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TEST REPORT
IEC 62841-1
Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery – Safety

Report Reference No.....:	140802048SHA-001
Date of issue.....:	2014-11-24
	Amendment 1: 5 September, 2016 Amendment 2: December 19, 2018 Amendment 3: March 28, 2022 **Amendment 4: Aug 21,2024**
Total number of pages	**Total 56 pages**
Applicant's name.....:	Zhejiang Huafeng Electric Tools Co., Ltd.
Address .....:	**No. 2111 Huafeng Road, JINDONG ECONOMIC DEVELOPMENT ZONE Zhejiang 321037, CHINA**
Test specification:	
Standard.....:	IEC 62841-1: 2014 (First Edition) + C1:2014 + C2:2015
	EN 62841-1:2015+AC:2015+A11:2022
Test procedure .....:	CE-MD
Non-standard test method……..:	
Test Report Form No.....:	IEC62841_1A
Test Report Form(s) Originator .....:	DEKRA Certification B.V.
Master TRF.....:	2014-05

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.

General disclaimer:

The test results presented in this report relate only to the object tested.
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Test item description..... :	Mitre Saw
Trade Mark..... :	N/A
Manufacturer ..... :	Same as applicant
Model/Type reference..... :	J1G-ZP27-255, J1G-ZP27-255-1, J1G-ZP27-255-2, J1G-ZP27-255-3, J1G-ZP27-255A, J1G-ZP27-255A-1, J1G-ZP27-255A-2, J1G-ZP27-255A-3, J1G-ZP27A-255, J1G-ZP27A-255-1, J1G-ZP27A-255-2, J1G-ZP27A-255-3, J1G-ZP27A-255A, J1G-ZP27A-255A-1, J1G-ZP27A-255A-2, J1G-ZP27A-255A-3, **J1G-ZP37-255, J1G-ZP37-255-1, J1G-ZP37-255-2, DC574, DC574-X, EDC574, EDC574-X, J1G-ZP37-255-3 (X refers to 0-999)**
Ratings..... :	220-240V~, 50Hz, n_0: 5000/min, Ø255mm, Class II J1G-ZP27-255, J1G-ZP27-255-1, J1G-ZP27-255-2, J1G-ZP27-255-3, J1G-ZP27A-255, J1G-ZP27A-255-1, J1G-ZP27A-255-2, J1G-ZP27A-255-3, **J1G-ZP37-255, J1G-ZP37-255-1, J1G-ZP37-255-2, DC574, DC574-X, EDC574, EDC574-X, J1G-ZP37-255-3**: 1800W J1G-ZP27-255A, J1G-ZP27-255A-1, J1G-ZP27-255A-2, J1G-ZP27-255A-3, J1G-ZP27A-255A, J1G-ZP27A-255A-1, J1G-ZP27A-255A-2, J1G-ZP27A-255A-3: 2000W
Model Similarity……:	J1G-ZP27-255A is identical with J1G-ZP27-255 except for marking rated input. J1G-ZP27-255A-1 is identical with J1G-ZP27-255-1 except for marking rated input. J1G-ZP27-255A-2 is identical with J1G-ZP27-255-2 except for marking rated input. J1G-ZP27-255A-3 is identical with J1G-ZP27-255-3 except for marking rated input. J1G-ZP27-255-1 is identical with J1G-ZP27-255 except J1G-ZP27-255-1 is equipped with laser system while J1G-ZP27-255 has not. J1G-ZP27-255-2 is identical with J1G-ZP27-255 except J1G-ZP27-255-2 is equipped with soft starting device while J1G-ZP27-255 has not. J1G-ZP27-255-3 is identical with J1G-ZP27-255 except J1G-ZP27-255-3 is equipped with laser system and soft starting device while J1G-ZP27-255 has not. The model of ZP27A series is identical with the model of ZP27 series except that ZP27A series is equipped with movable left fence but ZP27 is equipped with fixed left fence. **J1G-ZP37-255 is similar with J1G-ZP27-255 except for the appearance.** **J1G-ZP37-255-2 is identical with J1G-ZP37-255 except J1G-ZP37-255-2 is equipped with laser system while J1G-ZP37-255 has not.** **J1G-ZP37-255-1 is identical with J1G-ZP37-255 except J1G-ZP37-255-1is equipped with soft starting device while J1G-ZP37-255 has not.** **J1G-ZP37-255-3 is identical with J1G-ZP37-255 except J1G-ZP37-255-3 is equipped with laser system and soft starting device while J1G-ZP37-255 has not.** **DC574, DC574-X, EDC574, EDC574-X are identical with J1G-ZP37-255-2 except for the model name.**

Testing procedure and testing location:			
☒	**Testing Laboratory:**	Intertek Testing Services (Shanghai FTZ) Co., Ltd.	
Testing location/ address		Building 86, No.1198, Qinzhou North Road, Shanghai, China	
☐	**Associated Testing Laboratory:**		
Testing location/ address			
Tested by (name + signature).....		Jonathan Chu (Engineer)	
Approved by (name + signature).....		Michael Shen (Mandated Reviewer)	
☐	**Testing procedure: TMP/CTF Stage 1:**		
Testing location/ address			
Tested by (name + signature).....			
Approved by (name + signature).....			
☐	**Testing procedure: WMT/CTF Stage 2:**		
Testing location/ address			
Tested by (name + signature).....			
Witnessed by (name + signature)			
Approved by (name + signature).....			
☐	**Testing procedure: SMT/CTF Stage 3 or 4:**		
Testing location/ address			
Tested by (name + signature).....			
Witnessed by (name + signature)			
Approved by (name + signature).....			
Supervised by (name + signature)...			

List of Attachments (including a total number of pages in each attachment):

Attachment: EN deviation from EN 62841-1:2015+AC:2015+A11:2022, pages 35-46.
Attachment: Photos 47-56.

Summary of testing:

1.The sample was tested according to IEC 62841-3-9: 2020 with the national differences of EN 62841-3-9:2020+A11:2020 used in conjunction with IEC 62841-1: 2014 + C1:2014 + C2:2015 with the national differences of **EN 62841-1:2015+AC:2015+A11:2022** and found to comply with the standards' requirements. Refer to 140802048SHA-002+A1+A2 for the evaluation of IEC 62841-3-9: 2020 with the national differences of EN 62841-3-9:2020+A11:2020**.**

2.Determination of the test conclusion is based on IEC Guide 115 in consideration of measurement uncertainty.

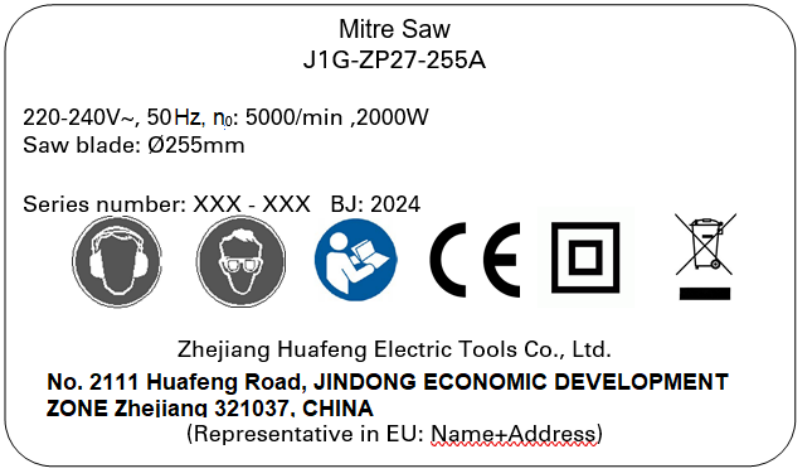
Tests performed (name of test and test clause):	**Testing location:**
Full	Intertek Testing Services (Shanghai FTZ) Co., Ltd. Building 86, No.1198, Qinzhou North Road, Shanghai,China

Summary of compliance with National Differences:

List of countries addressed: EUROPEAN GROUP

☒ The product fulfils the requirements of EN 62841-3-9:2020+A11:2020 with **EN 62841-1:2015+AC:2015+A11:2022.**

Copy of marking plate: (representative)



Laser warning (for model J1G-ZP27-255-1, J1G-ZP27-255A-1, J1G-ZP27-255-3, J1G-ZP27-255A-3, J1G-ZP27A-255-1, J1G-ZP27A-255A-1, J1G-ZP27A-255-3, J1G-ZP27A-255A-3, **J1G-ZP37-255-2, J1G-ZP37-255-3**)

Test item particulars ..... :	
Category of equipment ..... **:**	Transportable
Protection Class of tool ..... **:**	Class II
Method of supply cord attachment ..... **:**	Type X
Duty conditions ..... **:**	Normal
Type of operation ..... **:**	Normal
Degree of protection ..... **:**	IP20
Accessories and detachable parts included ..... **:**	dust bag, workpiece clamping device
Other options included ..... **:**	N/A
Possible test case verdicts:	
- test case does not apply to the test object ..... **:**	N/A or N (Not Applicable)
- test object does meet the requirement ..... **:**	P (Pass)
- test object does not meet the requirement ..... **:**	F (Fail)
Testing ..... **:**	
Date of receipt of test item ..... **:**	Aug 11,2024
Date (s) of performance of tests ..... **:**	Aug 11,2024 **–** Aug 21,2024

General remarks:

"(see Enclosure #)" refers to additional information appended to the report.
"(see table #)" refers to a table appended to the report.
Throughout this report a ☒ comma / ☐ point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :	☐ **Yes** ☒ **Not applicable**

When differences exist, they shall be identified in the General product information section.

Name and address of factory (ies) ..... **:**	Same as applicant

General product information:

The products covered in this report are transportable electric Mitre Saws. These mitre saws are intended for cutting wood and similar materials.
The models J1G-ZP27-255-1, J1G-ZP27-255A-1, J1G-ZP27-255-3 and J1G-ZP27-255A-3, J1G-ZP27A-255-1, J1G-ZP27A-255A-1, J1G-ZP27A-255-3, J1G-ZP27A-255A-3, **J1G-ZP37-255-2 and J1G-ZP37-255-3** provided with a laser to indicate a cutting line and the laser module.

Factory's name: Zhejiang Huafeng Electric Tools Co., Ltd.

Factory's address: No. 2111 Huafeng Road, JINDONG ECONOMIC DEVELOPMENT ZONE Zhejiang 321037, CHINA

Amendment 4:

This report was based on the previous report 140802048SHA-001+A1+A2+A3, 140802048SHA-002+A1 with following changes:

1. Update the standard from "EN 62841-1:2015+AC:2015" to "EN 62841-1:2015+AC:2015+A11:2022".

2. Added main switch, switch for laser module, LED, safety isolating transformer in the report, updated the certificate of laser module "LDBXQ03B", deleted main switch "MSB-1110-A, MSB-1110-B" from the report.

3. Added new models "J1G-ZP37-255, J1G-ZP37-255-1, J1G-ZP37-255-2, DC574, DC574-X, EDC574, EDC574-X, J1G-ZP37-255-3" in the report.

4.The address of applicant was changed to "No. 2111 Huafeng Road, JINDONG ECONOMIC DEVELOPMENT ZONE Zhejiang 321037, CHINA".

IEC62841-1			
Clause	Requirement + Test	Result - Remark	Verdict

6	**RADIATION, TOXICITY AND SIMILAR HAZARDS**		
6.1	No harmful radiation, no toxic or similar hazard		P
6.2	For tool with laser to indicate a cutting line or the like, laser class 2M or lower according to IEC 60825-1:2007.	according to IEC 60825-1:2014	P
	Tool marked with symbol(s) as in of IEC 60825-1: 2007 for the relevant laser class.	according to IEC 60825-1:2014	P
6.3	Tool fitted with non-coherent light sources, users of tools are cautioned as to the risk of potential photo-biological harm, if such harm exist .....:		N/A
6.3.1	Visible light indicators (pilot lamps) and Infrared sources used for signalling and communication considered to have no risk of photo-biological harm, no marking required.		N/A
6.3.2	Tools emitting visible light from electroluminescent, incandescent or LED sources, considered to be for short term, non-general light services use where exposure is both incidental and intermittent	LED light on tool	P
	Marked with either: – “CAUTION Do not stare at operating lamp”, or – symbol 60417-6041(2010-08)		N/A
	If no reasonable risk of harm, markings may be omitted		P
	No reasonable risk of harm considered, as either a) light emission at a distance of 200 mm along any direction of the tool < 500 Lux; or b) luminance light emission < 10 000 cd/m² in the range of visible light; or c) light source (if not focused by external optics) is in Risk Group 1 or lower evaluated by the methods of IEC 62471; or d) tool itself evaluated by the methods of IEC 62471 and found to be in Risk Group 1 or lower.	c)	P
6.3.3	For light derived by sources other than those mentioned in 6.3.2, product evaluated by the methods of IEC 62471, markings guided by 5.4 of IEC/TR 62471-2:2009.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

