



Test Report issued under the responsibility of:



**TEST REPORT**  
**IEC 60745-2-22**  
**Hand-held motor-operated electric tools - Safety –**  
**Part 2-22: Particular requirements for cut-off machines**

Report Number..... : 3146349.51B

Date of issue..... : 2014-08-21

Total number of pages ..... 18 pages

CB Testing Laboratory ..... : DEKRA Testing and Certification (Shanghai) Ltd.

Address..... : 10F #250 Jiangchangsan Road Building 16 Headquarter Economy Park Shibe Hi-Tech Park, Zhabei District Shanghai 200436 CHINA

Applicant's name ..... : LEE YEONG INDUSTRIAL CO., LTD.

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

**Test specification:**

Standard ..... : IEC 60745-2-22 (First Edition): 2011

Test procedure ..... : CB Scheme

Non-standard test method..... : N/A

Test Report Form No. .... : IEC60745\_2\_22A

Test Report Form(s) Originator .... : TÜV Rheinland LGA Product GmbH

Master TRF ..... : Dated 2012-08

**Copyright © 2012 Worldwide System for Conformity Testing and Certification of Electrotechnical Equipment and Components (IECEE), Geneva, Switzerland. All rights reserved.**

This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

**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.**



Test item description..... : Concrete Saw(Cut-off Machine)

Trade Mark..... : AGP

Manufacturer ..... : LEE YEONG INDUSTRIAL CO., LTD.  
No.2, Kejia Rd., Douliu City, Yunlin County 64057, Taiwan

Model/Type reference ..... : C14; C355; CS355; CS14; SCS14; SCS355; SC14; SC355

Ratings..... : 220-240 V; 50-60 Hz; 2800 W; n=4500 min<sup>-1</sup>; ø355 mm  
110-120 V; 50-60 Hz; 1700 W; n=4500 min<sup>-1</sup>; ø355 mm  
Class I

|  |                               |  |
|--|-------------------------------|--|
| <b>Testing procedure and testing location:</b> |                               |  |
| <input checked="" type="checkbox"/>            | <b>CB Testing Laboratory:</b> | DEKRA Testing and Certification (Shanghai) Ltd.  |
| <b>Testing location/ address .....</b>         |                               | 10F #250 Jiangchangsang Road, Building 16 Headquarter Economy Park Shibeil Hi-Tech Park, Zhabei District Shanghai 200436 CHINA |
| <b>Tested by (name + signature) .....</b>      |                               | David Yang                                  |
| <b>Approved by (name + signature) .....</b>    |                               | Chris Feng                                  |
| <hr/>  |                               |  |
| <input type="checkbox"/>                       | <b>Testing procedure: TMP</b> |  |
| <b>Testing location/ address .....</b>         |                               |  |
| <b>Tested by (name + signature) .....</b>      |                               |  |
| <b>Approved by (name + signature) .....</b>    |                               |  |
| <hr/>  |                               |  |
| <input type="checkbox"/>                       | <b>Testing procedure: WMT</b> |  |
| <b>Testing location/ address .....</b>         |                               |  |
| <b>Tested by (name + signature) .....</b>      |                               |  |
| <b>Witnessed by (name + signature) .....</b>   |                               |  |
| <b>Approved by (name + signature) .....</b>    |                               |  |
| <hr/>  |                               |  |
| <input type="checkbox"/>                       | <b>Testing procedure: SMT</b> |  |
| <b>Testing location/ address .....</b>         |                               |  |
| <b>Tested by (name + signature) .....</b>      |                               |  |
| <b>Approved by (name + signature) .....</b>    |                               |  |
| <b>Supervised by (name + signature) ..</b>     |                               |  |

