No
731-C	110-120 V/220-240 V	1100 W	450/730 min^{-1}	No
742-C	110-120 V/220-240 V	1100 W	300/450 min^{-1}	No
942-C	110-120 V/220-240 V	1100 W	300/450 min^{-1}	No

MD300N and MD300 have a driving motor for auto feed; others have no driving motor.

731-C is same as SMA 352, except the model name.

742-C and 942-C are same as SMA502, except the model name.

The gear boxes of MD300N, MD300, MD350N and MD350 are the same.

The gear boxes of SMD351L, SMD351H, SMA351L and SMA351H are the same.

The gear boxes of SMD352, SMD502, SMA352 and SMA502 are the same.

SMA352, SMA502, SMD352 and SMD502 have a mechanical speed adjustment.

The position of the grip of each model is different.

All models shares the same components and construction.

Modification 1 report:
The original Test Report Ref. No. 3120835.50, dated 2012-04-05 modified on 2014-12-01 to include the following changes and/or addition, which were considered technical modifications.

Alternative models' names added.
MD300N is same as MR- 3035.1100, MAGPRO 35 Semi Automatic, MB300 auto, HF-30A.
MD300 is same as SMD351L, MR- 3550.1100M, MD35, MAGPRO 35/1S ADJUST.
SMD351H is same as MD0351.
SMD352 is same as MAGPRO 35/2S ADJUST.
SMD502 is same as ST50, R502, MMD50, MAGPRO 50/2S ADJUST, MB502E、16082605, AC50.
MD350N is same as MD-35Q, KW1500380, MB351, HF-35, 35PM.

After review, no test was considered necessary.

IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict
7	MARKING		P
7.1	Rated voltage(s) (V) .....:	110-120 V or 220-240 V	P
	Nature of supply	~	P
	Rated frequency (Hz) .....:	50-60	P
	Input (W or kW).....:	1100 W	P
	Rated current (A) if greater than 10A .....:		N/A
	Manufacturer's name or trade mark	AGP	P
	Model or type reference	MD300N, MR- 3035.1100, MAGPRO 35 Semi Automatic, MB300 auto, HF-30A, MD300, SMD351L, MR- 3550.1100M, MD35, MAGPRO 35/1S ADJUST, SMD351H, MD0351, SMD352, MAGPRO 35/2S ADJUST, SMD502, ST50, R502, MMD50, MAGPRO 50/2S ADJUST, MB502E、16082605, AC50, MD350N, MD-35Q, KW1500380, MB351, HF-35, 35PM, MD350, SMA300, SMA351L, SMA351H, SMA352, SMA502, 731-C, 742-C and 942-C	P
	Rated operating/resting time	Continuous	P
	Symbol for Class II		N/A
	Symbol for protection against moisture		N/A
7.2	Operating time/resting time corresponding to normal use	Continuous	N/A
	Marking of operation		N/A
7.3	Heating elements: marking according to IEC 60335-1		N/A
7.4	Adjustable voltage or input easily and clearly discernible		N/A
7.5	Marked input for each rated voltage or voltage range		P
7.6	Correct symbols used		P
	Symbol for nature of rated supply next to rated voltage		P
	Correct dimensions for Class II symbol and no confusion with any other marking		N/A
7.7	Letter N used exclusively for neutral conductor		N/A

IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Marking for earthing terminal		P
	Marking not on screws, removable washers or other removable parts		P
7.8	Use of red push-button (only to open the circuit)		N/A
	Figure 0 indicates only OFF position		P
	Figure I indicates ON position		P
	Correct symbols used for greater output, input, speed etc.		P
	Manual reset buttons of thermal cut-outs cannot be mistaken for main controls		N/A
7.9	Marking easily legible and durable		P
	Marking placed on a main part clearly discernible		P
	Marking and indications related to any component placed in the vicinity of the component involved		P
	Marking not placed on removable parts, if confusion possible		P
	Rubbing test		P
7.10	Regulation devices marked with .....:	1, 2 and 3 (Feed rate selector)	P
7.11	Switches so marked or placed as to indicate clearly which part of the tool they control		P
7.12	Wiring diagram if more than 2 supply conductors		N/A
7.13	Language of safety markings/instructions .....:	English version	P
	Installation instructions:		P
	- setting-up or fixing tool in a stable position as appropriate		P
	- unpacking and assembly		P
	- connection to power supply, cabling, fusing, socket-type and earthing requirements		P
	- illustrated description of functions		P
	- limitations on ambient conditions		P
	- list of contents		P
	Operating instructions:		P
	- setting and testing		P
	- tool changing		P
	- clamping of work		P
	- limits on size of work piece		P
	- general instructions for use		P

IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Safety precautions:		P
	- precautions and use of clothing (where necessary)		P
	- special safety precautions		P
	- dust extraction		P
	- guards; security and adjustment		P
	Maintenance and servicing:		P
	- regular cleaning, maintenance and lubrication		P
	- servicing by manufacturer or agent; list of addresses		P
	- list of user replaceable parts		P
	- special tools which may be required		P
8	PROTECTION AGAINST ACCESSIBILITY TO LIVE PARTS		
8.1	Adequate protection against accidental contact with:		P
	- live parts, even after removal of detachable parts		P
	- basic insulation of metal parts separated from live parts by basic insulation only (Class II)		N/A
	Lacquer, enamel etc. not relied upon		P
	Uninsulated parts at safety extra-low voltage considered to be live parts		N/A
	Apertures in Class II and Class I tools: 10 N force test with test pin		P
	Openings in enclosure: 50 N force test with standard test finger		P
8.2	Adequate strength of parts providing protection (do not work loose and are only removable with tools)		P
8.3	Shafts of operation knobs and the like not live		P
8.4	Metal handles or knobs of switch-operating means (tools other than Class III) covered by insulating material		N/A
	Separation by supplementary insulation		N/A
8.5	Capacitors not connected to accessible metal parts in Class II tools		N/A
	Separation by supplementary insulation (in case of metal casing)		N/A
8.6	Risk of electric shock from the pins of a plug		P
	Measured voltage (V) one second after disconnection .....:	Capacitor behind switch	N/A

IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict
9	STARTING		
9.1	Start under normal voltage conditions		P
	Starting three times at 0,85 times rated voltage without load or lower limit of the voltage range		P
	With centrifugal or other automatic starting switch: three times at 1.06 times rated voltage or upper limit of the voltage range		N/A
9.2	Overload protection devices not operating during normal starting conditions		P
10	POWER INPUT AND CURRENT		
10.1	Input deviations at rated voltage and under normal load	(see appended table)	P
10.2	Current deviations at rated voltage and under normal load conditions	(see appended table)	P
11	HEATING		
11.1	No excessive temperatures in normal use	(see appended table)	P
11.2	Tool loading conditions during temperature test:		P
11.3	Temperature rises of windings and core laminations	(see appended table)	P
11.4	Tool operating time .....:	Until steady condition	P
11.5	Operations of thermal cut-outs		N/A
11.6	Additional tests if temperature rise of the windings and core laminations exceeds the value of 11.5		N/A
	Heat treatment for 240 h		N/A
	Heating cabinet temperature (EC).....:		N/A
	Insulation resistance after heat treatment		N/A
	Electric strength after heat treatment		N/A
	Humidity treatment		N/A
	Insulation resistance after humidity treatment		N/A
	Electric strength after humidity treatment		N/A
12	LEAKAGE CURRENT		
12.1	Test voltage (V) (1,06 times rated voltage)	(see appended table)	P
12.2	Leakage current test	(see appended table)	P
	Tools with heating element tested according to IEC 60335-1; 13.2		N/A

IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict
13	RADIO INTERFERENCE SUPPRESSION		
13.1	Safety of the tool not affected by components for radio and television interference suppression		P
13.1	Safety of the tool not affected by components for radio and television interference suppression		N/A
14	MOISTURE RESISTANCE		
14.1	Tools marked with degree of protection against ingress of foreign bodies fullfil this requirement under working conditions		N/A
14.2	Tools with a higher degree than IPX0 comply with IEC 60529 under working condition IP .....:		N/A
14.3	Humidity test		P
	Relative humidity 91 - 95% .....:	93%	P
	Temperature 20 - 30°C .....:	25 °C	P
	Duration of treatment (h) .....:	48 h	P
	Electric strength test after humidity treatment		P
14.4	Spillage of liquid in normal use for tools with liquid container		N/A
	Electric strength test after spillage of liquid		N/A
	No appreciable quantity of water has entered the appliance and no trace of water on insulating parts		N/A
15	INSULATION RESISTANCE AND ELECTRIC STRENGTH		
15.2	Insulation resistance	(see appended table)	P
15.3	Electric strength test (50 or 60 Hz)	(see appended table)	P
16	ENDURANCE		
16.1	Extended normal use		P
	No electrical or mechanical failure		P
	Insulation not damaged		P
	Contacts and connections do not work loose		P
	Tests of 16.2 and 16.3		P
	Electric strength test after extended use (75% of values specified in 15.3 (V) .....:	938 V, 1875 V, 2813 V	P
16.2	Intermittent operation with no load for 2 x 24 h		P
	Operating period for short-time or intermittent operation tools .....:		P

IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Test voltage(s) (V) .....:	99 V; 132 V And 198 V; 264 V	P
	Test positions .....:	On horizontal	P
	Operation of overload protection devices during extended normal use		P
	Safety of tools not impaired after extended normal use		P
16.3	Tools with a centrifugal or other automatic starting switch		N/A
	Number of starting operations .....:		N/A
	Test voltage(s) (V) .....:		N/A
	After extended use, the safety of tools in normal use not impaired		N/A
17	ABNORMAL OPERATION		
17.1	Prevention against hazards as a result of abnormal or careless operation		P
	Tools incorporating commutator motors		P
	Test voltage (V) (1,3 times rated voltage) .....:	312	P
	Tools incorporating induction motors		P
	- moving parts are liable to be jammed or stopped by hand		N/A
	- operated by hand look for 30 s max. winding temperature: ..... °C:	120 V: 108 °C 240 V: 104 °C	P
	- attend during use look for 5 min max. winding temperature: ..... °C:		N/A
	Three phase motors with one phase disconnected and under the torque producing normal load max. winding temperature: ..... °C:		N/A
17.2	Tools incorporating electronic devices		P
	Operating with electronic device short-circuited		P
	Operating with electronic device open circuited		P
	No damage within the meaning of this standard		P
17.3	Tools with switches or other devices for reversing the motor		N/A
	Reversing the direction of rotation under running conditions		N/A
	Test voltage(s) (V) .....:		N/A
	No electrical or mechanical failure of the device		N/A

IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict
	No damage within the meaning of this standard		N/A
18	MECHANICAL HAZARDS		
18.1	Protection against injury by parts moving in normal use		P
	Adequate mechanical strength of protective enclosures and guards		P
	Protective enclosures, covers, guards etc. not removable without the aid of a tool		P
	Guard for more frequent access does not create danger in case of:		N/A
	- used as protection of working element		N/A
	- during use and adjustment		N/A
	All working elements are secured so that they cannot create dangers		P
	Compliance with tests of Cl. 19		P
18.2	Adequate stability		P
	Tilting test through an angle of 10° appliance does not overturn		P
18.3	Tools have adequate stability under the most onerous condition		P
18.4	No sharp edges, burrs, flashes and the like		P
19	MECHANICAL STRENGTH		
19.1	Adequate mechanical strength tested with the spring operated impact-test apparatus		P
	Tools possess adequate mechanical strength and withstand rough handling		P
19.2	Three blows applied to brush caps		N/A
	Impact energy: 0,5 ± 0,05 Nm .....:		N/A
	Compression: 20,0 mm .....:		N/A
	Test voltage (V) .....:		N/A
	Other parts tested		P
	Impact energy: 1,0 ± 0,05 Nm .....:	1,0	P
	Compression: 28,3 mm .....:	28,3	P
	Test voltage (V) .....:	1250 V / 2500 V / 3750 V	P
19.3	Adequate mechanical strength for brush holders and their caps		N/A
	Removing and replacing the brushes ten times		N/A

IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Test torque (Nm) .....:		N/A
	Brush-holder shows no damage		N/A
20	CONSTRUCTION		
20.1	Use tools of class I, class II or class III construction only		P
20.2	Accidental changing of the setting is unlikely to occur in tools with different voltages or different speed setting		N/A
20.3	Accidental changing of the setting of control devices is unlikely to occur		P
20.4	Removal of parts which ensure the required degree of protection against moisture without the aid of a tool not possible		N/A
20.5	The fixing of handles, knobs and the like used to indicate the position of switches or similar components in a wrong position not possible		P
20.6	Replaceable components suitable fitted		P
20.7	Replaceable of a flexible cable or cord requiring the displacement of a switch possible without subjecting internal wiring to undue stress		P
	After repositioning of the switch and before reassembling the tool, construction allows verification whether the internal wiring is correctly positioned		P
20.8	Wood, cotton, silk, ordinary paper and similar fibrous or hygroscopic material not used as insulation, unless impregnated chemically rendered non-fibrous.		P
	Driving belts not relied upon to ensure electrical insulation		N/A
20.9	Reinforced insulation only used if it is manifestly impracticable to provide separate basic insulation and supplementary insulation		P
20.10	Insulating barriers of Class II tools, and parts of Class II tools which serve as supplementary insulation or reinforced insulation		N/A
	– fixed in such a way that they cannot be removed without being seriously damaged		N/A
	– so designed that they cannot be replaced in an incorrect position, and when omitted, the tool inoperable or manifestly incomplete		N/A
20.11	Assembly gap with a width greater than 0,3 mm in supplementary insulation		P

IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict
20.12	Hazards from parts such as wire, screw, nut, washer or spring becoming loose for falling out of position.		P
	In Class I tools: accessible metal not made live		P
	In Class II tools: clearance and creepage distances not reduced to less than50 % of values shown in 27.1		N/A
	Class II tools, other than those of the all-insulated type provided with an insulating barrier which encloses the motor and all other live parts		N/A
20.13	Supplementary and reinforced insulation not likely to be impaired by deposition of dirt, or by dust resulting from wear of parts within the tools		P
	Parts of natural or synthetic rubber used as supplementary insulation in Class II tools resistant to aging		N/A
	Rubber parts so arranged and dimensioned that creepage distances are not reduced below the values specified in 27.1, even if cracks occur		N/A
	Aging test for rubber parts		N/A
20.14	Internal wiring etc. not exposed to oil, grease and similar substances for constructions which necessitate the exposure, oil or grease used with adequate insulating properties		P
20.15	No access to brushes without the aid of a tool		P
	When tightening screw-type brush-caps, two surfaces clamped together		N/A
	Locking device retaining brushes in position not depending upon the brush-spring tension		P
	Screw-type brush-caps accessible from the outside of the tool made of insulating material or covered with insulating material of adequate mechanical and electrical strength		N/A
	Compliance with tests of 19.1 and 19.3		N/A
	Compliance with tests for supplementary and/or reinforced insulation		N/A
20.16	Radio and television suppressor adequately protected		P
20.17	Tools are fitted with a mains switch		P
20.18	Accidental operation of switches unlikely to occur		P
20.19	Tools provided with a switch or control device to stop the machine		P
20.20	No danger after voltage recovery		P

IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict
21	INTERNAL WIRING		
21.1	Internal wiring so rigid, so fixed or so insulated that , in normal use, creepage distances and clearances cannot be reduced below values specified in 27.1		P
	The insulation not damaged in normal use		P
21.2	Internal wiring and electrical connections adequately protected		P
21.3	Wireways smooth and free from sharp edges, burrs etc.		P
	Holes in metal through which insulated wires pass provided with bushings of insulating material		P
	Wiring prevented from coming into contact with moving parts		P
21.4	Class II tools need prevention for direct contact of basic insulated wires and accessible metal parts		N/A
21.5	Use of green/yellow conductors for earthing terminals only		P
21.6	Wiring between different parts of tools are not exposed to undue stress		P
	No damage of insulation by using flexible metallic tubes		N/A
	Open-coil springs are not used		P
	Flexing test		N/A
	Number of flexings .....:		N/A
	Wiring withstands electric strength test		N/A
	Test voltage (V) .....:		N/A
21.7	Minimum distance of 25 mm between moving parts and wiring or additional prevention		N/A
21.8	Aluminium wires not used for internal wiring		P
22	COMPONENTS		
22.1	Components comply with relevant IEC standards	(see appended table)	P
	Components used in accordance with their markings		P
	Capacitors in series with a motor winding marked with rated voltage and rated capacitance		P
	Measured voltage across capacitor with tool operating at 1,1 times rated voltage under minimum load not exceeding 1,1 times rated voltage of capacitor	Rated: 400 V Measured: 412 V	P

IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict
22.2	Adequate breaking capacity of mains switches		P
	Mains switches have a contact separation of at least 3 mm		P
	Mains switches rated for frequent operation		P
	Switch operated 50 times with motor stalled		P
	Mains switches marked with individual ratings tested in accordance with IEC 60328		N/A
22.3	Mains switches not fitted in the flexible cable or cord		P
22.4	Overload protection devices of the non-self-resetting type		N/A
22.5	Plugs and appliance inlets for safety extra-low voltage circuits or for frequencies other than 50 Hz of 60 Hz not interchangeable with plugs, connectors and appliance inlet complying with IEC 60083 or IEC 60320		N/A
22.6	Capacitors not connected between contacts of thermal cut-outs		P
22.7	Components for basic radio and television interference suppression are not incorporated in plugs		P
22.8	Inductors for radio and television interference suppression inserted in the earthing circuit		N/A
	Inductor test		N/A
22.9	Appliance couplers comply with IEC 60320		N/A
23	SUPPLY CONNETION AND EXTERNAL FLEXIBLE CABLES AND CORDS		
23.1	Tools are provided with		P
	– power supply cord with type X or M attachment		P
	– appliance inlet		N/A
	Type M attachment not easily replaceable by type X attachment		N/A
	Connector inserted in appliance inlet without difficulties		N/A
	No accidental contact with live parts or pins during insertion or removal of connector		N/A
23.2	Flexible cables or cords not lighter than:		P
	– polyvinyl chloride sheathed (227 IEC 60053)	H05VV-F	P
	– rubber sheathed (245 IEC 60053)	H07RN-F	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Class I tools: cord provided with green/yellow conductor, connected to earthing terminal of appliances and earthing contact of plug		P
23.3	Tools provided with plug complying with IEC 60083, IEC 60309-1 and IEC 60309-2		P
23.4	The nominal cross-sectional area (mm²) of flexible cables or cords .....:	220-240 V: 0,75 mm² 110-120 V: 1,0 mm²	P
	Rated current (A) .....:	110-120 V: 10,0 A 220-240 V: 5,0 A	P
23.5	Conductors relieved from strain and twisting and protected against abrasion		P
	Clear method of strain relief and prevention of twisting for type X flexible cords or cables		P
	Cord anchorages of Class II tools		N/A
	No strain on the earthing conductor due to failure of the cord anchorages of Class I tools		P
	Cord anchorages of Class II tools made of or lined with insulating material		N/A
	Cord anchorages of type X cords:		P
	– no contact between cable or cord and accessible metal parts through clamping screws		P
	– cable or cord not clamped by a metal screw directly bearing the cord		P
	– components not readily lost during cord replacement		P
	– one part of component securely fixed to an integral part of tool		P
	– replacement of cable or cord without special tool		P
	– suitable for all specified types of cable or cord		P
	– allowing for easy replacement of cable or cord		P
	Cord anchorage part of mains switch		N/A
	Removal of screws fixing other components during replacement of cable or cord		N/A
	Glands not used as cord anchorages		P
	Pull test for cord anchorage		P
	Pull force (N) .....:	100	P
	Torque test for cord anchorage		P
	Torque (Nm) .....:	1,2 Nm * 2/3 = 0,8 Nm	P
	Mass of the tool (kg) .....:	16,5	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Cable or cord not damaged		P
	Cable or cord displacement (max. 2mm) .....:	0	P
	Movement of conductors in the terminals (max. 1 mm)	0	P
	Cord anchorage not damaged		P
	Creepage distances and clearances not reduced		P
23.6	Protection of flexible cords against excessive bending at the inlet opening by means of a cord guard of insulating material		P
	Protection of cord guard outside the tool		P
	Fixing of cord guard		P
	Curvature of cable or cord min 1,5 D		P
23.7	Cable or cord introduced into inlet openings without risk of damage		P
	Inlet opening for flexible cable or cord in insulating material or bushing of insulating material		P
	Bushing free from ageing effects in normal use		N/A
	No damage to flexible cable or cord due to shape of openings or bushings		P
	Inlet bushing not removable without aid of a tool		N/A
	Inlet bushings reliably fixed		N/A
	Bushings in Class II tools with inlet openings in metal (not of rubber nor part of the cord guard)		N/A
	Bushings in other tools with inlet openings in metal (not of rubber nor part of the cord guard)		N/A
23.8	Sufficient space for introduction and connection of supply cable or cord		P
	No damage to conductors when fitting cover		P
	Checking of correct position of conductors possible before fitting cover		P
	Removal of covers possible without a special tool		P
	Uninsulated end of conductor freed from its terminal not touching accessible metal parts		P
	Loosened wire test (with force of 2 N)		N/A

