

Number of pages in this package 32 [including additional pages 0]
 (Fill in when using printed copy as record)

CLIENT INFORMATION	
Company Name	ZHEJIANG DORRENHAUS HARDWARE INDUSTRY CO LTD
Address	#350-1 Guilan Rd Qiaodun Town Cangnan, Zhejiang 325806 China

AUDIT INFORMATION:

Description of Tests	Per Standard No.	ANSI/BHMA	Edition	2019
		A156.4		Edition / 2019-07-09

<input checked="" type="checkbox"/> Tests Conducted by ¹	Zhong Jianghua
<input checked="" type="checkbox"/> UL Staff conducting or witnessing testing (WTDP, CTF Stage 1 or 2 only)	
<input type="checkbox"/> UL Staff supervising UL Staff in training	Wilson Wang
<input type="checkbox"/> Authorized Signatory (CTDP, TPTDP, TCP, PPP, CTF Stage 3 or 4)	
Printed Name	Signature. Include date for CTDP, TPTDP, TCP, PPP, CTF Stage 3 or 4

TESTS TO BE CONDUCTED:

Test No.	Done ³	Test Name	<input type="checkbox"/> Comments/Parameters <input type="checkbox"/> Tests Conducted by ² <input type="checkbox"/> Link to separate data files ⁴
1.	x	PREPARATION FOR PERFORMANCE TEST:	
2.	x	BREAK-IN CYCLE:	
3.	x	STATIC TEST 1 - RANGE OF CHECKING CONTROL:	
4.	x	STATIC TEST 2 - TWO SPEEDS OF CLOSING CONTROL:	
5.	x	STATIC TEST 3 - ADJUSTABLE CLOSING SPEED:	
6.	x	STATIC TEST 5 - CLOSING FORCE FOR CLOSERS WITH ADJUSTMENT THROUGH RANGE OF SIZES:	
7.	x	STATIC TEST 6 - DOOR CLOSER EFFICIENCY:	
8.	x	STATIC TEST 7 - CHECKING CYLINDER:	
9.	x	STATIC TEST 8 - BACKCHECK:	
10.	x	STATIC TEST 9 - DELAYED ACTION CLOSER:	

TESTS TO BE CONDUCTED:			
Test No.	Done ³	Test Name	<input type="checkbox"/> Comments/Parameters <input type="checkbox"/> Tests Conducted by ² <input type="checkbox"/> Link to separate data files ⁴
11.	x	STATIC TEST 11 - OVERLOAD ABUSE TEST FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS, 1 AND 2 ONLY (PT1 AND PT2 ONLY):	
12.	x	INTERMEDIATE CYCLE:	
13.	x	INTERIM STATIC:	
14.	x	FINAL CYCLE:	
15.	x	FINAL STATIC:	

Instructions -

1 - When all tests are conducted by one person, name can be inserted here instead of including name on each page containing data.

2 - When test conducted by more than one person, name of person conducting the test can be inserted next to the test name instead of including name on each page containing data. Test dates may be recorded here instead of entering test dates on the individual datasheet pages.

3 - Use of this field is optional and may be employed differently. If used to include a date instead of entering the testing date on the individual datasheet pages, the date shall be the date the test was conducted.

4 - Link to separate data files for a test can be inserted here. The link must be to a server that is accessible to UL staff, that provides for backup, required retention periods and a path, including file name, that does not change and result in a broken link. Not applicable to DAP.

Special Instructions -

[x] Unless specified otherwise in the individual Methods, the tests shall be conducted under the following ambient conditions. Confirmation of these conditions shall be recorded at the time the test is conducted.

Ambient		Relative		Barometric	
Temperature, F	60 to 85	Humidity, %	N/A	Pressure, mBar	N/A

60 degree F = 15.6 degree C; 85 degree F = 29.4 degree C

~~[] No general environmental conditions are specified in the Standard(s) or have been identified that could affect the test results or measurements.~~

RISK ANALYSIS RELATED TO TESTING PERFORMANCE:

The following types of risks have been identified. Take necessary precautions. This list is not all inclusive.

<input type="checkbox"/> Electric shock	<input type="checkbox"/> Radiation
<input type="checkbox"/> Energy related hazards	<input type="checkbox"/> Chemical hazards
<input type="checkbox"/> Fire	<input type="checkbox"/> Noise
<input type="checkbox"/> Heat related hazards	<input type="checkbox"/> Vibration
<input checked="" type="checkbox"/> Mechanical	<input type="checkbox"/> Other (Specify) __

Tested by: _____

WITNESS TEST DATA PROGRAM (WTDP) INFORMATION:

Environment:	
Accommodations and Environmental conditions, including proper power source meet the requirements of the test standard or UL default criteria (ISO/IEC 17025 Clause 5.3.1, 5.3.2, 5.3.3, 5.3.4)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Personnel:	
Lab Management shall authorize personnel to operate particular types of equipment used in testing. (ISO/IEC 17025 5.2.5)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Technical personnel is knowledgeable in the risks and hazards associated with conducting safety testing, including laboratory safety regulations, safeguards and procedures to reduce laboratory risks. OSHA Directive Annex A 5.2 A iii	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Equipment:	
Testing is being conducted within the test equipment calibration dates. (See Test Instrument Information Page and ISO/IEC 17025 5.5.1, 5.5.2, 5.5.4, 5.5.5, 5.5.8,)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Calibrations for testing equipment is traceable to SI Units. Refer to 00-OP-C0032 (Calibration Certificate Analysis). (ISO/IEC 17025 5.6.2.2)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Equipment that does not need to be calibrated against documented specifications and/or procedures must be verified before use. OSHA Directive Annex A 5.5 D	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Critical Consumables:	
Critical consumables are compliant with test standard requirements. (ISO/IEC 17025 Clause 4.6)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Sample Identification:	
Identification of items to be tested has been made (e.g. model no., Serial No., etc.) (See Test Sample Identification page and ISO/IEC 17025 Clause 5.8.2)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Summary:	
The test facility was not deemed to have the environment and capabilities necessary to perform the tests included in this data package.	

