

TEST REPORT							
EN 1154							
Building hardware- Controlled door closing devices -Requirements and test methods							
Report Reference No.....	140924090GZU-001						
Tested by (name and signature).....	Jordan Lin <i>Jordan Lin</i>						
Approved by (name and signature)...	Credy Chen <i>Credy Chen</i>						
Date of issue.....	November 17, 2014						
Contents	Total test report 16 pages including: Report text: 10 pages Appendix A for product photo: 1 page Appendix B for product drawing and bill of material: 1 page Appendix C for installation instruction: 2 pages Appendix D for markings : 1 page Revision page : 1 page						
Testing Laboratory name	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch						
Address.....	Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China						
Testing location.....	Same as above						
Applicant's name	SAINT GOBAIN SEVA						
Address.....	43 Rue du Pont de Fer-BP 10176, 71105 Chalon-sur-Saone-France						
Test specification							
Standard	EN 1154:1996/A1:2002/AC:2006						
Non-standard test method	None						
Test Report Form No	TTRF EN 1154: 1997 A						
TTRF Originator.....	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch						
Master TTRF.....	Dated 2008-01						
Test item description	Concealed floor spring for glass door						
Trade Mark	B-Twist						
Model and/or type reference.....	SN313495-SN313496, SN313501-SN313500						
Rating(s)	<table border="1"><tr><td>3</td><td>8</td><td>3</td><td>1/0*</td><td>1</td><td>3</td></tr></table>	3	8	3	1/0*	1	3
3	8	3	1/0*	1	3		
Summary of testing							
The submitted samples COMPLIED WITH all applicable mechanical performance requirements of EN 1154:1996/A1:2002/AC:2006 for the ratings.							

TTRF EN 1154: 1997 A
Originator: Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Test item particulars	
Classification of installation and use	: For all internal and external doors for use by the public, and others with little incentive to take care.
Test case verdicts	
Test case does not apply to the test object.....	: N/A
Test item does meet the requirement	: P (Pass)
Test item does not meet the requirement	: F (Fail)
Testing	
Date of receipt of test item	: March 29, 2013
Date(s) of performance of test	: April 1, 2013 to June 27, 2013
General remarks	
<p>This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.</p> <p>"(See remark #)" refers to a remark appended to the report. "(See Appendix #)" refers to an appendix appended to the report. Throughout this report a comma (point) is used as the decimal separator.</p> <p>When determining the test result, measurement uncertainty has been considered.</p>	

General product information:

Concealed floor spring for glass door, model: SN313495-SN313496 and SN313501-SN313500, they are same in size, shape, materials and structure, see below table for their detailed difference.

Model No.	Maximum opening angle	Power size	Speed control	Latch control	Back check	Delay closing	*Hold open	Zero Position
SN313495-SN313496	150°	3	Yes	Yes	No	No	Yes	Yes
SN313501-SN313500	<u>150°</u>	<u>3</u>	<u>Yes</u>	<u>Yes</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>Yes</u>

Test data on this report was base on SN313501-SN313500 without hold open function.

* Such closing device SN313495-SN313496 with fixed mechanical hold-open is not allowed to use on fire/smoke door assemblies.

Schedule of Components:

See Appendix B – product drawing and bill of material.

Detail “Ratings” information listed as following:

First digit (Category of use): Grade 3–for closing doors from at least 105°open;

Second digit (Durability): Grade 8 – 500 000 test cycles;

Third digit (Door closer power size): Grade 3 – power size 3;

Fourth digit (suitability for use on fire/smoke doors): Grade 1–suitable for use on fire/smoke door assemblies; (* Such closing device SN313495-SN313496 with fixed mechanical hold-open is not allowed to use on fire/smoke door assemblies.)

Fifth digit (Safety): Grade 1– all door closers are required to satisfy the essential requirement of safety in use;

Sixth digit (Corrosion resistance): Grade 3– high resistance.