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

See part 1

**Summary of testing:****Tests performed (name of test and test clause):**

See part 1

**Testing location:**

See part 1

**Summary of compliance with National Differences****List of countries addressed:**


See part 1

**Copy of marking plate**

**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.**

See part 1

|   |  |
|---|--|
| <b>Test item particulars.....:</b>  | <b>Cut-off machine</b>   |
| <b>Classification of installation and use.....:</b>   | <b>Class I and severe duty condition</b>   |
| <b>Supply Connection .....</b>  | <b>Type Y attachment</b>   |
| .....:  |  |
| <b>Possible test case verdicts:</b>   |  |
| - test case does not apply to the test object.....:   | <b>N/A</b>   |
| - test object does meet the requirement.....:   | <b>P (Pass)</b>  |
| - test object does not meet the requirement.....:   | <b>F (Fail)</b>  |
| <b>Testing.....:</b>  |  |
| <b>Date of receipt of test item .....</b>   | <b>2014-04-17</b>  |
| <b>Date (s) of performance of tests .....</b>   | <b>2014-04-18 to 2014-06-10</b>  |
| <b>General remarks:</b>   |  |
| The test results presented in this report relate only to the object tested.<br>This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.<br>"(see Enclosure #)" refers to additional information appended to the report.<br>"(see appended table)" refers to a table appended to the report. |  |
| Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.   |  |
| <b>Manufacturer's Declaration per sub-clause 6.2.5 of IEC60745-2:</b>   |  |
| 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 .....   | <input type="checkbox"/> Yes<br><input checked="" type="checkbox"/> Not applicable |
| When differences exist; they shall be identified in the General product information section.  |  |
| <b>Name and address of factory (ies) .....</b>  | See part 1   |
| <b>General product information:</b>   |  |
| See part 1  |  |

| IEC 60745-2-22 |   |                 |         |
|----------------|---|-----------------|---------|
| Clause         | Requirement + Test  | Result - Remark | Verdict |
| <b>8</b>       | <b>Marking and Instructions</b>   |                 |         |
| <b>8.1</b>     | Addition  |                 | P       |
|                | <p>Tools shall also be marked with:</p> <ul style="list-style-type: none"> <li>· rated speed in revolutions per minute;</li> <li>· rated capacity in mm;</li> <li>· tools provided with a threaded spindle shall be marked with spindle thread size;</li> <li>· “WARNING Always wear eye protection” or the sign M004 of ISO 7010 or the following safety sign:</li> </ul>  <p>The eye protection symbol may be modified by adding other personal protective equipment such as ear protection, dust mask, etc.</p> |                 | P       |
| 8.101          | Tools shall also be marked with an indication of direction of rotation of the spindle. This shall be indicated by an arrow, raised or sunk, or by any other means no less visible and indelible.  |                 | P       |
| 8.6            | Addition:   |                 | P       |
|                | Rated speed: ..... : 4500 min <sup>-1</sup>   |                 | P       |
| 8.12.1.1       | Addition:   |                 | P       |

| IEC 60745-2-22 |   |                 |         |
|----------------|---|-----------------|---------|
| Clause         | Requirement + Test  | Result - Remark | Verdict |
| 8.12.1.1.101   | <p>Safety instructions for abrasive cutting-off operations</p> <p>Cut-off machine safety warnings</p> <p>a) The guard provided with the tool must be securely attached to the power tool and positioned for maximum safety, so the least amount of wheel is exposed towards the operator. Position yourself and bystanders away from the plane of the rotating wheel. The guard helps to protect operator from broken wheel fragments and accidental contact with wheel.</p> <p>b) Use only bonded reinforced or diamond cut-off wheels for your power tool. Just because an accessory can be attached to your power tool, it does not assure safe operation.</p> <p>NOTE Use the wording "bonded reinforced" or "diamond" as applicable depending on the designation of the tool.</p> <p>c) The rated speed of the accessory must be at least equal to the maximum speed marked on the power tool. Accessories running faster than their rated speed can break and fly apart.</p> <p>d) Wheels must be used only for recommended applications. For example: do not grind with the side of cut-off wheel. Abrasive cut-off wheels are intended for peripheral grinding, side forces applied to these wheels may cause them to shatter.</p> <p>e) Always use undamaged wheel flanges that are of correct diameter for your selected wheel. Proper wheel flanges support the wheel thus reducing the possibility of wheel breakage.</p> <p>f) Do not use worn down reinforced wheels from larger power tools. Wheels intended for a larger power tool are not suitable for the higher speed of a smaller tool and may burst.</p> <p>NOTE The above warning does not apply for tools only designated to be used with diamond wheels.</p> <p>g) The outside diameter and the thickness of your accessory must be within the capacity rating of your power tool. Incorrectly sized accessories cannot be adequately guarded or controlled.</p> <p>h) The arbour size of wheels and flanges must properly fit the spindle of the power tool. Wheels and flanges with arbour holes that do not match the mounting hardware of the power tool will run out of balance, vibrate excessively and may cause loss of control.</p> |                 | P       |