24.	TERMINALS FOR EXTERNAL CONDUCTORS		
24.1	Tools provided with terminals of screw type or equally effective devices		P
	Use of screws, nuts etc. with metric ISO thread for external conductors		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Screws and nuts for fixing external conductors, not used to fix other components		N/A
	Screws and nuts for fixing external conductors clamping internal conductors		N/A
	Soldered connections for external conductors in tools with type X or M attachment and rated input not exceeding 100 W		N/A
	Conductors maintained in position by additional means and not by soldering alone		P
	Use of barriers to maintain at least 50% of required creepage distances and clearances in case of conductor breaking away		P
24.2	Terminals for type X attachment suitable for connection of required size conductors:		P
	Rated current (A) of tool .....:	110-120 V: 10,0 A 220-240 V: 5,0 A	P
	required cross-sectional area (mm²) .....:	220-240 V: 0,75 mm² 110-120 V: 1,0 mm²	P
24.3	Terminals and terminations for type M attachment		N/A
	Pull test of 5 N		N/A
24.4	Terminals prevented from working loose:		N/A
	– use of two screws		N/A
	– use of one screw, fixed in a recess		N/A
	– use of self-hardening resins		N/A
	Internal wiring not subjected to stress		N/A
	Creepage distances and clearances not reduced below values specified in 27.1		N/A
	Torque test with torque 2/3 of torque specified in 26.1 (ten fastening and loosening operations)		N/A
	Torque test (Nm) .....:		N/A
24.5	Conductors clamped between metal surfaces with sufficient pressure		N/A
	No damage to conductors		N/A
24.6	For tools rated current 16 A maximum, no special preparation of conductors required		N/A
	No slipping out of conductor during tightening of clamping screws		N/A
24.7	Use of pillar terminals:		N/A
	– rated current (A) of tool .....:		N/A
	– measured thread diameter (mm) .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	– measured hole diameter (mm) .....:		N/A
	– measured length of thread in pillar (mm) .....:		N/A
	– measured length of threaded part of screws (mm) .....:		N/A
	– differences between diameter of hole and thread diameter (mm) .....:		N/A
	Surface against which the conductor is clamped free from sharp edges		N/A
	Visibility of conductor end inserted into terminal		N/A
	Distance beyond threaded hole (mm) .....:		N/A
	Depth of recess (mm) for recessed threaded holes ..		N/A
	Length of threaded part of (headed) screw mm) ...:		N/A
24.8	Screw terminals:		N/A
	– rated current (A) of tool .....:		N/A
	– thread diameter (mm) .....:		N/A
	– length of thread on screw (mm) .....:		N/A
	– length of thread in screw hole or nut (mm) .....:		N/A
	– differences between diameter (mm) of head and shank of screw .....:		N/A
	– height of screw head (mm) .....:		N/A
	Use of extruded terminal screw hole		N/A
	– edge of extrusion smooth .....:		N/A
	– length of thread in screw hole (mm) .....:		N/A
	– length of extrusion (mm) .....:		N/A
	– 80% of original thickness or adequate mechanical strength .....:		N/A
	Use of terminals with intermediate part (pressure plate):		N/A
	– intermediate part locked against rotation		N/A
	– thickness of intermediate part (mm) .....:		N/A
	– length of thread on screw (mm) .....:		N/A
	– differences between diameter of head and shank (mm) .....:		N/A
	Use of intermediate part with more than one screw.		N/A
	– thread diameter of screw (mm) .....:		N/A
	Use of recessed screw hole or nut:		N/A
	– depth of recess (mm) .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	– length of headed screw (mm) .....:		N/A
24.9	Stud terminals:		N/A
	– rated current (A) .....:		N/A
	– rated diameter (mm) .....:		N/A
	– differences between thread diameter (mm) and inner diameter of washers .....:		N/A
	– differences between thread diameter and outer diameter of washers (mm) .....:		N/A
	A negative deviation of 0,15 mm is allowed for the normal thread diameter and for the nominal difference between diameters of head and shank of the screw		N/A
24.10	Use of thread smaller than specified:		N/A
	Torque test		N/A
	Torque value (Nm) (1,2 times the torque specified in 26.1) .....:		N/A
	Pull test (24.4)		N/A
	Pull force (N) .....:		N/A
24.11	Terminals for type X and M attachment located in proximity to corresponding terminals		P
24.12	Terminals not accessible without the aid of a tool		P
24.13	Conductor cannot slip out, if soldering or welding breaks		N/A
24.14	Location or shielding of terminals and terminations for type X and M attachments such as to prevent hazards from escaped wire		P
	Test with 8 mm escaped wire of stranded conductor		P
25	PROVISION FOR EARTHING		
25.1	Accessible metal parts of Class I tools permanently connected to earthing terminal or earthing contact of appliance inlet		P
	No electrical connection between earthing terminals or contacts and neutral terminal		P
	No provision for earthing in Class II and III		N/A
25.2	Earthing connections not made by screwless terminals		P
	Clamping means adequately locked against loosening		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Earthing connections not possible to loosen without the aid of a tool		P
25.3	No risk of corrosion between metal parts of earthing terminal and copper of earthing conductor or other metal in contact with terminal		P
	Body of terminal made of brass or other metal no less resistant to corrosion		P
	Screw or nut of brass or other metal no less resistant to corrosion		P
	No risk of corrosion between copper and aluminium (or aluminium alloy) of enclosure		P
25.4	For tools with power supply cords or cables, current-carrying conductors become taut before the earthing conductor if the cable or cord slips out of anchorage		P
25.5	Resistance of earthing circuit (max. 0,1 Ω) .....:	0,068	P
25.6	Terminal screws for earthing conductors don't serve any other purpose, e.g. mechanical fixing		P
26	SCREWS AND CONNECTIONS		
26.1	All screwed connections withstand the mechanical stresses in normal use		P
	Use of screws diameter < 3 mm transmitting contact pressure or tightened by the user		N/A
	Screws not made of soft metal or liable to creep metal		P
	Diameter of screws of insulation material min. 3mm .		N/A
	Use of screws of insulating material only for non-electrical connections		N/A
	Screws of insulating material removable for cord replacement etc. not used if replacement by metal screws could impair electrical insulation		N/A
	Torque test on screws and nuts transmitting contact pressure or screws tightened by the user		P
	Torque test .....:	1) 1,2 Nm for screw on cord anchorage 2) 1,2 Nm for screw on plastic enclosure of motor 3) 0,8 Nm for screw on switch box	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Number of operations .....:	screw on cord anchorage: 5 times screw on plastic enclosure: 10 times Screw on switch box: 5 times	P
26.2	Screws in engagement with thread of insulating material		P
	Correct introduction of screw into nut or screw hole ensured		P
26.3	Contact pressure not transmitted through insulating material (unless compensated for shrinkage or distortion)		N/A
26.4	Space-threaded screws not used for connection of current-carrying parts, unless directly clamping and locking means provided		P
	No thread-cutting screws used for connection of current-carrying parts, unless they generate full from standard machine screw thread		P
	Use of space-threaded or thread-cutting in earthing circuit		P
26.5	Screws for mechanical connection between parts of tool locked against loosening if connection carries current		N/A
	Rivets for current-carrying connections subject to torsion in normal use, locked against loosening		N/A
27	CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGHT INSULATION		
27.1	Creepage distances	(see appended table)	P
	Clearances	(see appended table)	P
	Distances through insulation	(see appended table)	P
	Use of minimum three layers of thin sheet material for reinforced insulation		N/A
	Electric strength test on two layers of insulation		N/A
	Test voltage (V) .....:		N/A
27.2	Distances between metal parts	(see appended table)	P
27.3	Rated current over 25 A		N/A
	Distance between terminal and metal enclosures (mm) .....:		N/A
28	RESISTANCE TO HEAT, FIRE AND TRACKING		

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Clause	Requirement + Test	Result - Remark	Verdict
28.1	External parts of insulating materials: ball pressure test	(see appended table)	P
28.2	Insulating parts retaining live parts in position: ball pressure test	(see appended table)	P
	Insulating parts retaining live parts in position: conical mandrel test	(see appended table)	P
28.3	Resistance to tracking	(see appended table)	P
29	RESISTANCE TO RUSTING		
	Ferrous parts adequately protected against rusting		N/A
	Exposure to a 10% solution of ammonium chloride and moisture treatment		N/A
30	RADIATION		
	No emission of harmful radiation		N/A
B	APPENDIX B		
B1.	Reliable operation of thermal cut-outs and overload releases		N/A
	Test current (A) at normal load .....:		N/A
	Test voltage (V) .....:		N/A
	Number of operations: 15 .....:		N/A
B2.	No changes to the setting of thermal cut-outs and overload releases by heating, vibration etc., occurring in normal use		N/A
C	APPENDIX C		
C8.1	Accessible parts not regarded as live parts		N/A
C17.101	Electronic circuits designed and applied that any fault conditions do not render the appliance unsafe	(see appended table)	P
C20.101	Parts separated by protective impedance comply with DI or RI		N/A
C20.102	RI is allowed for parts separated by SLV transformer or protective impedance or opto coupler		N/A
C20.103	Protective impedance structur consists of two separate components		N/A
C27.1	Creepage distances and clearances on printed circuit boards		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

10.1	TABLE: input data (in normal load conditions)					P
rated input (W)	rated voltage U (V)	rated current I (A)	measured input (W) or current (A)	deviation	load conditions/remark	
1100 W	110-120	--	1100 W 10 A	0%	Normal load	
1100 W	220-240	--	1100 W 5,0 A	0%	Normal load	
supplementary information						

11.1	TABLE: temperature rise measurements (Rated input voltage: 220-240 V)		P
	test voltage (V) .....:	207/220/240/**254**	P
	ambient temperature C.....:	24,0	P
	operating time .....:	Until steady condition	P
	torque load (Nm) .....:	13,91	P
	input current (A) / power (W) .....:	948/1040/1162/**1263** W 4,8/5,0/5,1/**5,2** A	P
	speed (/min) .....:	364/389/428/454	P

temperature rise dT of part/at:	dT (K)	required dT (K)
Supply cord	7,5	50
Ambient of main switch	11,0	30
Main switch knob	13,9	60
Transformer	11,7	95
X2 capacitor	7,6	75(T100)
Capacitor of driving motor	8,1	45(T70)
PCB	18,8	120
Adjustable speed device	10,8	Ref.
Adjustable speed device knob	7,3	60
Internal wire on PCB	4,5	50
Internal wire near motor	3,0	50
Plastic Enclosure of main motor	14,2	60
Brush holder	33,1	Ref.