Tested by: _____

[] The CAS Staff as indicated below, (a competent L1, L2 or L3 in a similar CCN/Standard for a similar test method) was utilized to conduct the witnessing of tests on behalf of the project handler. (Please complete the table below to document the rationale and approval.)

Name of UL Staff conducting WTDP	CCN/Standard to be witnessed	Test(s) to be witnessed	L1, L2 or L3 Competency	Similar CCN/Standard Competency

[] The Field Services Staff Member, as indicated below, (with a competent program competency as authorized by the FOM) was informed and utilized to conduct the witnessing of tests on behalf of the project handler. (Please complete the table below to document the information and approval.)

Name of UL Staff conducting WTDP	CCN/Standard to be witnessed	Test(s) to be witnessed	FOM Approver (name)

Tested by: _____

Date 2021-4-13-7-
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TEST LOCATION: (To be completed by Staff Conducting the Testing)					
<input type="checkbox"/> UL or Affiliate	<input checked="" type="checkbox"/> WTDP	<input type="checkbox"/> CTDP	<input type="checkbox"/> TPTDP	<input type="checkbox"/> TCP	<input type="checkbox"/> PPP
	<input type="checkbox"/> CTF	<input type="checkbox"/> CTF	<input type="checkbox"/> CTF	<input type="checkbox"/> CTF	
	Stage 1	Stage 2	Stage 3	Stage 4	
Company Name: ZHEJIANG DORRENHAUS HARDWARE INDUSTRY CO LTD					
Address: #350-1 Guilan Rd Qiaodun Town Cangnan, Zhejiang 325806 China					

TEST EQUIPMENT INFORMATION

UL test equipment information is recorded on Meter Use.

UL test equipment information is recorded on <<insert location and local laboratory equipment system identification.>>

Inst. ID No.	Instrument Type	Test Number +, Test Title or Conditioning	Function /Range	Last Cal. Date	Next Cal. Date
1.	Weight Scale	All Test	0.05kg/100kg	2020-12-7	2021-12-6
2.	Tape measure	1, 4, 7, 10, 11, 12, 13, 14, 15	1mm/0-2m	2020-12-8	2021-12-7
3.	Stop Watch	2, 5, 8, 10, 11, 12, 13, 14, 15	0.01s/0-24h	2020-12-7	2021-12-6
4.	Caliper	1, 7, 10, 11, 12, 13, 14, 15	0.02mm/0-150mm	2020-10-15	2021-10-14
5.	Push/Pull Gauge	1, 6, 7, 8, 11, 12, 13, 14, 15	1N/0-200N	2020-12-7	2021-12-6
6.	Protractor	All Test	1°/0°-180°	2020-12-31	2021-12-30

+ - If Test Number is used, the Test Number must be identified on the data sheet pages or on the Data Sheet Package cover page.

The following additional information is required when using client's or rented equipment, or when a UL ID Number for an instrument number is not used. The Inst. ID No. below corresponds to the Inst. ID No. above.

Inst. ID No.	Make/Model/Serial Number/Asset No.
1.	Wuyi Dahe/TCS-150kg/956065/-
2.	Deli/ (0-2) m/8201/DHS-JC-001
3.	Shanghai No.5 Watch Factory/JD-1A/-/DHS-P1-001
4.	Chengliang Tool/0-150mm/IA446685/-
5.	HANDPI/NK-200/2200140613624/DHS-R7-004
6.	Jiangxi Wanzaitianhe/0°-180°/-/DHS-G3-001

Tested by: _____

2021-4-13-7-
Date 26

TEST SAMPLE IDENTIFICATION:

The table below is provided to establish correlation of sample numbers to specific product related information. Refer to this table when a test identifies a test sample by "Sample No." only.

Sample Card No.	Date Received	<input checked="" type="checkbox"/> Test No.+	Sample No.	Manufacturer, Product Identification and Ratings
-	-	All	2.	ZHEJIANG DOORENHAUS HARDWARE INDUSTRY CO LTD, Swinging Fire Door Closers, Models:D9000 DA, Size 1-6(BC), Grade 1
-	-	-	-	Model D9000DA covers model D9000 that without Delay Action, final test by RWT

The application models of this test datasheet are D9000 DA and D9000, testing on D9000 DA was deemed representative of D9000 since D9000 is identical to D9000 DA except that D9000 has no delay action. - Wilson Wang 2021-7-26

+ - If Test Number is used, the Test Number or Numbers the sample was used in must be identified on the data sheet pages or on the Data Sheet Package cover page.

Sampling Procedure -

This document contains data or information using color and if printed, should be printed in color to retain legibility and the information represented by the color.

PREPARATION FOR PERFORMANCE TEST:

ANSI/BHMA A156.4, Sec. 3

Fluid - To ensure better performance over a range of outdoor temperatures fluid used in door closers intended for exterior or vestibule door application shall have a pour point of minus 38 degrees F (-39 degrees C) or lower when tested in accordance with ASTM D-97.

Types to Test - Non-hold open type closers shall be used for all testing.

Samples - A single door closer shall be used for all tests except finish tests, and shall be run consecutively.

Weight - The test door weight shall be as specified in Table 1 below. Center of gravity of the weighted door shall be 18 in (457 mm) from the pivot center of the door for size 2 or larger closers and 15 in. (381 mm) for size 1 closers. For light screen or combination storm door closers test door weight shall be 30 lbs (13.6 kg). Door weight is for test purposes only.

TABLE 1

Closer Size	Closing Force between the 1/2 in. (12.77 mm) and 3 in. (76 mm) mark (F1)		Test Door Weight
	lbf	N	
I	From 2 up to 3	From 9 up to 13	50 lbs/23 kg
II	From 3 up to 5	From 13 up to 22	80 lbs/36 kg
III	From 5 up to 8	From 22 up to 36	100 lbs/45 kg
IV	From 8 up to 11	From 36 up to 49	125 lbs/57 kg
V	From 11 up to 14	From 49 up to 62	155 lbs/70 kg
VI	14 and above	Above 62	180 LBS/82 KG

Mounting - Doors shall be hung on hinges, accurately aligned with vertical pins or on offset or center pivots, if required by the door closer. Force required to overcome friction or out of balance condition, shall be a 1/4 lbf. (1.1 N) or less, throughout the test measured perpendicular to the face of the door at a point 30 in (762 mm) from pivot center. Forces required to overcome friction or out of balance conditions are permitted to be greater than a 1/4 lbf. (1.1 N), if acceptable to closer manufacturer. Top jamb mounting shall be 2 in ± 1/8 in (51 ± 3 mm) reveal. Any force due to hinge friction shall not be used to adjust test data.

