

# XING TAI DOOR CONTROL HARDWARE CO. TEST REPORT

## SCOPE OF WORKs

REPORT OF < Floor Spring > IN ACCORDANCE WITH ANSI/BHMA A156.4: 2019 STANDARD FOR  
DOOR CONTROLS - CLOSERS

## REPORT NUMBER

220922170GZU-001

## TEST DATE(S)

2022-09-22 ~ 2022-12-09

## ISSUE DATE

2022-12-22

## REVISED DATE

/

## RECORD RETENTION END DATE

2026-12-21

## PAGES

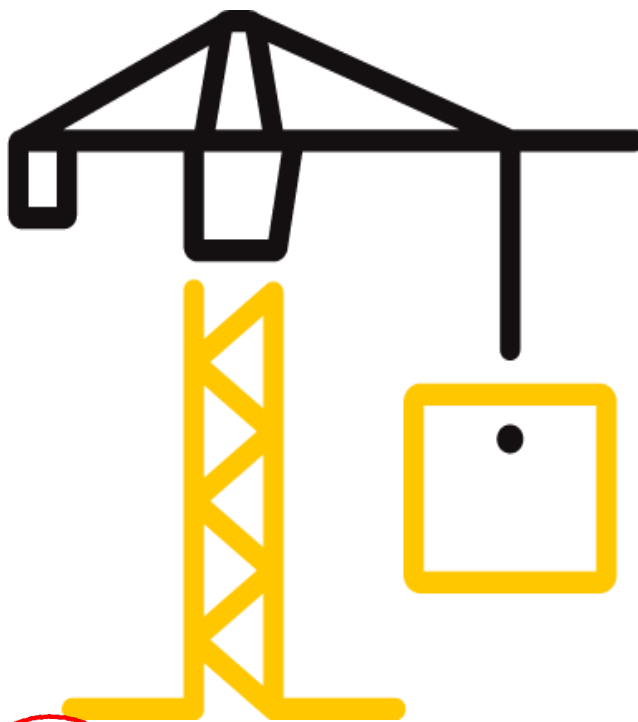
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## DOCUMENT CONTROL NUMBER

TTRF\_ANSI/BHMA A156.4\_c

Effective date: 2022-6-24

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Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

## Test Report

**Report Number: 220922170GZU-001**

**Report Date: 2022-12-22**

## Statement

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- 5.All the tests results give the statement of conformity refer to the decision rule of "Procedure 2 Accuracy Method" as stated in the IEC Guide 115:2007.

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**Report Date: 2022-12-22**

<b>Applicant:</b>	XING TAI DOOR CONTROL HARDWARE CO.
<b>Applicant Address:</b>	Pioneer Garden of Xian Gang Town, Gaoyao District, Zhaoqing, Guangdong, China
<b>Attn:</b>	info@hk-yigao.cn

<b>Sample information</b>	
Product:	Floor Spring
Trade Mark:	/
Model and/or type reference:	YG-84
Manufacturer:	XING TAI DOOR CONTROL HARDWARE CO.
Manufacturer Address:	Pioneer Garden of Xian Gang Town, Gaoyao District, Zhaoqing, Guangdong, China
Sample ID:	S220922170GZU.001~002
Date of receipt of test item:	2022-09-21
Situation of receipt samples:	Received in good condition
Date (s) of performance of tests:	2022-09-22 ~ 2022-12-09

<b>Testing information</b>	
Standard:	ANSI/BHMA A156.4: 2019
Rating(s):	Grade 3
Testing Laboratory name:	Intertek Testing Services Shenzhen Ltd. Guangzhou
Address:	Room 4103 & 4203, No. 63, Punan Road, Huangpu District, Guangzhou, China.
<b>Possible Test Case Verdicts</b>	
Test Case does not apply to the Test object:	Not applicable
Test object does meet the requirement:	Compliant
Test object does not meet the requirement:	Non-compliant

### Conclusion:

Compliant with all applicable sections of ANSI/BHMA A156.4:2019 of **Grade 3**. See following pages for full test data.