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Clause	Requirement + Test	Result - Remark	Verdict

Stator core		7,5	Ref.
Handle		6,6	50
Magnetic wire		17,1	105(Class F)
Interlock switch		4,6	30
Gear box		11,6	60
Enclosure of bottom		1,3	Ref.
supplementary information			
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11.1	TABLE: temperature rise measurements (Rated input voltage: 110-120 V)		P
	test voltage (V) .....:	103/110/**120**/127	P
	ambient temperature C.....:	18,0	P
	operating time .....:	Until steady condition	P
	torque load (Nm) .....:	13,20	P
	input current (A) / power (W) .....:	956/1031/**1163/**1267 W 9,7/9,9/**10,2**/10,4 A	P
	speed (/min) .....:	348/373/**406**/433	P
temperature rise dT of part/at:		dT (K)	required dT (K)
Supply cord		24,6	50
Ambient of main switch		14,9	30
Main switch knob		8,0	60
Transformer		35,3	95
X2 capacitor		19,8	75(T100)
Capacitor of driving motor		14,2	45(T70)
PCB		24,5	120
Adjustable speed device		25,1	30
Adjustable speed device knob		13,6	60
Internal wire on PCB		17,6	50
Internal wire near motor		13,2	50
Plastic Enclosure of main motor		19,6	60
Brush holder		24,6	Ref.
Stator core		21,6	Ref.
Handle		10,7	50
Magnetic wire		19,3	105(Class F)

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Clause	Requirement + Test	Result - Remark	Verdict

Interlock switch	9,5	30
Gear box	11,8	60
Enclosure of bottom	7,5	Ref.
supplementary information		
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11.3	TABLE: temperature rise of windings (Rated input voltage: 220-240 V)					P
	test voltage (V) °C.....:	254				P
	t1 (EC) °C.....:	20,7				P
	t2 (EC) °C.....:	24,0				P
temperature rise dT of winding and core laminations (by resistance):		R_1 (Ω)	R_2 (Ω)	dT (K)	allowed dT (K)	insulation class
Stator 1 of main motor		1,507	1,861	56,6	140	Class H
Stator 2 of main motor		1,493	1,854	58,4	140	Class H
Rotor (1-7th)		1,831	2,362	70,7	140	Class H
Main winding of driving motor		52,98	58,08	20,7	140	Class H
Aux. winding of driving motor		54,49	59,62	20,7	140	Class H
Magnetic wire		780,5	812,5	7,2	115	Class F
11.3	TABLE: temperature rise of windings (Rated input voltage: 110-120 V)					P
	test voltage (V) °C.....:	120				P
	t1 (EC) °C.....:	17,9				P
	t2 (EC) °C.....:	18,0				P
temperature rise dT of winding and core laminations (by resistance):		R_1 (Ω)	R_2 (Ω)	dT (K)	allowed dT (K)	insulation class
Stator 1 of main motor		0,2957	0,3525	48,4	140	Class H
Stator 2 of main motor		0,3060	0,3601	44,5	140	Class H
Rotor (1-7th)		0,4770	0,5821	59,5	140	Class H
Main winding of driving motor		51,20	55,31	20,2	140	Class H
Aux. winding of driving motor		51,60	56,42	23,5	140	Class H
Magnetic wire		374	404	20,1	115	Class F
temperature rise dT of winding and core laminations (by thermocouplers)				dT (K)	allowed dT (K)	insulation class
				-	-	-
supplementary information						

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Clause	Requirement + Test	Result - Remark	Verdict

12.1 + 12.2	TABLE: Leakage current measurements at operating temperature		P
	at 1,06 times rated voltage (V) .....:	254	P
Leakage current I between:		I (mA)	required I (mA)
L/N to Enclosure		0,003/0,012	0,75
	at 1,06 times rated voltage (V) .....:	127	P
Leakage current I between:		I (mA)	required I (mA)
L/N to Enclosure		0,006/0,016	0,75

15.2	TABLE: insulation resistance measurements		
insulation resistance R between:		R MΩ	required R MΩ
live parts and body (basic insulation)		>5000 MΩ	2 MΩ
live parts and body (reinforced insulation)		>5000 MΩ	7 MΩ
live parts and metal parts (basic Class II tools)		>5000 MΩ	2 MΩ
metal parts and body (separated from live parts by basic Class II tools)		>5000 MΩ	5 MΩ

15.3	TABLE: electric strength measurements		P
test voltage applied between:		test voltage (V)	Breakdown
L/N to earthed part		1250	No
L/N to metal core		1250	No
Metal core to plastic enclosure		2500	No
L/N to plastic enclosure		3750	P
supplementary information			

22.1	TABLE: list of critical components				P
object/part No.	manufac-turer/trademark	type/model	technical data	standard	mark(s) of conformity[1])
Supply cord*	Ta An Electric	H05VV-F	3 G 1,0 mm^2	IEC 60227	VDE
Alternative	Ta An Electric	H05VV-F	3 G 1,5 mm^2	IEC 60227	VDE
Alternative	Lu Chiang Electric	H05VV-F	3 G 1,0 mm^2	IEC 60227	VDE
Alternative	Lu Chiang	H05VV-F	3 G 1,5 mm^2	IEC 60227	VDE

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Clause	Requirement + Test	Result - Remark	Verdict

	Electric				
Alternative	I-Sheng Electric	H05VV-F	3 G 1,0 mm^2	IEC 60227	VDE
Alternative	I-Sheng Electric	H05VV-F	3 G 1,5 mm^2	IEC 60227	VDE
Alternative	I-Sheng Electric	H05VV-F	3 G 2,5 mm^2	IEC 60227	VDE
Alternative	Nexans	H07RN-F	3 G 1,0 mm^2	IEC 60245	LCIE
Alternative	Nexans	H07RN-F	3 G 1,5 mm^2	IEC 60245	LCIE
Alternative	Nexans	H07RN-F	3 G 2,5 mm^2	IEC 60245	LCIE
Alternative	Ta Tun Electric	H07RN-F	3 G 1,0 mm^2	IEC 60245	VDE
Alternative	Ta Tun Electric	H07RN-F	3 G 1,5 mm^2	IEC 60245	VDE
Supply cord only for 220-240 V*	Ta An Electric	H05VV-F	3 G 0,75 mm^2	IEC 60227	VDE
Alternative	Lu Chiang Electric	H05VV-F	3 G 0,75 mm^2	IEC 60227	VDE
Alternative	I-Sheng Electric	H05VV-F	3 G 0,75 mm^2	IEC 60227	VDE
Power plug*	Ta An Electrical	TP-66	250 Vac; 13 A fuse included	BS 1363	ASTA
Alternative	Ta An Electrical	TP-52	16 A; 250 Vac	IEC 60884	VDE
Alternative	Ta An Electrical	TP-50	16 A; 250 Vac	IEC 60884	VDE
Alternative	Ta An Electrical	TP-51	16 A; 250 Vac	IEC 60884	VDE
Alternative	Ta An Electrical	TP-22	10 or 15 A; 250 VAC	IEC 60884	SAA
Alternative	Ching Cheng Wire Material	EL-208	16 A; 250 Vac	SANS 164-1 SABS 164-1	SABS
Alternative	Ta An Electrical	TP-34	10 A; 250 Vac	BS 1363	IRAM
Alternative	Ta An Electrical	TP-33	10 A; 250 Vac	CEI 23-50	IMQ
Alternative	Ta An Electrical	TP-32	10 A; 250 Vac	IEC 60884	SEMKO
Alternative	Ta An Electrical	TP-23	10 A; 250 Vac	IEC 60884	DEMKO
Power plug only for 110-120 V*	Ningbo Znpon	P1134	16 A; 130 Vac	IEC 60309	SEMKO
Relay 220-240 V	Song Chuan Precision	RY 875B-1CH-F-C	24 Vdc	IEC 61810	TUV

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Clause	Requirement + Test	Result - Remark	Verdict

Relay 110-120 V	Tyco Electronics	RY-OZ-SS-112LM1	12 Vdc; 1 A	IEC 61810	TUV
Motor capacitor	YUHCHANG ELECTRIC CO.LTD	SFE	400 Vac 1,5 µF	IEC 60252-1	VDE
Motor protector of driving motor	Seki Controls Co Ltd	ST-22	250 Vac; Tf 90 °C	IEC 60730	VDE
Main switch 220-240 V	Zhejiang Kedu Electric	KJD17 KJD17B	250 Vac;10(8) A	IEC 61058-1	VDE
Alternative	EVEREL Group S.p.A.	SP63	250 Vac;16(6) A	IEC 61058-1	VDE
Main switch 110-120 V	Zhejiang Kedu Electric	KJD17 KJD17B	120 Vac; 18(16) A	IEC 61058-1	TUV
Magnetic switch	Zhejiang Jiaben Electronics Co., Ltd.	KND2-12/2	250 Vac; 12(10) A 125 Vac; 18(16) A	IEC 61058-1	TUV
Alternative	Canal Electronic Co., Ltd.	R Series	250 Vac; 10(2) A, 16(4) A or 16(8) A	IEC 61058-1	VDE
Magnetic wire	Tai-I Electric	PEW	Class F	IEC 61029	Tested in appliance
**X2 capacitor	Carli Electronics	MPX	0.1µF or 0.47µF; 275 Vac	IEC 60384-14	VDE
Alternative	Aid Electronics	MEX	0.1µF or 0.47µF; 275 Vac	IEC 60384-14	VDE
PCB	Zeon Enterprise	FR-4-86	1,6 mm, V-0 (UL/E117678)	IEC 61029	Tested in appliance
Alternative	Kent Printed Circuit Board Co., Ltd.	CCP 508	1,6mm (UL/E213002)	IEC 61029	Tested in appliance
Alternative	Kent Printed Circuit Board Co., Ltd.	ETL-XPC-204	1,6mm (UL/E213002)	IEC 61029	Tested in appliance
Transformer on PCB	Yin Nan Enterprises	TL010-1	Input: 110-120 V Output: 11 V; 120 mA Class B	IEC 61029	Tested in appliance
Transformer on PCB	Yin Nan Enterprises	TL010-2	Input: 220-240 V Output: 11 V; 110 mA Class B	IEC 61029	Tested in appliance

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Clause	Requirement + Test	Result - Remark	Verdict

1) an asterisk indicates a mark which assures the agreed level of surveillance

*) or other certified plugs and cables with the same technical data
**) or any other certified brand/type with equivalent ratings and the same construction.

