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Intertek Report No. GZ11040377-1R1

Supersede Report No. GZ11040377-1 dated November 30, 2011

EVALUATION
OF

**R500, Overhead Concealed closer, Grade 1
FOR**

ARCTEK INDUSTRIAL CO., LTD.

No.76 Hsin Kung Rd,Pei Tou,County 521-49,Taiwan(R.O.C)

TEST STANDARD:

Per customer's specifications, using the following standard as a guideline: ANSI/BHMA A156.4 - 2008 American National Standard for Door Controls- Closers.

TEST SAMPLES:

Samples were identified by the applicant as R500, Overhead Concealed closer;
Samples were received in good condition on April 9, 2011, which manufactured by ARCTEK INDUSTRIAL CO., LTD.

TEST DATES: May 12, 2011 to November 11, 2011

RESULTS:

The closer **COMPLIED WITH** related clauses of ANSI/BHMA A 156.4 for PT5 requirements

Amendment 1: The original GZ11040377-1 modified on December 01, 2011 to revise the typo error in item 4.7.

The attached summary and data are results of the product testing and evaluation.

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Project No.: GZ11040377-1R1
ARCTEK INDUSTRIAL CO., LTD.
R500, Overhead Concealed closer.

ANSI/BHMA A156.4-2008
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DATA SHEETS
ANSI/BHMA 156.4 - 2008
AMERICAN NATIONAL STANDARD FOR
DOOR CONTROLS - CLOSERS

Test Door Weight	Name & Model No	Function number	Mounting
100lbs	R500	C05061	Overhead Concealed

Date Started: 2011-5-4 Date Completed: 2011-11-11

Description of Test:

The closer was specified as Overhead Concealed closer, power size 3, model of R500 without backcheck.
The submitted samples were tested per PT5.

Summary of Test Results: (Completed at end of Test)

The closer complied with the applicable requirements of the standard.

Initial Static Test - Section 4

4.1 BREAK IN CYCLES

Compliant

Cycle the door to 4,000 cycles	Actual cycle count	Date
Cycle start	0	2011-5-10
4,000 cycles completed	4000	2011-5-11

4.2 Static Test 1 - Range of Checking Control

Compliant

Type	PT1 / PT5	PT2 / PT6	PT3 / PT7	PT8A
Degrees	20°	25°	30°	7°

Degrees door opened	Degrees where door essentially stopped	Range of control
105°	100°	5°

4.3 Static Test 2 - Two Speeds of Closing Control

Compliant

	Test Results	Pass	Fail
Release Between 12" and 2"	6"	X	

4.4 Static Test 3 -Adjustable Closing Speed

Compliant

	Test Results	Pass	Fail
60 Sec Minimum (Valves Closed)	4'17"50	X	

	Test Results	Pass	Fail
3 Sec Maximum (Valves Open)	1"78	X	

4.5 Static Test 4 - Closing Force for Fixed Size Closers with 15% to 50% adjustment.

Compliant

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	Pass	Fail
7.3 lbf	N/A	N/A	X	

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

Not applicable

	Test Results				
	REG	TJ	PA	Pass	Fail
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					
Size IV = From 8 lbf up to 11 lbf					
Size V = From 11 lbf up to 14 lbf					
Size VI = 14 lbf and above					

4.7 Static Test 6 - Door Closer Efficiency

Compliant

	Test Results				
	REG	TJ	PA	Pass	Fail
Size I 50% Minimum					
Size II 50% Minimum					
Size III 60% Minimum	73%	N/A	N/A	X	
Size IV 60% Minimum					
Size V 60% Minimum					
Size VI 60% Minimum					

4.8 Static Test 7 - Checking Cylinder Test

Compliant

	Test Results				
	REG	TJ	PA	Pass	Fail
8 second Minimum (20 lbf load)	36"12	N/A	N/A	X	

4.9 Static Test 8 - Backcheck Tests

Not applicable

	Test Results			Pass	Fail
	REG	TJ	PA		
Damping between 60 & 85 Degrees					
PT4J - Backcheck advanced 15 degrees					