Subsection	Test Description	1 <sup>ST</sup> Test Results	2 <sup>nd</sup> Test Results
4	INITIAL STATIC TESTS	Compliant	Not applicable
5	INTERMEDIATE CYCLE TEST	Compliant	Not applicable
6	INTERMEDIATE STATIC TESTS	Compliant	Not applicable
7	FINAL CYCLE TEST	Compliant	Not applicable
8	FINAL STATIC TESTS	Compliant	Not applicable
10	FINISH TEST	Compliant	Not applicable

**Approved by:**

**Prepared by:**

*Nelson Zhu*

*Jaydon Lin*

Name: Nelson Zhu

Name: Jaydon Lin

Title: Reviewer

Title: Project Engineer

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### TEST RESULTS

Model	Function number	Mounting	Size	Grade	PT Number	Test door weight
YG-84	06013	Concealed Floor	III	3	PT7, PT8B, PT8M	100 lbs

Section	Result/Requirement	Verdict
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#### 4 TEST PROCEDURES PART 1: INITIAL STATIC TESTS

Compliant

##### 4.1 BREAK-IN CYCLES

Compliant

###### Requirement:

Prior to performing the static tests, 4,000 break-in cycles are permitted to be performed as designated by the manufacturer. If break-cycles are not performed prior to static tests they shall be added to the intermediate cycles such that the total number of cycles completed does not change.

Counter readings	Date	Technician's initials	Remark
0	2022-10-13	Zhibei Wang	Started
4,000	2022-10-14	Zhibei Wang	Finished

Comment: None

##### 4.2 Static Test 1 - Range of Checking Control

Compliant

PT Number	PT1/PT5	PT2/PT6	PT3/PT7	PT8
Degrees	20°	25°	30°	7°

Degrees of door opened	Degrees where door essentially stopped	Range of control
130°	121°	9°

Comment: None

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4.3 Static Test 2 - Two Speeds of Closing Control Not applicable

Test #1	Test Results
The point at which the speed noticeably accelerated between 12" and 2"	—

Test #2 In lieu of Test #1 at the option of the manufacturer Not applicable

For floor concealed or Overhead concealed closer, Grade 1 (PT5) only

	Test Results
Release force between 30° and 25° (lbf)	—
Release force between 12" and 2" (lbf)	—
Exceed(%)	—

Comment: PT7, N/A

4.4 Static Test 3 -Adjustable Closing Speed Compliant

Regulating valves adjusted	Test result	Requirement
Fully closed	1'48"719	60 Sec. Minimum
Fully opened	2"074	3 Sec. Maximum

Comment: None

4.5 Static Test 4 - Closing Force for Fixed Size Closers with 15% to 50% Adjustment Not applicable

Closer Size	Closing Force between the ½ in. and 3 in. mark (F1)
I	From 2 lbf up to 3 lbf
II	From 3 lbf up to 5 lbf
III	From 5 lbf up to 8 lbf
IV	From 8 lbf up to 11 lbf
V	From 11 lbf up to 14 lbf
VI	14 lbf and above

Maximum(F1)	Maximum (F2)	% of change
—	—	—

Comment: N/A

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- 4.6 Static Test 5 - Closing Force for Closers with Adjustment Through Range of Sizes (lbf) Compliant

	REG	TJ	PA
Size I = From 2 lbf up to 3 lbf	—	—	—
Size II = From 3 lbf up to 5 lbf	—	—	—
Size III = From 5 lbf up to 8 lbf	7.1	—	—
Size IV = From 8 lbf up to 11 lbf	—	—	—
Size V = From 11 lbf up to 14 lbf	—	—	—
Size VI = 14 lbf and above	—	—	—

Comment: None

Remark: "REG" refers to Regular mounting, "TJ" refers to Top jamb mounting and "PA" refers to Parallel arm mounting, all the brief descriptions found in the following are the same as above.

- 4.7 Static Test 6 - Door Closer Efficiency Not applicable

	REG	TJ	PA
Size I 50% Minimum	—	—	—
Size II 50% Minimum	—	—	—
Size III 60% Minimum	—	—	—
Size IV 60% Minimum	—	—	—
Size V 60% Minimum	—	—	—
Size VI 60% Minimum	—	—	—

Comment: PT7, N/A

- 4.8 Static Test 7 - Checking Cylinder Test Not applicable

	REG	TJ	PA
8 seconds Minimum (20 lbf load)	—	—	—

Comment: PT7, N/A

- 4.9 Static Test 8 - Backcheck Tests Not applicable

	REG	TJ	PA
Damping between 60 & 85 Degrees	—	—	—
PT4J - Backcheck advanced 15 degrees	—	—	—