Actuating Means for mechanically opening the door to the 90 degree position (± 5 degrees) and releasing shall be provided for the cycling test.

The Door Closer to be Tested - If door closer bodies of the same type are of substantially the same construction, the cycle test shall be required only for one arm application (i.e. regular arm, parallel arm, track arm, bracket mounting or top jamb mounting) under tests PT 1, PT 2, and PT 3.

PREPARATION FOR PERFORMANCE TEST: (CONT'D)

ANSI/BHMA A156.4, Sec. 3

Door Opening Templates and Floor Marking - In preparation for the testing, attach a pointer to bottom the leading edge of door 30" from pivot center, and provide a template (Figure 4 of ANSI/BHMA A156.4) or floor markings along the swing of the pointer mounted on the test door at the following intervals: 135, 115, 90, 70, and 45 degrees. For the applicable tests, the door will be opened to the line being parallel to the leading edge of the door degree where the pointer intersects the required location. In addition, for tests which require an opening to a specified distance, mark lines (Figure 5 of ANSI/BHMA A156.4) at 1/2, 2, 3, 4 and 12 inches perpendicular to the door in the closed position, and 30 in. (762 mm) from the pivot center of the door.

Installation - The door closer shall be installed in accordance with the manufacturer's written installation instructions. The door closer shall be installed in accordance with the manufacturer's instructions at a setting from 90 degrees to 110 degrees of door opening. (Except after the Range of Checking Control test, closer shall be remounted for 90 degrees of door opening.)

Applied Forces and Force Readings - All applied forces or force readings shall be made perpendicular to the face of the door at a point 30 in (762 mm) from the pivot center of the door. Force applications and readings shall be applied by a force gauge with a combined calibration and reading accuracy within 5%.

Overload Abuse Test Weights - In closers with adjustable spring power, set the closing force to the closest increment within the values specified for the closer size in Table 1.

TABLE 2

Door Closer Size	I	II	III	IV	V	VI
Overload Test Weight	35 lbs (16 kg)	40 lbs (18 kg)	45 lbs (21 kg)	55 lbs (25 kg)	60 lbs (27 kg)	65 lbs (30 kg)

BREAK-IN CYCLE:

ANSI/BHMA A156.4, Sec. 4.1

METHOD

This test was conducted for Grades 1, 2, 3 (PT1, PT2, PT3, PT5, PT6, PT7, & Other PT Options closers).

The door closer was mounted on the test apparatus and the door closing time was regulated from 90 degrees to between 3 and 6 seconds. This time was maintained during the cycling by re-regulating if necessary. The backcheck valve was fully open, where applicable. The door closer was operated for 4,000 cycles. After the 4,000 cycles, the static tests were conducted.

RESULTS

The door closer [did] ~~[did not]~~ complete the 4,000 cycles.

STATIC TEST 1 - RANGE OF CHECKING CONTROL:

ANSI/BHMA A156.4, Sec. 4.2

METHOD

SURFACE OR CONCEALED-IN-DOOR CLOSERS, (PT1, PT2, PT7) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, (PT3, PT5, PT 6)

Mount door closer per manufacturer's instructions. Completely close the general speed regulating valve on the closer. Open the door to 135° or maximum designed opening if less than 135 degrees and release. The point at which the closing motion of the door is essentially stopped (a slow creeping motion after deceleration shall be disregarded) shall be measured.

CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, OPTIONAL (PT8A)

Mount door closer per manufacturer's instructions. Completely close the general speed regulating valve on the closer. Open the door to maximum opening and release. The point at which the closing motion of the door is essentially stopped (a slow creeping motion after deceleration shall be disregarded) shall be measured.

RESULTS

SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADE 1 (PT1) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADE 1 (PT5)

The point at which the closing motion of the door essentially stopped ~~[was]~~ [was not] more than 20° from release point.

SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADE 2 (PT2) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADE 2 (PT6)

The point at which the closing motion of the door essentially stopped [was] [was not] more than 25° from release point.

SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADE 3 (PT3) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADE 3 (PT7)

The point at which the closing motion of the door essentially stopped [was] [was not] more than 30° from release point.

CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, OPTIONAL (PT8A)

The point at which the closing motion of the door essentially stopped [was] [was not] more than 7° from release point.

STATIC TEST 2 - TWO SPEEDS OF CLOSING CONTROL:

ANSI/BHMA A156.4, Sec. 4.3

METHOD

SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADES 1, 2, 3 (PT1, PT2, PT3) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADES 1 (PT5)

Adjust the general speed regulating valve for a normal closing motion and fully open the latch speed regulating valve. Open the door to approximately 45 degrees and release.

When the valving does not allow a latch speed faster than the closing speed, adjust the general speed regulation for normal closing motion and close the latching speed regulating valve. Open the door to about 45 degrees and release.

CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADES 1 (PT5)

In lieu of the above test at the option of the manufacturer, with the door closer mounted and with the regulating valves fully open, open the door beyond 30 degrees, release, and measure the maximum force between 30 and 25 degrees. Open the door beyond 12 in. (305 mm) and release; measured between 12 in. (305 mm) and 2 in. (51 mm), the closing force shall exceed by at least 30%, the value measured at the 25 to 30 degree points.

RESULTS

SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADES 1, 2, 3 (PT1, PT2, PT3) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADES 1 (PT5)

The point at which the door noticeably ~~accelerates~~ ~~decelerates~~ ~~was~~ ~~was not~~ between the 12 in. (305 mm) and 2 in. (51 mm) marks.

CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADES 1 (PT5)

The closing force ~~did~~ ~~did not~~ exceed by 30% the value specified by Table 1.

