

TEST REPORT

DEGREES OF PROTECTION PROVIDED BY ENCLOSURE (IP CODE)

REPORT NUMBER: M2103025

**TEST STANDARD: AS 60529: 2004
(IEC 60529 ED 2.1:2001)**

CLIENT: RED2GO PTY LTD

**DEVICE: SUBMERSIBLE PUMP JOINT
KIT**

MODEL: HSPKU

DATE OF ISSUE: 31 MAY 2021

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EQUIPMENT UNDER TEST (EUT)



REVISION TABLE

Version	Sec/Para Changed	Change Made	Date
1	--	INITIAL ISSUE OF DOCUMENT	31/05/2021

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CERTIFICATE OF COMPLIANCE

DEGREES OF PROTECTION PROVIDED BY ENCLOSURE (IP CODE)

Device: Submersible pump joint kit
Model Number: HSPKU

Manufacturer: Red2go Pty Ltd
27 River Road, Bayswater, WA, 6053, Australia

Tested for: Red2go Pty Ltd
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Standards: **AS 60529: 2004**
(IEC 60529 Ed 2.1: 2001)
Degrees of protection provided by enclosures (IP Code)


Result: The Test Sample complied with the IPX8 limits (50m depth, 30min) of test standard. Refer to Report M2103025 for full details

Test Date(s): 13 May 2021

Date of Receipt of Device: 11 May 2021

Issue Date: 31 May 2021

Test Engineer(s): 
Zhimou Qin

Authorised Signatory(s): 
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TEST REPORT

DEGREES OF PROTECTION PROVIDED BY ENCLOSURE (IP CODE) IN ACCORDANCE WITH AS 60529: 2004 (IEC 60529 ED 2.1: 2001)

1 INTRODUCTION

Ingress Protection tests were performed on the Submersible pump joint kit, Model: HSPKU in accordance with the requirements of AS 60529: 2004 (IEC 60529 Ed 2.1: 2001). The details of the Equipment Under Test (EUT) and the test results are provided.

The test sample was provided by the client. All results herein apply only to the test sample.

1.1 Laboratory Overview

EMC Technologies Pty. Ltd. is an independently owned Australian company that is A2LA accredited to ISO 17025 for electrical safety testing – **Accreditation Number 5082.01**.

1.2 Test Laboratory/Accreditations

Measurements were performed at EMC Technologies' laboratory in Keilor Park, Victoria Australia.

Table 1-1: Accreditations for Conformity Assessment

Country/Region	Body	
Australia/New Zealand	A2LA	Accreditation Number 5082.01 & 5082.02
Europe	European Union	Notified Body Number: 0819
USA	FCC	Designation Number: AU0001
Canada	ISED Canada	Company Number: 3569B
Japan	VCCI	Company Number: 785
Taiwan	BSMI	Lab Code SL2-IN-E-5001R

2 DEVICE DETAILS

(Information supplied by the Client)

Test item description.....: Submersible pump joint kit
Trade Mark: RADIFORM
Model/Type reference.....: HSPKU
Rating: IPX8

2.1 General Product Information

IP protection class: IPX8
Altitude during operation (m): Up to 2000
Altitude of test laboratory (m): Not over 2000

2.2 Device Description

(Description provided by the customer)

The EUT (Equipment Under Test) Submersible pump joint kit, model: HSPKU, is a heat-shrink set.

2.3 Reference Documents

List of Attachments (including a total number of pages in each attachment)		
Document No.	Documents included / attached to this report (description)	Appendix
1.	Photographs	A
2.	Photographs – IPX8 (Water Test)	B

2.4 General Remarks

- (a) This test report is based on assessment and tests applied to the specific test item(s) as submitted by the client. EMC Technology Pty Ltd disclaims any and all responsibility or obligation for any other item.
- (b) The test samples are two cables wrapped with two different sizes of heat-shrinks, the heat-shrinks are of the maximum and minimum diameter chosen from the Submersible pump joint kit. After IPX8 testing, the samples were cut open and inspected for water ingress.