| IEC 60745-2-22 |  |                 |         |
|----------------|--|-----------------|---------|
| Clause         | Requirement + Test   | Result - Remark | Verdict |
|                | <p>i) Do not use damaged wheels. Before each use, inspect the wheels for chips and cracks. If power tool or wheel is dropped, inspect for damage or install an undamaged wheel. After inspecting and installing the wheel, position yourself and bystanders away from the plane of the rotating wheel and run the power tool at maximum no load speed for one minute. Damaged wheels will normally break apart during this test time.</p> <p>j) Wear personal protective equipment. Depending on application, use face shield, safety goggles or safety glasses. As appropriate, wear dust mask, hearing protectors, gloves and shop apron capable of stopping small abrasive or workpiece fragments. The eye protection must be capable of stopping flying debris generated by various operations. The dust mask or respirator must be capable of filtering particles generated by your operation. Prolonged exposure to high intensity noise may cause hearing loss.</p> <p>k) Keep bystanders a safe distance away from work area. Anyone entering the work area must wear personal protective equipment. Fragments of workpiece or of a broken wheel may fly away and cause injury beyond immediate area of operation.</p> <p>l) Hold the power tool by insulated gripping surfaces only, when performing an operation where the cutting accessory may contact hidden wiring or its own cord. Cutting accessory contacting a "live" wire may make exposed metal parts of the power tool "live" and could give the operator an electric shock.</p> <p>m) Position the cord clear of the spinning accessory. If you lose control, the cord may be cut or snagged and your hand or arm may be pulled into the spinning wheel.</p> <p>n) Never lay the power tool down until the accessory has come to a complete stop. The spinning wheel may grab the surface and pull the power tool out of your control.</p> <p>o) Do not run the power tool while carrying it at your side. Accidental contact with the spinning accessory could snag your clothing, pulling the accessory into your body.</p> <p>p) Regularly clean the power tool's air vents. The motor's fan will draw the dust inside the housing and excessive accumulation of powdered metal may cause electrical hazards.</p> |                 | P       |



| <b>IEC 60745-2-22</b> |  |                 |         |
|-----------------------|--|-----------------|---------|
| Clause                | Requirement + Test   | Result - Remark | Verdict |
|                       | <p>q) Do not operate the power tool near flammable materials. Sparks could ignite these materials.</p> <p>r) Do not use accessories that require liquid coolants. Using water or other liquid coolants may result in electrocution or shock.</p> <p>NOTE The above warning does not apply for power tools specifically designed for use with a liquid system.</p>  |                 | P       |
| 8.12.1.1.102          | <p>Further safety instructions for abrasive cutting-off operations</p> <p><b>Kickback and related warnings</b></p>   |                 | P       |
|                       | <p>Kickback is the result of power tool misuse and/or incorrect operating procedures or conditions and can be avoided by taking proper precautions as given below.</p> <p>a) Maintain a firm grip on the power tool and position your body and arm to allow you to resist kickback forces. Always use auxiliary handle, if provided, for maximum control over kickback or torque reaction during start-up. The operator can control torque reactions or kickback forces, if proper precautions are taken.</p> <p>b) Never place your hand near the rotating accessory. Accessory may kickback over your hand.</p> <p>c) Do not position your body in line with the rotating wheel. Kickback will propel the tool in direction opposite to the wheel's movement at the point of snagging.</p> <p>d) Use special care when working corners, sharp edges etc. Avoid bouncing and snagging the accessory. Corners, sharp edges or bouncing have a tendency to snag the rotating accessory and cause loss of control or kickback.</p> |                 | P       |
|                       | <p>e) Do not attach a saw chain, woodcarving blade, segmented diamond wheel with a peripheral gap greater than 10 mm or toothed saw blade. Such blades create frequent kickback and loss of control.</p> <p>f) Do not "jam" the wheel or apply excessive pressure. Do not attempt to make an excessive depth of cut. Overstressing the wheel increases the loading and susceptibility to twisting or binding of the wheel in the cut and the possibility of kickback or wheel breakage.</p> <p>g) When wheel is binding or when interrupting a cut for any reason, switch off the power tool and hold the power tool motionless until the wheel comes to a complete stop. Never attempt to remove the wheel from the cut while the wheel is in motion otherwise kickback may occur. Investigate and take corrective action to eliminate the cause of wheel binding.</p>  |                 | P       |

