



TEST REPORT

EN 60529

Degrees of protection provided by enclosures (IP Code)

Report Reference No..... : ZHT-221010008S

Date of issue..... : Oct. 14, 2022

Total number of pages..... 13 Pages

Testing Laboratory..... : Guangdong Zhonghan Testing Technology Co., Ltd.

Address..... : Room 104, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Applicant's name..... : Shenzhen Happyrun Intelligent Technology Co., Ltd.

Address..... : 3F, Building A, Runfa Tech Park, NO.25, Mudun Road, First Industry Park, Lou Cun, Gongming, Guangming, Shenzhen, China

Test specification:

Standards..... : EN 60529:1991+A1:2000+A2:2013

IP Code : IP X5

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

This test report is specially limited to the above client company and product model only. It may not be duplicated without prior written consent of ZHT Test.

Test item description..... : Power assisted electric bicycle

Trade Mark..... : **HAPPYRUN**

Manufacturer..... : Shenzhen Happyrun Intelligent Technology Co., Ltd.
3F, Building A, Runfa Tech Park, NO.25, Mudun Road, First Industry Park, Lou Cun, Gongming, Guangming, Shenzhen, China

Model/Type reference..... : HR-G50

Ratings..... : IP X5



Testing procedure and testing location:

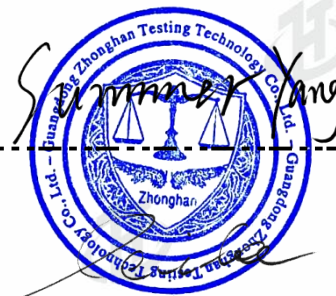
Testing Laboratory.....: **Guangdong Zhonghan Testing Technology Co., Ltd.**

Address.....: Room 104, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Date of Test.....: Oct. 10, 2021 - Oct. 13, 2022

Tested by (name + signature).....: Laney Xie

Reviewed by (name + signature).....: Summer Yang



Approved by (name + signature).....: Levi Lee



Testing procedure and testing location:	
List of Attachments: Attachment 1: 5 pages of Photo Documentation	
Test item particulars..... :	
Possible test case verdicts: - test case does not apply to the test object..... : N/A - test object does meet the requirement..... : P (Pass) - test object does not meet the requirement..... : F (Fail)	
Testing..... :	
Date of receipt of test item..... :	Oct. 10, 2022
Date (s) of performance of tests..... :	Oct. 10, 202 - Oct. 13, 2022
General remarks: The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. "(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
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EN 60529																																			
Clause	Requirement – Test	Result – Remark	Verdict																																
	GENERAL CONDITIONS FOR THE TESTS		--																																
13.1	Test means and the main test conditions are given in table 7. Table 7 æ Test means for the tests for protection against solid foreign objects <table border="1"> <thead> <tr> <th>First characteristic numeral</th> <th>Test means (object probes and dust chamber)</th> <th>Test force</th> <th>Test conditions, see</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>No test required</td> <td>--</td> <td>--</td> </tr> <tr> <td>1</td> <td>Rigid sphere without handle or guard 0,0550+0 mm diameter</td> <td>50 N ± 10 %</td> <td>13.2</td> </tr> <tr> <td>2</td> <td>Rigid sphere without handle or guard 0,212,5+0 mm diameter</td> <td>30 N ± 10 %</td> <td>13.2</td> </tr> <tr> <td>3</td> <td>Rigid steel rod 0,052,5+0 mm diameter with edges free from burrs</td> <td>3 N ± 10 %</td> <td>13.2</td> </tr> <tr> <td>4</td> <td>Rigid steel rod 0,051,0+0 mm diameter with edges free from burrs</td> <td>1 N ± 10 %</td> <td>13.2</td> </tr> <tr> <td>5</td> <td>Dust chamber figure 2, with or without underpressure</td> <td>--</td> <td>13.4 + 13.5</td> </tr> <tr> <td>6</td> <td>Dust chamber figure 2, with under-pressure</td> <td>--</td> <td>13.4 + 13.6</td> </tr> </tbody> </table>		First characteristic numeral	Test means (object probes and dust chamber)	Test force	Test conditions, see	0	No test required	--	--	1	Rigid sphere without handle or guard 0,0550+0 mm diameter	50 N ± 10 %	13.2	2	Rigid sphere without handle or guard 0,212,5+0 mm diameter	30 N ± 10 %	13.2	3	Rigid steel rod 0,052,5+0 mm diameter with edges free from burrs	3 N ± 10 %	13.2	4	Rigid steel rod 0,051,0+0 mm diameter with edges free from burrs	1 N ± 10 %	13.2	5	Dust chamber figure 2, with or without underpressure	--	13.4 + 13.5	6	Dust chamber figure 2, with under-pressure	--	13.4 + 13.6	--
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6	Dust chamber figure 2, with under-pressure	--	13.4 + 13.6																																
13.4	Dust test for first characteristic numerals 5 and 6		N/A																																
	The test is made using a dust chamber incorporating the basic principles shown in figure 2 whereby the power circulation pump may be relaced by other means suitable to maintain the talcum powder in suspension in a closed test chamber. The talcum powder used shall be the nominal width of a gap between wires 75µm. The amount of talcum power to be used is 2 kg per cubic metre of the test chamber volume. It shall not have been used for more than 20 tests.		N/A																																
	Category 1: enclosures where the normal working cycle of the equipment causes reductions in air pressure within the enclosure below that of the surrounding air. For example, due to thermal cycling effects.		N/A																																
	Category 2: enclosures whrere on pressure difference relative to the surrounding air is present.		N/A																																