EN 1154																																																																								
Clause	Requirement – Test			Result - Remark		Verdict																																																																		
4	CLASSIFICATION					—																																																																		
4.1	Door closer shall be classified by six digit coding system:					—																																																																		
4.2	Category of use:			3	—																																																																			
4.3	Durability:			8	—																																																																			
4.4	Door closer power size:			3	—																																																																			
4.5	Suitability for use on fire/smoke doors:			1/0*	—																																																																			
4.6	Safety:			1	—																																																																			
4.7	Corrosion resistance:			3	—																																																																			
5	REQUIREMENTS					—																																																																		
5.1	<p>Product information</p> <p>A door closer manufactured to this standard shall be supplied with clear, detailed instructions for its installation, regulation and maintenance, which shall include any limitations of opening angle.</p> <p>Where a door closer is recommended for fitting in other than a standard application, these instructions shall clearly define the door closer power size for each application of fitting position stated.</p>			<p>Detail instruction information was provided in the Product Instruction.</p> <p>Power size 3 and relevant recommended door specification were list in the installation instruction.</p> <p>Maximum opening: 150°.</p>		P																																																																		
5.2	<p>Performance</p> <table border="1"> <thead> <tr> <th rowspan="3">Door closer Power size</th> <th colspan="4">Closing moment</th> <th rowspan="2">Opening moment 0° to 60°</th> <th rowspan="2">Door closer efficiency 0° to 4°</th> </tr> <tr> <th colspan="2">0° to 4°</th> <th>88° to 92°</th> <th>Any other angle</th> </tr> <tr> <th>Nm min.</th> <th>Nm max.</th> <th>Nm min.</th> <th>Nm min.</th> <th>Nm max.</th> <th>% min.</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>9</td> <td><13</td> <td>3</td> <td>2</td> <td>26</td> <td>50</td> </tr> <tr> <td>2</td> <td>13</td> <td><18</td> <td>4</td> <td>3</td> <td>36</td> <td>50</td> </tr> <tr> <td>3</td> <td>18</td> <td><26</td> <td>6</td> <td>4</td> <td>47</td> <td>55</td> </tr> <tr> <td>4</td> <td>26</td> <td><37</td> <td>9</td> <td>6</td> <td>62</td> <td>60</td> </tr> <tr> <td>5</td> <td>37</td> <td><54</td> <td>12</td> <td>8</td> <td>83</td> <td>65</td> </tr> <tr> <td>6</td> <td>54</td> <td><87</td> <td>18</td> <td>11</td> <td>134</td> <td>65</td> </tr> <tr> <td>7</td> <td>87</td> <td><140</td> <td>29</td> <td>18</td> <td>215</td> <td>65</td> </tr> </tbody> </table>					Door closer Power size	Closing moment				Opening moment 0° to 60°	Door closer efficiency 0° to 4°	0° to 4°		88° to 92°	Any other angle	Nm min.	Nm max.	Nm min.	Nm min.	Nm max.	% min.	1	9	<13	3	2	26	50	2	13	<18	4	3	36	50	3	18	<26	6	4	47	55	4	26	<37	9	6	62	60	5	37	<54	12	8	83	65	6	54	<87	18	11	134	65	7	87	<140	29	18	215	65	—
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6	54	<87	18	11	134	65																																																																		
7	87	<140	29	18	215	65																																																																		
5.2.1	<p>General</p> <p>When tested in accordance with clauses 6 and 7, the door closer shall satisfy the relevant performance requirements of 5.2.2 to 5.2.11, and 5.2.12 to 5.2.18 as appropriate:</p>			See below clauses		P																																																																		

EN 1154					
Clause	Requirement – Test	Result - Remark			Verdict
5.2.2	Durability The door closer shall be able to close a test door conforming to 6.1.1 and 6.2 from an opening angle of 90°, for a minimum of 500,000 test cycles:	250 000 test cycles in each direction			P
5.2.3	Closing moment After 5000 test cycles and after 500,000 test cycles the measured closing moments shall be not less than the value stated in Table 1:	After 5000 test cycles			P
		Rotating direction	CW	CCW	
		Maximum closing moment (0°~ 4°), Nm	25,2	24,8	
		Maximum closing moment (88°~ 92°), Nm	14,6	14,8	
		Minimum closing moment at any other angle, Nm	8,6	8,8	
		After 500,000 test cycles			
		Rotating direction	CW	CCW	
		Maximum closing moment (0°~ 4°), Nm	22,0	21,9	
		Maximum closing moment (88°~ 92°), Nm	11,0	11,2	
		Minimum closing moment at any other angle, Nm	6,3	6,5	
5.2.4	Opening moment After 5000 test cycles the measured closing moments shall be not less than the value stated in Table 1:	Rotating direction	CW	CCW	P
		Maximum opening moment(0°~ 60°), Nm	31,4	31,2	
5.2.5	Efficiency After 5000 test cycles and after 500,000 test cycles the measured efficiency shall be not less than value stated in Table 1:	After 5000 test cycles			P
		Rotating direction	CW	CCW	
		Efficiency, %:	81,0	79,7	
		After 500,000 test cycles			
		Rotating direction	CW	CCW	
Efficiency, %:	78,2	76,8			
5.2.6	Closing time After 5000 test cycles and after 500,000 test cycles, the closing time, from a door opening angle of 90 degree, shall be capable of adjustment to 3 seconds or less, and 20 seconds or more. After 500,000 test cycles, the closing time set at 5000 test cycles shall not have increased by more than 100%, or decreased by more than 30 %:	·After 5000 test cycles: The adjustable range of closing time: 2"15 to more than 5 minutes; Setting closing time: 4"78 ·After 500,000 test cycles: Final closing time: 4"97 The adjustable range of closing time: 2"21 to more than 5 minutes.			P

