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Date 8/27/2010

David Bailey
Hammond Manufacturing
485 Conestogo Road
Waterloo ON N2L 4C9

Report #: 100193417CRT-001

Dear Mr. Bailey:

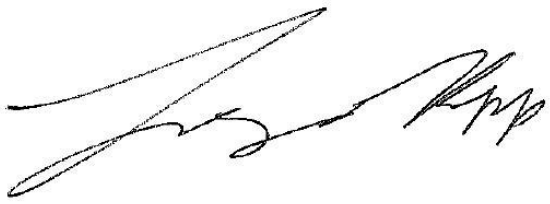
Intertek has completed our testing and evaluation of the enclosures 1550W, 1550Z, 1590Z, 1594, 1554/55; to the indicated requirements of **IEC 60529: Degrees of Protection Provided by Enclosures (IP 68) – Edition 2.1, dated February 01, 2000, revised through January, 2003**. The test samples, 20 units, were received from the client on 8/17/2010, in good condition. The evaluation was performed at Intertek in Cortland, NY on 8/25/2010 to 8/27/2010. The results of the tests are as indicated below.

Test Unit:	Standard:	Section:	Test Completed:	Pass / Fail
Samples 1-10	**IEC 60529**	**13.4**	Protection Against Solid Foreign Objects (IP6X)	Pass
Samples 11-20	**IEC 60529**	**14.2.8**	Protection Against Continuous Immersion (IP X8)	Pass

Please see attached test data sheets for evaluation details.

The enclosures 1550W, 1550Z, 1590Z, 1594, 1554/55; were found to be in compliance with the indicated requirements from the standard **IEC 60529: Degrees of Protection Provided by Enclosures (IP 68) – Edition 2.1, dated February 01, 2000, revised through January, 2003**. This Test Report concludes the work anticipated for this phase of your project under Intertek quote number 500202980. If there are any questions regarding this report please contact the undersigned at 607-758-6711.

Reported By,



Lorenzo Kopp
Engineer

Reviewed By,

Eric Burns
Project Engineer

Intertek Test Data Sheets

Transcribed Test Data

Client: Hammond Manufacturing
Engineer: Mark Viscotha
Job No.: G100193417
Tested By: Lorenzo Kopp
Date: 8/25/2010
Product: Enclosures
Reviewed By: Eric Burns
Date: 9/1/2010
Model No.: 1550W; 1550Z; 1590Z; 1594; 1554
Standard(s): IEC 60529: Degrees of Protection Provided by Enclosures (IP 68)-2nd Edition January 2000
Sample Control Number(s): 212894 through 212900

Tests to be Performed					
Required	**Page**	**Standard**	**Clause**	**Test Description**	**Pass/Fail**
NA	1	NA	NA	Report	NA
NA	2	NA	NA	Tests to be Performed	NA
NA	3	NA	NA	Test Equipment	NA
NA	4	NA	NA	Product Photos	NA
(X)	7	IEC 60529	13.4	Protection Against Solid Foreign Objects (IP6X)	Pass
(X)	8	IEC 60529	14.2.8	Protection Against Continuous Immersion (IP X8)	Pass

Intertek Test Data Sheets

Transcribed Test Data

Client: Hammond Manufacturing
Engineer: Mark Viscotha
Job No.: G100193417
Tested By: Lorenzo Kopp
Date: 8/25/2010
Product: Enclosures
Reviewed By: Eric Burns
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Model No.: 1550W; 1550Z; 1590Z; 1594; 1554
Standard(s): IEC 60529: Degrees of Protection Provided by Enclosures (IP 68)-2nd Edition January 2000
Sample Control Number(s): 212894 through 212900

Test Equipment

#	ITS #	Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
1	D528	Environmental Monitor	Control Company	99760-00	61493723	10-15-2009	10-15-2010
2	N1246	Torque Wrench	Lab Alert	N/A	none	03-17-2010	03-17-2011
3	P200	MANOMETER	DWYER	475	NSN	12-11-2009	12-11-2010
4	N1125	Stopwatch	Sper Scientific	810032	N1125	04-22-2010	04-22-2011
5	0720	Immersion/Pressure Tank	N/A	N/A	0720	N/A	N/A
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