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Clause	Requirement – Test	Result – Remark	Verdict
14.2.4	Test for second characteristic numeral 4 with oscillating tube or spray nozzle. Test test is made using one of the two test devices described in Figure 4 and in Figure 5 in accordance with the relevant product standard.		N/A
	The conditions to be observed are as follows:		N/A
	The oscillating tube has spray holes over the whole 180° of the semicircle. The total flow rate is adjusted as specified in Table IX and is measured with a flow meter.		N/A
	Delivery rate: 0.07l/min		N/A
	The tube is caused to oscillate through an angle of almost 360°, 180° on either side of the vertical, the time for one complete oscillation (2 x 360°) being about 12 s.		N/A
	The duration of the test is 10 min.		N/A
	If not specified otherwise in the relevant product standard, the support for the enclosure under test is perforated so as to avoid acting as baffle and the enclosure is sprayed from every direction by oscillating the tube to the limit of its travel in each direction.		N/A
14.2.5	Test for second characteristic numeral 5 with the 6,3 mm nozzle	IP X5	P
	The test is made by spraying the enclosure from all practicable directions with a stream of water from a standard test nozzle as shown in figure 6.		P
	Test conditions to be observed are as follows:		P
	-- internal diameter of the nozzle:6.3mm		P
	-- delivery rate: 12.5l/min ± 5%;		P
	-- water pressure: to be adjusted to achieve the specified delivery rate;		P
	-- core of the substantial stream: circle of approximately 40mm diameter at 2.5m distance from nozzle;		P
	-- test duration per square metre of enclosure surface area likely to be sprayed: 1 min;		P
	-- minimum test duration:3min;		P
	-- distance from nozzle to enclosure surface: between 2.5mm and 3mm.		P
14.2.6	Test for second characteristic numeral 6 with the 12.5mm nozzle		N/A