TABLE 1

Closer Size	Closing Force between the 1/2 in. (12.77 mm) and 3 in. (76 mm) mark (F1)		Test Door Weight
	lbf	N	
I	From 2 up to 3	From 9 up to 13	50 lbs/23 kg
II	From 3 up to 5	From 13 up to 22	80 lbs/36 kg
III	From 5 up to 8	From 22 up to 36	100 lbs/45 kg
IV	From 8 up to 11	From 36 up to 49	125 lbs/57 kg
V	From 11 up to 14	From 49 up to 62	155 lbs/70 kg
VI	14 and above	Above 62	180 LBS/82 KG

STATIC TEST 3 - ADJUSTABLE CLOSING SPEED:

ANSI/BHMA A156.4, Sec. 4.4

METHOD

SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADES 1, 2, 3 (PT1, PT2, PT3, PT5, PT6, PT7)

Test #1 Fully **close** general and latch speed regulating valve(s). Open the door to 90 degrees and release.

Test #2 Fully **open** general and latch speed regulating valve(s). Open the door to 90 degrees and release.

RESULTS

Results #1 The door [did] ~~[did not]~~ take 60 seconds or longer to fully close.

Results #2 The door [did] ~~[did not]~~ fully close in 3 seconds or less.

**STATIC TEST 5 - CLOSING FORCE FOR CLOSERS
WITH ADJUSTMENT THROUGH RANGE OF SIZES:**

ANSI/BHMA A156.4, Sec. 4.6

METHOD

SURFACE OR CONCEALED-IN-DOOR CLOSERS, OPTIONAL (PT4H) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, OPTIONAL (PT8M)

Test #1 Fully open both the general and latch speed regulating valves.

Adjust

the closing force to the **minimum** available for the closer being tested. The door was opened beyond the 3 in. (76 mm) line drawn on the floor. Holding the door open with a force meter, the door was allowed to close slowly under the power of the door closer. The greatest force exerted by the power of the door closer as the door travels between the 3 in. (76 mm) and 1/2 in. (12.7 mm) marks was read and recorded.

Test #2 Fully open both the general and latch speed regulating valves.

Adjust the closing force to the **maximum** available for the closer being tested. Open the door beyond the 3 in. (76 mm) line drawn on the floor. Holding the door open with a force meter, allow the door to close slowly under the power of the door closer. Read the greatest force exerted by the power of the door closer as the door travels between the 3 in. (76 mm) and 1/2 in. (12.7 mm) marks and record force.

RESULTS

Test #1 The recorded force [was] ~~[was not]~~ less than the maximum value specified in Table 1 for the minimum size closer specified by the manufacturer.

Test #2 The recorded force [was] ~~[was not]~~ equal to, or greater than the minimum value specified in Table 1 for the maximum size closer specified by the manufacturer.

STATIC TEST 6 - DOOR CLOSER EFFICIENCY:

ANSI/BHMA A156.4, Sec. 4.7

METHOD

SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADES 1, 2, 3 (PT1, PT2, PT3) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADES 1, 2 (PT5, PT6)

Fully open the general and latch speed regulating valves.

First, using a force meter **open** the door slowly and uniformly. Record the opening forces F3, F4, and F5 as the door edge passes the 2 in. (51 mm), 3 in. (76 mm), and 4 in. (102 mm) marks respectively.

Second, starting beyond the 4 in. (102 mm) mark, let the door closer **close** the door in a slow and uniform manner resisted by the force meter. Record the force readings F6, F7, and F8 as the door edge passed the 4 in. (102 mm), 3 in. (76 mm), and 2 in. (51 mm) marks respectively. Calculate the door closer efficiency by the following formula:

$$\text{Percent Efficiency} = ((F6 + F7 + F8) / (F3 + F4 + F5)) \times 100$$

RESULTS

Unit: N	F3	F4	F5	F6	F7	F8	Efficiency
Standard	96	96	92	58	64	61	64.4%
Parallel	82	71	64	42	48	60	69.1%
Frame	94	86	78	50	53	55	61.2%

The door closer efficiency [was] ~~[was not]~~ a minimum of [50% for sizes I and II] or [60% for sizes III through VI].

STATIC TEST 7 - CHECKING CYLINDER:

ANSI/BHMA A156.4, Sec. 4.8

METHOD

SURFACE, CONCEALED-IN-DOOR CLOSERS, CONCEALED IN FLOOR, OVERHEAD CONCEALED GRADES 1,2 (PT1, PT2, PT5, PT6)

Open both the general and latch speed regulating valves. Adjust the closing force to the maximum in accordance with the manufacturer's instructions. Open the door beyond the 3 in. (76 mm) line drawn on the floor. Holding the door open with a force meter, allow the door to close slowly under the power of the door closer. Read the greatest force exerted by the power of the door closer as the door travels between the 3 in. (76 mm) and 1/2 in. (12.7 mm) marks and record force (F1). The recorded force shall equal or exceed the minimum values specified in Table 1 for the size closer being tested. Once closing force is set, fully close both the latch and speed regulating valves.

Open the door to 90 degrees. Release and push the door closed with a 20 lbf (89 N) force applied 30 in (762 mm) from the pivot center. The time required for the door to fully close shall not be less than 8 seconds.

TABLE 1

Closer Size	Closing Force between the 1/2 in. (12.77 mm) and 3 in. (76 mm) mark (F1)		Test Door Weight
	lbf	N	
I	From 2 up to 3	From 9 up to 13	50 lbs/23 kg
II	From 3 up to 5	From 13 up to 22	80 lbs/36 kg
III	From 5 up to 8	From 22 up to 36	100 lbs/45 kg
IV	From 8 up to 11	From 36 up to 49	125 lbs/57 kg
V	From 11 up to 14	From 49 up to 62	155 lbs/70 kg
VI	14 and above	Above 62	180 LBS/82 KG

RESULTS

The time required for the door to fully close ~~was~~ [was not] less than 8 seconds.