EN 1154			
Clause	Requirement – Test	Result - Remark	Verdict
5.2.7	<p>Angles of operation</p> <p>The door closer shall permit the test door to open according to its grade, and on closing, shall control the door from a minimum angle of 70 degree:</p>	<p>Maximum open angle: 150°</p> <p>The controlled angle: 135°</p>	P
5.2.8	<p>Overload performance</p> <p>The door closer shall be capable of withstanding the closing overload tests:</p>	<p>After 5000 and 500,000 cycles</p> <p>Overload weight: 21 kg</p> <p>Cycle: 5 times for each side;</p> <p>The floor spring functioned normally after overload and no visible oil leakage were found.</p>	P
5.2.9	<p>Temperature dependence</p> <p>A set closing time of 5 seconds at an ambient temperature of 20 degree C, shall not increase to more than 25 seconds or decrease to less than 3 seconds when tested at -15 degree C and 40 degree C:</p>	<p>Closing time at 20°C: 5"15</p> <p>Closing time at -15°C: 7"58</p> <p>Closing time at 40°C: 3"24</p>	P
5.2.10	<p>Fluid leakage</p> <p>Throughout the test programme there shall be no leakage of fluid from the door closer:</p>	Not found any fluid leakage throughout the test	P
5.2.11	<p>Damage</p> <p>Throughout the test programme there shall be no damage to the door closer or its arms that would adversely affect its performance to this standard:</p>	Not found any damage throughout the test	P
5.2.12	<p>Latch control (optional)</p> <p>Accelerated closing shall be effective over a maximum range of 15 degree from the closed position, and shall be adjustable</p>	Latch control could be adjustable to enable accelerated closing controlled angle 0° to 15°	P
5.2.13	<p>Backcheck (optional)</p> <p>The door closer shall be capable of arresting the test door before 90 degree position:</p>	No backcheck function	N/A
5.2.14	<p>Delay closing (optional)</p> <p>The delay time shall not be less than 20 seconds.</p> <p>The delay zone shall not extend below the 65 degree open position.</p> <p>The moment required to override manually the delay action shall not exceed 150 Nm.</p> <p>The delay time at the conclusion of 500 test cycles shall be between 10 seconds to 30 seconds:</p>	No delayed closing function	N/A

EN 1154				
Clause	Requirement – Test	Result - Remark		Verdict
5.2.15	Adjustable closing force (optional) If provided with an adjustable closing function, the door closer shall comply with the performance at both the minimum and maximum power settings claimed by manufacture:	Fixed closing force door closer		N/A
5.2.16	Zero position (for double action door closers only) The amount of free play at the zero position of a new door closer shall not exceed 3 mm, and after 500,000 test cycles shall not exceed 6 mm:	Before test, the measured free play is 1,7mm; After 500 000 test cycles, measured free play is 2,30mm		P
5.2.17	Corrosion resistance The requirement shall be according to EN 1670. The closing moment of the door closer shall be not less than 80% of the closing moment measured prior to the test. The acceptance conditions of EN 1670 shall be met for all surfaces of the door closer which are visible:	Before corrosion test		P
		Rotating direction:	CW CCW	
		Maximum closing moment (0°~4°), Nm	22,0 22,1	
		Maximum closing moment (88°~92°), Nm	13,1 13,6	
		Minimum closing moment at any other angle, Nm	8,1 8,1	
		After 240 hours corrosion test		
		Rotating direction:	CW CCW	
		Maximum closing moment (0°~4°), Nm	20,2 20,4	
		Maximum closing moment (88°~92°), Nm	12,4 12,5	
		Minimum closing moment at any other angle, Nm	6,9 7,0	
5.2.18	Fire/smoke door suitability A door closer for use on a fire/smoke door assembly shall meet the necessary requirements of Annex A.....	SN313501-SN313500 was suitable for used on fire/smoke door assemblies, refer to Annex A for detail. * Such closing device SN313495-SN313496 with fixed mechanical hold-open is not allowed to use on fire/smoke door assemblies		P
6	Test apparatus			—
7	Test methods			—
8	Marking			—