9	**PROTECTION AGAINST ACCESS TO LIVE PARTS**		
9.1	Tools so constructed and enclosed that there is adequate protection against accidental contact with live parts, even after removal of detachable parts and soft materials		P
9.2	Accessible part not considered live if it is:		P
	- supplied with SELV	Laser light	P
	- or separated from live parts by protective impedance, d.c. current not exceeding 2 mA		N/A
	- or separated from live parts by protective impedance, a.c. peak value not exceeding 0.7 mA		N/A
	- for peak value 42.4 V up to and including 450 V capacitance not exceeding 0.1 µF		N/A
	- for peak value 450 V up to and including 15 kV discharge not exceeding 45 µF		N/A
9.3	Lamps located behind a detachable cover are not removed		N/A
	Protection against contact with live parts of the lamp cap ensured during insertion or removal of lamps located behind a detachable cover		N/A
	Test probe B of IEC 61032:1997 applied with a force of ≤5 N		N/A
	Opening does not allow entry of test probe B of IEC 61032:1997, rigid test probe applied with a force of 20 N		N/A
	Test with probe B of IEC 61032:1997 repeated		N/A
	Test probe does not touch live parts or live parts protected only by lacquer, enamel, ordinary paper, cotton, oxide film, beads or sealing compound		N/A
9.4	Test probe 13 of IEC 61032:1997 applied with a force ≤5 N through openings in class II tools and class II constructions		P
	Exception: openings giving access to lamp caps and live parts in socket-outlets.		N/A
	Test probe is also applied through openings in earthed metal enclosures having a non conductive coating such as enamel or lacquer.		N/A
	Not be possible to touch live parts with the test probe		P
9.5	Class II tools and class II constructions, adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only.		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Parts not separated from live parts by double reinforced insulation are not accessible		P
	Probe B of IEC 61032:1997 cannot contact basic insulation through openings in Class II tools or Class II constructions		P
10	**STARTING**		
10.1	Motors start under normal voltage conditions		P
	Starting ten times at 0.85 times rated voltage without load (V) .....:	0,85×220=187V, 10 times	P
	Tool operated and overload protection devices incorporated in the tool did not activate.		N/A
	Centrifugal and other automatic starting switches operate reliably and without contact chattering		N/A
10.2	Input current drawn at (2,0 ±0,2) s after starting does not exceed 30 A…		N/A
	… or 4 times the rated current of the tool		P
11	**INPUT AND CURRENT**		
	Marked power input or current is at least 110% of measured no-load input or current .....:	See appended Table 11.1	P
	Tool marked with more than one rated voltage, test made at each rated voltage .....:		N/A
	Tools marked with one or more rated voltage ranges, test made at both the upper and lower limits of the ranges.....:		N/A
	Marking of the rated input is related to the mean value of the relevant voltage range, test is made at a voltage equal to the mean value of that range.....:	See appended Table 11.1	P
12	**HEATING**		
12.1	No excessive temperatures attained at rated input or rated current .....:	See appended Table 12.1	P
	Temperature rise determined according to Clauses 12.2 to 12.5	See appended Table 12.1	P
	Test of Clause C.3 at 1,06 times the rated voltage under heated conditions	See Table C.3A	P
12.2	Tool is operated at each rated voltage; load conditions as specified in 12.2.1; torque applied is measured and maintained; voltage is then adjusted to 0,94 times and 1,06 times the rated voltage		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Tool with a rated voltage range is operated at - the lower limit of the rated voltage range; conditions as specified in 12.2.1; torque applied is measured and maintained; voltage is then adjusted to 0,94 times the lower limit of the rated voltage range - the upper limit of the rated voltage range; conditions as specified in 12.2.1; torque applied is measured and maintained; voltage is then adjusted to 1,06 times the upper limit of the rated voltage range		P
	Temperatures are measured at the most unfavourable of the voltage settings used		P
	Temperatures measured by means of thermocouples are taken while the tool is operating		P
12.2.1	Loading conditions during temperature test.....:	See below	P
	Tool without inherent operating cycle is operated with a torque load to draw rated input or rated current until thermal equilibrium is reached		P
	Tool with an inherent operating cycle is operated with a torque load to draw rated input or rated current during each operating cycle; tool was cycled consecutively for 30 min		N/A
12.3.1	Heating elements, if any, are operated under the conditions specified in Clause 11 of IEC 60335-1:2010; tool was operated at 1,06 times the rated voltage		N/A
12.3.2	Tool provided with automatic cord reel, one third of the total length of the cord was unreeled		N/A
12.3.2	Temperature rise was determined near to the hub of the reel and between the two outermost layers of the cord on the reel		N/A
	Cord storage devices, other than automatic cord reels, intended to accommodate the supply cord partially while the tool is in operation, 50 cm of the cord is unwound		N/A
	The temperature rise of the stored part of the cord is determined at the most unfavourable place.		N/A
12.4	Temperature rises, other than those of windings, determined using thermocouples chosen and positioned to have the minimum effect on the temperature of the part tested		P
	Temperature rise of electrical insulation, other than windings, measured on surface of insulation		P
	When possible, temperature rises of windings determined by resistance method		P

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Clause	Requirement + Test	Result - Remark	Verdict
	For handles, knobs, grips and the like, all parts considered which are gripped in normal use, and, if of insulating material, to those parts in contact with hot metal		P
12.5	Temperature rises did not exceed values in Tables 1a and 1b, except as allowed by 12.6		P
	Protective devices did not operate		N/A
	Sealing compounds did not flow		N/A
12.6	When winding temperatures exceeded values in Table 1, three additional samples successfully subjected to following tests:		N/A
	a) Heat treatment for 240 h at the specified cabinet temperature (°C):.....:		N/A
	b) No interturn short circuit after oven treatment		N/A
	c) Humidity treatment in accordance with 14.1		N/A
	d) Tests of Annex D .....:		N/A
14	**MOISTURE RESISTANCE**		
14.1	Tools are proof against likely humid conditions		P
	Tool subjected to humidity treatment test for 48 h		P
	Relative humidity (93 ± 2) %.....:	93	P
	Temperature (20…30 °C) maintained at ± 1K .....:	25	P
	Samples pre-conditioned to between t and t + 4 °C:		P
	No excessive leakage after humidity treatment .....:	See Table C.2A	P
	No flashover or breakdown occurred during test of Annex D after humidity treatment.....:	See Table D.2	P
	No flashover or breakdown occurred during additional test of D.2 between accessible metal parts and supply cord wrapped with metal foil .....:	See Table D.2	P
14.2	Degree of protection for tool enclosure according to tool classification (IP Code) .....:	IP20	N/A
14.2.1	Tool not connected to the supply and turned continuously through most unfavourable positions		N/A
	Removable parts are removed and subjected to the relevant treatment with the main part. .....:		N/A
14.2.2	Tool rated IPX1 through IPX7 subjected to applicable tests of IEC 60529:2013		N/A
	For IPX7 test, tool immersed in water containing 1,0 % NaCl		N/A
	Tool withstood electric strength test of Annex D after moisture treatment	See Table D.2	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	No trace of water on insulation causing reduction of creepage and clearance below values in 28.1		N/A
14.3	No increased risk of electrical shock from liquid systems or spillage of liquid		N/A
	Residual current device is disabled		N/A
	Removable parts, except those fulfilling the test of 21.22., are removed		N/A
	Tool prepared as described in 8.14.2		N/A
	Liquid container filled, then 15% or 0,25 l added .....:		N/A
	Detachable liquid container mounted and dismounted 10 times		N/A
	No excessive leakage .....:	See Table C.3B	N/A
	No flashover or breakdown occurred during test of D.2 between live parts and accessible parts after drying for 24 h at ambient temperature .....:	See Table D.2A	N/A
14.4	No increased risk of electrical shock from liquid systems under pressure during operation		N/A
	Residual current device is disabled		N/A
	Liquid system is subject to a hydrostatic pressure equal to twice the pressure stated in 8.14.2 d) 1) is applied for 1 h with 1,0 % NaCl solution		N/A
	Tool did not exceed maximum allowable leakage current during pressure application	See Table C.2B	N/A
	No flashover or breakdown occurred during test of D.2 between live parts and accessible parts after drying for 24 h at ambient temperature .....:	See Table D.2	N/A
14.5	Residual current devices complied with IEC 61540:1999 and met requirements a) to c)		N/A
	a) RCD disconnected only both mains conductors when leakage exceeded 10 mA with a maximum response of 300 ms		N/A
	Test conducted according to 9.9.2 of IEC 61540:1999, and earthing conductor stayed connected		N/A
	b) RCD operated correctly for all 50 cycles		N/A
	c) RCD cannot be removed during use or routine normal maintenance (i.e., residual current device fixed to tool or power supply cord connected to tool)		N/A
	RCD fitted in supply cord provided with Type Y or Z attachment for connection to supply cord and interconnection cord		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

17	**ENDURANCE**		
17.1	Construction prevents electrical or mechanical failures that might impair compliance with this standard.		P
	Insulation not damaged		P
	Connections did not work loose		P
	Overload protection devices did not activate		N/A
	No flashover or breakdown occurred during test of Annex D, test voltages reduced to 75 per cent, after tests of 17.2 and 17.3	See Table D.2	P
17.2	No load intermittent operation (2 x 24 h) for hand-held tools		N/A
	No load intermittent operation (2 x 12 h) for transportable tools		P
	Test voltage at each operation (V) .....:	1,1×240=264V 0,9×220=198V	—
	Rate of operation (100s “on”, 20s “off”) .....:	100s “on”, 20s “off”	—
	Three test positions selected for hand-held tools ...:	---	—
	Normal working position(s) for transportable tools..:	Normal use position	—
	Operation time for each position.....:	12 hours	—
	Servicing of carbon brushes and lubricant .....:		N/A
	Replacement of parts due to mechanical failure.....:		N/A
	Forced cooling or rest periods if temperature exceeded values in Table 1 .....:		N/A
	No operation of overload protection devices		N/A
17.3	Tools with Centrifugal switches operated for 10,000 cycles		N/A
	Number of operations under normal load.....:		N/A
	Rate of operations (s “on”, s “off”).....:		N/A
	Test voltage 0.9 x rated Voltage (V) .....:		N/A

18	**ABNORMAL OPERATION**		
18.1	Risk of fire and mechanical damage impairing - safety and - the protection against electric shock as a result of abnormal operation is obviated as far as is practicable.		P
18.1.1	Tool did not emit flames or molten metal		P
	Compliance with Clause 9 maintained		P