Comment: Without backcheck function

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4.10 Static Test 9 - Delayed Action Closer Test Not applicable

	REG	TJ	PA
Closing time between 90° and 70° was a minimum of 20 seconds	—	—	—
Point of degree where speed is noticeably changed	—	—	—

Comment: Without delayed action function

4.11 Static Test 10 - Dead Stop Tests Not applicable

	REG	TJ	PA
Degrees specified by client	—	—	—
Point of degree where door dead stops	—	—	—
Force applied (lbs)	—	—	—

Comment: Without dead stop function

4.12 Static Test 11 - Overload Abuse Test for Surface and Concealed-in-Door Closers (PT1 and PT2 only) Not applicable

Door Closer Size	I	II	III	IV	V	VI
Overload Test Weight	35lbs	40lbs	45lbs	55lbs	60lbs	65lbs

	REG	TJ	PA
— lbs load 90° to close — cycles	—	—	—

Comment: Only apply to PT1 and PT2

4.13 Static Test 12 - Automatic Hold-Open Test for Concealed-in-Floor Closers or Overhead Concealed Closers Compliant

	REG	TJ	PA
Degrees specified by client	90°	—	—
Point of degree where hold-open engages	90°	—	—

Comment: None

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- 4.14 Static Test 13 - Selector Hold-Open or Non-Hold-Open Test for Concealed-in-Floor Closers or Overhead Concealed Closers Not applicable

	REG	TJ	PA
Degrees specified by client	—	—	—
Point of degree where hold-open engages	—	—	—
With selector turned off, does hold open still engage? Yes/No	—	—	—

Comment: Without a selector for hold-open or non-hold-open

- 4.15 Static Test 14 - 165 Degree of Door Opening Test for Concealed-in-Floor or Overhead Concealed Closers Not applicable

	REG	TJ	PA
Open door to $165^{\circ} \pm 2^{\circ}$ Does any harm come to trim, closer or mounting? Yes/No	—	—	—

Comment: The maximum degree of opening is  $130^{\circ}$ .

### 5 TEST PROCEDURES PART 2: INTERMEDIATE CYCLE TEST

Compliant

Requirement:

Note on Spring Force Adjustment: Once spring force is set, adjust all speed regulating valves for a door closing time from a 90 degree opening to between 3 and 6 seconds. Maintain this time during the cycling by re-regulating all valves if necessary.

- 5.1 For Surface or Concealed-in-Door Closers without Backcheck and Concealed-in-Floor or Overhead Concealed Closers without Backcheck

Compliant

PT Number	PT1/PT5	PT2/PT6	PT3/PT7
Backcheck Cycle	0	0	0
Non-Backcheck Cycle	1,000,000	500,000	<b>496,000</b>
Total Cycles	1,004,000	504,000	<b>500,000</b>

Date	Counter readings	Technician	Remark
2022/10/15	10,234	Zhibei Wang	Started
2022/10/25	104,856	Zhibei Wang	—
2022/11/15	314,144	Zhibei Wang	—
2022/11/25	414,072	Zhibei Wang	—
2022/12/5	500,000	Zhibei Wang	Finished

Comment: Without backcheck



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- 5.2 For Surface or Concealed-in-Door Closers with Backcheck and Not applicable  
Concealed-in-Floor or Overhead Concealed Closers with Backcheck

PT Number	PT1/PT5	PT2/PT6	PT3/PT7
Backcheck Cycle - Test 1	100,000	50,000	0
Non-Backcheck Cycle - Test 2	400,000	200,000	496,000
Total cycles	504,000	254,000	500,000

Date	Counter readings	Technician	Remark
—	—	—	Started
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	Finished

Comment: Without backcheck

- 5.3 For light screen or combination storm door closers Not applicable

**Requirement:**

Install in accordance with the manufacturer's instructions for 90 degrees of door opening. Regulate door closing time from 90 degrees to 0 degrees to between 2 and 5 seconds. Maintain that time during cycling by re regulating if necessary. Mechanically open the door to 90 degrees  $\pm$  5 degrees and release allowing the door closer to close the door. One opening and closing constitutes one cycle. Repeat this action for 100,000 cycles for Grade 1, 75,000 cycles for Grade 2, and 50,000 cycles for Grade 3. At end of cycle test, measure closing speed adjustability. A Grade 1 door closer shall regulate door closing times 90 to 0 degrees smoothly over a range of 2 to 8 seconds. Grades 2 and 3 door closers shall regulate door closing times from 90 to 0 degrees smoothly over a range of 2 to 4 seconds. Hydraulic closers shall not show evidence of leakage.