4.10 Static Test 9 - Delayed Action Closer Test

Not applicable

	Test Results			Pass	Fail
	REG	TJ	PA		
closing time between 90° and 70° in seconds					
Point of degree where speed is noticeably changed					

4.11 Static Test 10 - Dead Stop Tests

Not applicable

	Test Results			Pass	Fail
	REG	TJ	PA		
Degrees specified by client					
Point of degree where door dead stops					
Force applied in lbs					

4.12 Static Test 11 - Overload Abuse Test for Concealed-in-Door Closers

Not applicable

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

	Test Results			Pass	Fail
	REG	TJ	PA		
_ lbf load 90° to close _ cycles					

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

Not applicable

	Test Results			Pass	Fail
	REG	TJ	PA		
Degrees specified by client					
Point of degree where hold-open engages					

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

	Test Results			Pass	Fail
	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					

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

	Test Results			Pass	Fail
	REG	TJ	PA		
Open door to 165° ± 2° Does any harm come to trim, closer or mounting? Yes/No					

Intermediate Cycle Test - Section 5

Compliant

Closers Cycle Log			
Counter Reading	Cycles to Date	Technicians	Remarks
0	2011-5-10	Blusea	Start
4,000	2011-5-11	Blusea	OK
4,001	2011-5-13	Blusea	OK
85,124	2011-5-20	Blusea	OK
165,985	2011-5-27	Blusea	OK
246,254	2011-6-3	Blusea	OK
327,541	2011-6-10	Blusea	OK
406,626	2011-6-17	Blusea	OK
488,254	2011-6-24	Blusea	OK
567,685	2011-7-1	Blusea	OK
648,002	2011-7-8	Blusea	OK
728,726	2011-7-15	Blusea	OK
812,568	2011-7-22	Blusea	OK
892,154	2011-7-29	Blusea	OK
970,301	2011-8-5	Blusea	OK
1,004,826	2011-8-9	Blusea	Finished

4.2 Static Test 1 - Range of Checking Control

Compliant

Type	PT1 / PT5	PT2 / PT6	PT3 / PT7	PT8A
Degrees	20°	25°	30°	7°

Degrees door opened	Degrees where door essentially stopped	Range of control
105°	100°	5°

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

	Test Results			Not applicable	
	REG	TJ	PA	Pass	Fail
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					
Size IV = From 8 lbf up to 11 lbf					
Size V = From 11 lbf up to 14 lbf					
Size VI = 14 lbf and above					

4.7 Static Test 6 - Door Closer Efficiency

Compliant

	Test Results				
	REG	TJ	PA	Pass	Fail
Size I 50% Minimum					
Size II 50% Minimum					
Size III 60% Minimum	70%	N/A	N/A	X	
Size IV 60% Minimum					
Size V 60% Minimum					
Size VI 60% Minimum					

4.8 Static Test 7 - Checking Cylinder Test

Compliant

	Test Results				
	REG	TJ	PA	Pass	Fail
8 second Minimum (20 lbf load)	41"16	N/A	N/A	X	

4.9 Static Test 8 - Backcheck Tests

Not applicable

	Test Results				
	REG	TJ	PA	Pass	Fail
Damping between 60 & 85 Degrees					
PT4J - Backcheck advanced 15 degrees					

4.10 Static Test 9 - Delayed Action Closer Test

Not applicable

	Test Results			Pass	Fail
	REG	TJ	PA		
closing time between 90° and					
Point of degree where speed is noticeably changed					

Final Cycle Test - Section 7

Compliant

Closers Cycle Log			
Counter Reading	Cycles to Date	Technicians	Remarks
1,004,827	2011-8-9	Blusea	OK
1,095,998	2011-8-17	Blusea	OK
1,187,537	2011-8-25	Blusea	OK
1,278,125	2011-9-2	Blusea	OK
1,368,258	2011-9-10	Blusea	OK
1,462,358	2011-9-18	Blusea	OK
1,549,956	2011-9-26	Blusea	OK
1,643,812	2011-10-4	Blusea	OK
1,731,667	2011-10-12	Blusea	OK
1,826,254	2011-10-20	Blusea	OK
1,913,377	2011-10-28	Blusea	OK
2,000,000	2011-11-5	Blusea	Finished
0	2011-11-6	Blusea	Additional cycles for double acting closer
10,000	2011-11-7	Blusea	