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Clause	Requirement + Test	Result - Remark	Verdict
	No flashover or breakdown occurred during test of Annex D between live parts and accessible parts after tests of clause 18	See Table D.2	P
	Tool still operable and continues to comply with 19.1 but without repeating the tests of Clause 20		P
18.2	Fuses, thermal cut-outs, overcurrent protection devices used to provide the necessary protection		N/A
	Electronic circuits relied upon for protection evaluated for this safety critical function as in clause 18.8.		N/A
18.3	Tool with series motor operated without accessories at no load for 1 min at 1,3 times rated voltage, or upper limit of voltage range (V).....:	1,3×240=312V	—
	No parts were ejected from the tool		P
	Speed limiting device operated		—
18.4	Tools with multiphase motor tested, started from cold, with one phase disconnected, and under the torque produced while operated at rated voltage or the mean value of the rated voltage range with rated input or rated current - for 30 s tests for tool kept switched on by hand or continuously loaded by hand - for 5 min test for other tools.....:		N/A
	30 s tests for tool kept switched on by hand or continuously loaded by hand		N/A
	5 min test for other tools.....:		N/A
	After the test, or at the instant of operation of fuses, thermal cut-outs, motor protection devices and the like, the temperature of the windings complied with the limits in Table 3		N/A
	Max winding temperature recorded (°C) .....:		—
18.5	Class I tool with class II construction and class II tool subjected to running overload conditions		P
	Tools with series motor, test of 18.5.1		P
	Class I tool with class II armature test of 18.5.2 instead of 18.5.1		N/A
	Tool with electronically commutated stator windings, test 18.5.4		N/A
	Tool with other motor, test of 18.5.3		N/A
	Lawn and garden machinery, test as specified in relevant part of IEC 62841-4.....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
18.5.1	All fuses, thermal cut-outs, overload protectors and the like that are accessible or can be reset by the user without the aid of a tool and any self-resetting protective devices were shorted	No such device	N/A
	Functions of electronic circuits that prevent the tool from operating at 160 % rated current disabled .....:		N/A
	Functions of electronic circuits that prevent the tool from operating at 160 % rated evaluated as safety critical functions as in 18.8. .....:		N/A
	Test circuit minimum 12 kVA .....:	15kVA	P
	Leakage current between live parts and accessible parts measured as in Clause C.3 did not exceed 2 mA throughout the test and until stabilization afterwards.....:	See Table C.3C	P
	Tool operated for 15 min, or until the tool open-circuited, or flame appeared .....:	Operated for 15 min	P
	160% rated test current (A).....:	12,578A	—
	Tool operated at rated voltage (V).....:	240V~	—
	Overload condition existed for (_min, _sec).....:	15min.	—
	Condition continued until the tool open-circuited, or flame appeared or 15 minutes expired.....:	Operated for 15 min	P
	Elements that opened in case an open circuit occurred.....:		N/A
	When flames appeared, extinguished by CO_2 extinguisher		N/A
	Tool did not operate after 15 min, cooled to ambient temperature and subjected to test of D.2 at 1500 V between live parts and accessible parts	See Table D.2	N/A
	Tool still operated after 15 min, cooled to ambient temperature and subjected to test of D.2 at 2500 V between live parts and accessible parts	See Table D.2	P
	Tool permanently open-circuited due to over temperature condition (except opening of a motor winding), test repeated.		N/A
	Non-self-resetting thermal limit function of an electronic circuit bypassed or evaluated as a safety critical function in 18.8.		N/A
	Tool permanently open-circuited for reasons other than above, the cause is determined and bypassed in a new sample, test repeated		N/A
18.5.2	Test circuit minimum 12 kVA applied to armature ..:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Leakage current between commutator segments and the armature shaft measured did not exceed 2 mA throughout the test and until stabilization afterwards .....:		N/A
	1,06 times rated voltage (V) applied between opposite commutator segments .....:		—
	160% rated test current (A).....:		—
	Current applied for 15 min, or until the armature open-circuited, or flame appeared.....:		N/A
	When flames appeared, extinguished by CO_2 extinguisher		N/A
	Armature cooled to ambient temperature and subjected to test of D.2 at 1500 V between commutator segments and the armature shaft	See Table D.2	N/A
18.5.3	Test circuit minimum 12 kVA .....:		N/A
	Tool stalled, capacitors in circuit of auxiliary windings are open-circuited		N/A
	Test repeated with capacitors short-circuited one at a time unless they are of class P2 of IEC 60252-1		N/A
	Operated at rated voltage (V) .....:		—
	Test duration (min, s) .....:		—
	Temperature of the windings did not exceed the relevant value specified in Table 3		N/A
	Conditions of 18.1.1 fulfilled		N/A
18.5.4	Motors with electronically commutated stator windings, all possible static faults of the outputs of the motor drive circuitry considered		N/A
	Protective function prevent these faults evaluated as an SCF according to 18.8 with minimum PL = a.....:		N/A
	All fuses, thermal cut-outs, overload protectors and the like that are accessible or can be reset by the user without the aid of a tool and any self-resetting protective devices were shorted		N/A
	Leakage current between live parts and accessible parts measured as in Clause C.3 did not exceed 2 mA throughout the test and until stabilization afterwards.....:	See Table C.3D	N/A
	Voltage applied for 15 min, or until the armature open-circuited, or flame appeared.....:		N/A
	Source voltage of the motor drive circuitry.....:		N/A
	When flames appeared, extinguished by CO_2 extinguisher		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Any motor windings open-circuited after 15 min, motor cooled to ambient temperature and subjected to test of D.2 at 1500 V between live parts and accessible parts	See Table D.2	N/A
	No motor windings open-circuited after 15 min, motor cooled to ambient temperature and subjected to test of D.2 at 2500 V between live parts and accessible parts	See Table D.2	N/A
18.6	No hazards from electric shock, fire or accessible moving parts occurred under fault conditions of 18.6.1	Electronic components incorporated in soft start device.	P
	Tool operated at rated voltage (V).....:	240	—
	No charring or burning of the gauze or tissue paper occurred		P
	Protection against electric shock as in Clause 9 maintained		P
	Protection against accessibility to moving parts as in 19.1 maintained		P
	Evaluation not performed for low power circuits as in Annex H if no SCF can be lost.....:		N/A
	Circuit encapsulated with an insulating material with a minimum thickness of 0,5 mm and no SCF can be lost, circuit evaluated by open-circuiting and short-circuiting within the encapsulated circuit .....:		N/A
	Fuses, thermal cut-outs, thermal links, temperature limiters, electronic devices or any components or conductors operated, and		N/A
	– test repeated twice, using two more samples; or		N/A
	– tool withstands test of 18.6.1 with the fuse, thermal cut-out or thermal link bridged; or		N/A
	–miniature fuse link complying with IEC 60127 operates and tool withstands test of 18.6.2		N/A
	Tool withstood the particular test as a conductor of a PCB open-circuited, and		N/A
	– creepage or clearances between live parts and accessible metal parts not reduced below values in 28 due to loosened conductors, and		N/A
	– tool withstood repeated tests with the open-circuited conductor bridged, or		N/A
	– test repeated twice, using two more samples		N/A
18.6.1	Fault conditions a) to f) conducted as applicable	See Table 18.6.1	P

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Clause	Requirement + Test	Result - Remark	Verdict
18.6.2	Tests repeated with fuse-link replaced by an ammeter when during fault conditions of 18.6.1, safety of the tool depended on operation of a miniature fuse-link complying with IEC 60127-3,		N/A
	– Circuit not considered to be adequately protected when current measured was ≤ 2.1 times the rated current of fuse-link, and test conducted with fuse-link short-circuited (A) .....:		N/A
	– Circuit considered adequately protected when current measured was ≥ 2.75 times the rated current of fuse-link (A) .....:		N/A
	– Fuse-link short-circuited when current measured was 2.1-2.75 times the rated current of fuse-link, and test conducted as follows (A).....:		N/A
18.7	Switches and devices for motor reversal withstood stresses occurring when rotation reversed 25 times under running conditions at rated voltage at no-load (V) .....:		N/A
18.8	**Electronic circuits providing safety critical functions (SCF)**		—
18.8.1	Electronic circuits providing SCF are reliable and not susceptible to loss of SCF due to electro-magnetic environmental stresses		N/A
	No SCF lost after tests of 18.8.2 to 18.8.6 for circuits with no internal clock frequency or oscillator frequency > 15 MHz		N/A
	No SCF lost after tests of 18.8.2 to 18.8.7 for other electronic circuits		N/A
	Test voltage was rated voltage or the mean value of the rated voltage range .....:		N/A
	Difference between upper and lower limit of rated voltage range > 20 % of its mean value, test at both upper and lower limits of the rated voltage range ...:		N/A
	After evaluation using 18.6.1, no loss of any SCF or tool in a safe state under any present fault condition.		N/A
	Concept of 18.6.1 not appropriate, reliability evaluated using ISO 13849-1.		N/A
	Required performance levels.....:	See Table 18.8.1	N/A
	If only $MTTF_d$ is applied to achieve the required PL: $MTTF_d$ is 5/20/50 years for PL = a/b/c		N/A
	Software used in circuits of programmable devices whose failure would create loss of safety critical function, complied with software class B requirements as in H.11.12.3 of IEC 60730-1:2010		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	In the case where software class B is realized by single channel with periodic self-test, an acceptable period is regarded as either after each activation of the power switch or a maximum of 5 min.		N/A
	Class B realized by single channel, periodic self-test either after each activation of the power switch or at least every maximum 5 min		N/A
	H.11.12.3.4.1 applicable for SCF with a PL ≥ c		N/A
18.8.2	Electrostatic discharges as in IEC 61000-4-2:2008 applied to tool, test level 4 used for air discharge and test level 3 for contact discharge, ten / ten discharges having a positive / negative polarity applied		N/A
18.8.3	Fast transient bursts as in IEC 61000-4-4:2012 applied to tool, test level 3 used. Repetition frequency 5 kHz for 2 min / 2 min with a positive / negative polarity		N/A
18.8.4	Voltage surges as in IEC 61000-4-5:2005 applied to power supply terminals, five positive impulses and five negative impulses applied at the selected points		N/A
	Test level 3 applied for line-to-line coupling mode, a generator with 2 Ω source impedance being		N/A
	Test level 4 applied for line-to-earth coupling mode, a generator with 12 Ω source impedance being		N/A
	Tools has surge arresters incorporating spark gaps, test was repeated at 95 % of the flashover voltage		N/A
18.8.5	Injected currents as in IEC 61000-4-6:2008 applied to tool, test level 3 applicable, all frequencies between 0,15 MHz to 230 MHz covered		N/A
18.8.6	Class 3 voltage dips and interruptions in accordance with IEC 61000-4-11:2004 applied to tool		N/A
	Values of Tables 1 and 2 of IEC 61000-4-11:2004 were applied at zero crossing of the supply voltage		N/A
18.8.7	Radiated fields in accordance with IEC 61000-4-3:2010 applied to tool, test level 3 applicable		N/A
	Frequency ranges 80 MHz to 1 000 MHz tested		N/A

19	**MECHANICAL HAZARDS**		
19.1	Adequate protection against injury provided against moving and other dangerous parts		P
	Protective enclosures, covers, and the like have adequate mechanical strength and cannot be removed without the aid of a tool		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Adjustable guard used as protection of the working element has easily accessible means of accurate adjustment		P
	No dangers from adjusting the guards		P
	No contact with dangerous moving parts using probe B of IEC 61032:1997, test force ≤ 5N		P
	Any soft materials removed prior to the test		P
19.2	No hazardous ragged or sharp edges, other than necessary for the functioning of the tool		P
19.3	No contact with dangerous moving parts through dust collection openings, using probe B of IEC 61032:1997, test force ≤5N	See part II	N/A
19.4	Hand-held tool has at least one handle or grasping surface for safe handling during use		N/A
	Transportable tools provided with at least one handle, grasping surface or the like for safe transportation		P
	Lawn and garden machinery has adequate grasping surfaces for safe handling during use		N/A
19.5	Tool allows visual check of the contact of cutting tool with workpiece		P
19.6	Marking with rated no-load speed required, measured no-load speed of the spindle did not exceed 110 % of the rated no-load speed	5006/min max. <110%X5000/min.	P
19.7	Transportable tool or lawn and garden machinery intended to be used on a surface such as the floor or a table has adequate stability		P
	10° tilting test, tool or machinery did not tip over		P
	Tested with doors open and closed		N/A
	Filled with most unfavourable quantity of water or the recommended liquid		N/A
19.8	Transportable tool provided with wheels identified in the relevant part of IEC 62841-3 has adequate stability during transportation	No wheels	N/A
	10° tilting test, tool did not tip over		N/A
19.9	Fixed guards to be removed to convert the tool or to change the accessory, fastenings remains attached to the guard or to the machinery	No removed fixed guard	N/A
	Fastening not completely removed and considered as still attached		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

20	**MECHANICAL STRENGTH**		
20.1	Adequate mechanical strength to withstand rough handling		P
	No flashover or breakdown occurred during test of Annex D between live parts and accessible parts after tests of clause 20.2-20.4	See Table D.2	P
	No live parts became accessible		P
	No creepage distances or clearances below the values of 28.1		P
	Mechanical safety of the tool as required by this standard not impaired		P
	Inner cover withstood test after removal of the decorative cover		N/A
20.2	Three blows applied to every weak point of enclosure by spring-operated impact test apparatus in Clause 5 of IEC 60068-2-75:1997		P
	Brush cap impact energy (Nm) .....:	No exposed brush caps	—
	Other part impact energy (Nm) .....:	1,0	—
	Blows applied each point of the enclosure likely to be weak .....:	Handle, switch, ventilation openings etc.	P
	Blows applied to guards, covers, handles, levers, knobs and the like as necessary .....:	Guards, covers, handles, levers, knobs etc.	P
20.3	Test of 20.3.1, 20.3.2 or the relevant part of IEC 62841-4 applied, as applicable		P
20.3.1	Hand-held tool withstood impact of 3 varied drops on a concrete surface from 1 m		N/A
	Separable accessories were not mounted		N/A
	Any attachments provided as specified in instructions, test repeated with each attachment or combination of attachments mounted to a separate tool sample		N/A
20.3.2	Transportable tool withstood impact with Ø (50 ± 2) mm, (0,55 ± 0,03) kg steel sphere, travelling vertically by (1,3 ± 0,1) m.		P
	Drop test applied to part of the tool that can be impacted from above		P
	Pendulum test applied to part of the tool that cannot be impacted from above		P
	Guard became disassembled but could be reassembled to function properly.		P
	Guard became deformed but could be restored to its original shape		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Other damage, except to guard, accepted, as tool was incapable of normal operation		P
20.4	Adequate mechanical strength of brush holder and their caps		N/A
	Brush cap removed and replace 10 times applying specified tightening torque		N/A
	Tightening torque (Nm) .....:		—
	No damage to brush holders impairing its further use, thread not damaged, cap shows no cracks		N/A
20.5	Handles and grasping surfaces have adequate mechanical strength to provide insulation between grasping area and output shaft		N/A
	A separate sample subjected to a single impact from 1m onto a concrete surface on each handle and each recommended grasping surface		N/A
	No flashover or breakdown occurred during test of D.2 at 1250 V a.c. between handles and grasping surfaces in contact with foil and the output shaft of the tool		N/A
23	**COMPONENTS**		
23.1	Components comply with relevant IEC standards	See Table 23.1	P
	Components used in accordance with their markings		P
28	**CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH INSULATION**		
28.1	Creepage and clearances not less than the values in Table 12, except for cross-over points of motor windings.....:	See Table 28.1	P
	When a resonance voltage occurs, creepage and clearance are not less than specified for the voltage imposed by the resonance; these values increased by 4 mm in case of reinforced insulation		N/A
	Creepage and clearances for a tool with an appliance inlet measured with an appropriate connector inserted		N/A
	Creepage and clearances on a tool with other attachment measured on the tool as delivered		P
	Measurements on tool with belt made with the belt in place and belt tension adjusted to the most unfavourable position within its adjustment range		N/A
	Measurements repeated with the belt removed		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Movable parts placed in the most unfavourable position		P
	Nuts and screws with non-circular heads tightened in the most unfavourable position		N/A
	Clearances between terminals and accessible metal parts also measured with screws and nuts unscrewed as far as possible and they were not less than 50% of Table 12 .....:	See Table 28.1	P
	Distances through slots or openings in external parts of insulating material measured to metal foil in contact with accessible surface with the foil pushed into corners using test probe B of IEC 61032:1997 :	See Table 28.1	P
	2 N force applied to internal wiring, bare conductors and uninsulated capillary tubes of thermostats and similar devices during measurement		P
	30 N force applied to enclosure		P
	Measurements made according to Annex A	See Table 28.1	P
	Creepage and clearances on a tool having parts with double insulation and no metal between basic insulation and supplementary insulation		P
	PWB with peak voltage stresses ≤ 150 V per mm between parts of different potential provided with a min. distance of 0.2 mm, when protected against deposition of dirt	See Table 28.1	N/A
	-PWB with 100 V per mm provided with a min. distance of 0.5 mm, when not protected against deposition of dirt	See Table 28.1	N/A
	Values of the table applied when limits mentioned above resulted in higher values than in the table	See Table 28.1	N/A
	Distances reduced further since the tool complied with the requirements of Clause 18 distances short-circuited one at a time .....:	See Table 28.1	N/A
	Creepage and clearances within optocouplers not measured when individual insulation adequately sealed, with air excluded between material layers		N/A
	For live parts of different polarity separated by basic insulation only, creepage and clearances reduced as tool complied with Clause 18 when creepage and clearances short-circuited .....:	See Table 28.1	N/A
28.2	Distance through insulation between metal parts was ≥1.0 mm for working voltages ≤130 V when separated by supplementary insulation	See Table 28.2	N/A
	Distance through insulation between metal parts was ≥1.5 mm for working voltages ≤130 V when separated by reinforced insulation	See Table 28.2	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	Distance through insulation between metal parts was ≥1.0 mm for working voltages > 130V ≤ 280V when separated by supplementary insulation, and ≥2.0 mm when separated by reinforced insulation	See Table 28.2	P
	Distance through reinforced insulation between windings and accessible metal parts was ≥1.0 mm for working voltages ≤ 280V	See Table 28.2	P
	Requirement waived as insulation applied was in thin sheet form, other than mica or similar, and for supplementary insulation consisting of at least two layers, one layer having withstood electrical strength test for supplementary insulation		N/A
	Requirement waived as insulation applied was in thin sheet form, other than mica or similar, and for reinforced insulation consisting of at least three layers, two layers having withstood electrical strength test for reinforced insulation		N/A
	Requirement waived as max. temperature rise determined during test of Cl. 12 did not exceed values in 12.5 for inaccessible supplementary or reinforced insulation		N/A
	Requirement waived as inaccessible reinforced or supplementary insulation, after conditioning for 168h at 50 K above max. temperature rise determined per Cl. 12, withstood test of Annex D at the oven temperature and room temperature (°C).....:	See Table D.2	N/A
	For optocouplers, 168 h of conditioning at 50 K above the max. temperature rise measured on optocouplers during tests of Clauses 12 and 18, while operating under most difficult conditions		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