2.5 Legend

Complies or P	The product complies with the clause
Does Not Comply	The product does not comply with the clause. The reason for non-compliance is specified in the notes
Noted	The clause is not a requirement. It is either explanatory test or is referenced by other clauses.
Not tested	The clause not tested
N/A or Not Applicable	The clause does not apply to the product being tested

2.6 Conclusion

The EUT (Equipment Under Test) Submersible pump joint kit, Model HSPKU **Complied** with the IPX8 limits of the standard AS 60529: 2004 (IEC 60529 Ed 2.1: 2001).

Refer below for the full details.

3 RESULTS

AS 60529			
Clause	Requirement - Test	Result - Remark	Verdict

11	GENERAL REQUIREMENTS FOR TESTS		P
11.1	Atmospheric conditions for water or dust tests	Test carried out under standard atmospheric conditions	P
11.2	Test samples		P
	Details are specified in the relevant product standard:		N/A
	- the number of samples to be tested		N/A
	- conditions for mounting, assembling and positioning of the samples		N/A
	- the pre-conditioning, if any		N/A
	- whether to be tested energized or not		N/A
	- whether to be tested with its parts in motion or not		N/A
	In the absence of such specification, the manufacturer's instructions apply		P
11.3	Application of test requirements and interpretation of test results		P
11.4	Combination of test conditions for the first characteristic numeral		P
	Test for protection against access to hazardous parts		P
	Test for protection against solid foreign objects		P
11.5	Empty enclosures		N/A

12	TESTS FOR PROTECTION AGAINST ACCESS TO HAZARDOUS PARTS INDICATED BY THE FIRST CHARACTERISTIC NUMERAL		N/A
12.1	Access probes		N/A
12.2	Test conditions		N/A
	Access probe used		N/A
	Test force (N)		N/A
12.3	Acceptance conditions		N/A
	Adequate clearance between the access probe and hazardous parts		N/A
	For IP1X, the access probe not completely pass through the opening		N/A
	For IP2X, the jointed test finger may penetrate to its 80 mm length, but the stop face shall not pass through the opening		N/A

AS 60529			
Clause	Requirement - Test	Result - Remark	Verdict
12.3.1	For low-voltage equipment		N/A
	The access probe shall not touch hazardous live parts		N/A
12.3.2	For high-voltage equipment		N/A
	The equipment withstands the dielectric tests when the access probe is placed in the most unfavourable position		N/A
	Verification may be made either by dielectric test or by inspection of the specified clearance dimension in air		N/A
12.3.3	For equipment with hazardous mechanical parts		N/A
	The access probe shall not touch hazardous mechanical parts		N/A

13	TESTS FOR PROTECTION AGAINST SOLID FOREIGN OBJECTS INDICATED BY THE FIRST CHARACTERISTIC NUMERAL		N/A
13.1	Test means		N/A
13.2	Test conditions for first characteristic numerals 1, 2, 3, 4		N/A
	Object probe used		N/A
	Test force (N)		N/A
13.3	Acceptance conditions for first characteristic numerals 1, 2, 3, 4		N/A
	The full diameter of the probe does not pass through any opening		N/A
13.4	Dust test for first characteristic numerals 5 and 6		N/A
13.5	Special conditions for first characteristic numeral 5		N/A
13.5.1	Test conditions for first characteristic numeral 5		N/A
	The enclosure shall be deemed category 1; unless		N/A
	The relevant product standard for the equipment specifies that the enclosure is category 2		N/A
13.5.2	Acceptance conditions for first characteristic numeral 5		N/A
	Talcum powder has not accumulated in a quantity or location such that, as with any other kind of dust, it could interfere with the correct operation of the equipment or impair safety		N/A

AS 60529			
Clause	Requirement - Test	Result - Remark	Verdict
	No dust shall deposit where it could lead to tracking along the creepage distances		N/A
13.6	Special conditions for first characteristic numeral 6		N/A
13.6.1	Test conditions for first characteristic numeral 6		N/A
	The enclosure shall be deemed category 1, whether reductions in pressure below the atmospheric pressure are present or not		N/A
13.6.2	Acceptance conditions for first characteristic numeral 6		N/A
	No deposit of dust is observable inside the enclosure at the end of the test		N/A