Final Static Test - Section 8**8.1 REPEAT ALL APPLICABLE STATICS EXCEPT DEAD STOP****4.2 Static Test 1 - Range of Checking Control**

Compliant

Type	PT1 / PT5	PT2 / PT6	PT3 / PT7	PT8A
Degrees	20°	25°	30°	7°

Degrees door opened	Degrees where door essentially stopped	Range of control
105°	100°	5°

4.3 Static Test 2 - Two Speeds of Closing Control

Compliant

	Test Results		Pass	Fail
Release Between 12" and 2"	6"		X	

4.4 Static Test 3 -Adjustable Closing Speed

Compliant

	Test Results	Pass	Fail
60 Sec Minimum (Valves Closed)	3'52"91	X	

	Test Results	Pass	Fail
3 Sec Maximum (Valves Open)	1"66	X	

4.5 Static Test 4 - Closing Force for Fixed Size Closers with 15% to 50% adjustment.

Compliant

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	Pass	Fail
6.2 lbf	N/A	N/A	X	

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

Not applicable

	Test Results				
	REG	TJ	PA	Pass	Fail
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					
Size IV = From 8 lbf up to 11 lbf					
Size V = From 11 lbf up to 14 lbf					
Size VI = 14 lbf and above					

4.7 Static Test 6 - Door Closer Efficiency

Compliant

	Test Results				
	REG	TJ	PA	Pass	Fail
Size I 50% Minimum					
Size II 50% Minimum					
Size III 60% Minimum	64%	N/A	N/A	X	
Size IV 60% Minimum					
Size V 60% Minimum					
Size VI 60% Minimum					

4.8 Static Test 7 - Checking Cylinder Test

Compliant

	Test Results			Pass	Fail
	REG	TJ	PA		
8 second Minimum (20 lbf load)	40"60	N/A	N/A	X	

4.9 Static Test 8 - Backcheck Tests

Not applicable

	Test Results			Pass	Fail
	REG	TJ	PA		
Damping between 60 & 85 Degrees					
PT4J - Backcheck advanced 15 degrees					

4.10 Static Test 9 - Delayed Action Closer Test

Not applicable

	Test Results			Pass	Fail
	REG	TJ	PA		
closing time between 90° and					
Point of degree where speed is noticeably changed					

4.12 Static Test 11 - Overload Abuse Test for Concealed-in-Door Closers

Not applicable

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

	Test Results			Pass	Fail
	REG	TJ	PA		
_ lbf load 90° to close __cycles					

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

Not applicable

	Test Results			Pass	Fail
	REG	TJ	PA		
Degrees specified by client					
Point of degree where hold-open engages					