11	**TABLE: Input data under no-load conditions**				**P**
Input deviation of/at:	**Rated P (W) or I (A)**	**Measured P (W) or I (A)**	**Ratio (%)**	**Required ratio (%)**	**Remark**
220V~	1800W	1140W	157,9%	110	
240V~	1800W	1320W	136,4%	110	
Supplementary information:					

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Clause	Requirement + Test	Result - Remark	Verdict

12.1A	**TABLE: Temperature rise measurements under the conditions of 12.2 to 12.5 0,94X220V~**		**P**
Test voltage (V) .....:	206,8		—
Ambient temperature, t_1 (°C) :	22,0		—
Ambient temperature, t_2 (°C) :	22,0		
Operating time (min, s).....:	Until thermal stability		—
Load Speed (min^{-1}).....:	3662		—
Input Wattage (W) .....:	1644		—
Input current (A) .....:	8,285		—
Torque (Nm) .....:	1,973		—
Thermocouple Locations	**Temperature rise measured (K)**	**Temperature rise limit (K)**	
Core of stator	13,5	Clause 13,1	
Power cord	16,2	50	
Capacitor surface	4,5	60	
Ambient of switch	14,9	30	
Internal wire	1,8	50	
Enclosure	5,4	60	
Handle	6,5	50	
PCB	3,6	120	
Supplementary information:None			

12.1B	**TABLE: Heating test, resistance method 0,94X220V~**					**P**
	Test voltage (V) .....:	206,8				—
	Ambient, t_1 (°C) .....:	22,0				—
	Ambient, t_2 (°C) .....:	22,0				—
Temperature rise of winding	**R_1 (Ω)**	**R_2 (Ω)**	**ΔT measured (K)**	**ΔT Limit (K)**	**Insulation class**	
Stator (Aluminum)	1,527	1,782	41,3	90	120	
Rotor (Copper)	0,895	1,116	63,3	90	120	
Supplementary information:						

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Clause	Requirement + Test	Result - Remark	Verdict

12.1A	**TABLE: Temperature rise measurements under the conditions of 12.2 to 12.5 1,06X240V~**	**P**
Test voltage (V) .....:	254,4	—
Ambient temperature, t_1 (°C) :	22,0	—
Ambient temperature, t_2 (°C) :	22,0	
Operating time (min, s) .....:	Until thermal stability	—
Load Speed (min^{-1}) .....:	4592	—
Input Wattage (W) .....:	1954	—
Input current (A) .....:	8,066	—
Torque (Nm) .....:	1,343	—

Thermocouple Locations	**Temperature rise measured (K)**	**Temperature rise limit (K)**
Core of stator	9,8	Clause 13,1
Power cord	14,5	50
Capacitor surface	2,9	60
Ambient of switch	10,7	30
Internal wire	0,8	50
Enclosure	4,2	60
Handle	3,8	50
PCB	2,6	
Supplementary information:		

12.1B	**TABLE: Heating test, resistance method 1,06X240V~**					**P**
	Test voltage (V) .....:	254,4				—
	Ambient, t_1 (°C) .....:	22,0				—
	Ambient, t_2 (°C) .....:	22,0				—
Temperature rise of winding	**R_1 (Ω)**	**R_2 (Ω)**	**ΔT measured (K)**	**ΔT Limit (K)**	**Insulation class**	
Stator (Aluminum)	1,527	1,732	33,2	90	120	
Rotor (Copper)	0,895	1,130	67,4	90	120	
Supplementary information:						

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Clause	Requirement + Test	Result - Remark	Verdict

18.6.1	TABLE: Fault Condition Tests				P
	Ambient temperature (°C) .....:	24,0			—
	Fuse-link Current (A)				—
Component	Fault Condition	Test Voltage (V)	Test Duration*	Comment/Result Test repeated Yes/No**	
Soft start	OC/SC	240	1 min	No hazard	

Supplementary Information:
* Tests were continued until
- a protective device operates, or
- until steady conditions are established or
- an open circuit occurs.

** Test was repeated on a second sample due to an intentionally weak part permanently open-circuited to terminate the test.

23.1	TABLE: List of Critical Components				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity[1)]
Main switch	Zhejiang Jiaben Electronics Co.,Ltd	MSB-1210-A	AC250V,10(10)A, 5E4	EN 61058-1	TUV/ R 50154057
Alt. use	**Yueqing Dongke Electron Co.,Ltd**	**WD01-1**	**AC250V,14(12)A, 5E4**	**EN 61058-1**	**TUV/50421 879**
Switch for laser module	Zhejiang Jiaben Electronics Co., Ltd.	KND1-6/1	AC250V, 6(6)A, or DC36V, 8A	EN 61058-1	TUV/ R 50105402
Alt. use	**Zhejiang Jiaben Electronics Co., Ltd.**	**K1-6E-1106A**	**AC250V, 6(6)A, or DC36V, 8A**	**EN 61058-1**	**TUV/ R 50105402**
Alt. use	**Yueqing Dongke Electron Co.,Ltd**	**AN-18**	**AC250V, 6(6)A, or DC36V, 15A**	**EN 61058-1**	**TUV/R5038 5297**
Capacitor	Aid Electronic Corporation	MEX	AC275V, 0,22 or 0,33µF, X2, 25/085/21/C	EN 60384-14	VDE/ 40028973
Alt. use	Wujiang Taixing Electronics Co., Ltd.	TNS-2TH	AC 275V, 0,22 or 0,33µF, X2 40/100/21/C	EN 60384-14	VDE/ 117515
Alt. use	Yongkang City Huyan Soldering Material Factory	TNS-2H	AC 275V, 0,22 or 0,33µF, X2 40/085/21/C	EN 60384-14	VDE/ 40006984
Power cord	Jinhua Feng Ye Hong Electronic Appliance Co., Ltd.	H05VV-F	2×1,0 mm^2	EN 50525-2-11	VDE / 132797

IEC62841-1			
Clause	Requirement + Test	Result - Remark	Verdict

23.1	**TABLE: List of Critical Components**				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity[1)]
Alt.use	ZHEJIANG YONGKANG SHENGDA WIRE Co. Ltd.	H05VV-F	2×1,0 mm²	EN 50525-2-11	VDE / 134343
Alt.use	Ningbo Jiulian Wire Co., Ltd.	H05VV-F	2×1,0 mm²	EN 50525-2-11	VDE / 106428
Power plug	Jinhua Feng Ye Hong Electrical Appliances Co. Ltd.	FY-01	AC250V, 16A	VDE 0620-1	VDE / 40018868
Alt.use	Zhejiang Yongkang Shengda Wire Co.,Ltd	YK-002	AC250V, 16A	VDE 0620-1	VDE / 40000552
Alt. use	Ningbo Jiulian Wire Co., Ltd.	JL 201	AC250V, 16A	VDE 0620-1	VDE / 126375
Laser module	**Yueqing Dongke Electron Co., Ltd.**	**LDBXQ03B**	**DC3-6V, 30mA(max.), 650nm, Class 2 <1mW**	**EN 60825-1**	**TUV/J 50550307**
Alt.use	ZHEJIANG CHANGLONG ELECTRIC CO., LTD	CL35-L0310** （* = 0 to 9, for marketing purpose only）	Class 2, 650nm, Max. 30mA, DC 3-12V, 1mW max.	IEC 60825-1	TUV/J 50341732
LED	**Bay Area Compliance Laboratories Corp. (Dongguan)**	**SMD-5730-3v150mA**	**3VDC,150mA**	**IEC 62471**	**BACL/RSZ 170510550 03**
Safety isolating transformer	Yueqing Dongke Electron Ltd	B03	Supply voltage: AC230-240V, 50HZ, output: DC3V, 40mA	EN 61558-1 EN 61558-2-6	TUV/ R 50047514
Alt.use	ZHEJIANG CHANGLONG ELECTRIC CO., LTD	CL03-D01A	Input:AC 220-240V, Output: DC3V, 50mA, IP00	EN 61558-1 EN 61558-2-6	TUV/R 50315449
Alt.use	**Yueqing Dongke Electron Ltd.**	**B26-5A (DKLD)**	**AC 100-240V, 50-60Hz, Output: DC 4,1V,0,33A**	**EN 61558-1 EN 61558-2-6**	**TUV R 50418534**
Terminal block	Heavy Power Co.,Ltd	PA9 or PA9F	AC450V, 1,0-2,5mm²	EN 60998-1 EN 60998-2-1	VDE/ 40016425

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Clause	Requirement + Test	Result - Remark	Verdict

23.1	**TABLE: List of Critical Components**				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity[1)]
Alt.use	Heavy Power Co., Ltd.	PA7FDS, PA7F, PA7DS, PA7	450V, 17,5A	EN 60998-1 EN 60998-2-1	VDE/ 40019839
Saw blade	Zhejiang Changheng Tools Co., Ltd.	255x(d)x(w)x(z)T, (d)= 15,9, 16, 20, 25,4 or 30 (w)= 2,8, 3,0 or 3,2 (z)=24, 30, 36, 40, 48, 60, 80 or 100 Body thickness: 1.85mm	Ø255mm, Max. speed: 7000/min	EN 847-1	TUV/ R 50276897
Alt.use	Zhejiang Changheng Tools Co., Ltd.	254x(d)x3.0x(z)T, (d)= 15,9, 16, 20, 25,4 or 30 (z)=24, 30, 40 60, 80 or 100 Body thickness: 1.85mm	Ø254mm, Max. speed: 7000/min	EN 847-1	TUV/ R 50276838
Alt.use	Danyang City Changsheng Tools Co., Ltd.	254x(d)x(w)-(z)T	(d)=15,875, 16, 20, 25,4 or 30 (w)=2,8, 3,0 (z)= 24, 30, 36, 40, 48, 60, 80, 100 7000/min	EN 847-1	TUV/R 50448081
Alt.use	Gaoyou Xiangyu Mechanical Manufacturing Co., Ltd	254x(d)x(w)x(z)T	(d)=15,9, 16, 25,4 or 30 (w)=2,6 or 2,8 (z)=24,36,40,46,48,60,80,96 ,100 or 120 7000/min	EN 847-1	TUV/R 50280790
Soft starter	Wenzhou Aolong Electronics Co., KG	DS12A	AC 240V, 12A	EN62841-1 EN62841-3-9	Tested in appliance
Motor	Zhejiang Huafeng Electric Tools Co., Ltd.	---	Class E, at 20,3℃, Stator (Aluminium): 1,583Ω, Rotor: 0,876Ω (diagonal) Braking winding: 2,917 Ω	EN62841-1 EN62841-3-9	Tested in appliance

