

TEST REPORT

Mechanical & Hardgoods Laboratory

Report No. : HL50250C/2019

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Date : JUN. 24, 2019

SOON INDUSTRIAL CO., LTD

1F., No.100, Zhonggong 2nd Rd., Xitun Dist., Taichung City 407, Taiwan (R.O.C.)

The following merchandise was submitted and identified by the applicant as:

Product Description: Linear Actuator
Style/Item No.: KST-A
Manufacturer/Vendor: SOON INDUSTRIAL CO., LTD.
Country of Origin: Taiwan

We have tested the submitted sample(s) as requested and the following results were obtained:

Test Requested: 1. Test for Degrees of Protection Provided by Enclosures (IEC 60529 Edition 2.2: 2013)

IP Code	IP66
First characteristic numeral	Degrees of protection against access to hazardous parts and against solid foreign objects
Second characteristic numeral	Degrees of protection against ingress of water

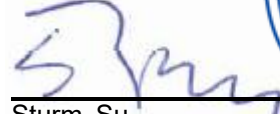
2. Durability test
3. Push up test
4. Compression test

Test Method & Result : ---See following sheet(s)---

Date of Receipt: May 14, 2019 & Jun. 10, 2019

Testing Period: May 14, 2019 ~ Jun. 03, 2019 & Jun. 10, 2019 ~ Jun. 24, 2019

Signed for and on behalf of
SGS Taiwan Ltd.


Sturm Su
Asst. Manager



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Test Method & Result:

1. Test for Degrees of Protection Provided by Enclosures:

Test Equipment:

Name	Brand	Model	Serial No.
1.0 mm Test Wire Probe	ED&D	TRP-02	L12470907
Digital Force Gauge	ALGOL	HF-50	HF-106764
Dust Tester	T-MACHINE	TMJ-9723S	T-23-110708
IPX6 Water Jet Hose Nozzle Set	PTL	P03.28	5040045

Lab Environmental Conditions:

Ambient temperature: (15 ~ 35)°C

Ambient humidity: (25 ~ 75) % RH

Test Location:

No.33, Wu Chyuan Road, New Taipei Industrial Park, WuKu District, New Taipei City, Taiwan

Test Method/ Specification:

Test method: IEC 60529 Edition 2.2: 2013 --IP66

(1). Test for protection against access to hazardous parts:

Test method: The test wire with 1.0 mm in diameter and 100 mm long is pushed against or inserted through any openings of the enclosure with designated force. Examine whether the test wire touches the hazardous live parts inside the enclosure or not.

Test force: 1 N±10 %

(2). Test for protection against solid foreign objects:

Test method: Dust test

Sample condition: Non-Operating

Category of enclosure: Category 1

Type of dust: Talcum powder

The amount of dust: 2 kg per cubic meter of the chamber volume

The maximum depression: < 20 mbar

Test duration: 8 hours

- Examine the protection against ingress dust of specimen(s) after this test.

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Test Method/ Specification--Continued:

(3). Test for protection against water:

Sample condition: Non-Operating

Internal diameter

of the nozzle: 12.5 mm

Delivery rate: 100 l/minute ±5%

Distance from nozzle

to enclosure surface: between 2.5 m and 3 m

Core of the substantial

stream: circle of approximately 120 mm diameter at 2.5 m distance from nozzle

Test duration: Total 3 minutes

- Examine the protection against ingress water of specimen after this test.

Specimen:

Style/ Item No.: KST-A/ #1、#5

Quantity: Total 2 pieces

Test Result:

A. Degrees of protection against access to hazardous parts and against solid foreign objects (IP6X)

A-1 Test for protection against access to hazardous parts (IP6X)

Test Result	
Check Item	Style/ Item No.
	KST-A/ #5
1 Does the test wire penetrate any openings of the enclosure?	No
2 (followed check item 1) If the test wire penetrates any openings of the enclosure, does the test wire touch any hazardous live parts or any hazardous mechanical parts?	N/A
3 (followed check item 2) Does adequate clearance be kept between the test wire and hazardous live parts or hazardous mechanical parts?	N/A

Note 1: N/A means "Not Applicable".
 Note 2: The check items in this test report for inspecting the degree of protection provided by enclosures are reference to the requirements specified in IEC 60529 Edition 2.2: 2013 and in accordance with the acceptance conditions specified by client.

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A-2 Test for protection against solid foreign objects (IP6X)

Test Result	
Check Item	Style/ Item No.
	KST-A/ #5
1	Does any dust deposit inside the enclosure? No

Note 1: N/A means "Not Applicable".
 Note 2: The check items in this test report for inspecting the degree of protection provided by enclosures are reference to the requirements specified in IEC 60529 Edition 2.2: 2013 and in accordance with the acceptance conditions specified by client.

B. Degree of protection against ingress of water (IPX6)

Test Result	
Check Item	Style/ Item No.
	KST-A/ #1
1	Does any water enter the enclosure? No
2	(followed check item 1) If any water has entered, does the water accumulate near the cable end or live parts? N/A
2.1	(followed check item 2) Does the water be sufficient to interfere with the correct operation of the equipment or impair safety? N/A
2.2	(followed check item 2.1) Does the water deposit on insulation parts where it could lead to tracking along the creepage distances? N/A
2.3	(followed check item 2.2) Does the water reach live parts or windings not designed to operate when wet? N/A

Note 1: N/A means "Not Applicable".
 Note 2: The check items in this test report for inspecting the degree of protection provided by enclosures are reference to the requirements specified in IEC 60529 Edition 2.2: 2013 and in accordance with the acceptance conditions specified by client.