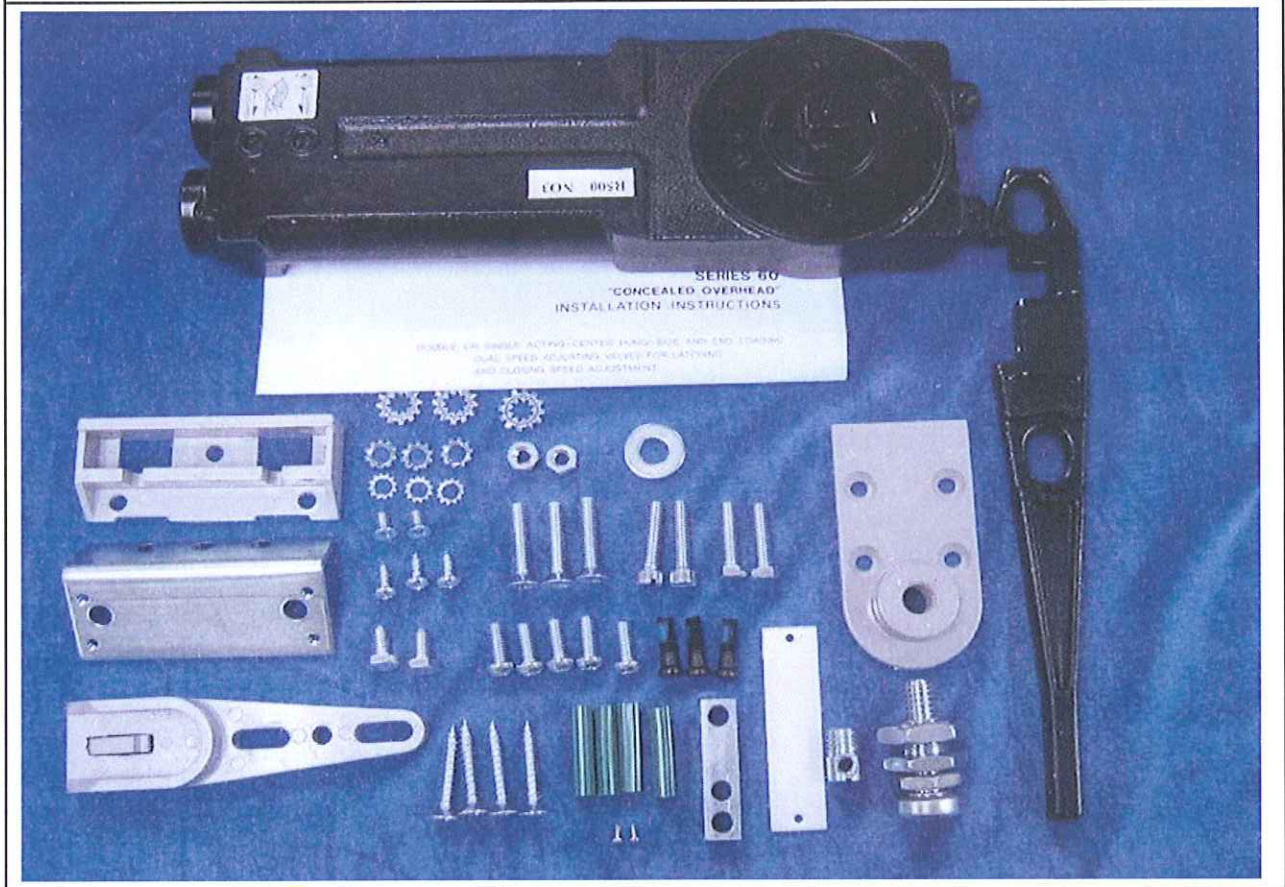
4.14 Static Test 13 - Selector Hold-Open or Non-Hold-Open Test for Concealed-in-Floor Closers or Overhead Concealed Closers Not applicable