IEC62841-1			
Clause	Requirement + Test	Result - Remark	Verdict

23.1	**TABLE: List of Critical Components**				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity[1)]
Internal wire	Wenzhou ZhongAn Electric Wire & Cable Manufacture Co. Ltd.	RV 300/500V	0,5mm² 0,75mm²	EN62841-1 EN62841-3-9	Tested in appliance
Alt.use	Wujiang Shenjiang Special Wire & Cable Co., Ltd.	RV 300/500V	0,5mm² 0,75mm²	EN62841-1 EN62841-3-9	Tested in appliance
Alt.use	Ouhai Zhenxing Electric Wire Factory	RV 300/500V	0,5mm² 0,75mm²	EN62841-1 EN62841-3-9	Tested in appliance
Enclosure	Zhejiang Huafeng Electric Tools Co., Ltd.	PA6-GF30	Min. thickness: 2,1mm	EN62841-1 EN62841-3-9	Tested in appliance
Granulate material of enclosure	Guangzhou Kingfa Factory	PA6-GF30	Natural white	EN62841-1 EN62841-3-9	Tested in appliance
Marking	HANG ZHOU IDEA LABEL CO LTD	NI01	-40~100°C, attached on Nylon, for indoor and outdoor use and occasional exposure to Lubricating Oil.	UL969	UL/ MH28439
Components listed below not for CE:					
BS Power Plug	Hangzhou Hongshi Electrical Ltd	SW 258 SW 36811	AC250V, 13A	BS1363-1	BSI / KM 95288
Alt.use	Ming Tak Electrical Wiring Co., Ltd.	NS-17	AC250V, 13A	BS1363-1	ASTA / 626
Alt.use	Cixi Lujie Electric Appliance Co., Ltd.	LJ01	AC250V, 13A	BS1363-1	BSI / KM 69196
Alt.use	Hangzhou Fuxing Electrical Factory.	SW208	AC250V, 13A	BS1363-1	BSI / KM 10807
Alt.use	Yongkang Kangda Electrical Appliance Co.,Ltd	KD-166	AC250V, 13A	BS1363-1	BSI / KM 71081
Alt.use	Ningbo Jiulian Wire Co., Ltd.	JL302C	AC250V, 13A	BS1363-1	ASTA / 866
Alt.use	Yongkang Kangda Electric Appliance Co., Ltd.	KD-368	AC 250V, 13A	BS 1363-1	BSI/ KM 71081
Alt.use	Jiangxi Kuncheng Wire & Cable Co., Ltd	KC-012	AC 250V,13A	BS 1363-1	ASTA/ 977
Alt.use	Jiaxing Chuangqi Cable Co., Ltd	CQ-20	AC 250V,13A	BS 1363-1	ASTA/ 1366
Power cord for BS plug	Hangzhou Hongshi Electrical Co., Ltd.	H05VV-F	2×1,0 mm²	EN 50525-2-11	VDE / 40010839
Fuse for BS Power plug	Group Talents Limited	LQ-412	AC240V, 13A	BS1362	ASTA / 500

IEC62841-1			
Clause	Requirement + Test	Result - Remark	Verdict

23.1	**TABLE: List of Critical Components**				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity[1)]
Alt.use	Dongguan Cooper Electronics Co., Ltd. / Bussmann	TDC180	AC240V, 13A	BS1362	ASTA / 658
Alt.use	Hangzhou Fuxing Electrical Limited / Hangzhou Hongshi Electrical Limited.	Richstar 13A Richstar SWE	AC240V, 13A	BS1362	ASTA / 1101
Alt.use	Splendid Electrical Manufactory	SEM	AC240V, 13A	BS1362	BSI / KM 21062
Alt.use	Dongguan Cooper Electronics Co., Limited	TDC180	AC240V, 13A	BS1362	ASTA / 658

28.1	**TABLE: Clearance and Creepage Distance Measurements**					**P**
Clearance cl and Creepage Distance (dcr) Between:	Up (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required dcr (mm)	Dcr (mm)
L - N	---	240	2,5	3,5	3,0	3,5
Rotor winding - Core	---	240	2,0	2,5	2,0	2,5
Stator winding - Core	---	240	2,0	2,5	2,0	2,5
Stator winding - Enclosure	---	240	6,0	8,0	6,0	8,0
Rotor winding - Axis	---	240	6,0	8,0	6,0	8,0
Internal wiring - Enclosure	---	240	4,0	4,5	4,0	4,5
Motor core - Enclosure	---	240	4,0	5,0	4,0	5,0
L/N - Enclosure	---	240	8,0	8,5	8,0	8,5
Commutator – Bearing	---	240	8,0	8,5	8,0	8.5

28.2	**TABLE: Distance Through Insulation Measurements**			**P**
Distance through insulation dti at/of:	**U r.m.s. (V)**	**Test voltage (V)**	**Required dti (mm)**	**dti (mm)**
Live parts – Shaft (Rotor)	240	---	2,0	2,4
Rotor core – Shaft (Rotor)	240	---	1,0	1,5
Live parts – Enclosure	240	---	2,0	2,1
Supplementary information:				

IEC62841-1			
Clause	Requirement + Test	Result - Remark	Verdict

C.2A	**TABLE: Leakage Current of the non-operating tool as per clause 14.1**				**P**
Points of application	Test voltage (rated V)	Freq. (Hz)	Selector Switch Position	Allowed leakage current (mA)	Measured leakage (mA)
Enclosure	240	50	1&2	0,25	0,017 max.
Supplementary Information:					

C.3A	**TABLE: Leakage Current of the operating tool as per clause 12.1**				**P**
Points of application	Test voltage (1.06 X rated V)	Freq. (Hz)	Selector Switch Position (ON /OFF[1])	Allowed leakage current (mA)	Measured leakage (mA)
Enclosure	254,4	50	1&2	0,25	0,017 max.
Supplementary Information:					

C.3C	**TABLE: Leakage Current of the operating tool as per clause 18.5.1**				**P**
Points of application	Test voltage (rated V)	Freq. (Hz)	Selector Switch Position (ON /OFF[1])	Allowed leakage current (mA)	Measured leakage (mA)
Enclosure	240	50	1&2	2	0,025max.
Supplementary Information:					

IEC 62841-1 attachment			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 62841-1
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES
Electric Motor-Operated Hand-Held, Transportable Tools and Lawn and Garden Machinery - Safety - Part 1: General requirements

Differences according to..... : EN 62841-1: 2015+AC: 2015+A11: 2022

Attachment Form No. ..... : EU_GD_IEC62841_1E
Attachment Originator..... : DEKRA Certification B.V.
Master Attachment ..... : 2022-09-02

	CENELEC COMMON MODIFICATIONS (EN)		–
8	**MARKINGS AND INSTRUCTIONS**		–
8.4	Replace the 2nd paragraph with the following:		–
	Markings specified in 8.2 and 8.3 are clearly discernible from the outside of the tool.		P
	Other markings on the tool may be visible after removal of a cover, provided that the location of the markings is readily accessible.		P
8.14	The words "Original instructions" appear on the language version(s) verified by the manufacturer or his authorised representative.		P
	Where no "Original instructions" exist in the official language(s) of the country where the tool is to be used, a translation into that/those language(s) is provided by the manufacturer or his authorised representative or by the person bringing the tool into the language area in question.		N/A
	The translations bear the words "Translation of the original instructions", and they are accompanied by a copy of the "Original instructions".		N/A
8.12	Markings easily legible		P
	Markings withstood durability test: - 15 s with water soaked cloth - 15 s with petroleum spirit soaked cloth		P
	Signs are in contrast to their background, clearly legible from a distance of not less than 500 mm		P
	Effect of normal use taken into account		P
	Adhesive backing durable, meets requirements of Annex ZB or…		N/A
	… withstands specified tests	Complied with UL 969	P
8.14.2 Za)	The noise emission, which is measured in accordance with I.2		P

IEC 62841-1 attachment			
Clause	Requirement + Test	Result - Remark	Verdict
	A-weighted sound pressure level L_{pA} and its uncertainty K_{pA}, where L_{pA} exceeds 70 dB(A) L_{pA} [dB(A)] .....: K_{pA} [dB(A)] .....:	L_{pA}: 94,6 [dB(A)] K_{pA}: 3,0 [dB(A)]	P
	Where L_{pA} does not exceed 70 dB(A), this fact is indicated		N/A
	A-weighted sound power level L_{WA} and its uncertainty K_{WA}, where the A-weighted sound pressure level L_{pA} exceeds 80 dB(A); L_{WA} [dB(A)] .....: K_{WA} [dB(A)] .....:	L_{WA}: 107,6 [dB(A)] K_{WA}: 3,0 [dB(A)]	P
	peak C-weighted instantaneous sound pressure value LpCpeak, where this exceeds 63 Pa (130 dB in relation to 20 µPa) L_{pCpeak} (dB) .....: K_{pCpeak} (dB) .....:		N/A
	The vibration total value and its uncertainty which is measured in accordance with I.3.	Not applicable to transportable tool	N/A
	When the vibration total value exceeds 2,5 m/s², its value is given in the instructions. Work mode - vibration emission value a (m/s²)….: Uncertainty K (m/s²)……..:		N/A
	When the vibration total value does not exceed 2,5 m/s², this is stated.		N/A
	Information that the declared vibration total value has been measured in accordance with a standard test method and may be used for comparing one tool with another		N/A
	Information that the declared vibration total value may also be used in a preliminary assessment of exposure.		N/A
	A warning that the vibration emission during actual use of the power tool can differ from the declared total value depending on the ways in which the tool is used		N/A
	A warning of the need to identify safety measures to protect the operator that are based on an estimation of exposure in the actual conditions of use (taking account of all parts of the operating cycle such as the times when the tool is switched off and when it is running idle in addition to the trigger time).		N/A
18	**ABNORMAL OPERATION**		**P**

IEC 62841-1 attachment			
Clause	Requirement + Test	Result - Remark	Verdict
18.8.1	In Table 4, replace the table footnote by the following: * Performance levels are to be specified in the relevant part of EN 62841-2, EN 62841-3 or EN 62841-4.		P
	Delete the 5th paragraph and the subsequent NOTE 3.		P
21	**CONSTRUCTION**		**–**
21.18.1	delete the 2nd paragraph.		P
21.18.1.Z1	Unless hand-held tools are equipped with a momentary power switch without lock-on device, voltage recovery following an interruption of the supply do not give rise to a hazard.		N/A
	The relevant part of EN 62841-2 specifies if this subclause applies and gives specific requirements.		N/A
21.18.2.1	Unless transportable tools are equipped with a momentary power switch without lock-on device, voltage recovery following an interruption of the supply do not give rise to a hazard.		P
	The relevant part of EN 62841-3 specifies if this subclause applies and gives specific requirements.		N/A
21.Z1	Noise reduction of tools as an integral part of the design process achieved by particularly applying measures at source to control noise, such as example EN ISO 11688-1:2009		P
	Success of the applied noise reduction measures assessed based on the actual noise emission values, measured in accordance with I.2, in relation to other machines of the same type with comparable non acoustical technical data		P
21.Z2	Vibration at the handles kept as low as possible without unduly affecting the performance or the ergonomics (weight, handling, etc.) of the tool.		N/A
	Vibration reduced by the application of engineering measures as given in CR 1030-1:1995		N/A
	Success of the applied vibration measures is assessed by comparing the vibration levels for the tool, measured in accordance with I.3, with those for other tools of the same type and with a comparable specification and performance.		N/A
ANNEX E	**METHODS OF APPLYING ISO 13849-1 TO POWER TOOLS**		**N/A**
ANNEX I	**MEASUREMENT OF NOISE AND VIBRATION EMISSIONS**		**P**

IEC 62841-1 attachment			
Clause	Requirement + Test	Result - Remark	Verdict

	Replace the title of Annex I by the following **ANNEX I – (NORMATIVE)**		P
I.2	Noise test code (grade 2)		P
I.2.Z1	Noise reduction	See 21.Z1	P
I.2.1	General		P
	The noise emission determined by using a machine which has design and technical specifications replicating the machine concerned.		P
	The overall noise can be divided into the pure machine noise and the noise generated from the processed workpiece.		P
	The load conditions for particular tools are therefore specified in the relevant part of IEC 62841-2, IEC 62841-3 or IEC 62841-4.		N/A
I.2.2	Sound power level measured according to ISO 3744		P
I.2.2.2	Hand-held power tools		N/A
	For all hand-held power tools, the sound power level is determined by using a hemispherical / cylindrical measurement surface according to Figure I.2.		N/A
I.2.2.3	For all transportable powert tools, the sound power level is determined by using a cubic measurement surface according to Figure I.3.		P
I.2.2.4	The sound power level of lawn and garden machinery is determined as specified in the relevant part of IEC 62841-4.		N/A
I.2.3	Emission sound pressure level determination		P
I.2.3.1	The A-weighted emission sound pressure level of hand-held tools at the work station LpA according to ISO 11203:2009 with LpA = L_{WA} −Q , in dB where Q = 8, in dB.		N/A
	If required, LpCpeak is measured at each of the five measurement positions specified in I.2.2		N/A
I.2.3.2	The A-weighted emission sound pressure level of transportable tools at the work station, LpA, is determined according to ISO 11201, grade 2.		P
	If required, the C-weighted peak emission sound pressure level LpCpeak is measured at the same operator's position as the A-weighted sound pressure level LpA.		N/A
I.2.3.3	The emission sound pressure level of lawn and garden machinery is determined as specified in the relevant part of IEC 62841-4.		N/A