| IEC 60745-2-22 |  |                 |          |
|----------------|--|-----------------|----------|
| Clause         | Requirement + Test   | Result - Remark | Verdict  |
|                | <p>h) Do not restart the cutting operation in the workpiece. Let the wheel reach full speed and carefully re-enter the cut. The wheel may bind, walk up or kickback if the power tool is restarted in the workpiece.</p> <p>i) Support panels or any oversized workpiece to minimize the risk of wheel pinching and kickback. Large workpieces tend to sag under their own weight. Supports must be placed under the workpiece near the line of cut and near the edge of the workpiece on both sides of the wheel.</p> <p>j) Use extra caution when making a “pocket cut” into existing walls or other blind areas. The protruding wheel may cut gas or water pipes, electrical wiring or objects that can cause kickback.</p> |                 | P        |
| 8.12.2 a)      | Addition:  |                 | P        |
|                | Explanation of the term “bonded reinforced wheel” or type designation, if applicable   |                 | N/A      |
|                | Permitted wheel construction (diamond or bonded reinforced, if diamond segmented, maximum peripheral gap between segments is 10 mm, only with a negative rake angle, see Figure 101), wheel diameter and wheel thickness   |                 | P        |
| 8.12.2 b)      | Addition:  |                 | P        |
|                | Proper use of blotters, when they are provided with a bonded reinforced product  |                 | N/A      |
|                | Mounting of accessories and use of the correct flanges, use and care of the abrasive product. For reversible flanges, the correct method of fitting the flanges  |                 | P        |
|                | Instruction for the mounting and securing of the guard identifying allowable adjustments to ensure maximum protection of the operator  |                 | P        |
|                | Instruction to the operator on the use of all the different types of wheels specified in the instructions in accordance with 8.12.2 a) 101), e.g. bonded wheel, diamond wheel  |                 | P        |
|                | Proper support for the workpiece   |                 | P        |
|                | If the guide roller or guide plate is removable or adjustable, instructions on its use and settings  |                 | P        |
| 8.12.2 c)      | Addition:  |                 | P        |
|                | Storage and handling of accessories  |                 | P        |
| <b>12.</b>     | <b>Heating</b>   |                 | <b>P</b> |