EN 1154			
Clause	Requirement – Test	Result - Remark	Verdict
	<p>Each door closer and separately supplied accessory manufactured to this standard shall be marked with the following:</p> <p>a) the manufacturer's name or trademark, or other means of identification;</p> <p>b) product model identification;</p> <p>c) the classification according to Clause 4;</p> <p>d) the number of this European Standard;</p> <p>e) the year and week of manufacture.</p> <p>In the case of concealed door closers, the above information shall be readily visible after removal of the cover plate.</p> <p>For accessories (where there may be insufficient space to provide the information given in the clause), only item a) is mandatory.</p> <p>Accessories claiming compliance with Annex A, shall be marked with the information a) to e) above. In preferential order the information shall be placed:</p> <p>1) on the product itself; or</p> <p>2) on a label attached to it; or</p> <p>3) on the installation instructions; or</p> <p>4) on its packaging.</p>	<p>Compliant with the requirements</p> <p>See Appendix D 'Markings'</p>	P
Annex A	Additional requirements for door closing devices intended for use on fire/smoke door assemblies		
A.1	<p>The door closer, when installed in accordance with the manufacturer's installation instructions, shall be capable of closing the test door from any angle to which it may be opened.</p> <p>Due to their low closing moments door closers size 1 and 2, without adjustable closing force, are NOT considered suitable for use on fire/smoke door assemblies. Door closers with adjustable closing force shall be capable of adjustment at least to power size 3. For such closers the installation instructions shall include precise instructions to the installer to ensure that the door closer power is adjusted on site to size 3 or more, to overcome resistance of any seals or latches fitted.</p>	Fixed closing size 3	P
A.2	The door closer shall not include a hold-open device unless it is an electrically powered device in accordance with EN 1155.	<p>The floor spring SN313501-SN313500 did not include a hold-open device.</p> <p>* Such closing device SN313495-SN313496 with fixed mechanical hold-open is not allowed to use on fire/smoke door assemblies</p>	P