14	TESTS FOR PROTECTION AGAINST WATER INDICATED BY THE SECOND CHARACTERISTIC NUMERAL		P
14.1	Test means	IPX8	P
14.2	Test conditions		P
	The tests are conducted with fresh water		P
14.2.1	Test for second characteristic numeral 1 with the drip box		N/A
	Uniform flow of water drops over the whole area of the enclosure		N/A
	The turntable on which the enclosure is placed has a rotation speed of 1 r/min		N/A
	The eccentricity (distance between turntable axis and specimen axis) is approximately 100 mm		N/A
	The base of the drip box is larger than the base of the enclosure under test		N/A
	The support for the enclosure under test is smaller than the base of the enclosure; except		N/A
	For enclosures designed for wall or ceiling mounting		N/A
	An enclosure normally fixed to a wall or ceiling is fixed in its normal position of use to a wooden board having dimensions which are equal to those of that surface of the enclosure which is in contact with the wall or ceiling when the enclosure is mounted as in normal use		N/A
	The duration of test is 10 min		N/A

AS 60529			
Clause	Requirement - Test	Result - Remark	Verdict
14.2.2	Test for second characteristic numeral 2 with the drip box		N/A
	The table on which the enclosure is placed does not turn		N/A
	The enclosure is tested for 2.5 min in each of four fixed positions of tilt		N/A
	These positions are 15° on either side of the vertical in two mutually perpendicular planes		N/A
	The total duration of the test is 10 min		N/A
14.2.3	Test for second characteristic numeral 3 with oscillating tube or spray nozzle		N/A
	The test is made using one of the two test devices in accordance with the relevant product standard		N/A
a)	Conditions when using the oscillating tube		N/A
	The oscillating tube is provided with spray holes over an arc of 60° either side of the centre point		N/A
	The support is not perforated		N/A
	The enclosure to be tested is placed at the centre point of the semicircle		N/A
	The tube is caused to oscillate as specified		N/A
	The test duration is 5 min		N/A
	The enclosure is then turned through an horizontal angle of 90° and the test is continued for a further 5 min		N/A
	Tube radius R (mm)		N/A
	Number of open holdes N		N/A
	Total water flow (l/min)		N/A
b)	Conditions when using the spray nozzle		N/A
	The counterbalanced shield is in place for this test		N/A
	The water pressure is kept constant during the test		N/A
	The water flow rate (l/min)		N/A
	The test duration is 1 min/m ² of the calculated surface area of the enclosure (excluding any mounting surface), with a minimum duration of 5 min		N/A
	Calculated surface area (m ²)		N/A
	Test duration (min)		N/A

AS 60529			
Clause	Requirement - Test	Result - Remark	Verdict
14.2.4	Test for second characteristic numeral 4 with oscillating tube or spray nozzle		N/A
	The test is made using one of the two test devices in accordance with the relevant product standard		N/A
a)	Conditions when using the oscillating tube		N/A
	The oscillating tube has spray holes over the whole 180° of the semicircle		N/A
	The tube is caused to oscillate as specified		N/A
	The test duration 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 a baffle and the enclosure is sprayed from every direction by oscillating the tube to the limit of its travel in each direction		N/A
	Tube radius R (mm)		N/A
	Number of open holds N		N/A
	Total water flow (l/min)		N/A
b)	Conditions when using the spray nozzle		N/A
	The counterbalanced shield is removed from the spray nozzle		N/A
	The enclosure is sprayed from all practicable directions		N/A
	The water pressure is kept constant during the test		N/A
	The water flow rate (l/min)		N/A
	The test duration is 1 min/m ² of the calculated surface area of the enclosure (excluding any mounting surface), with a minimum duration of 5 min		N/A
	Calculated surface area (m ²)		N/A
	Test duration (min)		N/A
14.2.5	Test for second characteristic numeral 5 with the 6.3 mm nozzle		N/A
	The test is made by spraying the enclosure from all practicable directions with a stream of water from a standard test nozzle		N/A
	Test conditions:		N/A
	- internal diameter of the nozzle: 6.3 mm		N/A
	- delivery rate (l/min)		N/A
	- water pressure (kPa)		N/A