| <b>IEC 60745-2-22</b> |   |                 |          |
|-----------------------|---|-----------------|----------|
| Clause                | Requirement + Test  | Result - Remark | Verdict  |
| 12.4                  | Replacement:<br>The tool is operated for 30 min. The temperature rises are measured at the end of the 30 min.   |                 | P        |
| <b>18.</b>            | <b>Abnormal Operation</b>   |                 | <b>P</b> |
| 18.10                 | Addition:<br>When evaluating the tool in accordance with 18.10, an electronic soft start or a restart prevention device need not operate.   |                 | P        |
| 18.10.4               | Addition:<br>During these tests, the speed of the spindle shall not exceed 120 % of the rated speed. The accessory in accordance with 8.12.2 a) 101) that results in the maximum speed shall be installed.  |                 | P        |
| <b>19.</b>            | <b>Mechanical Hazards</b>   |                 | <b>P</b> |
| 19.4                  | Addition:<br>For tools provided with a detachable guide plate or guide roller(s), two handles are required for a rated capacity exceeding 100 mm.<br>The motor casing, if suitably shaped, may be considered as a second handle.  |                 | P        |
| 19.6                  | Replacement:<br>The tool shall be designed so as to prevent excessive speed under normal use. The speed of the tool shall not exceed the rated speed under any operating condition.<br>Compliance is checked by inspection and by measuring the speed after the tool is operated for a period of 5 min. The permitted accessory that produces the maximum speed shall be installed.<br>If the tool is provided with a load sensitive speed control, then an accessory need not be installed to load the tool to find maximum speed. |                 | P        |
| 19.101                | Tools shall be provided with a wheel guard to protect the user during normal use against:<br><br>– accidental contact with the abrasive product;<br>– ejection of fragments of the abrasive product;<br>– sparks and other debris.  |                 | P        |

| IEC 60745-2-22 |  |                 |         |
|----------------|--|-----------------|---------|
| Clause         | Requirement + Test   | Result - Remark | Verdict |
|                | The guard shall fulfil the following requirements:<br><ul style="list-style-type: none"> <li>· to change the wheel, it shall not be necessary to remove the guard from the tool;</li> <li>· be designed to facilitate easy replacement of the wheel. For this purpose, parts of the guard may be opened without the aid of a tool provided these parts remain attached to the guard together with any fasteners. An example of such guard is shown in Figure 102;</li> <li>· be designed so that the risk of an accidental contact between the operator and the wheel during normal use is minimized e.g. by a possibility of adjustment;</li> </ul> |                 | P       |
|                | To prevent the installation of an oversized wheel, the clearance between the inside of the guard and the periphery of a new abrasive product shall in at least one location be 8 mm maximum for tools with a rated capacity not exceeding 130 mm and 10 mm maximum for tools with a rated capacity exceeding 130 mm.   |                 | P       |
|                | A minimum opening for the plunging movement of the motor with respect to the upper guard may be provided between the guide plate and the lower side of the motor.  |                 | N/A     |
|                | For tools designed for bonded reinforced wheels, the guard shall cover the periphery and both sides of the abrasive wheel for at least 175°, except that the guard need not cover the spindle end, nut and the locking flange. See Figure 102.   |                 | N/A     |
|                | For tools designed only for diamond wheels, the guard shall cover<br><ul style="list-style-type: none"> <li>– the periphery and the spindle side for at least 175°;</li> <li>– at least the outer 20 % of the maximum recommended wheel radius of the side where the nut and locking flange are located for at least 175°.</li> </ul>  |                 | P       |
| 19.102         | The tool shall be designed so as to prevent the abrasive product coming loose under normal use.  |                 | N/A     |
|                | Spindle and flange shall be designed so that they secure and locate wheels to the cut-off machine. At least one of the flanges shall be keyed, screwed, shrunk-on or otherwise secured to prevent rotation relative to the tool spindle.   |                 | N/A     |
|                | Either the direction of the spindle threads shall be such that any clamping device or wheel with threaded hole tend to tighten during cutting or the locking flange shall have positive locking to the spindle.  |                 | N/A     |
| 19.103         | In order to limit the unbalance of any rotating accessory, the eccentricity of the spindle shall be less than 0,1 mm.  |                 | P       |