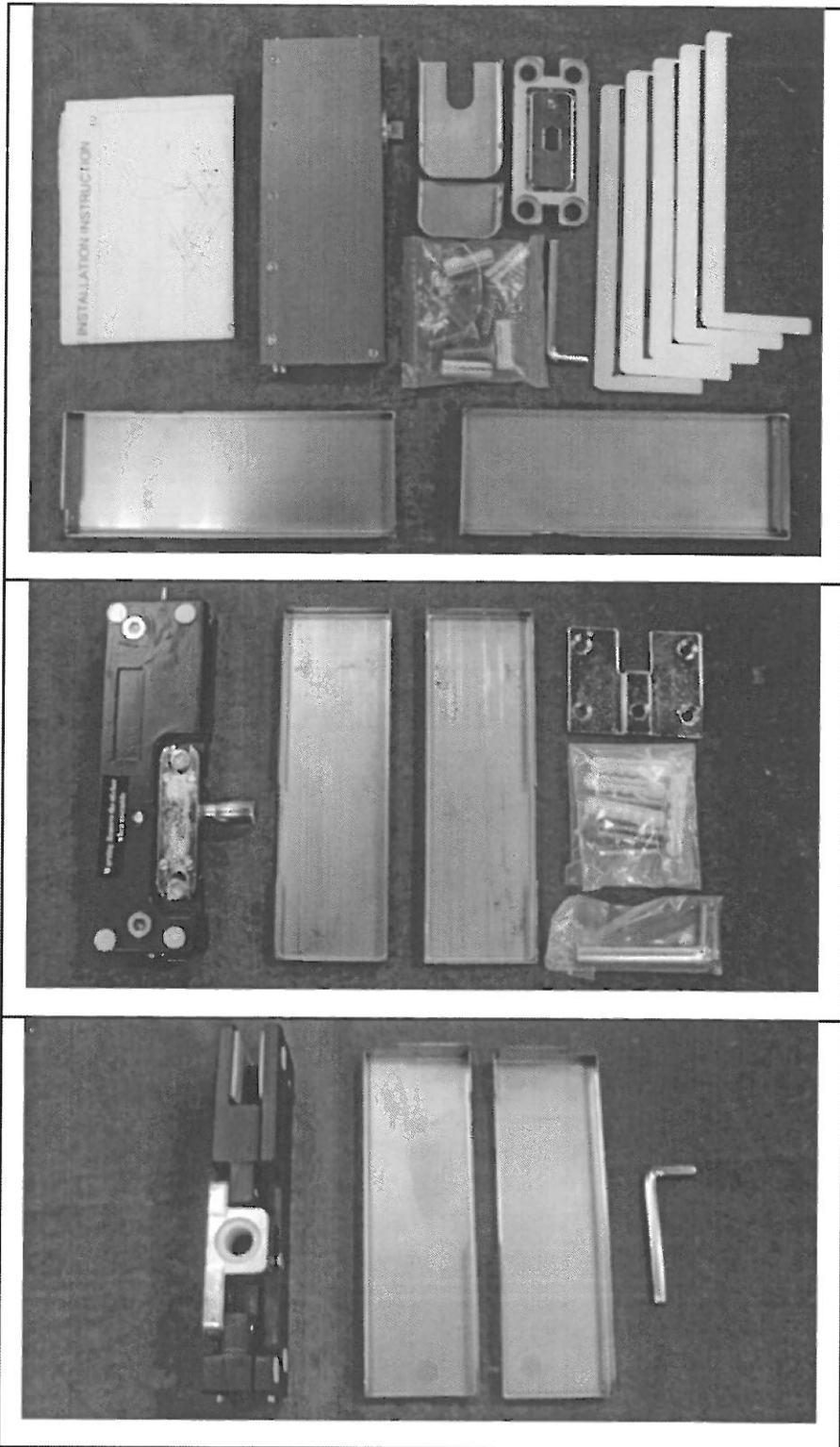
EN 1154			
Clause	Requirement – Test	Result - Remark	Verdict
A.3	Control regulators shall either be concealed, or operable only by means of a tool.	The control regulators were concealed after installed.	P
A.4	The design of a door closer shall be such that it is not possible to inhibit its closing action in any way, without the use of a tool.	Compliant	P
A.5	Any incorporated delayed action function shall be capable of adjustment to less than 25 s, between the door closing angles of 120 ° and the end of the delay zone.	No delayed action function	N/A
A.6	The door closer, representative of its model, shall have been incorporated in a door assembly that has satisfied the appropriate criteria of a fire test. The test shall have been on a full sized assembly in accordance with EN 1634-1 or when relevant, in accordance with EN 1634-3.	Compliant Test standard: EN 1634-1:2008 Fire/smoke resistive time: 40 minutes Refer to fire test report 130820007SHJ-BP-1 for details.	P
A.7	Where the door closer is intended for use with other, significantly different arm assemblies (for example slide tracks) which may be supplied separately, that combination shall also be tested according to Clause 7.	Not intended to used with other significantly arm assemblies.	N/A

EN 1154			
Clause	Requirement – Test	Result - Remark	Verdict
ZA.3	<p>CE marking and labelling</p> <p>The CE conformity marking symbol consists exclusively of the letters “CE” in accordance with Directive 93/68/EC.</p> <p>The CE marking symbol shall be accompanied by the following information:</p> <p>a) identification number of the certification body;</p> <p>b) the name or identifying mark of the producer;</p> <p>c) registered address of the producer;</p> <p>d) the last two digits of the year in which the marking was applied;</p> <p>e) the number of the EC certificate of conformity;</p> <p>f) reference to this European standard (EN 1154:1996 + A1:2002);</p> <p>g) the designation and performance of the door closing device according to 4.2 to 4.7, where referenced in Table ZA.1.</p> <p>The CE marking symbol and items a) to g) above shall accompany the product and shall be included with the installation instructions. Additionally, at least the CE marking symbol and item a) of this information shall be affixed to the door closing device and optionally, on its packaging.</p> <p>In addition to any specific information relating to dangerous substances shown above, the product should also be accompanied, when and where required and in the appropriate form, by documentation listing any other legislation on dangerous substances for which compliance is claimed, together with any information required by that legislation.</p>	<p>Compliant with the requirements</p> <p>See Appendix D ‘Markings’</p>	P