AS 60529			
Clause	Requirement - Test	Result - Remark	Verdict
	- core of the substantial stream: circle of approx. 40 mm diameter at 2.5 m distance from nozzle		N/A
	- calculated surface area likely to be sprayed (m ²).....:		N/A
	- test duration (min)		N/A
	- distance from nozzle to enclosure surface (m)		N/A
14.2.6	Test for second characteristic numeral 6 with the 12.5 mm nozzle		N/A
	The test is made by spraying the enclosure from all practicable directions with a stream of water from a standard test nozzle		N/A
	Test conditions:		N/A
	- internal diameter of the nozzle: 12.5 mm		N/A
	- delivery rate (l/min)		N/A
	- water pressure (kPa)		N/A
	- core of the substantial stream: circle of approx. 120 mm diameter at 2.5 m distance from nozzle		N/A
	- calculated surface area likely to be sprayed (m ²).....:		N/A
	- test duration (min)		N/A
	- distance from nozzle to enclosure surface (m)		N/A
14.2.7	Test for second characteristic numeral 7: temporary immersion between 0.15 m and 1 m		N/A
	The test is made by completely immersing the enclosure in water in its service position as specified by the manufacturer; and		N/A
	a) the lowest point of enclosures with a height less than 850 mm is located 1 000 mm below the surface of the water		N/A
	b) the highest point of enclosures with a height equal to or greater than 850 mm is located 150 mm below the surface of the water		N/A
	c) the duration of the test is 30 min		N/A
	d) the water temperature does not differ from that of the equipment by more than 5 K		N/A
14.2.8	Test for second characteristic numeral 8: continuous immersion subject to agreement	50m depth immersion, 30min	P

AS 60529			
Clause	Requirement - Test	Result - Remark	Verdict
	The test conditions are subject to agreement between manufacturer and user		P
14.3	Acceptance conditions		P
	After testing in accordance with the appropriate requirements of 14.2.1 to 14.2.8 the enclosure is inspected for ingress of water		P
	No water has entered the enclosure after the test	No water ingress	P
	If any water has entered, it shall not:		N/A
	- be sufficient to interfere with the correct operation of the equipment or impair safety		N/A
	- deposit on insulation parts where it could lead to tracking along the creepage distances		N/A
	- reach live parts or windings not designed to operate when wet		N/A
	- accumulate near the cable end or enter the cable if any		N/A
	Drain-holes used as specified		N/A
	Drain-holes not used as accepted by the relevant product standard		N/A
15	TESTS FOR PROTECTION AGAINST ACCESS TO HAZARDOUS PARTS INDICATED BY THE ADDITIONAL LETTER		N/A
15.1	Access probes		N/A
15.2	Test conditions		N/A
	Access probe used		N/A
	Test force (N)		N/A
15.3	Acceptance conditions		N/A
	Adequate clearance between the access probe and hazardous parts		N/A
	For additional letter B, the jointed test finger may penetrate to its 80 mm length, but the stop face shall not pass through the opening		N/A
	In case of the tests for the additional letters C and D, the access probe may penetrate to its full length, but the stop face shall not fully penetrate through the opening		N/A