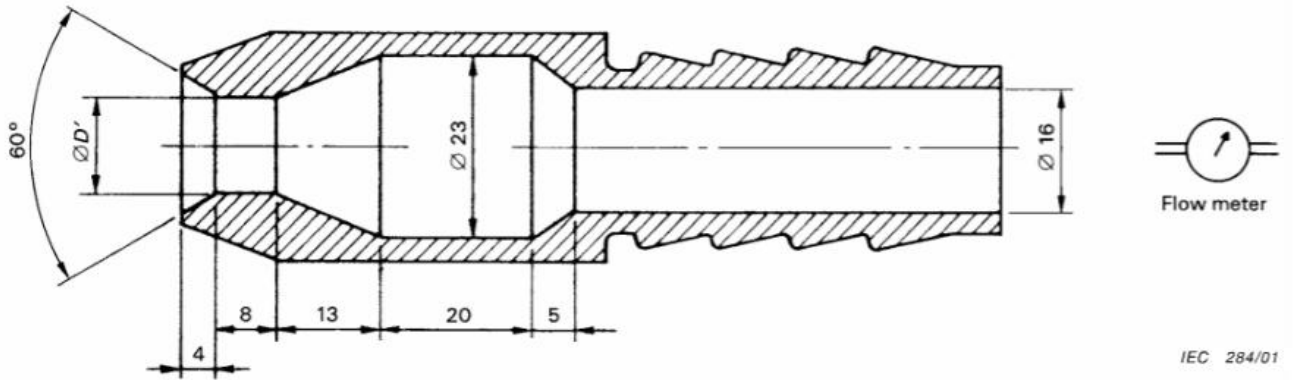


EN 60529			
Clause	Requirement – Test	Result – Remark	Verdict
	The test is made by spraying the enclosure from all practicable directions with a stream of water from a standard test nozzle as shown in figure 6.		N/A
	The conditions to be observed are as follows:		N/A
	-- internal diameter of the nozzle: 12.5mm;		N/A
	-- delivery rate: 100 l/min \pm 5%		N/A
	-- water pressure: to be adjusted to achieve the specified delivery rate;		N/A
	-- core the substantial stream: circle of approximately 120 mm diameter at 2.5m distance from nozzle;		N/A
	-- test duration per square metre of enclosure surface area likely to be sprayed: 1 min;		N/A
	-- minimum test duration: 3 min;		N/A
	-- distance from nozzle to enclosure surface: between 2.5m and 3m.		N/A
14.3	Acceptance conditions After testing in accordance with the appropriate requirements of 14.2.1 to 14.2.8 the enclosure shall be inspected for ingress of water. It is the responsibility of the relevant technical committee to specify the amount of water which may be allowed to enter the enclosure and the details of a dielectric strength test, if any.		P
	In general, if any water has entered, it shall not:		P
	be sufficient to interfere with the correct operation of the equipment or impair safety;		P
	deposit on insulation parts where it could lead to tracking along the creepage distances;		P
	reach live parts or windings not designed to operate when wet;		P
	accumulate near the cable end or enter the cable if any.		N/A
	If the enclosure is provided with drain-holes, it should be proved by inspection that any water which enters does not accumulate and that it drains away without doing any harm to the equipment.		N/A



After the test of IPX5, following tests was conducted

A.1	Insulation resistance test	---
	Test requirements: Immediately after the moisture treatment, the insulation resistance shall be measured with a d.c. voltage of approximately 500 V, 1 min after application of the unit having an insulating cover or envelope shall be wrapped with metal foil. Test result: Between input and enclosure: Max. <u>100</u> MΩ > 2 MΩ	P
A.2	Electric strength test	---
	Test requirement: Immediately after the test of A.1, the insulation is subjected for 1 min to a voltage of substantially sine-wave form at rated frequency. The value of the test voltage and the points of application are as following Test result: Between input and enclosure: 500 VAC There is flashover and breakdown occurred.	P



Dimensions in millimetres

D' = 6,3 for the test of 14.2.5 (second characteristic numeral 5)
D' = 12,5 for the test of 14.2.6 (second characteristic numeral 6)

Figure 6 – Test device to verify protection against water jets (hose nozzle)

Attachment I: Photo-documentation

EUT Photo 1



EUT Photo 2



EUT Photo 3



EUT Photo 4





EUT Photo 5



EUT Photo 6



EUT Photo 7



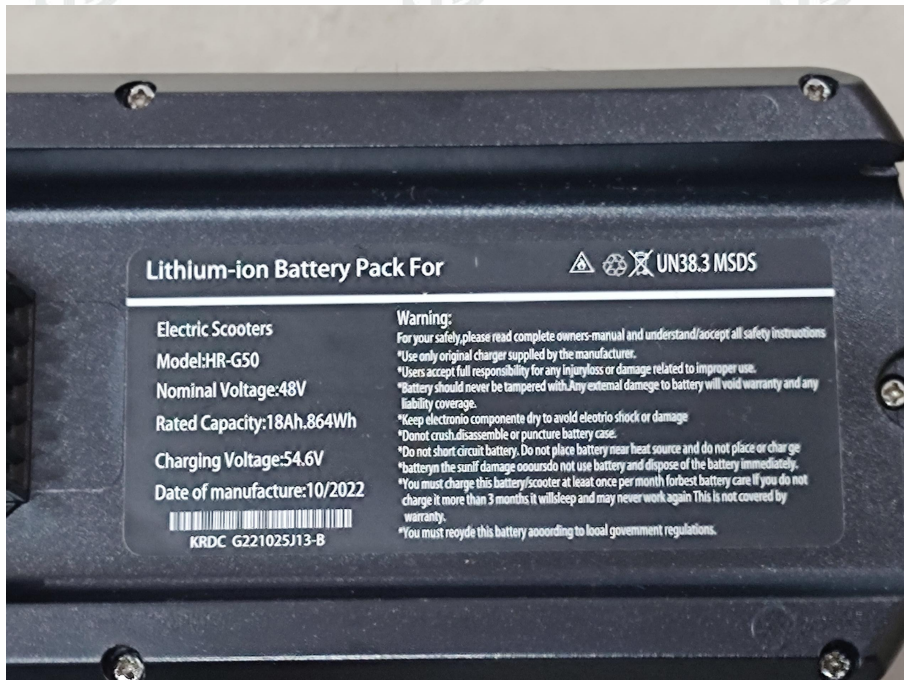
EUT Photo 8



EUT Photo 9



EUT Photo 10



***** END OF REPORT *****