2. Durability test

- (a) Connect the sample to the DC24V power supply and control module (As provided by client).
- (b) Start the switch and extended the cylinder of sample for 3 seconds, then return to original position, as the driver motor action for 2 cycles.
- (c) Repeat for a total of 100,000 cycles.
- (d) Rate: 12 cycles/min.

Sample	Test Cycle(s)	Result
#2	100,000 cycles	No visual damage was found and normal function after testing.

3. Push up test

- (a) Connect the sample to the DC24V power supply.
- (b) Secure the sample on the testing platform. (Photo I)
- (c) Start the switch, let the head of cylinder to push the load cell, until the force can not increase.
- (d) Record max. force.
- (e) Testing Machine : INSTRON 5581

Sample	Max. force (kgf)
#3	233

4. Compression test

- (a) Secure the sample on the test platform. (Photo J)
- (b) Apply a downward force to the sample, until it is damaged.
- (c) Record max. force and any findings.
- (d) Testing Machine : INSTRON 5581, Rate:10 mm/min.
- (e) Loading Pad : Ø35 mm steel bar

Sample	Max. force (kgf)	Result
#4	691	The inner structure of sample was damage after testing.

- Picture(s) -



Photo A : Appearance of the sample #1 (IPX6)



Photo B : Appearance of the sample #2 (Durability test)



Photo C : Power supply (As provided by client).



Photo D : Control module for durability test (As provided by client).



Photo E: Appearance of the sample #3 (Push up test)



Photo F: Appearance of the sample #4 (Compression test)

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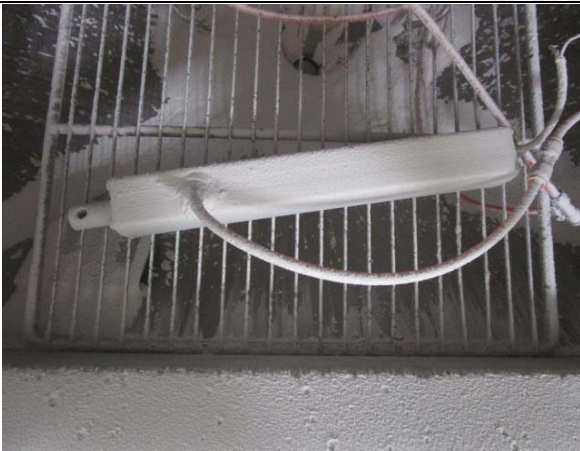


Photo G: Test setup (Dustproof test)



Photo H: Test setup (Waterproof test)

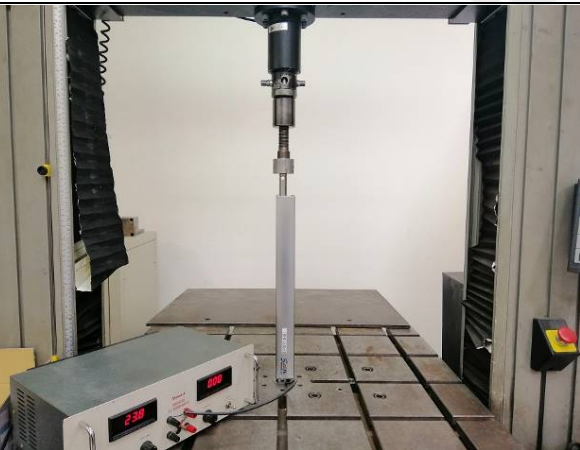


Photo I: Push up test

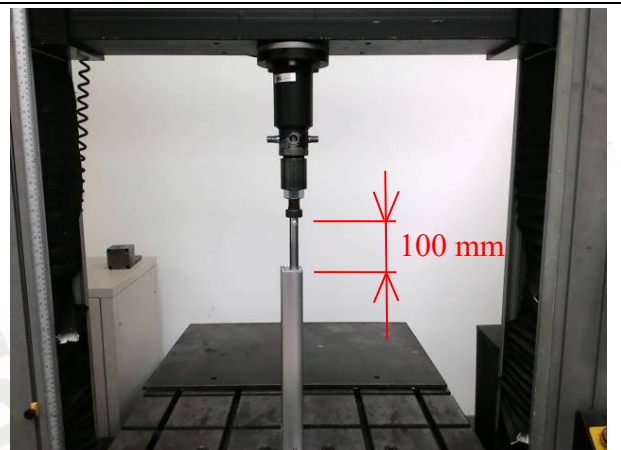


Photo J: Test setup (Compression test)

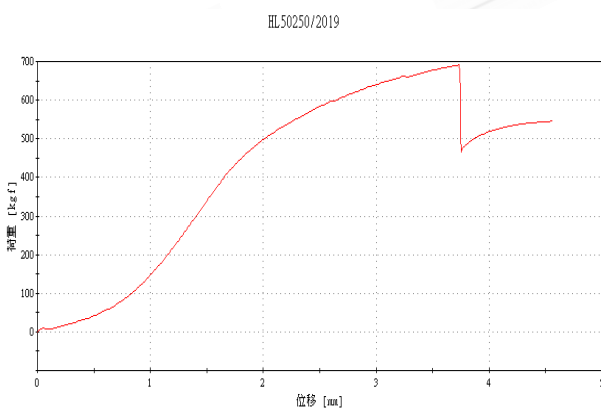


Photo K: Diagram of compression test



Photo L: Appearance of the sample #5 (IP6X)

---End of Report---