	Test Results			Pass	Fail
	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					

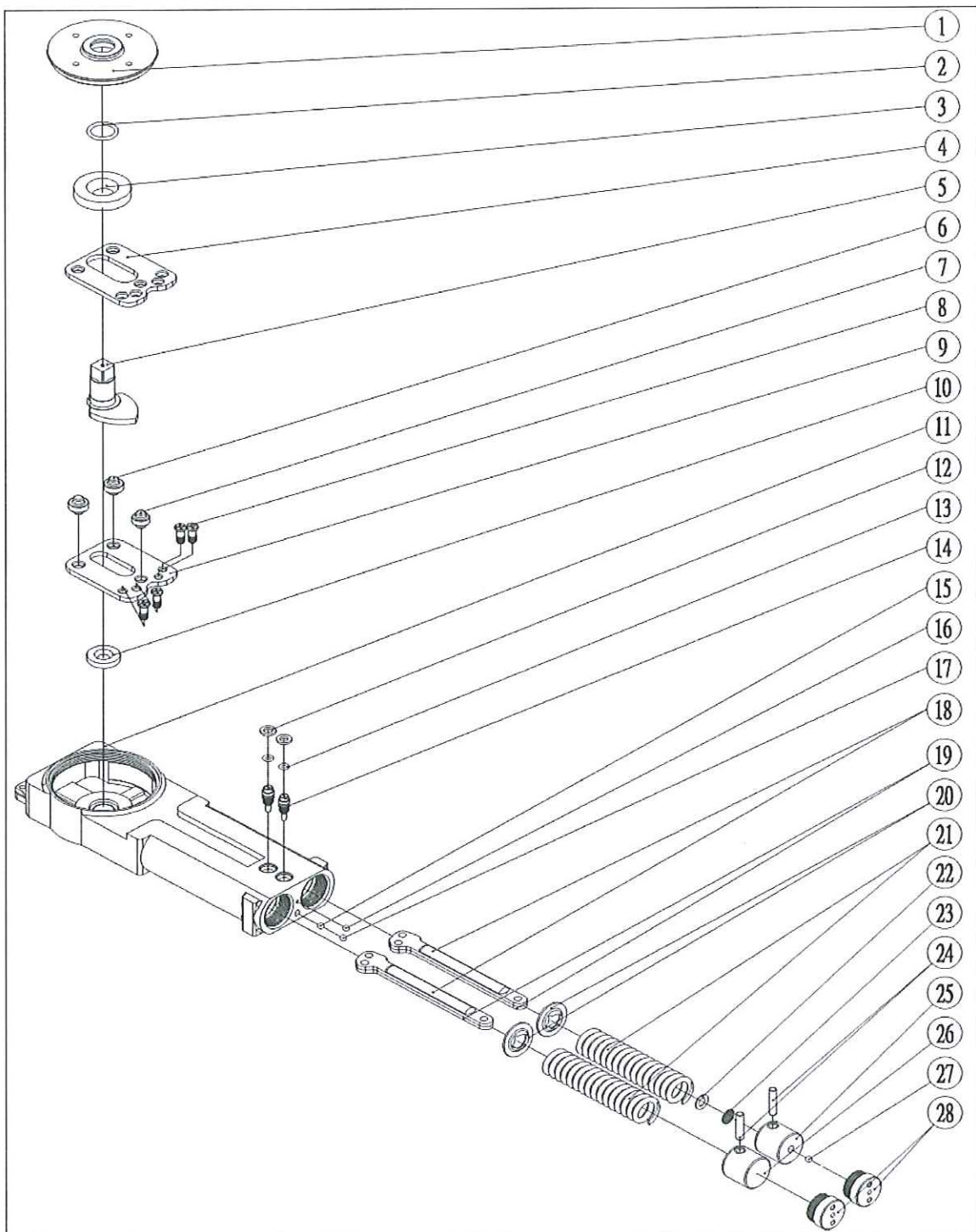
4.15 Static Test 14 - 165 Degree of Door Opening Test for Concealed-in-Floor or Overhead Concealed Closers Not applicable

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

Product Photo



Product Drawing



Bill of Materials

Item No.	Parts No.	Parts Name.	Q'ty	reserved
1	6000-017	Cylinder Cap(Big)	1	
2	6000-018	O-Ring	1	
3	6000-016	Bearing	1	
4	6000-010A	Guide Plate(Top)	1	
5	6000-012B	Cam	1	
6	6000-013	Roller(Big)	2	
7	6000-014	Roller(Small)	1	
8	6000-015	Bolt	4	
9	6000-011E	Guide Plate(Bottom)	1	
10	6000-009	Bearing	1	
11	6000-001	Pressing Body	1	
12	6000-022	Washer	2	
13	6000-021	O-Ring	3	
14	6000-023	Speed Adjustment Screw	2	
15	S620-005	Steel Ball	1	φ 3/16" (Made in Taiwan)
16	S620-003	Steel Ball	1	φ 1/8" (Made in Taiwan)
17	S620-006	Steel Ball	1	φ 7/32" (Made in Taiwan)
18	6000-002A	Connecting Rod	2	
19	6000-002B	Connecting Rod	2	
20	6000-008	Spring Seat	2	
21	6000-003M	Spring	2	
22	6000-006	Washer	1	
23	6000-007	Mesh	1	
24	6000-004	Pin	2	
25	6000-005	Piston	1	
26	6000-005A	Piston	1	
27	S620-005A	Steel Ball	1	φ 3/16" (Made in Japan)
28	6000-020	Cylinder Cap(Small)	2	
29	GF-46	Oil	300 ml	