	Grade 1	Grade 2	Grade 3
Cycles	100,000	75,000	50,000
Closing time	2~8 s	2~4 s	

	Test results
Closing time	—

Comment: For light screen or combination storm door closers

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**6 TEST PROCEDURES PART 3: INTERMEDIATE STATIC TEST** Compliant

Repeat the following tests, as applicable to the closer type, from Part 1: Range of Checking Control (4.2), Adjustment Through Range of Sizes (4.6), Door Closer Efficiency (4.7), Checking Cylinder Test (4.8), Backcheck Tests (4.9), and Delayed Action Closer Test (4.10)

**4.2 Static Test 1 - Range of Checking Control** Compliant

PT Number	PT1/PT5	PT2/PT6	PT3/PT7	PT8
Degrees	20°	25°	30°	7°

Degrees door opened	Degrees where door essentially stopped	Range of control
130°	118°	12°

Comment: None

**4.6 Static Test 5 - Closing Force for Closers with Adjustment Through Range of Sizes (lbf)** Compliant

	REG	TJ	PA
Size I = From 2 lbf up to 3 lbf	—	—	—
Size II = From 3 lbf up to 5 lbf	—	—	—
Size III = From 5 lbf up to 8 lbf	7.02	—	—
Size IV = From 8 lbf up to 11 lbf	—	—	—
Size V = From 11 lbf up to 14 lbf	—	—	—
Size VI = 14 lbf and above	—	—	—

Comment: None

**4.7 Static Test 6 - Door Closer Efficiency** Not applicable

	REG	TJ	PA
Size I 50% Minimum	—	—	—
Size II 50% Minimum	—	—	—
Size III 60% Minimum	—	—	—
Size IV 60% Minimum	—	—	—
Size V 60% Minimum	—	—	—
Size VI 60% Minimum	—	—	—

Comment: PT7, N/A

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4.8 Static Test 7 - Checking Cylinder Test Not applicable

	REG	TJ	PA
8 second Minimum (20 lbf load)	—	—	—

Comment: PT7, N/A

4.9 Static Test 8 - Backcheck Tests Not applicable

	REG	TJ	PA
Damping between 60 & 85 Degrees	—	—	—
PT4J - Backcheck advanced 15 degrees	—	—	—

Comment: Without backcheck

4.10 Static Test 9 - Delayed Action Closer Test Not applicable

	REG	TJ	PA
Closing time between 90° and 70° in 20 seconds	—	—	—
Point of degree where speed is noticeably changed	—	—	—

Comment: Without delayed action function

### 7 TEST PROCEDURES PART 4: FINAL CYCLE TEST

Compliant

7.1

Compliant

For Surface or Concealed-in-Door Closers without Backcheck and  
Concealed-in-Floor or Overhead Concealed Closers without Backcheck

PT Number	PT1/PT5	PT2/PT6	PT3/PT7
Backcheck Cycle	0	0	0
Non-Backcheck Cycle	996,000	496,000	0
Total Cycles	2,000,000	1,000,000	500,000

Comment: None

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- 7.2 For Surface or Concealed-in-Door Closers with Backcheck and Not applicable  
Concealed-in-Floor or Overhead Concealed Closers with Backcheck

PT Number	PT1/PT5	PT2/PT6	PT3/PT7
Backcheck Cycle	0	0	0
Non-Backcheck Cycle	996,000	496,000	0
Total Cycles	1,500,000	750,000	500,000

Date	Counter readings	Technician	Remark
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

Comment: Without Backcheck

- 7.3 Additional Test Required for Double Acting Floor & Overhead Concealed Not applicable  
Closers (Grade1 & 2)

**Requirement:**

Cycle a grade 1 closer an additional 10,000 cycles and a grade 2 closer for 5,000 cycles from 20 degrees to 0 degrees to 20 degrees (opposite direction) for a total of 40 degrees of door travel.

Adjust the latch speed to have hydraulic control by making closing speed from the 20 degree open position 1 second +/- 10% slower than that with the valves completely open.

Cycle with an air actuator exerting 15 lbf (67 N) applied both ways at 30 in. (762 mm) from the pivot point.