27.1	TABLE: clearances and creepage distance measurements					P
clearances cl and creepage distance dcr between:	Up (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
live parts of different polarity:	-	240	2,5	6,4	2,5	6,4
live parts and other metal parts over BI	-	240	3,0	5,6	4,0	5,6
live parts and other accessible parts over reinforced insulation:	-	240	8,0	>12	8,0	>12
metal parts separated by supplementary insulation:	-	240	4,0	5,2	4,0	5,2
lacquered or enamelled windings and metal parts separated from live parts:	-	240	6,0	8,6	6,0	8,6
supplementary information						

	distance through insulation				P
distance through insulation di between:	U r.m.s.	test voltage (V)	required di (mm)	di (mm)	
windings and accessible metal parts separated by reinforced insulation	240	240	2	2,2	
metal parts separated by supplementary insulation	240	240	1	1,2	
other metal parts separated by reinforced insulation	-	-	-	-	
supplementary information					

27.3	TABLE: creepage distance measurements					N/A
clearances cl and creepage distance dcr between:	Up (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
terminal to metal enclosures					9,5	

28.1	TABLE: ball-pressure test		
	required impression diameter 2 mm (mm) .....:		

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Clause	Requirement + Test	Result - Remark	Verdict

part under test	test temperature °C	impression diameter (mm)
Brush holder	125	0,9
Enclosure	75	1,2
Support of PCB	125	1,2
supplementary information		

28.2	TABLE: hot mandrel test		P
	mandrel temperature 300 °C (°C) .....:	Glow wire test at 550 °C	P
	test duration 5 min (min) .....:		N/A
	pressure force 12 N (N) .....:		N/A

part under test	ignition of sample or gases
Brush holder	No
Enclosure	No
Support of PCB	No
supplementary information	

l8.3	TABLE: resistance to tracking		P
	test current (A) 1,0 ± 0,1 A .....:	1,0 A	P
	number of drops 50 .....:	50 drops	P
	test solution 0,1% ammonium chloride .....:	0,1 %	P

part under test	flashover or breakdown
Brush holder	No
supplementary information	

C17.101	TABLE: fault condition test		P
	ambient temperature °C .....:	21	-
	model/type .....:	MD300	-
	rated input .....:	1100 W	-
	rated voltage .....:	120/240 Vac	-

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Clause	Requirement + Test	Result - Remark	Verdict

	rated frequency .....:	50 Hz	-

No.	component No.	fault	test voltage (V)	test time	fuse No.	fuse current (A)	result
1	Control module	Short-circuit	240	5 min	-	-	No operation No hazard
2	Control module	Open-circuit	240	5 min	-	-	No operation No hazard
3	Control module	Short-circuit	120	5 min	-	-	No operation No hazard
4	Control module	Open-circuit	120	5 min	-	-	No operation No hazard
supplementary information							

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Photos:

MD300/MD300N:

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Clause	Requirement + Test	Result - Remark	Verdict

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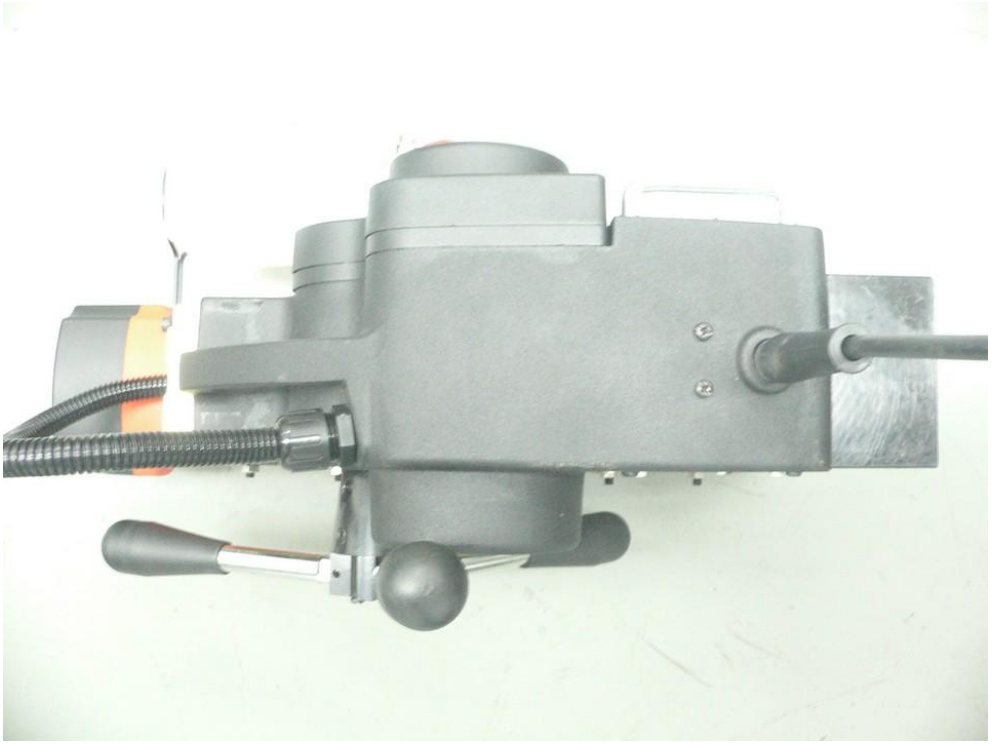
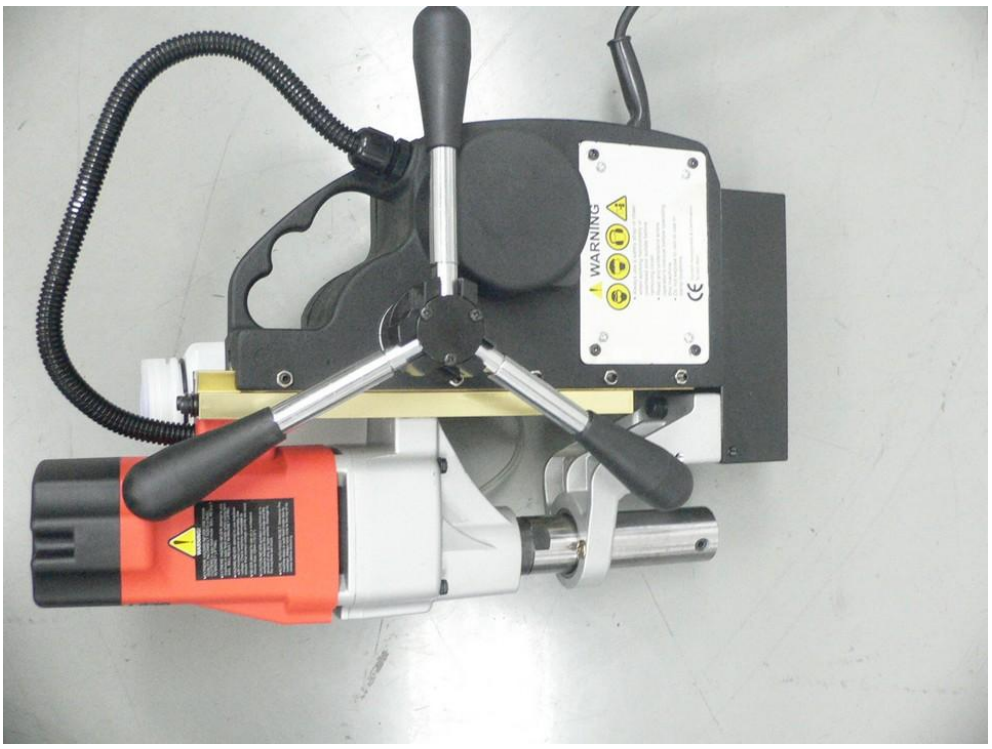
Clause	Requirement + Test	Result - Remark	Verdict





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Clause	Requirement + Test	Result - Remark	Verdict

MD350N:

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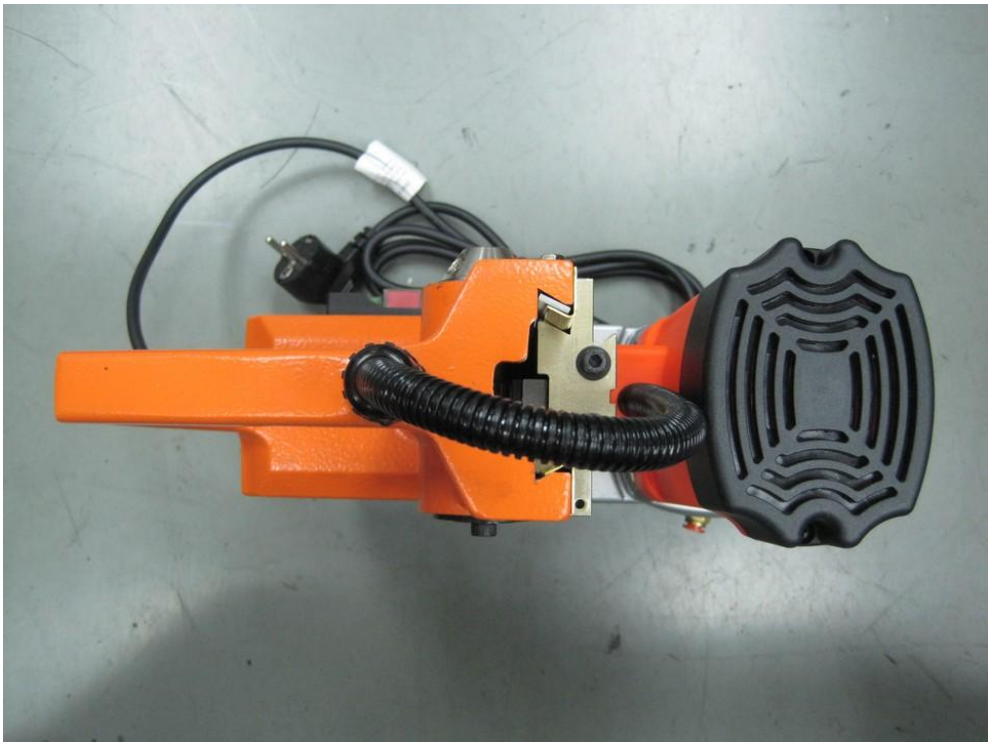
Clause	Requirement + Test	Result - Remark	Verdict

IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict

IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict

SMA351:



IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict

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Clause	Requirement + Test	Result - Remark	Verdict

IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict

SMD351:

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Clause	Requirement + Test	Result - Remark	Verdict

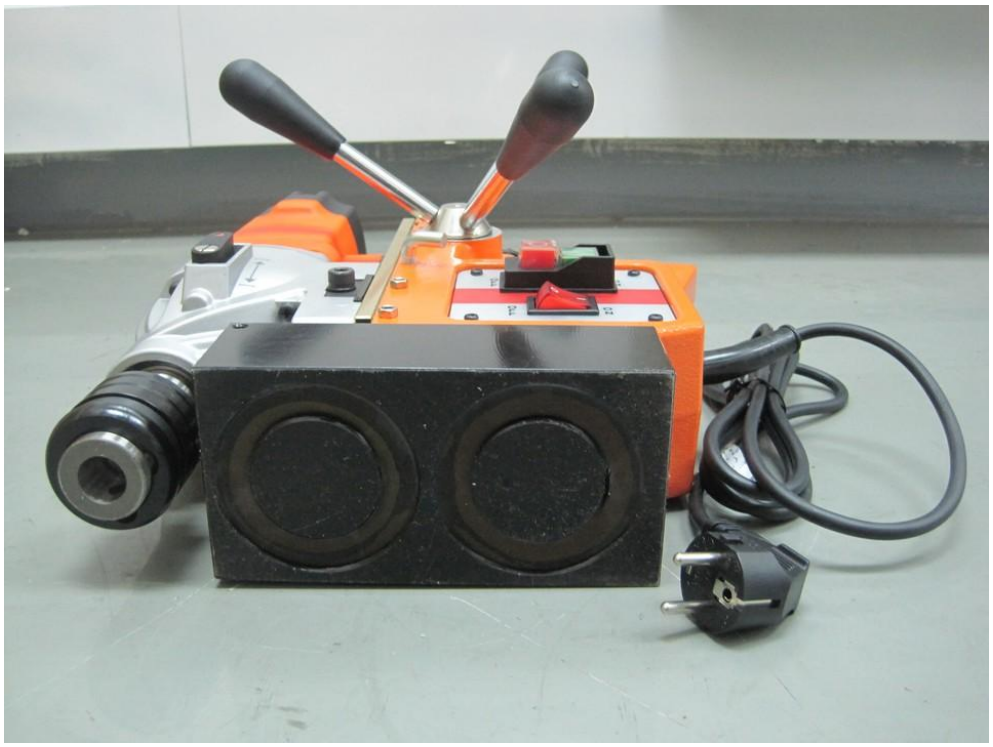
IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict

IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict

SMA502:

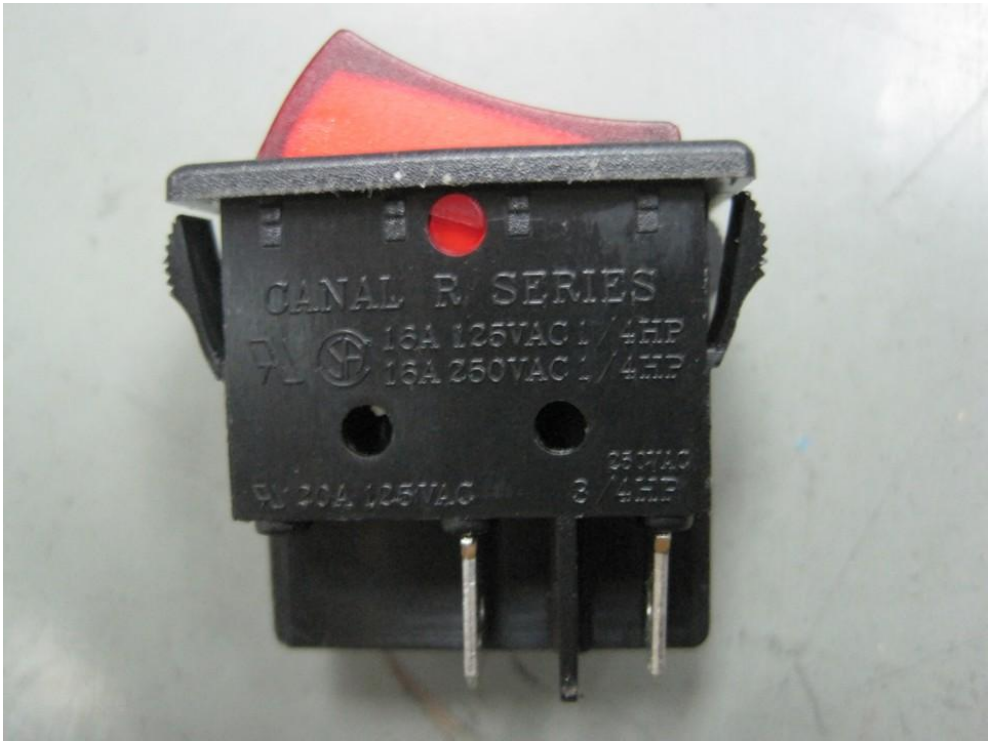
IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict

IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict



IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict

Details:



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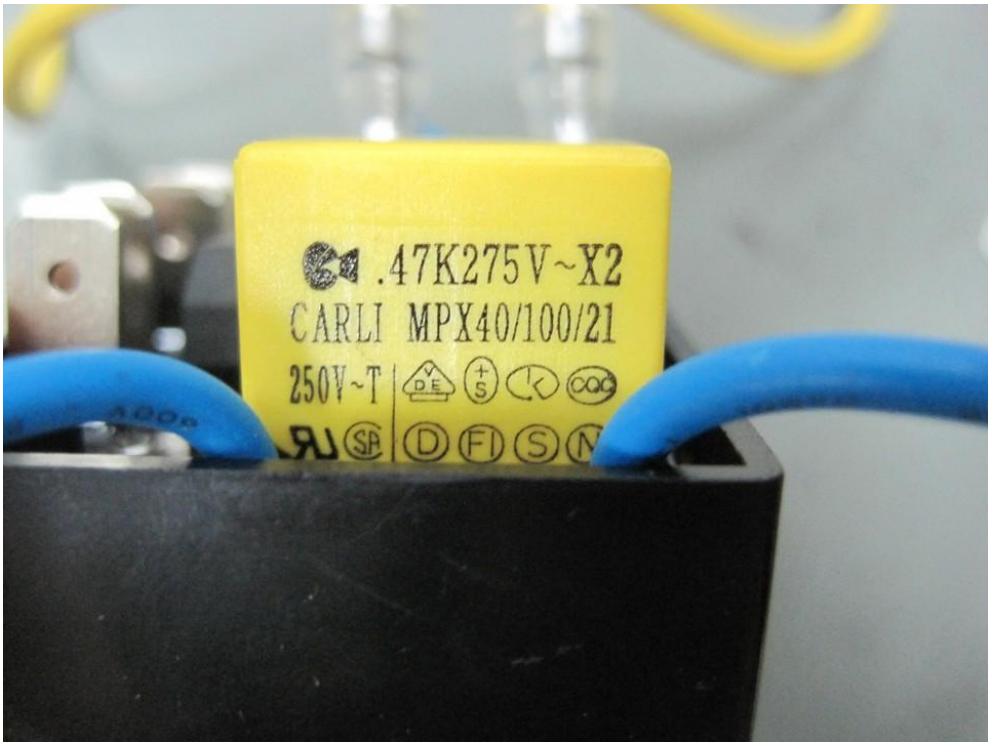
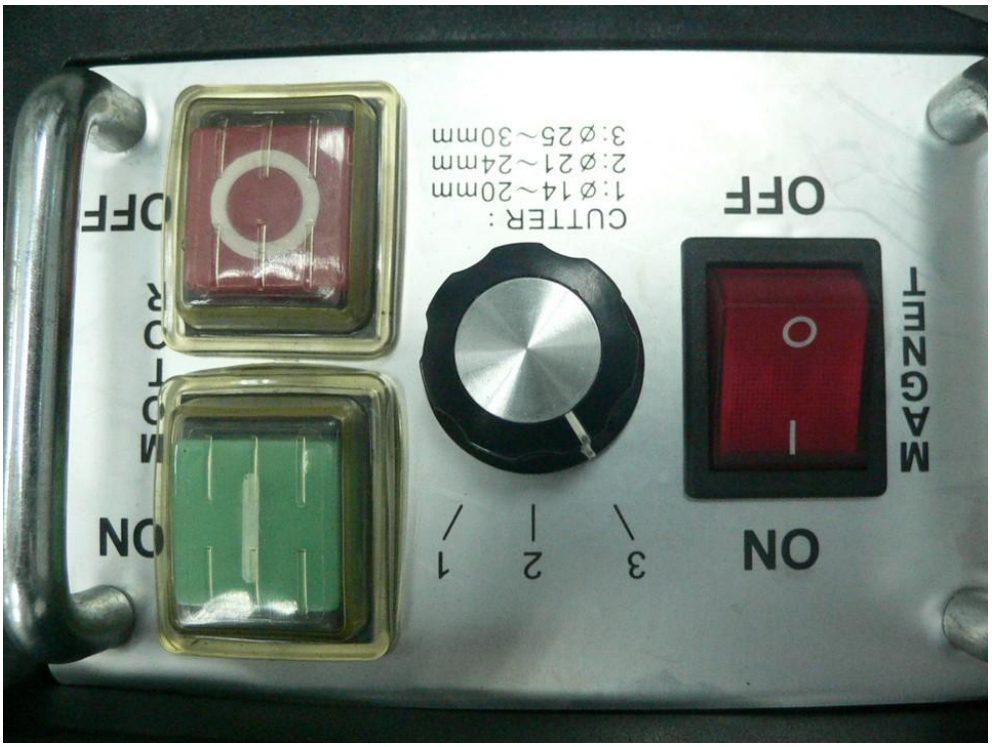
Clause	Requirement + Test	Result - Remark	Verdict