Intertek Test Data Sheets

Transcribed Test Data

Client: Hammond Manufacturing | Engineer: Mark Viscotha

Job No.: G100193417 | Tested By: Lorenzo Kopp | Date: 8/25/2010

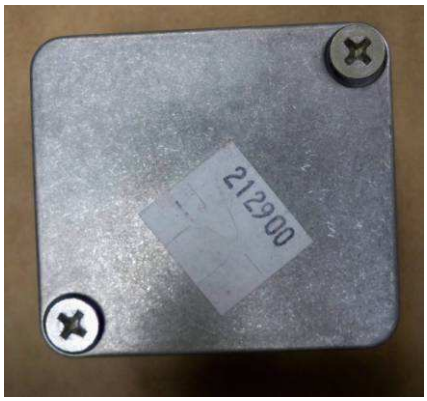
Product: Enclosures | Reviewed By: Eric Burns | Date: 9/1/2010

Model No.: 1550W; 1550Z; 1590Z; 1594; 1554 | Standard(s): IEC 60529: Degrees of Protection Provided by Enclosures (IP 68)-2nd Edition January 2000

Sample Control Number(s): 212894 through 212900

Product Photos:

Sample #1 model 1590Z



Sample #2 model 1590Z

Sample #3 model 1550Z

Sample #4 model 1550Z

Intertek Test Data Sheets

Transcribed Test Data

Client: Hammond Manufacturing | Engineer: Mark Viscotha

Job No.: G100193417 | Tested By: Lorenzo Kopp | Date: 8/25/2010

Product: Enclosures | Reviewed By: Eric Burns | Date: 9/1/2010

Model No.: 1550W; 1550Z; 1590Z; 1594; 1554 | Standard(s): IEC 60529: Degrees of Protection Provided by Enclosures (IP 68)-2nd Edition January 2000

Sample Control Number(s): 212894 through 212900

Product Photos:

Sample #5 model 1550W

Sample #6 model 1550W

Sample #7 model 1594

Sample #8 model 1594

Intertek Test Data Sheets

Transcribed Test Data

Client:	Hammond Manufacturing	Engineer:	Mark Viscotha		
Job No.:	G100193417	Tested By:	Lorenzo Kopp	Date:	8/25/2010
Product:	Enclosures	Reviewed By:	Eric Burns	Date:	9/1/2010
Model No.:	1550W; 1550Z; 1590Z; 1594; 1554	Standard(s):	IEC 60529: Degrees of Protection Provided by Enclosures (IP 68)-2nd Edition January 2000		

Sample Control Number(s): 212894 through 212900

Product Photos:

Sample #9 model 1554/55

Sample #10 model 1554/55

Intertek Test Data Sheets

Transcribed Test Data

Client: Hammond Manufacturing | Engineer: Mark Viscotha

Job No.: G100193417 | Tested By: Lorenzo Kopp | Date: 8/25/2010

Product: Enclosures | Reviewed By: Eric Burns | Date: 9/1/2010

Model No.: 1550W; 1550Z; 1590Z; 1594; 1554 | Standard(s): IEC 60529: Degrees of Protection Provided by Enclosures (IP 68)-2nd Edition January 2000

Sample Control Number(s): 212894 through 212900

Protection Against Solid Foreign Objects IEC 60529, Section 13.4 (IP 6X): Pass: X Fail:

Test Purpose:
To determine the ability of an enclosure to resist the penetration of dust. Setup and test run per sect. 13.4, Category 1 Enclosure

Test Parameters:				
Sample :	Enclosure			
Test Duration :	80 air exchanges or a maximum of 8 hours			
Contaminate :	Talc Po wder			
Max. Vacuum :	8 in. water (<2kPa)			
Torque:	Model: 1550W	4 – 7 inLb	Model: 1550Z	5 – 7 inLB
	Model: 1590Z	5 – 7 inLb	Model: 1594	2.5 inLB
	Model: 1554/55	2.5 inLb		