IEC 62841-1 attachment			
Clause	Requirement + Test	Result - Remark	Verdict
I.2.4	Installation and mounting conditions of the power tools during noise tests		P
	The power tool under test is new and equipped with accessories which affect the acoustic properties, as recommended by the manufacturer.		P
	Prior to commencing testing, the power tool (including any required ancillary equipment) is set up in a stable condition in accordance with the manufacturer's instructions for safe use.		P
	A hand-held tool is held by the operator or suspended in such a way as to correspond to normal use, as specified in the relevant part of IEC 62841-2		N/A
	A transportable tool is so positioned, either placed on the test bench of Figure I.1		P
	Lawn and garden machinery is used and positioned as specified in the relevant part of IEC 62841-4.		N/A
I.2.5	Operating conditions		P
	Tools are tested under the two operating conditions "no-load" or "load" as appropriate for the type of tool and specified in the relevant part of IEC 62841-2, IEC 62841-3 or IEC 62841-4.		P
I.2.6	Measurement uncertainties		P
	Uncertainties according to standard determined, recorded and reported		P
I.2.7	Information and deviations are recorded.		P
I.2.8	Information to be reported		P
	- reference to this noise test code / basic standard		P
	- description of the power tool;		P
	- description of mounting and operating conditions		P
	Sound power level L_{WA} (dB(A))….....:	107,6	P
	Sound pressure level L_{PA} (dB(A))….....:	94,6	P
	C-weighted peak emission sound pressure level LpCpeak (dB).....:		N/A
I.2.9	Declaration and verification of noise emission values		P
	Sound power level LWA (dB(A))….....:	107,6	P
	Sound pressure level LPA (dB(A))….....:	94,6	P
	C-weighted peak emission sound pressure level LpCpeak (dB).....:		N/A
I.3	Vibration		N/A

IEC 62841-1 attachment			
Clause	Requirement + Test	Result - Remark	Verdict
I.3.Z1	Vibration reduction		N/A
I.3.1	Vibration measurement – General		N/A
	Details for particular types of tools are given in the relevant part of IEC 62841-2, IEC 62841-3 or IEC 62841-4.		N/A
	The vibration total value may be determined by using the measurements from a machine which has design and technical specifications replicating the machine concerned.		N/A
I.3.2	Symbols		N/A
I.3.3	Characterization of vibration		N/A
I.3.3.1	Direction of measurement		N/A
	Directions may be defined in the relevant part of IEC 62841-2, IEC 62841-3 or IEC 62841-4.		N/A
	If not defined the three orthogonal directions X, Y and Z as shown in Figure I.4. are related		N/A
I.3.3.2	Location of measurement		N/A
	The measurement positions for particular types of tools are specified in the relevant part of IEC 62841-2, IEC 62841-3 or IEC 62841-4.		N/A
I.3.3.3	Magnitude of vibration		N/A
I.3.3.4	Combination of vibration directions		N/A
I.3.4	Instrumentation requirements		N/A
	The vibration measurement equipment is in accordance with ISO 8041.		N/A
	Instrumentation for measuring other parameters whose characteristics are not covered by ISO 8041, is specified in the relevant part of IEC 62841-2, IEC 62841-3 or IEC 62841-4.		N/A
I.3.4.2	Transducers		N/A
I.3.5	Testing and operating conditions of the tool		N/A
I.3.5.1	Replace the 4th paragraph with the following:		N/A
	When the test procedure is not provided in a relevant part of EN 62841-2, EN 62841-3 or EN 62841-4, an operating condition is specified that is reproducible and representative of the noisiest operation in typical usage of the machine.		N/A
	The vibration test may simulate a single phase of a task or a working cycle, consisting of a set of operations where the operator is being exposed to vibration.		N/A
	However, the operating condition for the noise emission test is, if practicable, also used for the vibration test.		N/A

IEC 62841-1 attachment			
Clause	Requirement + Test	Result - Remark	Verdict

I.3.5.2	Attachment, workpiece and task		N/A
	Details for task and workpiece are given in the relevant part of IEC 62841-2, IEC 62841-3 or IEC 62841-4.		N/A
I.3.5.3	Operating conditions		N/A
	The relevant part of IEC 62841-2, IEC 62841-3 or IEC 62841-4 describes the modes of operation and the calculation of the declared emission value.		N/A
I.3.5.4	Operator		N/A
I.3.6	Measurement procedure and validity		N/A
I.3.6.1	Reported vibration values		N/A
	Details are specified in the relevant part of IEC 62841-2, IEC 62841-3 or IEC 62841-4.		N/A
	Work mode - vibration emission value a (m/s^2)….:		N/A
	Uncertainty K (m/s^2)……...:		N/A
I.3.6.2	Declaration of the vibration total value		N/A
	If required by the relevant part of IEC 62841-2, IEC 62841-3 or IEC 62841-4, the work mode description corresponding to the vibration emission is stated next to each declared value.		N/A
	Work mode - vibration emission value a (m/s^2)….:		N/A
	Uncertainty K (m/s^2)……...:		N/A
I.3.7	Measurement report		N/A
	The report includes the following information:		N/A
	a) reference to this standard		N/A
	b) specification of the machine		N/A
	c) attachments or accessories;		N/A
	d) operating and testing conditions		N/A
	e) measuring institution		N/A
	f) date of measurement		N/A
	g) instrumentation		N/A
	h) position and fastening of transducers, measuring directions and individual vibration values when relevant		N/A

IEC 62841-1 attachment			
Clause	Requirement + Test	Result - Remark	Verdict
	i) the arithmetic mean total vibration ah, for each operator the total vibration value ahv and the three single axes weighted acceleration values ahw. It is good practice to report all the measured values		N/A
	j) the uncertainty K of the vibration total value ah.		N/A
	Any deviations from the vibration test code in this standard is reported together with the technical justification for such deviations.		N/A
ANNEX K	**BATTERY TOOLS AND BATTERY PACKS**		**N/A**
K8.14.2 Z1	For battery tools with integral battery: instruction, how the integral battery can be removed safely from the tool after the tool's end of life, and information about the type of battery such as Li-Ion, NiCd and NiMH.		**N/A**
ANNEX L	**BATTERY TOOLS AND BATTERY PACKS PROVIDED WITH MAINS CONNECTION OR NON-ISOLATED SOURCES**		**N/A**
L8.14.2 Z1	For battery tools with integral battery: instruction, how the integral battery can be removed safely from the tool after the tool's end of life, and information about the type of battery such as Li-Ion, NiCd and NiMH.		N/A
ANNEX ZB	**DURABILITY REQUIREMENTS FOR ADHESIVE LABELS**		**–**
ZB.1	This annex covers adhesive-attached labels for use as permanent nameplates or markers		N/A
ZB.2	Performance		–
ZB.2.1	Labels applied or bonded to representative test surfaces and exposed to the applicable conditions described in ZB.5 show permanence and legibility as per Table ZB.1.		N/A
	Visual examination The labels are viewed with normal vision from a distance of (500 ± 50) mm		N/A
	A label shall adhere to the test surface without any significant curling or loosening around the perimeter greater than 10 % of the label area, or other indication of loss of adhesion such as wrinkles or bubbles. It shall not excessively craze, shrink more than 10 % of the label area or slip from its original position on the test panel more than 5 mm.		N/A

IEC 62841-1 attachment			
Clause	Requirement + Test	Result - Remark	Verdict
	Overlamination, if present, shows no separation, excessive darkening or shrinkage of more than 10 % of the label area		N/A
	Printing legible, no significant deterioration of legibility such as fading or bleeding; significant change in print colours to be noted		N/A
	Legibility test Printed surfaces of labels are rubbed with thumb or finger back and forth ten times with a downward force of approximately 18 N and then examined for legibility as in the visual examination.		N/A
	Subsurface printed labels and labels in which printing is protected by an overlamination are not subject to the legibility test		N/A
	Printing legible, no significant deterioration or blurring of legibility		N/A
	Defacement test Labels are scraped back and forth ten times across printed areas and edges, with a downward force of between 7,2 N and 9 N using the edge of a 1,65 mm to 2,5 mm thick steel blade held at a right angle to the test surface, the portion of the blade contacting the test surface having a radius of curvature of 25 mm to 33 mm and the edges of the blade being rounded to a radius of 0,41 mm ± 0.08 mm		N/A
	Label, including overlamination or overprint coating, if present, remains in place and is not torn, uplifted, or otherwise damage		N/A
	Scratching or defacement of unprotected printing, either text or background, is not considered a noncompliance.		N/A
	Adhesion test (see ZB.6) Test conducted if it is possible to remove test strips from surfaces		N/A
	If removal as described in ZB.6 is not possible because of breaking, tearing, or excessive rigidity of the label material, adhesion is determined by attempting to remove the entire sample by hand.		N/A
	Average quantitative adhesion value not less than 0,088 N/mm width at any point		N/A
	Adhesion not less than 0,0175 N/mm at any point		N/A
	In case it is not possible to separate test strips from the surface, sample shows good adhesion to the surface when removal by hand is attempted		N/A

IEC 62841-1 attachment			
Clause	Requirement + Test	Result - Remark	Verdict
ZB.2.2	If after any exposure condition the test surface excessively warps, bubbles, deteriorates, melts, chips, or otherwise renders it impossible to determine compliance of the label with the requirements of this Annex, the evaluation of the sample applied to the test surface is considered to be inconclusive.		N/A
ZB.2.3	Samples are representative of the construction of the label to be tested. Significant construction variables such as top-surface or subsurface printing; top coating; face stock; overlamination or adhesive thickness range; partial adhesive coverage; differing types or colours of similar face stock or adhesive (for example, clear, pigmented, or metallized); and alternative printing processes and inks (including floodcoating for subsurface printed constructions) are represented in the samples provided.		N/A
ZB.2.4	The minimum recommended sample size is 50 mm × 50 mm		N/A
ZB.3	Test surfaces		–
ZB.3.1	Test surface panels provided for each material on which the samples are to be tested		N/A
	Panels are essentially flat, smooth, and rigid, and measure approximately 75 mm x 280 mm		N/A
	Larger panels that can be cut, or smaller panels, if sufficient in number, may be used.		N/A
	If samples are investigated for use on a curved surface, curved surfaces or tubing of representative radius are provided.		N/A
	When samples are investigated for use on a textured surface, panels of the specific textured surface are provided.		N/A
ZB.3.2	Test surfaces is cleaned as described in ZB.3.3 to ZB.3.4, before the samples are applied		N/A
ZB.3.3	Test panel is repeatedly wiped with cheesecloth (bleached cotton gauze) dampened with denatured ethyl alcohol or isopropanol until it appears clean; surface then wiped once more, with the dampened cheesecloth turned to expose a clean area, and then allowed to dry in air for at least 1 min		N/A
ZB.3.4	If alcohol affects the surface or is not considered the solvent of choice for a particular test surface:		N/A
	– An alternative solvent that does not affect the surface or leave a film is used; or		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	– A detergent and water solution is used, after which the surface is thoroughly rinsed with demineralized water, wiped with clean dry cheesecloth, and allowed to dry in air for 1 h		N/A
ZB.4	Application of labels to surfaces		–
ZB.4.1	Two or more samples of a particular construction are applied to one or more panels of a test surface material for each exposure.		N/A
	Separate panels used for each exposure; number of samples applied to a panel may vary, depending upon sample size, and panel size		N/A
ZB.4.2	Samples applied to the test surface panels are stored at (23 ± 5) °C and a relative humidity of 50 % ± 20 % until they are subjected to the applicable exposure conditions.		N/A
ZB.5	Exposure conditions		–
ZB.5.1	Labels subjected to each of the conditions given in Table ZB.2: – 72 h in a standard atmosphere (as received); – 24 h in a standard atmosphere followed by immersion in demineralized water for (48 ± 0,5) h at (23 ± 2) °C (water immersion); – 24 h in a standard atmosphere followed by (240 ± 1) h in an air-circulating oven at the test temperature corresponding to the maximum temperature rating (elevated temperature); – 24 h in a standard atmosphere followed by (7 ± 0,25) h in a cold box maintained at the temperature (±2) °C corresponding to the minimum temperature rating (low temperature)		N/A
ZB.5.2	Test temperatures applicable to the maximum temperature rating are given in Table ZB.3 .....:		–
ZB.5.3	Labels are conditioned for at least 24 h in a standard atmosphere of (23 ± 2) °C and a relative humidity of 50 % ± 10 %		N/A
	Samples are then immersed in IRM903 lubricating oil for (48 ± 0,5) h		N/A
	After being immersed, samples are evaluated in accordance with the water immersion exposure in Table ZB.2 for compliance with the requirements in Table ZB.1 except that label panels removed from the lubricating oil are permitted to drain up to 5 min before being evaluated		N/A
	When exposure to the oil should be avoided, the legibility test (see Table ZB.1) is conducted using a thin, smooth-surfaced latex or nitrile rubber glove		N/A