At the conclusion of test, closer shall return to 0 degrees

Date	Counter readings	Technician	Remark
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

Comment: Grade 3, N/A

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### 8 TEST PROCEDURE PART 5: FINAL STATIC TESTS

Compliant

- 8.1 Repeat all applicable Initial Static Tests for the closer type except the Dead Stop Tests.

Compliant

- 4.2 Static Test 1 - Range of Checking Control

Compliant

PT Number	PT1/PT5	PT2/PT6	PT3/PT7	PT8
Degrees	20°	25°	30°	7°

Degrees door opened	Degrees where door essentially stopped	Range of control
130°	118°	12°

Comment: None

- 4.3 Static Test 2 - Two Speeds of Closing Control

Not applicable

Test #1

	Test Results
Release Between 12" and 2"	—

Test #2 In lieu of Test #1 at the option of the manufacturer

For Floor spring only

	Test Results
Release Force Between 30° and 25°	—
Release Force Between 12" and 3"	—
Exceed(%)	—

Comment: PT7, N/A

- 4.4 Static Test 3 -Adjustable Closing Speed

Compliant

Regulating valve adjusted	Requirement	Test Results
Fully closed	60 Sec. Minimum	1'30"703
Fully opened	3 Sec. Maximum	2"076

Comment: None

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- 4.5 Static Test 4 - Closing Force for Fixed Size Closers with 15% to 50% Adjustment Not applicable

Closer Size	Closing Force between the ½ in. and 3 in. mark (F1)
I	From 2 lbf up to 3 lbf
II	From 3 lbf up to 5 lbf
III	From 5 lbf up to 8 lbf
IV	From 8 lbf up to 11 lbf
V	From 11 lbf up to 14 lbf
VI	14 lbf and above

Minimum (F1)	Maximum (F2)	% of change
—	—	—

Comment: N/A

- 4.6 Static Test 5 - Closing Force for Closers with Adjustment Through Range of Sizes Compliant

	REG	TJ	PA
Size I = From 2 lbf up to 3 lbf	—	—	—
Size II = From 3 lbf up to 5 lbf	—	—	—
Size III = From 5 lbf up to 8 lbf	7.02	—	—
Size IV = From 8 lbf up to 11 lbf	—	—	—
Size V = From 11 lbf up to 14 lbf	—	—	—
Size VI = 14 lbf and above	—	—	—

Comment: None

- 4.7 Static Test 6 - Door Closer Efficiency Not applicable

	REG	TJ	PA
Size I 50% Minimum	—	—	—
Size II 50% Minimum	—	—	—
Size III 60% Minimum	—	—	—
Size IV 60% Minimum	—	—	—
Size V 60% Minimum	—	—	—
Size VI 60% Minimum	—	—	—

Comment: None

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4.8 Static Test 7 - Checking Cylinder Test Not applicable

	REG	TJ	PA
8 second Minimum (20 lbf load)	—	—	—

Comment: PT7, N/A

4.9 Static Test 8 - Backcheck Tests Not applicable

	REG	TJ	PA
Damping between 60 & 85 Degrees	—	—	—
PT4J - Backcheck advanced 15 degrees	—	—	—

Comment: Without backcheck

4.10 Static Test 9 - Delayed Action Closer Test Not applicable

	REG	TJ	PA
closing time between 90° and 70° in 20 seconds	—	—	—
Point of degree where speed is noticeably changed	—	—	—

Comment: Without delayed action function

4.11 Static Test 10 - Dead Stop Tests Not applicable

	REG	TJ	PA
Degrees specified by client	—	—	—
Point of degree where door dead stops	—	—	—
Force applied (lbs)	—	—	—

Comment: Without dead stop function

4.12 Static Test 11 - Overload Abuse Test for Surface and Concealed-in-Door Closers (PT1 and PT2 only) Not applicable

Door Closer Size	I	II	III	IV	V	VI
Overload Test Weight	35lbs	40lbs	45lbs	55lbs	60lbs	65lbs

	REG	TJ	PA
— lbs load 90° to close — cycles	—	—	—

Comment: PT7, N/A

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- 4.13 Static Test 12 - Automatic Hold-Open Test for Concealed-in-Floor Closers or Overhead Concealed Closers Compliant

	REG	TJ	PA
Degrees specified by client	90°	—	—
Point of degree where hold-open engages	90°	—	—