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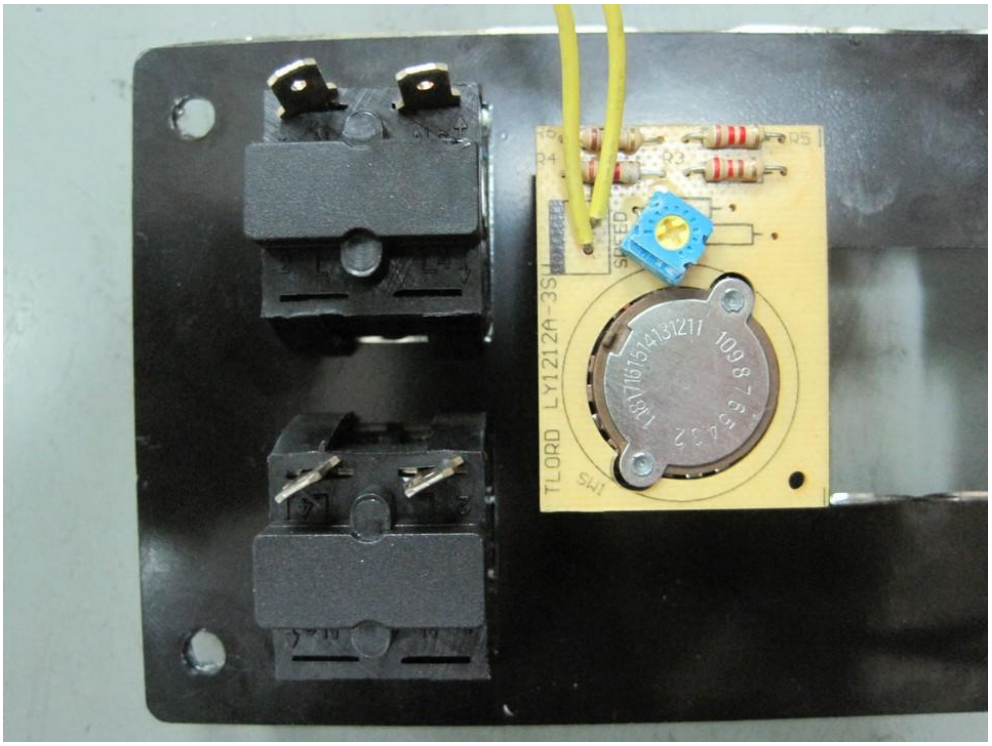
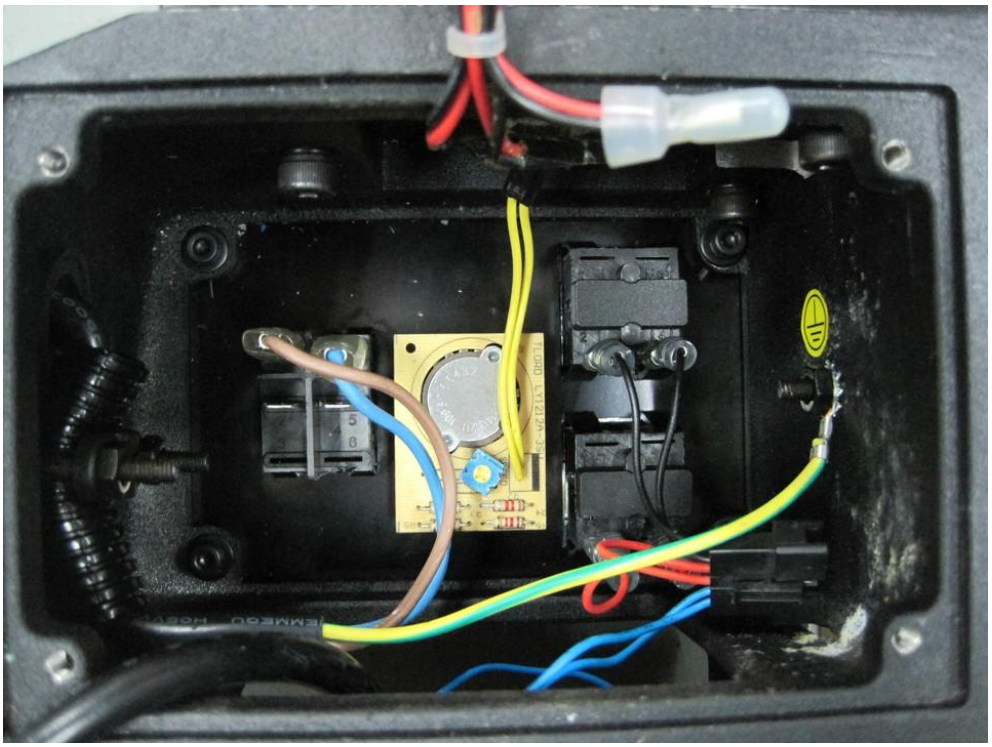
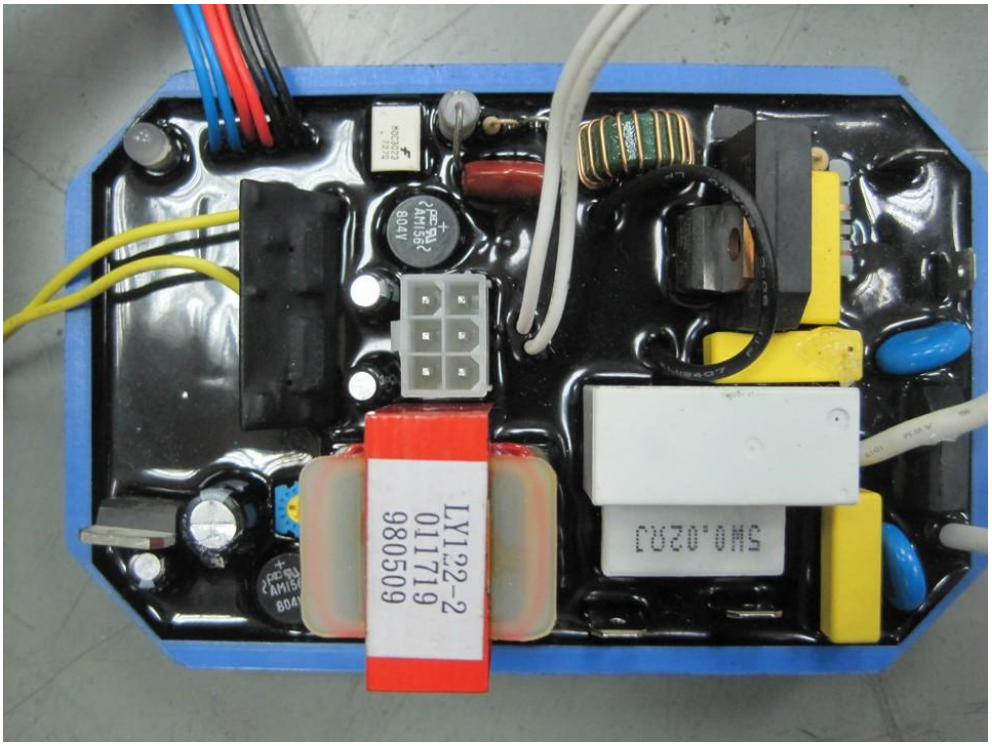
Clause	Requirement + Test	Result - Remark	Verdict





IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict



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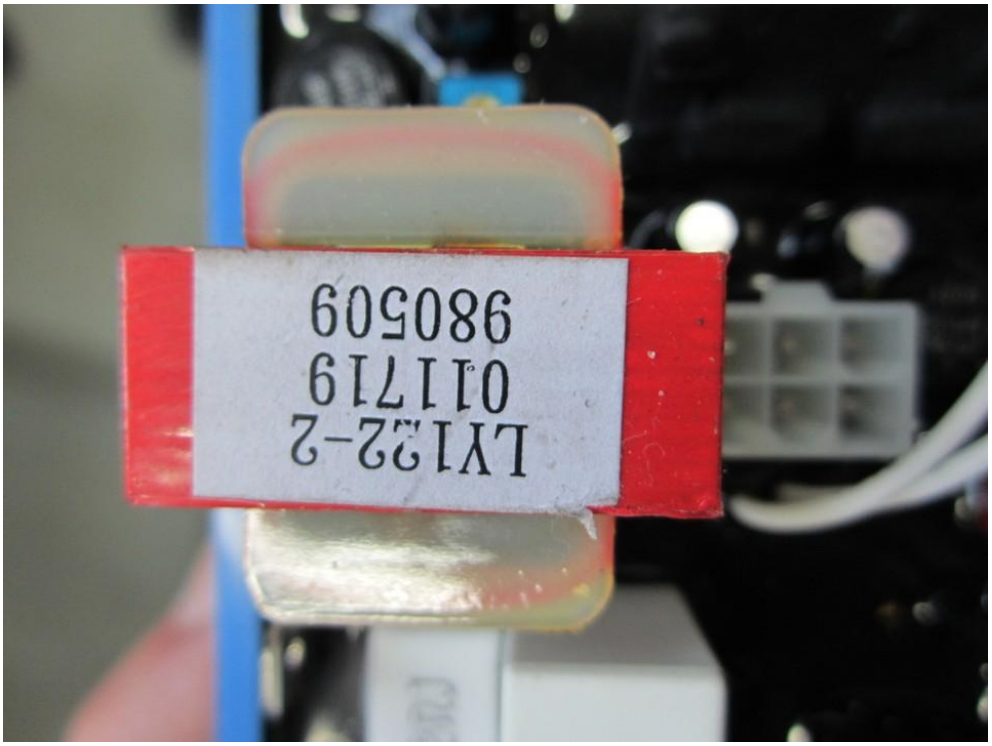
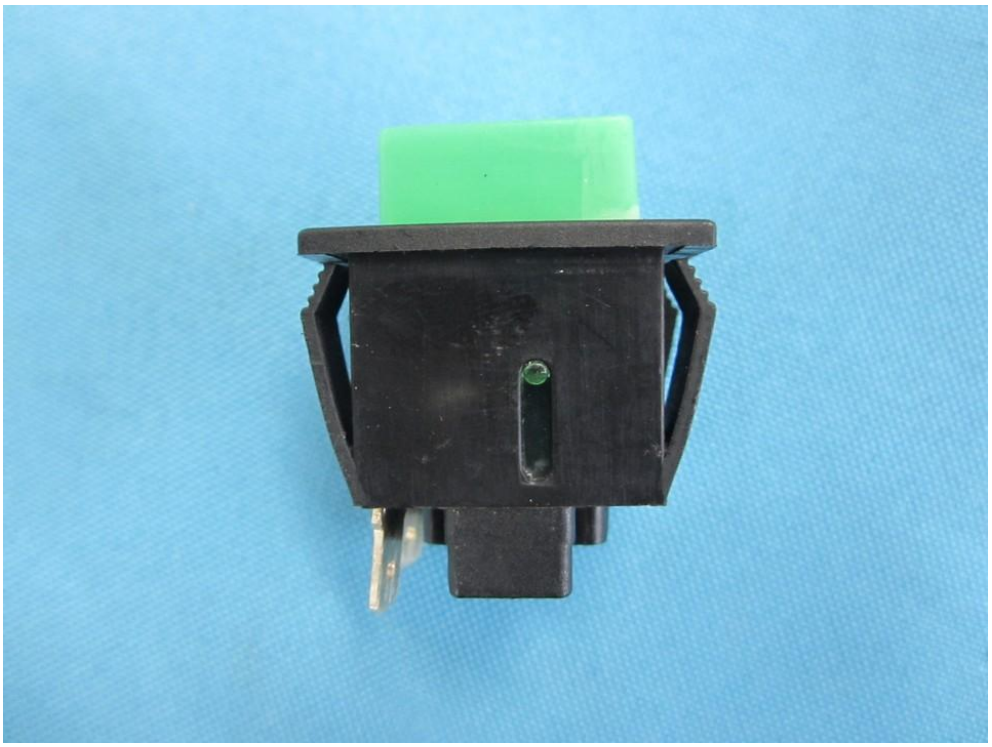
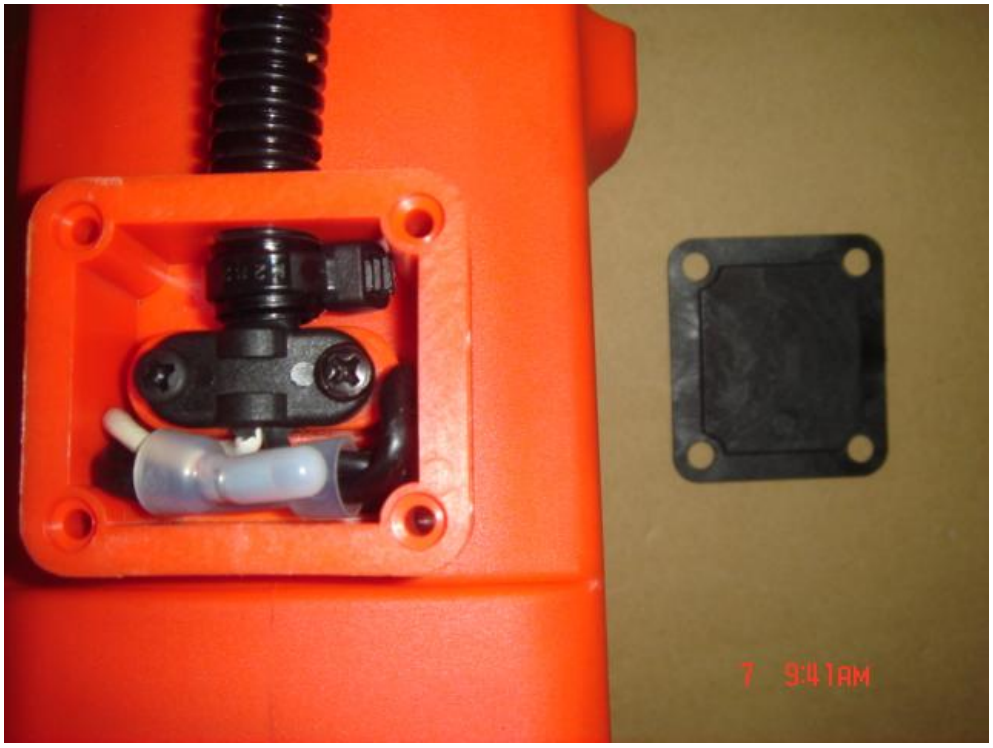
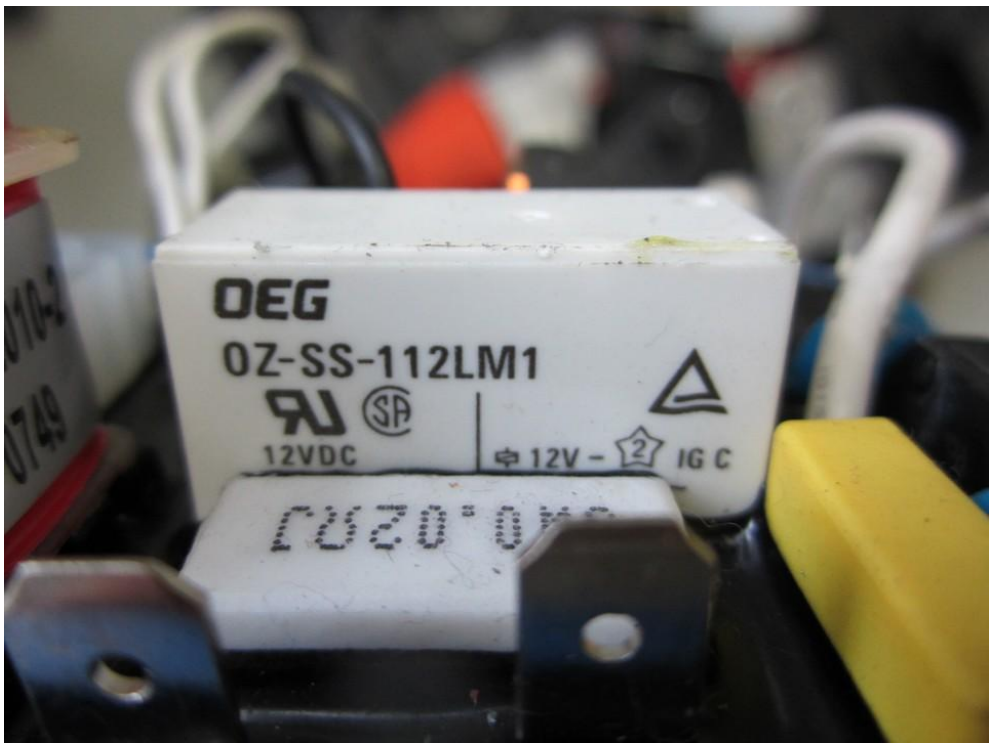




IEC 61 029-1			
Clause	Requirement + Test	Result - Remark	Verdict





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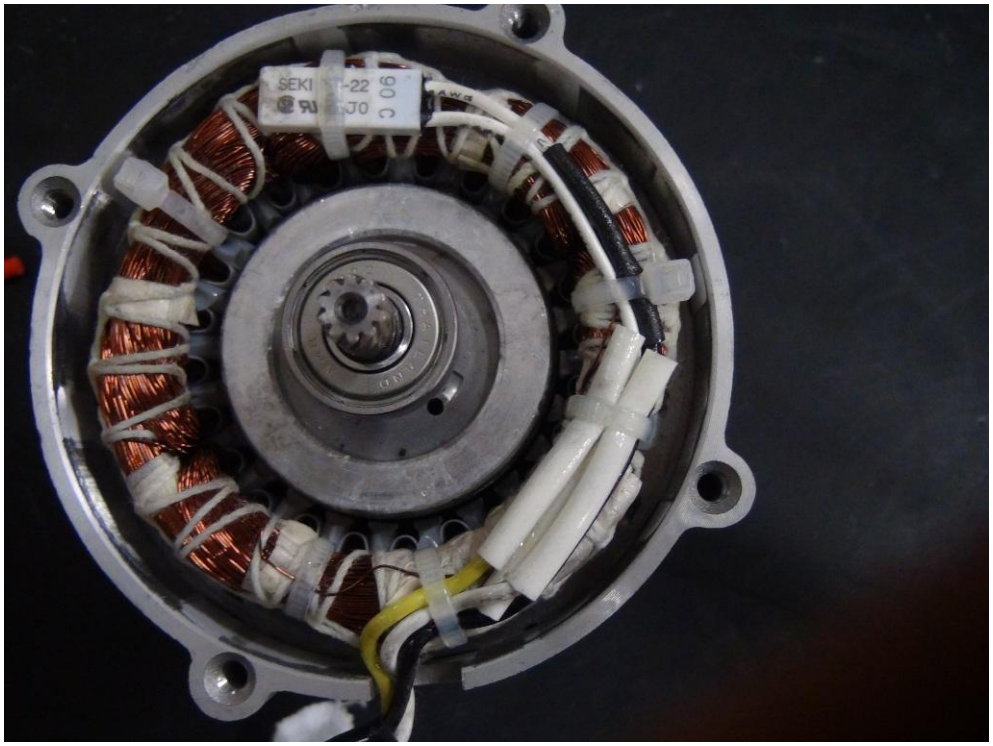

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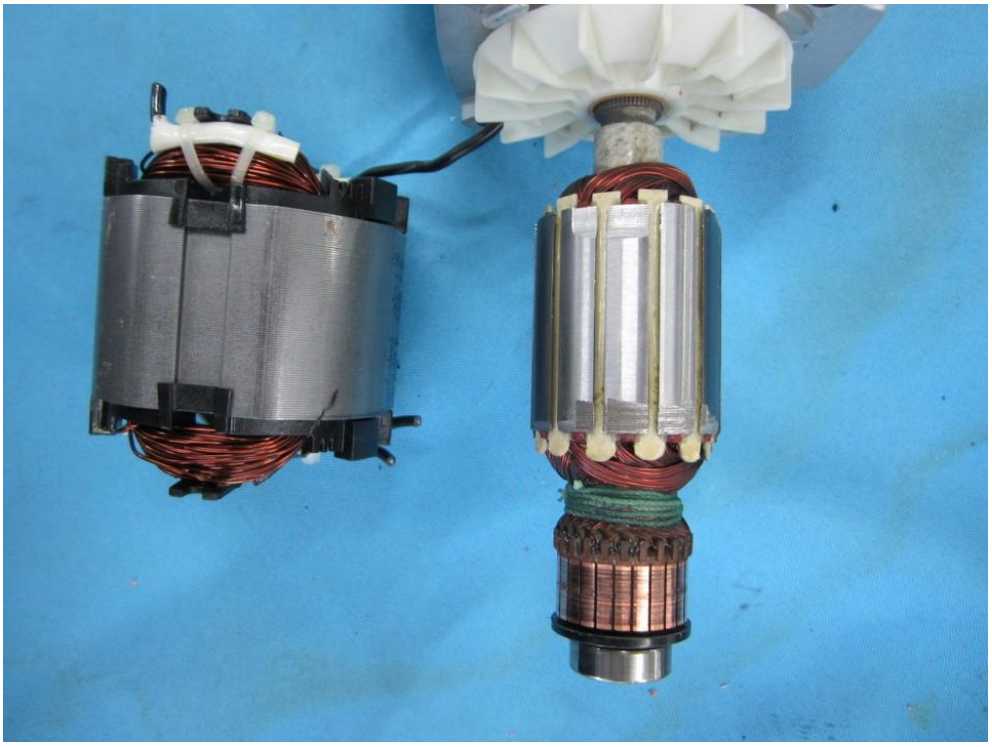

End of the report