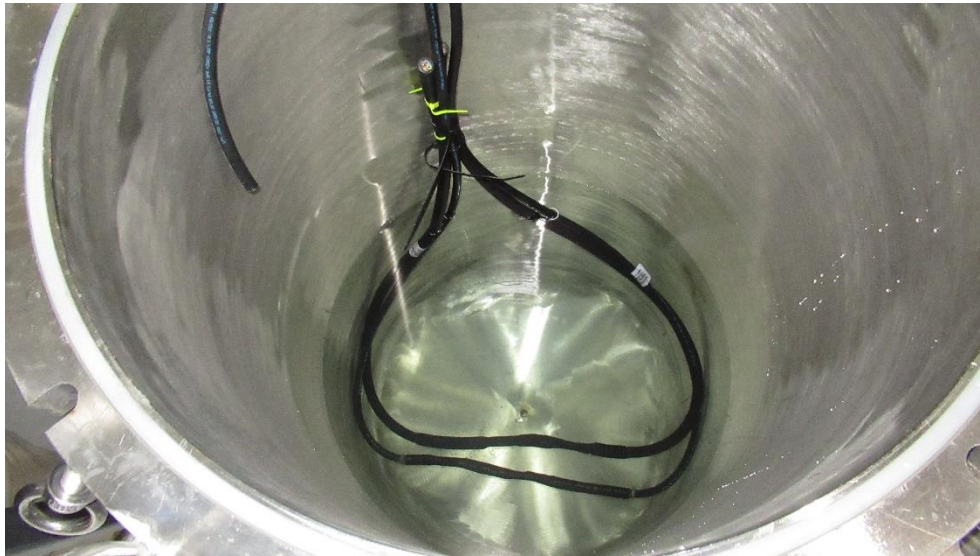
APPENDIX A

PHOTO DOCUMENTATION

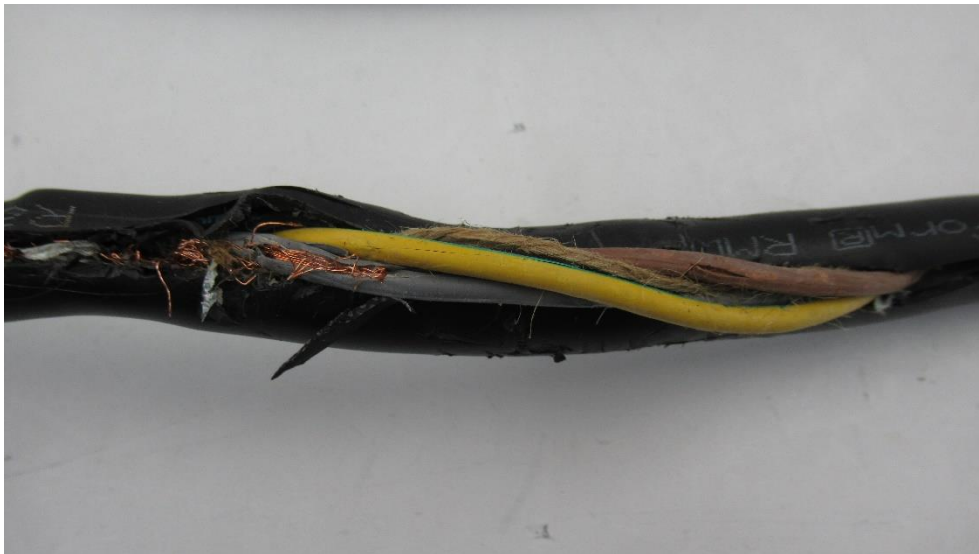


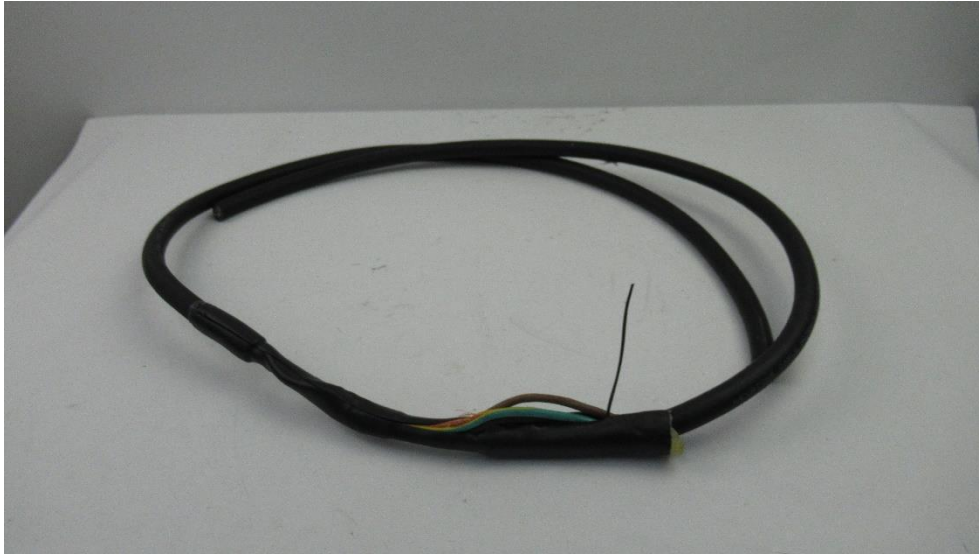
APPENDIX B

PHOTO DOCUMENTATION – IPX8 (WATER TEST)









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