STATIC TEST 8 - BACKCHECK:

ANSI/BHMA A156.4, Sec. 4.9

METHOD

[x] ADJUSTABLE BACKCHECK FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADES 1 AND 2 ONLY (PT1 AND PT2 ONLY), OPTIONAL (PT4D) AND ADJUSTABLE BACKCHECK FOR CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADES 1 AND 2 ONLY (PT5 AND PT6 ONLY), OPTIONAL (PT8F)

Open both the general and latch speed regulating valves. Set the closing force. Fully open backcheck valve. The backcheck function is tested by the actuating means of the test apparatus pushing the door to 50 degrees maximum door opening. The actuating means must push with a velocity sufficient to propel the door to a minimum opening angle of 110 degrees with the backcheck valve fully open. Adjust the backcheck valve to provide an observable reduction in the door opening speed between 60 degrees and 85 degrees of door opening and the door shall be completely stopped at a maximum of 90 degrees.

[] ADVANCED BACKCHECK FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS, OPTIONAL (PT4J)

Open both the general and latch speed regulating valves. Set the closing force. Disengage the backcheck function. Manually open the door and adjust the backcheck valve(s) to provide an observable reduction in the door opening speed prior to 70 degrees of door opening, at an angle specified by the manufacturer.

[] FACTORY PRE-SET BACKCHECK FOR CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADES 1 AND 2 ONLY (PT1 AND PT2 ONLY), OPTIONAL (PT4E)

Using a closer with adjustable backcheck as chosen by the manufacturer as representative of the model with construction which is the same or similar construction as the Factory Pre-Set Backcheck model under test, and mount the door closer open both the general and latch speed regulating valves. Set the closing force. Fully open backcheck valve. The backcheck function is tested by the actuating means of the test apparatus pushing the door to 50 degrees maximum door opening. The actuating means must push with a velocity sufficient to propel the door to a minimum opening angle of 110 degrees with the backcheck valve fully open. Replace the closer with adjustable backcheck with a closer with Factory Pre-Set Backcheck. The closer is to be mounted in accordance with the manufacturer's instructions for 90 degrees of opening. Open both the general and latch speed regulating valves. The Factory Pre-Set Backcheck shall provide an observable reduction in the door opening speed between 60 degrees and 85 degrees and the door shall be completely stopped at a maximum of 90 degrees.

STATIC TEST 8 - BACKCHECK: (CONT'D)

ANSI/BHMA A156.4, Sec. 4.9

RESULTS

ADJUSTABLE BACKCHECK FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADES 1 AND 2 ONLY (PT1 AND PT2 ONLY), OPTIONAL (PT4D) AND ADJUSTABLE BACKCHECK FOR CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADES 1 AND 2 ONLY (PT5 AND PT6 ONLY), OPTIONAL (PT8F)

When the backcheck valve was then adjusted the closer [did] ~~[did not]~~ have an observable reduction in the door opening speed between 60 degrees and 85 degrees of door opening and the door [did] ~~[did not]~~ completely stopped at a maximum of 90 degrees.

ADVANCED BACKCHECK FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS, OPTIONAL (PT4J)

When the backcheck valve was then adjusted, the closer [did] [did not] have an observable reduction in the door opening speed prior to 70 degrees of door opening.

FACTORY PRE-SET BACKCHECK FOR CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADES 1 AND 2 ONLY (PT1 AND PT2 ONLY), OPTIONAL (PT4E)

The Factory Pre-Set Backcheck [did] [did not] provide an observable reduction in the door opening speed between 60 degrees and 85 degrees and the door [did] [did not] completely stopped at a maximum of 90 degrees.

STATIC TEST 9 - DELAYED ACTION CLOSER:

ANSI/BHMA A156.4, Sec. 4.10

METHOD

[x] SURFACE OR CONCEALED-IN-DOOR CLOSERS, OPTIONAL (PT4F)

Fully open both the general and latch speed regulating valves and adjust the spring force. Fully close the delayed action regulating valve. Open the door to 100 degrees and release. Slowly open the delayed action regulating valve until the door begins to move. The closing time between 90 degrees and 70 degrees shall be a minimum of 20 seconds. The point at which the door noticeably accelerates shall be a minimum of 60 degrees.

[] CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, OPTIONAL (PT8J)

Fully open both the general and latch speed regulating valves and adjust the spring force. Fully close the delayed action regulating valve. Open the door to 90 degrees and release. Slowly open the delayed action regulating valve until the door begins to move. The closing time between 90 degrees and 70 degrees shall be a minimum of 20 seconds. The point at which the door noticeably accelerates shall be a minimum of 60 degrees.

RESULTS

SURFACE OR CONCEALED-IN-DOOR CLOSERS, OPTIONAL (PT4F) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, OPTIONAL (PT8J)

The closing time between 90 degrees and 70 degrees [was] ~~[was not]~~ a minimum of 20 seconds. The point at which the door noticeably accelerates [was] ~~[was not]~~ a minimum of 60 degrees.

**STATIC TEST 11 - OVERLOAD ABUSE TEST FOR
SURFACE OR CONCEALED-IN-DOOR CLOSERS, 1 AND
2 ONLY (PT1 AND PT2 ONLY):**

ANSI/BHMA A156.4, Sec. 4.12

METHOD

Mount door closer on the test apparatus, as shown in Fig. 3 of ANSI/BHMA A156.4. Adjust the closing time from 90 degrees to the closed position to 10 seconds. The test door weight shall be as described in Table 1 of ANSI/BHMA A156.4. Attach weights to the cable in accordance with Table 2 ANSI/BHMA A156.4.

Open and hold the door open to 90 degrees with the cable and weights attached and release the door allowing the weights to fall. The falling test weight is arrested when the door is 15 degrees from the closed position. The door continues to close under its own momentum until it is arrested by the energy absorbing stop at 5 degrees or the frame at 0 degrees, or in the case of double action closers, until it stops of its own accord. [For Grade 1 (PT1), cycle 10 times] or [For Grade 2 (PT2), cycle 5 times].

RESULTS

The door closer [did] ~~[did not]~~ complete the cycles.