| IEC 60745-2-22 |  |   |         |
|----------------|--|---|---------|
| Clause         | Requirement + Test   | Result - Remark                               | Verdict |
|                | For tools that provide for mounting of the accessory through the flange or similar clamping and locating device, the total eccentricity of the combination of the spindle, the diameter of the flange bore and the diameter of the part of the flange which locates and guides the accessory shall be less than:<br><ul style="list-style-type: none"> <li>· 0,30 mm for rated speeds less than 15 000 min<sup>-1</sup>;</li> <li>· 0,15 mm for rated speeds from 15 000 min<sup>-1</sup> to less than 25 000 min<sup>-1</sup>;</li> <li>· 0,10 mm for rated speeds 25 000 min<sup>-1</sup> and higher.</li> </ul> | 0,09 mm<br>less than 15 000 min <sup>-1</sup> | P       |
|                | For tools with flanges, the eccentricity of the flange in the worst off-centre position allowed by the mounting procedure is measured.   |   | P       |
|                | For tools with collets and chucks, a true concentric steel pin is mounted and its eccentricity is measured at 10 mm and at 20 mm from the mounting location.   |   | N/A     |
| 19.104         | Flanges shall be flat and have no sharp edges  |   | P       |
|                | Flanges for bonded reinforced wheels shall meet the dimensional requirements in 19.104.1.<br>Flanges for diamond wheels shall meet the dimensional requirements in 19.104.2.   |   | P       |

| IEC 60745-2-22 |   |                 |         |
|----------------|---|-----------------|---------|
| Clause         | Requirement + Test  | Result - Remark | Verdict |
| 19.104.1       | <p>Flanges for bonded reinforced wheels shall have the following dimensions illustrated in Figure 103, where <math>D</math> is the outside diameter of the wheel, <math>G</math> and <math>W</math> are the dimensions of the recess and <math>D_f</math> is the outside diameter of the flange clamping surface.</p> <p><math>D_f \geq 0,25 D</math></p> <p>For <math>55 \text{ mm} \leq D &lt; 80 \text{ mm}</math> and for <math>80 \text{ mm} \leq D &lt; 105 \text{ mm}</math> for wheels with a bore diameter of <math>10 \text{ mm}</math> (3/8 in UNC), a wheel flange with <math>D_f \geq 19 \text{ mm}</math> is acceptable.</p> <p>For <math>80 \text{ mm} \leq D &lt; 105 \text{ mm}</math> for wheels with a bore diameter of <math>16 \text{ mm}</math> (5/8 in UNC), a wheel flange with <math>D_f \geq 28 \text{ mm}</math> is acceptable.</p> <p>For <math>105 \text{ mm} \leq D \leq 230 \text{ mm}</math>, a wheel flange with <math>D_f \geq 40 \text{ mm}</math> is acceptable.</p> <p>The backing and the locking flange shall have the same diameter <math>D_f</math> or the overlap of the backing and locking flange bearing surfaces shall be at least equal to dimension <math>C</math>.</p> <p>The dimensions <math>C</math>, <math>G</math> and <math>W</math> in Figure 103 shall be:</p> <p><math>C \geq 3 \text{ mm}</math><br/> <math>W \geq G \geq 1 \text{ mm}</math> for <math>D_f &lt; 50 \text{ mm}</math><br/> <math>W \geq G \geq 1,5 \text{ mm}</math> for <math>D_f \geq 50 \text{ mm}</math></p> |                 | N/A     |
| 19.104.2       | <p>Flanges for diamond wheels shall have the following dimensions illustrated in Figure 103, where <math>D</math> is the outside diameter of the wheel, <math>G</math> and <math>W</math> are the dimensions of the recess and <math>D_f</math> is the outside diameter of the flange clamping surface.</p> <p><math>D_f \geq 0,15 D</math></p> <p>The backing and the locking flange shall have the same diameter <math>D_f</math> or the overlap of the backing and locking flange bearing surfaces shall be at least equal to dimension <math>C</math>, with</p> <p><math>C \geq 1,5 \text{ mm}</math>.</p> <p>Dimensions <math>G</math> and <math>W</math> shall be:</p> <p><math>W \geq G \geq 0</math></p>  |                 | P       |
| 19.105         | Flanges shall be designed so that they are of adequate strength.  |                 | P       |