Test Results:

Sample	Test Duration	Vacuum Applied	Any Dust?	Results	Pass/Fail
1	8 Hours	7 in. water	No	No Dust Internally	Pass
2	8 Hours	7 in. water	No	No Dust Internally	Pass
3	8 Hours	7 in. water	No	No Dust Internally	Pass
4	8 Hours	7 in. water	No	No Dust Internally	Pass
5	8 Hours	7 in. water	No	No Dust Internally	Pass
6	8 Hours	7 in. water	No	No Dust Internally	Pass
7	8 Hours	7 in. water	No	No Dust Internally	Pass
8	8 Hours	7 in. water	No	No Dust Internally	Pass
9	8 Hours	7 in. water	No	No Dust Internally	Pass
10	8 Hours	7 in. water	No	No Dust Internally	Pass

To Comply:	
IP 6X	The protection is satisfactory if no deposit of dust is observed inside the enclosure at the end of the test.

Intertek Comments:

X The product complies with all applicable requirements of this test.

The product does not comply with the requirements of this test.

Test Date: 8/25/2010 and 8/27/2010 Tested By: Lorenzo Kopp

Environmental Conditions During Testing: Humidity: 40% rh Pressure: 974 hpa Ambient: 26°C

Equipment Used (See page 2 for details): 1 | 2 | 3

Intertek Test Data Sheets

Transcribed Test Data

Client: Hammond Manufacturing | Engineer: Mark Viscotha

Job No.: G100193417 | Tested By: Lorenzo Kopp | Date: 8/25/2010

Product: Enclosures | Reviewed By: Eric Burns | Date: 9/1/2010

Model No.: 1550W; 1550Z; 1590Z; 1594; 1554 | Standard(s): IEC 60529: Degrees of Protection Provided by Enclosures (IP 68)-2nd Edition January 2000

Sample Control Number(s): 212894 through 212900

Protection Against Complete Immersion (IEC 60529, Section 14.2.8): Pass: X Fail:

Test Purpose:
To test an enclosure to determine if the enclosure inhibits water ingress.

Test Parameters:				
Test Sample :	11 through 20			
Area Tested :	Full Enclosure			
Water Depth:	1000mm			
Duration of test:	2 hours per sample			
Torque:	Model: 1550W	4 – 7 inLb	Model: 1550Z	5 – 7 inLB
	Model: 1590Z	5 – 7 inLb	Model: 1594	2.5 inLB
	Model: 1554/55	2.5 inLb		

Test Results:

Sample	Test Time	Test Device Used	Did Water Enter the Enclosure?	Pass / Fail
11	2 Hours	Immersion/Pressure Tank	No	Pass
12	2 Hours	Immersion/Pressure Tank	No	Pass
13	2 Hours	Immersion/Pressure Tank	No	Pass
14	2 Hours	Immersion/Pressure Tank	No	Pass
15	2 Hours	Immersion/Pressure Tank	No	Pass
16	2 Hours	Immersion/Pressure Tank	No	Pass
17	2 Hours	Immersion/Pressure Tank	No	Pass
18	2 Hours	Immersion/Pressure Tank	No	Pass
19	2 Hours	Immersion/Pressure Tank	No	Pass
20	2 Hours	Immersion/Pressure Tank	No	Pass

To Comply:	
IP X8	At the conclusion of the test, no water shall be deposited inside the enclosure.

Intertek Comments:

X The product complies with all applicable requirements of this test.

The product does not comply with the requirements of this test.

Test Date: 8/25/2010 Tested By: Lorenzo Kopp

Environmental Conditions During Testing: Humidity: 40% rh Pressure: 974 hpa Ambient: 26°C

Equipment Used (See page 2 for details): 1 | 2 | 4 | 5