INTERMEDIATE CYCLE:

ANSI/BHMA A156.4, Sec. 5

METHOD

FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS **WITHOUT** BACK CHECK, GRADES 1, 2, 3 (PT1, PT2, PT3) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS **WITHOUT** BACK CHECK, GRADES 1, 2, 3 (PT5, PT6, PT7)

Mount door closer (Fig.6 of ANSI/BHMA A156.4) and open both the general and latch speed regulating valves and adjust the spring force. Mechanically open the door to 90 degrees and release allowing the door closer to close the door. One opening and closing constitutes one cycle. Cycle door with the door closer maintaining control over the door for:

- For Grade 1 (PT1, PT5), run 1,000,000 cycles for a total of 1,004,000 cycles
- For Grade 2 (PT2, PT6), run 500,000 cycles for a total of 504,000 cycles
- For Grade 3 (PT3, PT7), run 496,000 cycles for a total of 500,000 cycles

FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS **WITH** BACK CHECK, GRADES 1, 2, 3 (PT1, PT2, PT3) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS **WITH** BACK CHECK, GRADES 1, 2, 3 (PT5, PT6, PT7)

1) Open both the general and latch speed regulating valves. Set the closing force. Fully open backcheck valve. The backcheck function is tested by the actuating means of the test apparatus pushing the door to 50 degrees maximum door opening. The actuating means must push with a velocity sufficient to propel the door to a minimum opening angle of 110 degrees with the backcheck

Adjust the backcheck valve to provide an observable reduction in the door opening speed between 60 degrees and 85 degrees of door opening and the door shall be completely stopped at a maximum of 90 degrees. Cycle the door closer as listed below:

- For Grade 1 (PT1, PT5), run 100,000 cycles with the back check control functional.
- For Grade 2 (PT2, PT6), run 50,000 cycles with the back check control functional.

2) Mount door closer (Fig.6 of ANSI/BHMA A156.4) and open both the general and latch speed regulating valves, turn off backcheck control, and adjust the spring force. Mechanically open the door to 90 degrees and release allowing the door closer to close the door. One opening and closing constitutes one cycle. Cycle door with the door closer maintaining control over the door for:

For Grade 1 (PT1, PT5), run 400,000 cycles with back check control disengaged for a total of 504,000 cycles.

For Grade 2 (PT2, PT6), run 200,000 cycles with back check control disengaged for a total of 254,000 cycles.

For Grade 3 (PT3, PT7), run 496,000 cycles with back check control disengaged for a total of 500,000 cycles.

INTERMEDIATE CYCLE: (CONT'D)

ANSI/BHMA A156.4, Sec. 5

RESULTS

[] FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS **WITHOUT** BACK CHECK, GRADES 1, 2, 3 (PT1, PT2, PT3) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS **WITHOUT** BACK CHECK, GRADES 1, 2, 3 (PT5, PT6, PT7)

The door closer [did] [did not] complete the cycles.

[x] FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS **WITH** BACK CHECK, GRADES 1, 2, 3 (PT1, PT2, PT3) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS **WITH** BACK CHECK, GRADES 1, 2, 3 (PT5, PT6, PT7)

1) The door closer [did] [~~did not~~] complete the cycles with the back check control functional.

2) The door closer [did] [~~did not~~] complete the cycles without the back check control functional.

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 if necessary.

INTERIM STATIC:

ANSI/BHMA A156.4, Sec. 6

METHOD

The following tests were repeated, as applicable to the closer type:

- RANGE OF CHECKING CONTROL (4.2),
- ADJUSTMENT THROUGH RANGE OF SIZES (4.6),
- DOOR CLOSER EFFICIENCY (4.7),
- CHECKING CYLINDER (4.8),
- BACKCHECK (4.9),
- DELAYED ACTION CLOSER (4.10).

RESULTS

- RANGE OF CHECKING CONTROL (4.2):
- SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADE 1 (PT1) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADE (PT5)

The point at which the closing motion of the door essentially stopped ~~[was]~~ [was not] more than 20° from release point.

- SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADE 2 (PT2) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADE 2 (PT6)

The point at which the closing motion of the door essentially stopped [was] [was not] more than 25° from release point.

- SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADE 3 (PT3) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADE 3 (PT7)

The point at which the closing motion of the door essentially stopped [was] [was not] more than 30° from release point.

- CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, OPTIONAL (PT8A)

The point at which the closing motion of the door essentially stopped [was] [was not] more than 7° from release point.

- ADJUSTMENT THROUGH RANGE OF SIZES (4.6):

Test #1 The recorded force [was] ~~[was not]~~ less than the maximum value specified in Table 1 for the minimum size closer specified by the manufacturer.

Test #2 The recorded force [was] ~~[was not]~~ equal to, or greater than the minimum value specified in Table 1 for the maximum size closer specified by the manufacturer.

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INTERIM STATIC: (CONT'D)

ANSI/BHMA A156.4, Sec. 6

[x] DOOR CLOSER EFFICIENCY (4.7):

Unit: N	F3	F4	F5	F6	F7	F8	Efficiency
Standard	95	95	92	58	64	61	64.9%
Parallel	81	70	64	42	48	60	69.8%
Frame	93	85	78	50	53	55	61.7%

The door closer efficiency [was] ~~[was not]~~ a minimum of [50% for sizes I and II] or [60% for sizes III through VI].

[x] CHECKING CYLINDER(4.8):

The time required for the door to fully close ~~[was]~~ [was not] less than 8 seconds.

[x] BACKCHECK (4.9):

ADJUSTABLE BACKCHECK FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADES 1 AND 2 ONLY (PT1 AND PT2 ONLY), OPTIONAL (PT4D) AND ADJUSTABLE BACKCHECK FOR CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADES 1 AND 2 ONLY (PT5 AND PT6 ONLY), OPTIONAL (PT8F)

When the backcheck valve was then adjusted the closer [did] ~~[did not]~~ have an observable reduction in the door opening speed between 60 degrees and 85 degrees of door opening and the door [did] ~~[did not]~~ completely stopped at a maximum of 90 degrees.

ADVANCED BACKCHECK FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS, OPTIONAL (PT4J)

When the backcheck valve was then adjusted, the closer [did] [did not] have an observable reduction in the door opening speed prior to 70 degrees of door opening.