Comment: None

- 4.14 Static Test 13 - Selector Hold-Open or Non-Hold-Open Test for Concealed-in-Floor Closers or Overhead Concealed Closers Not applicable

	REG	TJ	PA
Degrees specified by client	—	—	—
Point of degree where hold-open engages	—	—	—
With selector turned off, does hold open still engage? Yes/No	—	—	—

Comment: Without a selector for hold-open or non-hold-open

- 4.15 Static Test 14 - 165 Degree of Door Opening Test for Concealed-in-Floor or Overhead Concealed Closers Not applicable

	REG	TJ	PA
Open door to $165^\circ \pm 2^\circ$ Does any harm come to trim, closer or mounting? Yes/No	—	—	—

Comment: The maximum degree of opening is 130°.

- 8.2 Hydraulic closers shall not show visible indications of fluid greater than SAE J1176 Class 3 – a recurring non-falling droplet. Compliant

Comment: None



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- 8.3 At the conclusion of the tests the closer shall be capable of being Compliant  
adjusted to return the door from 90 to zero degrees in 3 to 6 seconds.

	Test results
Return the door from 90 to zero degrees	4"425

Comment: None

- 10 FINISH TESTS** Compliant

- 10.2 Salt Spray Test Compliant

	Test results
Finish on all products: 24 hours	24 hours

Comment: Test for cover plates and pivots for floor closers

- 10.3 Humidity Test For clear coatings only Not applicable

	Test results
Grades 1 & 2: 48 Hours	48 hours
Pencil Hardness 2H and Adhesion Classification 4	—

Comment: Grade 3, N/A

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### Appendix A: Product Documents

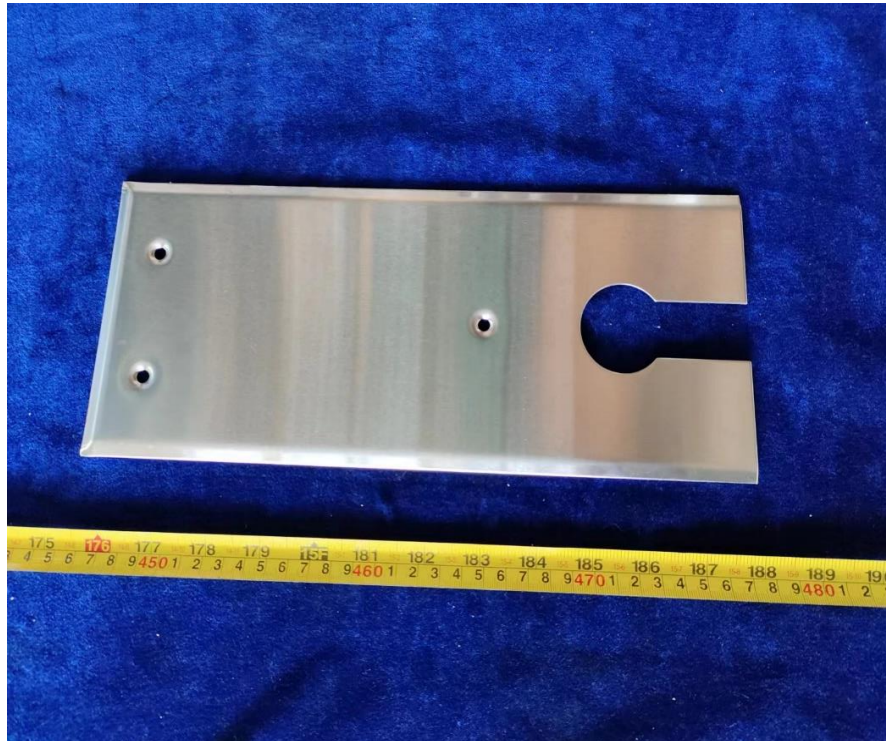
Model No.	Document Ref.	Document Type	Issue Date	Recieved Date
YG-84	YG-84 组装图	Assembly drawing	2022-09-20	2022-09-20
YG-84	YG-84 组合图	Assembly drawing	2022-09-20	2022-09-20

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### Appendix B: Product Photo



The cover plate after 24 hours of salt spray test



**Test Report**

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**Revision:**

Revision No.	Date	Changes	Author	Reviewer
/	/	First issue	/	/

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The End of Report