| <b>IEC 60745-2-22</b> |   |                 |          |
|-----------------------|---|-----------------|----------|
| Clause                | Requirement + Test  | Result - Remark | Verdict  |
|                       | <p>The cut-off machine shall be fitted with a steel disc having an equal thickness and shape as the wheel suitable for the tool.</p> <p>The clamping nut shall be tightened with a first test torque according to Table 101. A feeler gauge of a thickness of 0,05 mm shall be used to test whether the flanges are in contact with the disc all around the circumference. The test is satisfactory if at no place the feeler gauge can be pushed underneath the flanges.</p> <p>The clamping nut shall be further tightened to the second test torque according to Table 101. A feeler gauge of a thickness of 0,05 mm shall be used to test the deflection of the flanges. The result is satisfactory if at no place the feeler gauge can be pushed underneath the flanges by more than 1 mm.</p> |                 | P        |
| 19.106                | Tools shall be provided with a guide plate or guide roller for assisting normal operation. The guide plate or guide roller may be removable or adjustable.  |                 | P        |
| <b>20</b>             | <b>Mechanical strength</b>  |                 | <b>P</b> |
| 20.101                | The wheel guard, as required by 19.101, shall have sufficient mechanical strength to withstand a wheel breakage.  |                 | P        |
|                       | For tools designed for bonded reinforced wheels or designed for both diamond wheels and bonded reinforced wheels, compliance is checked by submitting three samples of any recommended guard to the test specified in 20.101.1 to 20.101.4. At the manufacturer's discretion, the test may be conducted with three guards but less than three separate cut-off machines. After the test, the tool shall meet the acceptance criteria of 20.101.5.   |                 | N/A      |
|                       | For tools designed only for diamond wheels, compliance is checked either: <ul style="list-style-type: none"> <li>– by submitting three samples of any recommended guard to the test specified in 20.101.1 to 20.101.4, also using bonded reinforced wheels. After the test, the tool shall meet the acceptance criteria of the first paragraph in 20.101.5.</li> <li>– or by meeting the design requirements in Table 102.</li> </ul>   |                 | P        |
| 20.101.1              | The guard shall be securely mounted to the cut-off machine in accordance with the instructions (see Figure 104).  |                 | N/A      |

| IEC 60745-2-22 |  |                 |          |
|----------------|--|-----------------|----------|
| Clause         | Requirement + Test   | Result - Remark | Verdict  |
|                | Regardless the intended wheel construction, a bonded reinforced wheel with the maximum thickness recommended in 8.12.2 a) 101) and with a diameter equal to the rated capacity of the cut-off machine shall be mounted to the spindle in accordance with the instructions. For tools where more than one diamond wheel can be fitted, only one bonded reinforced wheel is mounted.   |                 | N/A      |
|                | The cut-off machine shall be operated at rated voltage for a minimum of 5 min. The speed of the wheel is measured and recorded.  |                 | N/A      |
| 20.101.2       | The wheel as specified in 20.101.1 shall be notched into four equal segments (quadrants). The cut is directed from the outer edge radially towards the centre (see Figure 105). The width of each notch shall not exceed 2,5 mm. The extent of the notches shall allow for the centrifugal forces to cause the wheel to disintegrate at a speed equal to or greater than either the speed established in 20.101.1 or 90 % of the rated speed of the cut-off machine, whichever is higher. The notched wheel is mounted to the spindle in accordance with the instructions. |                 | N/A      |
| 20.101.3       | Teststand is to be built up according the instruction in 20.101.3  |                 | N/A      |
| 20.101.4       | While monitoring the wheel speed with a tachometer, the voltage to the tool is gradually increased until the speed specified in 20.101.2 is achieved. If the wheel does not disintegrate, the cut-off machine is stopped, the length of the pre-cuts increased and the test above repeated until the wheel bursts.   |                 | N/A      |
| 20.101.5       | The guard and the fasteners or the guard's mounting hardware shall remain in place. Deformation, hairline cracks or scratches and gouges to the guard and mounting hardware are acceptable.<br><br>As a result of the wheel's disintegration, the guard shall not have rotated in the direction of the wheel rotation by more than 90° (see Figure 104).   |                 | N/A      |
| <b>21</b>      | <b>Construction</b>  |                 | <b>P</b> |
| 21.18.1        | Replacement:<br>Tools with a rated capacity greater than 155 mm and with a device for locking the switch in the "on" position shall not give rise to danger following voltage recovery, after an interruption of the mains supply.   |                 | N/A      |