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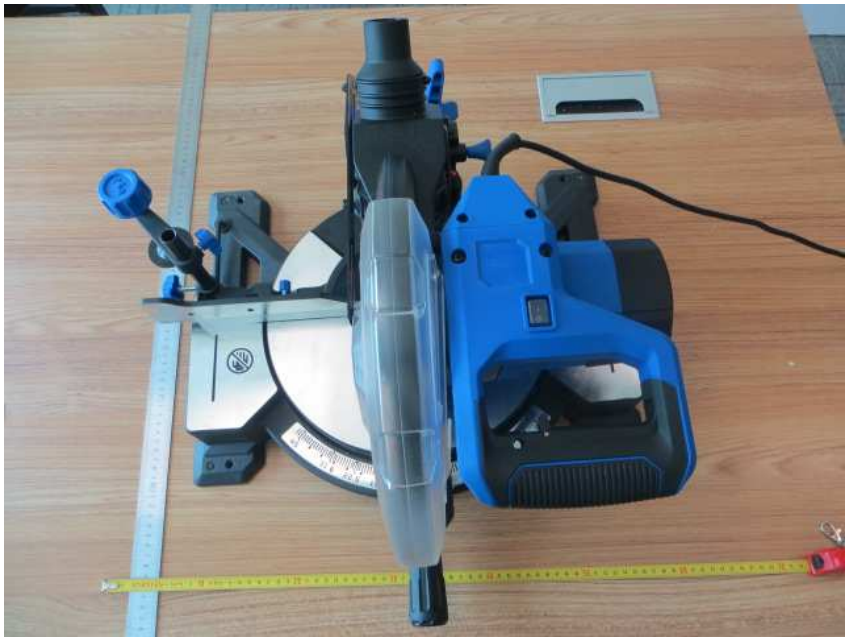
Clause	Requirement + Test	Result - Remark	Verdict
Z.6	Adhesion test		–
	Samples tested as specified		N/A

Photo			
Clause	Requirement + Test	Result - Remark	Verdict

Over view



Over view

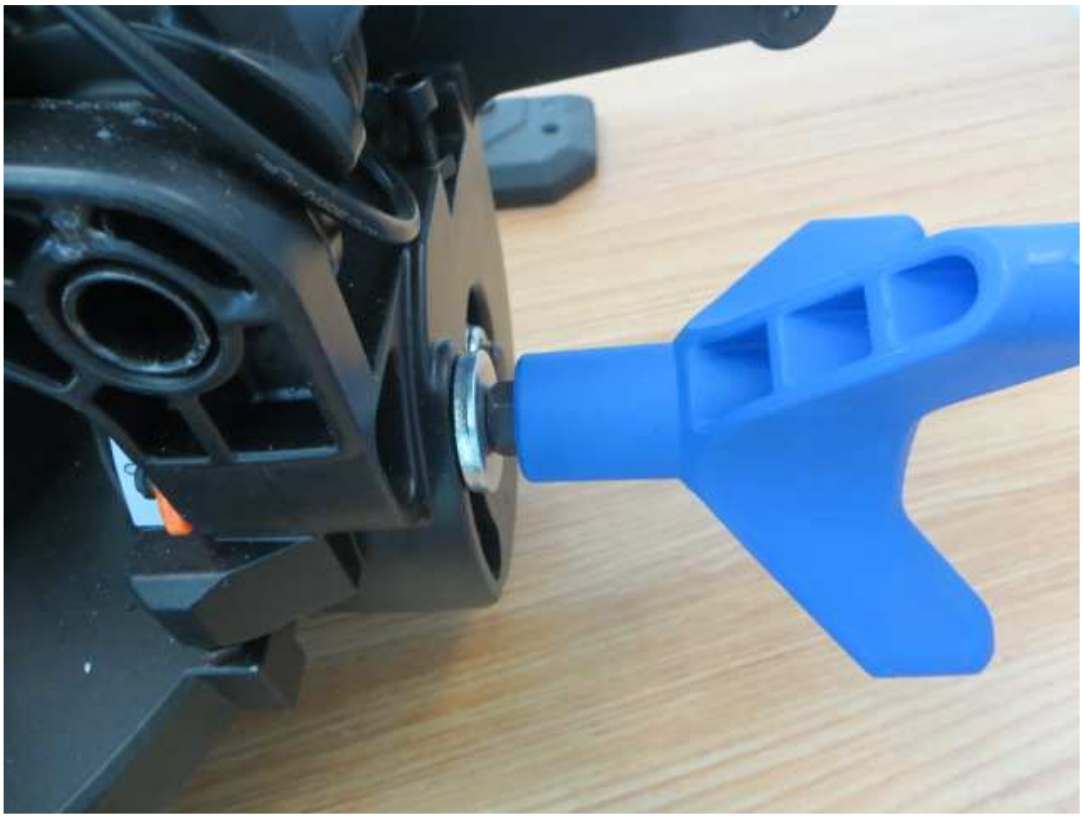
Photo			
Clause	Requirement + Test	Result - Remark	Verdict

Over view

Dust outlet

Photo			
Clause	Requirement + Test	Result - Remark	Verdict

Holes in the base



Function knob

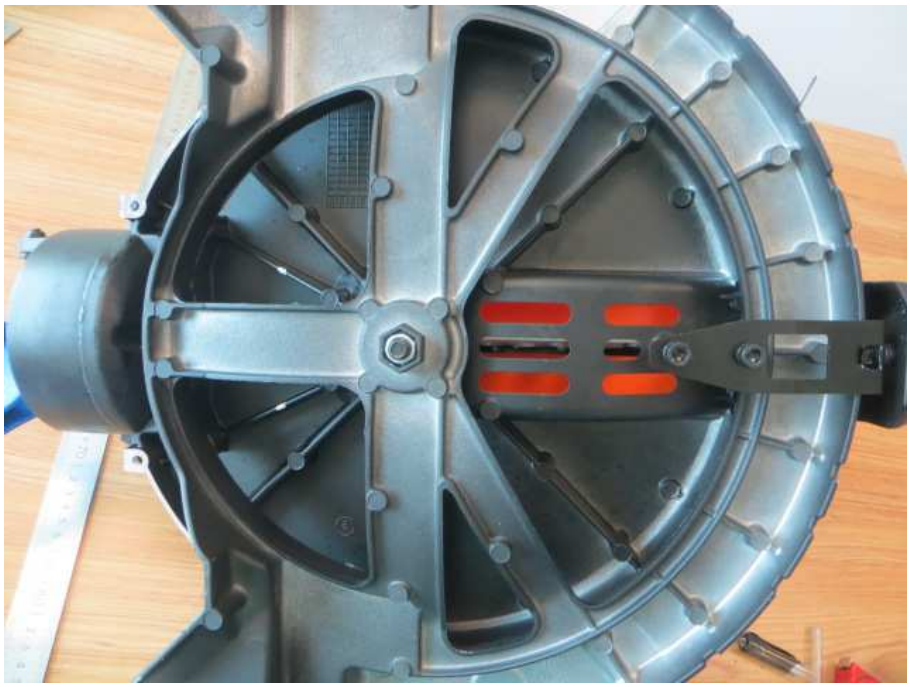
Photo			
Clause	Requirement + Test	Result - Remark	Verdict

Handle and lock off switch

Fence

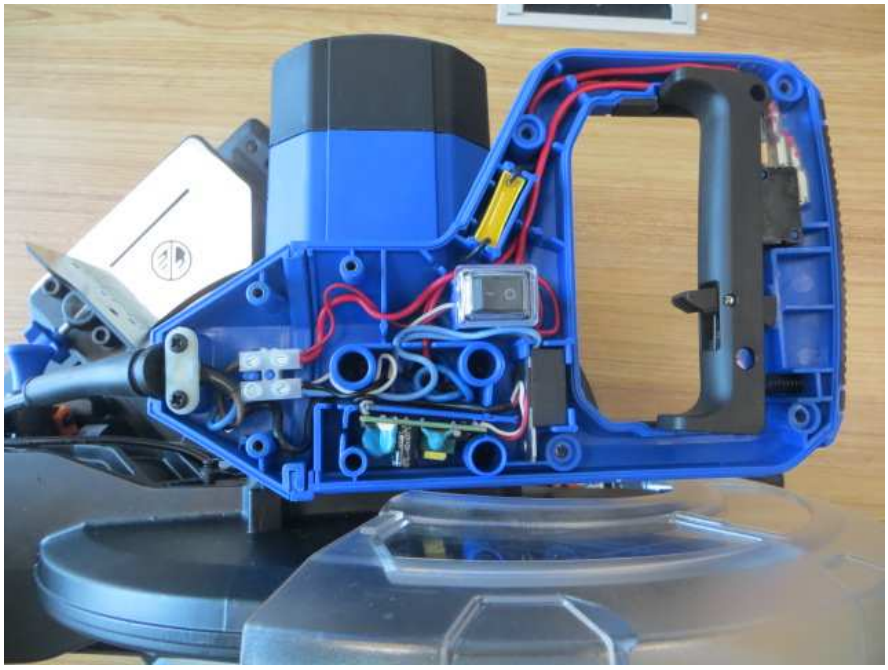
Photo			
Clause	Requirement + Test	Result - Remark	Verdict