FACTORY PRE-SET BACKCHECK FOR CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADES 1 AND 2 ONLY (PT1 AND PT2 ONLY), OPTIONAL (PT4E)

The Factory Pre-Set Backcheck [did] [did not] provide an observable reduction in the door opening speed between 60 degrees and 85 degrees and the door [did] [did not] completely stopped at a maximum of 90 degrees.

[x] DELAYED ACTION CLOSER (4.10):

SURFACE OR CONCEALED-IN-DOOR CLOSERS, OPTIONAL (PT4F) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, OPTIONAL (PT8J)

The closing time between 90 degrees and 70 degrees [was] ~~[was not]~~ a minimum of 20 seconds. The point at which the door noticeably accelerates [was] ~~[was not]~~ a minimum of 60 degrees.

FINAL CYCLE:

ANSI/BHMA A156.4, Sec. 7

METHOD

FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS **WITHOUT** BACKCHECK, GRADES 1, 2, 3 (PT1, PT2, PT3) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS **WITHOUT** BACKCHECK, GRADES 1, 2, 3 (PT5, PT6, PT7)

Open both the general and latch speed regulating valves and adjust the spring force. Mechanically open the door to 90 degrees and release allowing the door closer to close the door. One opening and closing constitutes one cycle. Cycle door with the door closer maintaining control over the door for:

- For Grade 1 (PT1, PT5), run 996,000 cycles for a total of 2,000,000 cycles.
- For Grade 2 (PT2, PT6), run 496,000 cycles for a total of 1,000,000 cycles.
- For Grade 3 (PT3, PT7), total cycle requirement of 500,000 cycles.

FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS **WITH** BACK CHECK, GRADES 1, 2, 3 (PT1, PT2, PT3) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS **WITH** BACKCHECK, GRADES 1, 2, 3 (PT5, PT6, PT7)

Open both the general and latch speed regulating valves, turn off backcheck control, and adjust the spring force, where applicable. Mechanically open the door to 90 degrees and release allowing the door closer to close the door. One opening and closing constitutes one cycle. Cycle door with the door closer maintaining control over the door for:

- For Grade 1 (PT1, PT5), run 996,000 cycles for a total of 1,500,000 cycles.
- For Grade 2 (PT2, PT6), run 496,000 cycles for a total of 750,000 cycles.
- For Grade 3 (PT3, PT7), total cycle requirements of 500,000 cycles.

ADDITIONAL TEST REQUIRED FOR DOUBLE ACTING FLOOR & OVERHEAD CONCEALED CLOSERS, GRADES 1 & 2

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 (See Fig. 7 of ANSI/BHMA A156.4). Adjust the latch speed to have hydraulic control by making closing speed from the 20 degree open position 1 second \pm 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.

FINAL CYCLE: (CONT'D)

ANSI/BHMA A156.4, Sec. 7

RESULTS

FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS **WITHOUT** BACKCHECK, GRADES 1, 2, 3 (PT1, PT2, PT3) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS **WITHOUT** BACKCHECK, GRADES 1, 2, 3 (PT5, PT6, PT7)

The door closer [did] [did not] complete the cycles.

FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS **WITH** BACK CHECK, GRADES 1, 2, 3 (PT1, PT2, PT3) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS **WITH** BACKCHECK, GRADES 1, 2, 3 (PT5, PT6, PT7)

The door closer [did] ~~[did not]~~ complete the cycles.

ADDITIONAL TEST REQUIRED FOR DOUBLE ACTING FLOOR & OVERHEAD CONCEALED CLOSERS, GRADES 1 & 2

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 (See Fig. 7 of ANSI/BHMA A156.4). Adjust the latch speed to have hydraulic control by making closing speed from the 20 degree open position 1 second \pm 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 degree.

- 1) The door closer [did] [did not] complete the cycles.
- 2) The door closer [did] [did not] return to 0 degree after complete cycles.

FINAL STATIC:

ANSI/BHMA A156.4, Sec. 8

METHOD

- RANGE OF CHECKING CONTROL (4.2),
- TWO SPEEDS OF CLOSING CONTROL (4.3),
- ADJUSTABLE CLOSING SPEED (4.4),
- CLOSING FORCE FOR FIXED CLOSERS 15 TO 50% ADJUSTMENT (4.5),
- ADJUSTMENT THROUGH RANGE OF SIZES (4.6),
- DOOR CLOSER EFFICIENCY (4.7),
- CHECKING CYLINDER (4.8),
- BACKCHECK (4.9),
- DELAYED ACTION CLOSER (4.10),
- DEAD STOP (4.11),
- OVERLOAD ABUSE TEST FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS (4.12),
- AUTOMATIC HOLD-OPEN TEST FOR CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS (4.13),
- SELECTOR HOLD-OPEN OR NON-HOLD-OPEN TEST FOR CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS (4.14),
- 165 DEGREE OF DOOR OPENING TEST FOR CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS (4.15).

RESULTS

- RANGE OF CHECKING CONTROL (4.2):
- SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADE 1 (PT1) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADE 1 (PT5)

The point at which the closing motion of the door essentially stopped ~~[was]~~ [was not] more than 20° from release point.

- SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADE 2 (PT2) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADE 2 (PT6)

The point at which the closing motion of the door essentially stopped [was] [was not] more than 25° from release point.

- SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADE 3 (PT3) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADE 3 (PT7)

The point at which the closing motion of the door essentially stopped [was] [was not] more than 30° from release point.

- CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, OPTIONAL (PT8A)

The point at which the closing motion of the door essentially stopped [was] [was not] more than 7° from release point.

FINAL STATIC: (CONT'D)

ANSI/BHMA A156.4, Sec. 8

[x] TWO SPEEDS OF CLOSING CONTROL (4.3):

[] SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADES 1, 2, 3 (PT1, PT2, PT3) AND CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADES 1 (PT5)

The point at which the door noticeably ~~[accelerates]~~ ~~[decelerates]~~ ~~[was]~~ ~~[was not]~~ between the 12 in. (305 mm) and 2 in. (51 mm) marks.

[] CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADES 1 (PT5)

The closing force ~~[did]~~ ~~[did not]~~ exceed by 30% the value specified by Table 1.