| <b>IEC 60745-2-22</b> |   |                 |          |
|-----------------------|---|-----------------|----------|
| Clause                | Requirement + Test  | Result - Remark | Verdict  |
|                       | <p>Compliance is checked by the following test:</p> <p>The tool is placed in all stable positions likely to be used by the operator on a horizontal circular pedestal, elevated at least 500 mm, with a diameter no greater than 150 % of the longest tool dimension measured without the cable. The tool is set for maximum depth of cut and at 90° bevel position. The geometric centre of the tool is placed at the centre of the circular pedestal. The surface of the circular pedestal is made of medium density fibreboard (MDF).</p> <p>With the switch in the locked on position, the tool is then energised for 15 s. The tool shall not fall off the pedestal.</p>   |                 | N/A      |
| 21.18.1.101           | <p>A lock-on device, if any, shall require two dissimilar actions to lock the switch in the “on” position, and the switch shall unlock automatically with a single actuation motion.</p>  |                 | N/A      |
| 21.18.2               | <p>Replacement:</p> <p>Switches shall be so located or designed that inadvertent operation is unlikely to occur during lifting or carrying.</p> <p>It shall not be possible to start the tool when a sphere with a diameter of <math>(100 \pm 1)</math> mm is applied to the switch perpendicularly to the tool’s surface where the switch is mounted, and the grasping surface immediately in front of or behind the switch shall be a minimum of 70 mm;</p> <p>or</p> <p>the switch shall have two separate and dissimilar actions before the motor is switched on (e.g. a switch which has to be pushed in before it can be moved laterally to close the contacts to start the motor);</p> <p>or</p> <p>for switches with an actuator having a maximum length of 40 mm, the travel from “off” to “on” of the part of the switch actuator that has the greatest travel shall not be less than 6,4 mm.</p> |                 | P        |
| <b>24</b>             | <b>Supply connection and external flexible cords</b>  |                 | <b>P</b> |
| 24.4                  | <p>Replacement of the first paragraph:</p> <p>For tools with a rated capacity greater than 155 mm, the supply cords shall be not lighter than heavy polychloroprene-sheathed flexible cable (code designation 60245 IEC 66) or equivalent.</p>  |                 | P        |
| <b>29</b>             | <b>Resistance to heat, fire and tracking</b>  |                 | <b>P</b> |

| IEC 60745-2-22 |   |                 |         |
|----------------|---|-----------------|---------|
| Clause         | Requirement + Test  | Result - Remark | Verdict |
| 29.3           | Addition:<br>Cut-off machines are considered to be subjected to severe duty conditions. |                 | P       |

### Annexes

|             |   |  |            |
|-------------|---|--|------------|
|             | <b>Annex K: Battery tools and battery packs</b>   |  | <b>N/A</b> |
| K.1         | Addition:<br>All clauses of this part 2 apply unless otherwise specified in this annex.   |  | N/A        |
| K8.12.1.101 | Replacement of item l)<br><br>l) Hold the power tool by insulated gripping surfaces only, when performing an operation where the cutting accessory may contact hidden wiring. Cutting accessory contacting a "live" wire may make exposed metal parts of the power tool "live" and could give the operator an electric shock. Items m) and r) are not applicable. |  | N/A        |
| K.12.4      | This subclause of Part 2 is not applicable.   |  | N/A        |
| K.24.4      | This subclause of Part 2 is not applicable.   |  | N/A        |
|             | <b>Annex L: Battery tools and battery packs provided with mains connection or non-isolated sources</b>  |  | <b>N/A</b> |
| L.1         | Addition:<br>All clauses of this part 2 apply   |  | N/A        |

-----End-----