Guarding system

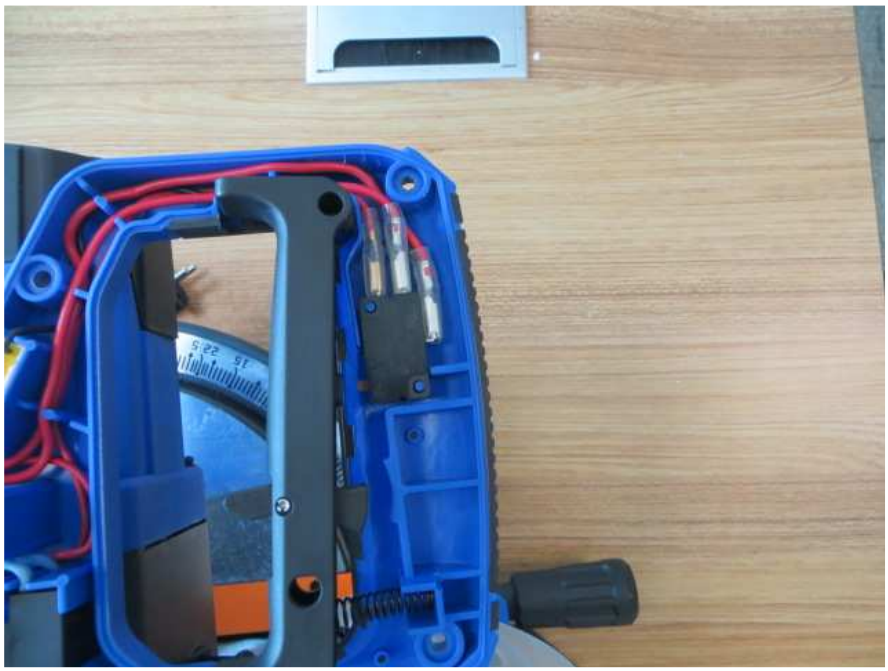


Over view

Photo			
Clause	Requirement + Test	Result - Remark	Verdict

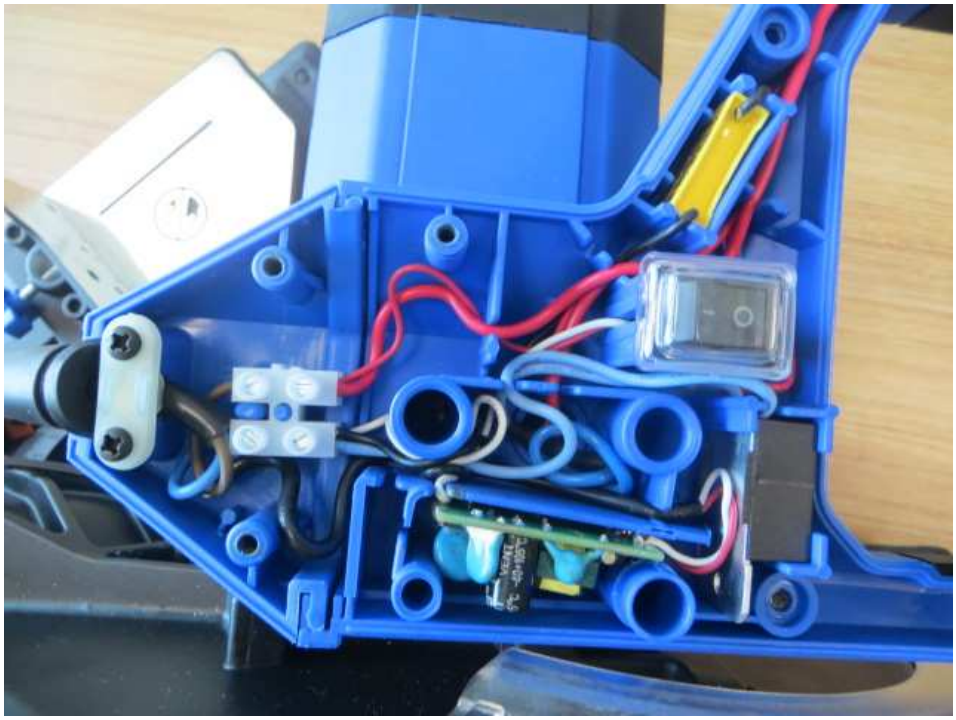


Inner view

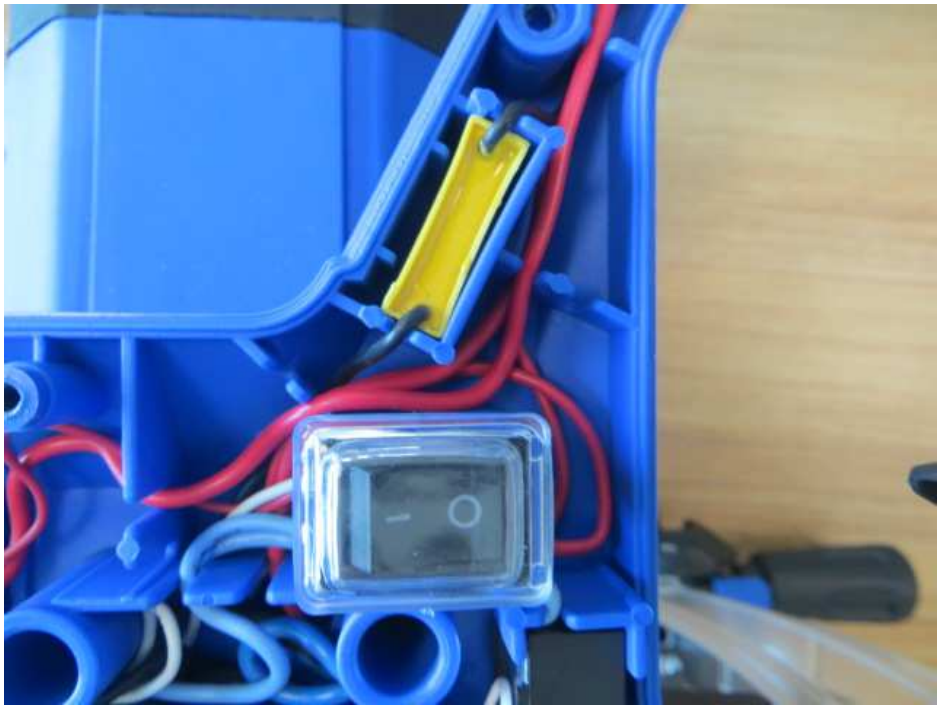


Inner view

Photo			
Clause	Requirement + Test	Result - Remark	Verdict

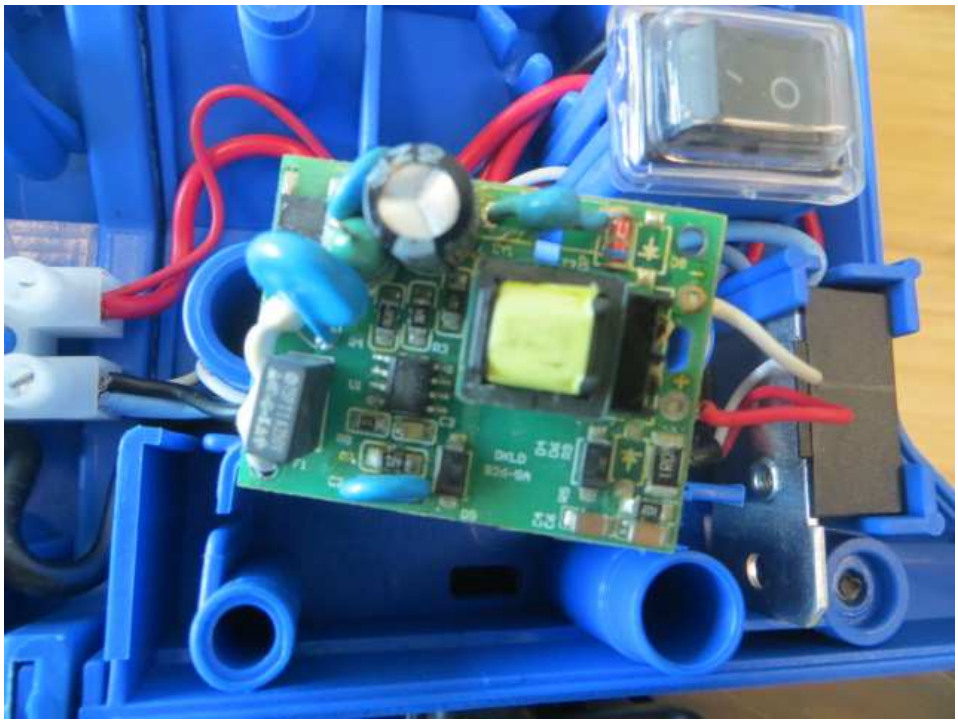


Inner view

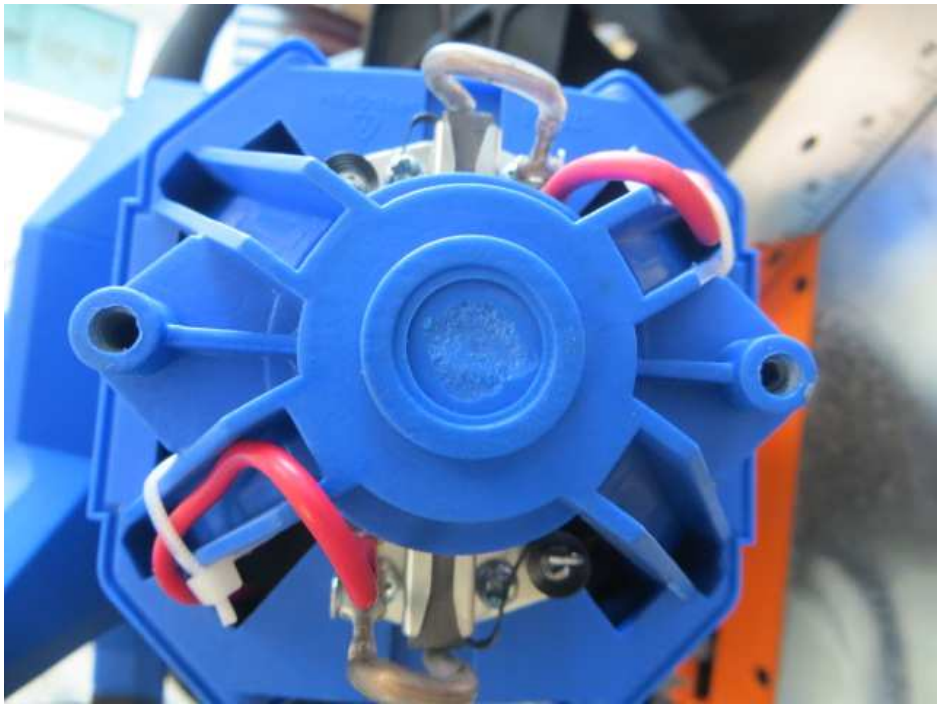


Inner view

Photo			
Clause	Requirement + Test	Result - Remark	Verdict

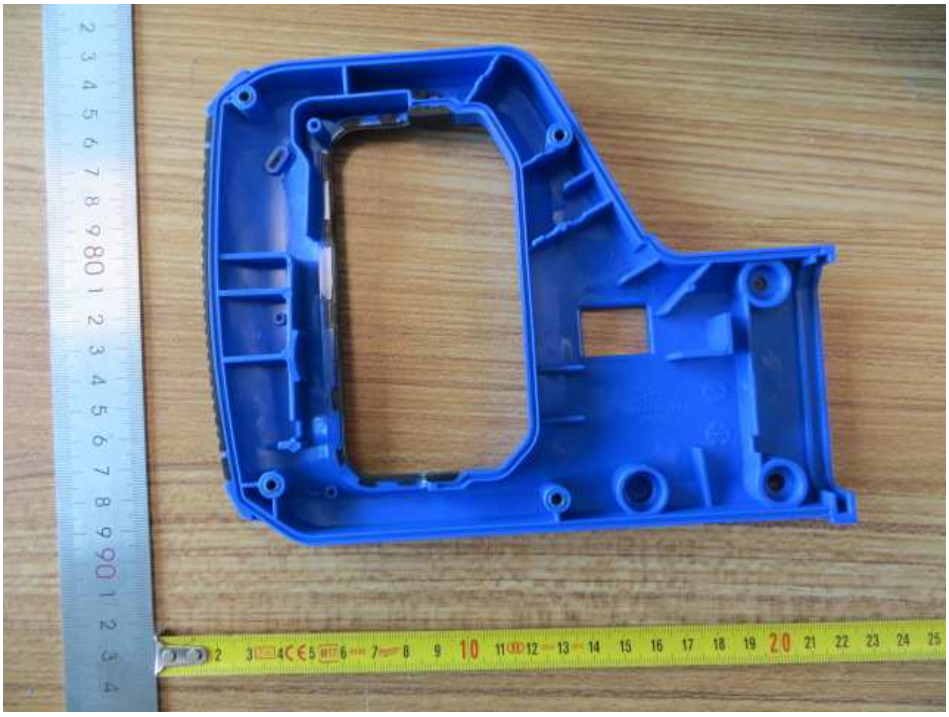


PCB

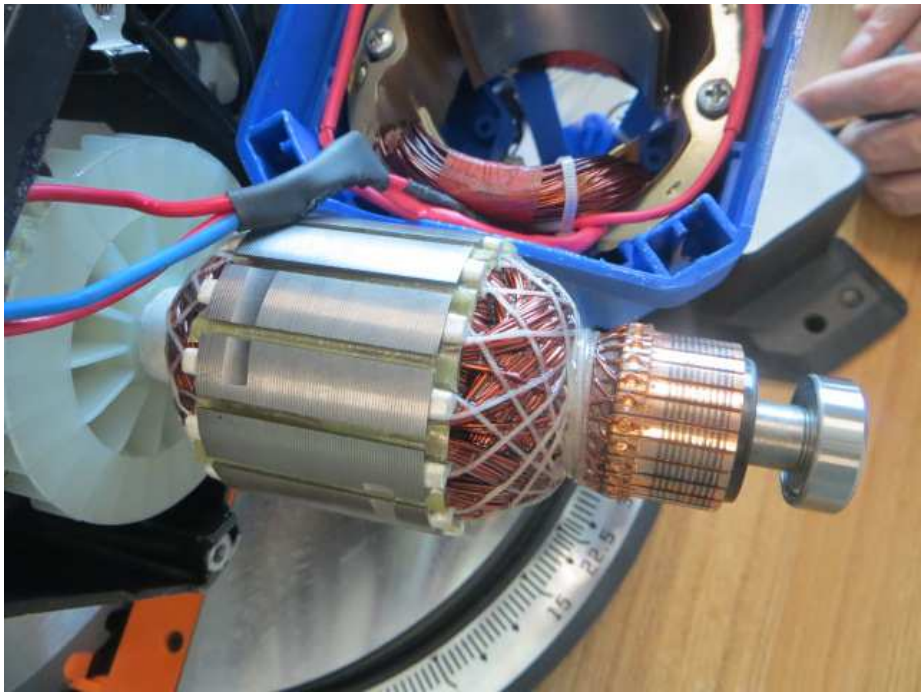


Inner view

Photo			
Clause	Requirement + Test	Result - Remark	Verdict

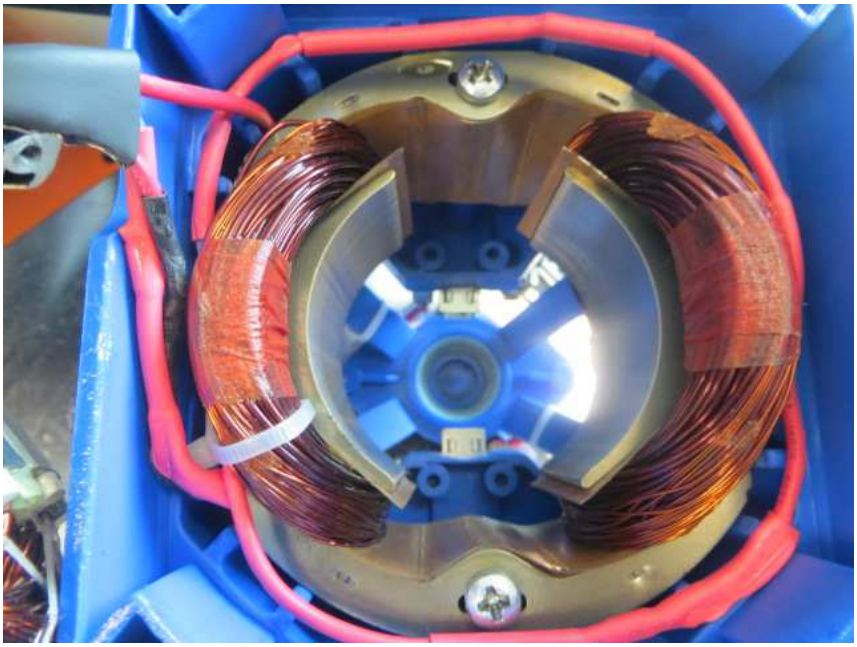


Enclosure



Rotor

Photo			
Clause	Requirement + Test	Result - Remark	Verdict



Stator