[x] ADJUSTABLE CLOSING SPEED (4.4):

Results #1 The door ~~[did]~~ ~~[did not]~~ take 60 seconds or longer to fully close.
Results #2 The door ~~[did]~~ ~~[did not]~~ fully close in 3 seconds or less.

[] CLOSING FORCE FOR FIXED CLOSERS 15 TO 50% ADJUSTMENT (4.5):

FOR FIXED AND ADJUSTABLE CLOSERS SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADES 1, 2, 3 (PT1, PT2, PT3, PT5, PT6, PT7)

The recorded force ~~[was]~~ ~~[was not]~~ within the values specified in Table 1 for the size closer being tested.

[] FOR ADJUSTABLE CLOSERS SURFACE OR CONCEALED-IN-DOOR CLOSERS, OPTIONAL (PT4A, PT4C)

The percentage of closing force adjustment ~~[was]~~ ~~[was not]~~ at least 15% for PT4A and 50% for PT4C over the minimum value for the size closer being tested.

[] FOR ADJUSTABLE CLOSERS CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, OPTIONAL (PT8D, PT8L)

The percentage of closing force adjustment ~~[was]~~ ~~[was not]~~ at least 50% for PT8D or 35% for PT8L over the minimum value for the size closer being tested.

[x] ADJUSTMENT THROUGH RANGE OF SIZES (4.6):

Test #1 The recorded force ~~[was]~~ ~~[was not]~~ less than the maximum value specified in Table 1 for the minimum size closer specified by the manufacturer.

Test #2 The recorded force ~~[was]~~ ~~[was not]~~ equal to, or greater than the minimum value specified in Table 1 for the maximum size closer specified by the manufacturer.

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FINAL STATIC: (CONT'D)

ANSI/BHMA A156.4, Sec. 8

[x] DOOR CLOSER EFFICIENCY (4.7):

Unit: N	F3	F4	F5	F6	F7	F8	Efficiency
Standard	93	92	89	60	63	61	67.2%
Parallel	78	70	63	42	48	59	70.6%
Frame	90	84	76	50	53	55	63.2%

The door closer efficiency [was] ~~[was not]~~ a minimum of [50% for sizes I and II] or [60% for sizes III through VI].

[x] CHECKING CYLINDER (4.8):

The time required for the door to fully close ~~[was]~~ [was not] less than 8 seconds.

[x] BACKCHECK (4.9):

ADJUSTABLE BACKCHECK FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS, GRADES 1 AND 2 ONLY (PT1 AND PT2 ONLY), OPTIONAL (PT4D) AND ADJUSTABLE BACKCHECK FOR CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADES 1 AND 2 ONLY (PT5 AND PT6 ONLY), OPTIONAL (PT8F)

When the backcheck valve was then adjusted the closer [did] ~~[did not]~~ have an observable reduction in the door opening speed between 60 degrees and 85 degrees of door opening and the door [did] ~~[did not]~~ completely stopped at a maximum of 90 degrees.

ADVANCED BACKCHECK FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS, OPTIONAL (PT4J)

When the backcheck valve was then adjusted, the closer [did] [did not] have an observable reduction in the door opening speed prior to 70 degrees of door opening.

FACTORY PRE-SET BACKCHECK FOR CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED CLOSERS, GRADES 1 AND 2 ONLY (PT1 AND PT2 ONLY), OPTIONAL (PT4E)

The Factory Pre-Set Backcheck [did] [did not] provide an observable reduction in the door opening speed between 60 degrees and 85 degrees and the door [did] [did not] completely stopped at a maximum of 90 degrees.

FINAL STATIC: (CONT'D)

ANSI/BHMA A156.4, Sec. 8

DELAYED ACTION CLOSER (4.10):
SURFACE OR CONCEALED-IN-DOOR CLOSERS, OPTIONAL (PT4F) AND CONCEALED-IN-FLOOR
OR OVERHEAD CONCEALED CLOSERS, OPTIONAL (PT8J)

The closing time between 90 degrees and 70 degrees [was] ~~[was not]~~ a minimum
of 20 seconds. The point at which the door noticeably accelerates [was] ~~[was
not]~~ a minimum of 60 degrees.

DEAD STOP (4.11):
 DEAD STOP DEGREE TEST FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS, (PT4G)

The degree at the opening [was] [was not] 90 ± 2 degrees.

DEAD STOP DEGREE TEST FOR CONCEALED-IN-FLOOR OR OVERHEAD CONCEALED
CLOSERS, (PT8G)

The degree at the opening [was] [was not] 85 to 105 ± 2 degrees.

DEAD STOP TEST FOR PT4G AND PT8G

The door closer [did] [did not] withstand the force as listed with no
impairment of function to the closer mechanism or mounting.

OVERLOAD ABUSE TEST FOR SURFACE OR CONCEALED-IN-DOOR CLOSERS (4.12):

The door closer [did] ~~[did not]~~ complete the cycles.

AUTOMATIC HOLD-OPEN TEST FOR CONCEALED-IN-FLOOR OR OVERHEAD
CONCEALED CLOSERS (4.13):

The closer [did] [did not] have an automatic hold-open between 85 and 180 ± 2
degrees.

SELECTOR HOLD-OPEN OR NON-HOLD-OPEN TEST FOR CONCEALED-IN-FLOOR OR
OVERHEAD CONCEALED CLOSERS (4.14):

1) The hold-open [did] [did not] occur at the door opening specified by the
manufacturer ± 2 degrees.

2) The closer [did] [did not] engage hold-open.

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FINAL STATIC: (CONT'D)

ANSI/BHMA A156.4, Sec. 8

[] 165 Degree of Door Opening Test for Concealed-in-Floor or Overhead
Concealed closers (4.15):

For single acting closers, the door [did] [did not] open to 165 ± 2 degrees
without harm to the closer, trim permitting.

For double acting closers, the door [did] [did not] open to 165 ± 2 degrees
in either direction, trim permitting.

8.2: Hydraulic closers [were] [were not] shown visible indications of fluid
dripping.

8.3: At the conclusion of the tests the closer [were] [were not] capable of
being adjusted to return the door from 90 to 0 degrees in 3 to 6 seconds.

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