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Appendix A

Product photos



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Appendix B

Product drawings and bill of material

Item	Name	Size	Qty	Material	Qty	Name	Size	Qty	Material
1	Body	#54.5	1	Aluminum	1	Scraper ring	#1510	1	Aluminum
2	Piston	#28x73L	1	Steel	1	Scraper ring	#1010	1	Aluminum
3	Scraper	#11.5x15.5L	1	Steel	1	O-ring	P15	1	Steel
4	Scraper	S7	1	Steel	1	O-ring	#26x#2	3	Steel
5	Steel ball	3/16"	1	Steel	1	Ring	#30.7x1.5L	1	Steel
6	Spring	#0.9x12L	1	Steel	1	Spring	#5.5x110L	1	Steel
7	Ring 1	#12.3x9.7L	1	Steel	1	Spring	#3.2x110L	1	Steel
8	Ring 1	#2x9.7L	1	Steel	1	Scraper	#30.7x1.2L	2	Steel
9	Ring 2	#7x22.5L	1	Steel	1	Steel ball	1/8"	2	Steel
10	Washer	#15x7.5x1L	2	Steel	2	Valve	M6x20L	2	Steel
11	Washer	#2x9.8L	14	Steel	14	O-ring	P4	2	Steel
12	Roller	#26x10L	1	Steel	1	Washer	#13.9x1L	1	Steel
13	Ring 2	#28.3x2L	1	Steel	1	O-ring	#8.3x2L	2	Steel
14	Piston	#15x10x61.5L	1	Steel	1	Spring	#2.5x110L	1	Steel

SN313495-
SN313496

SN313495-SN313496

Item	Name	Size	Qty	Material	Qty	Name	Size	Qty	Material
1	Body	#54.5	1	Aluminum	1	Scraper ring	#1510	1	Aluminum
2	Piston	#28x73L	1	Steel	1	Scraper ring	#1010	1	Aluminum
3	Scraper	#11.5x15.5L	1	Steel	1	O-ring	P15	1	Steel
4	Scraper	S7	1	Steel	1	O-ring	#26x#2	3	Steel
5	Steel ball	3/16"	1	Steel	1	Ring	#30.7x1.5L	1	Steel
6	Spring	#0.9x12L	1	Steel	1	Spring	#5.5x110L	1	Steel
7	Ring 1	#12.3x9.7L	1	Steel	1	Spring	#3.2x110L	1	Steel
8	Ring 1	#2x9.7L	1	Steel	1	Scraper	#30.7x1.2L	2	Steel
9	Ring 2	#7x22.5L	1	Steel	1	Steel ball	1/8"	2	Steel
10	Washer	#15x7.5x1L	2	Steel	2	Valve	M6x20L	2	Steel
11	Washer	#2x9.8L	14	Steel	14	O-ring	P4	2	Steel
12	Roller	#26x10L	1	Steel	1	Washer	#13.9x1L	1	Steel
13	Ring 2	#28.3x2L	1	Steel	1	O-ring	#8.3x2L	2	Steel
14	Piston	#15x10x61.5L	1	Steel	1	Spring	#2.5x110L	1	Steel

SN313501-
SN313500

SN313501-SN313500

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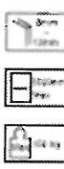
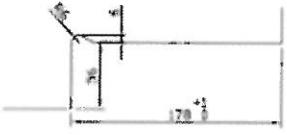
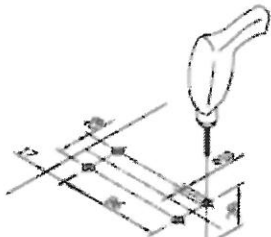
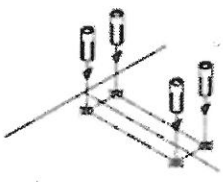
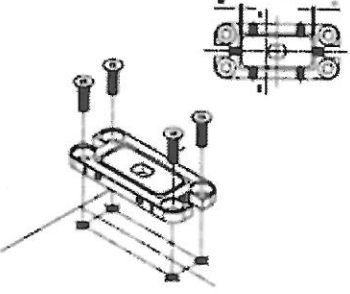
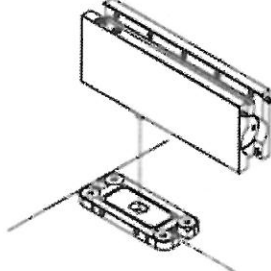

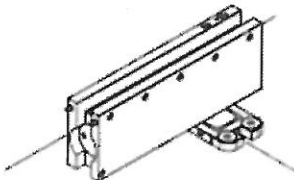
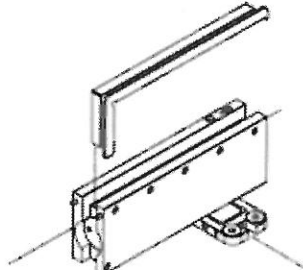
Appendix C

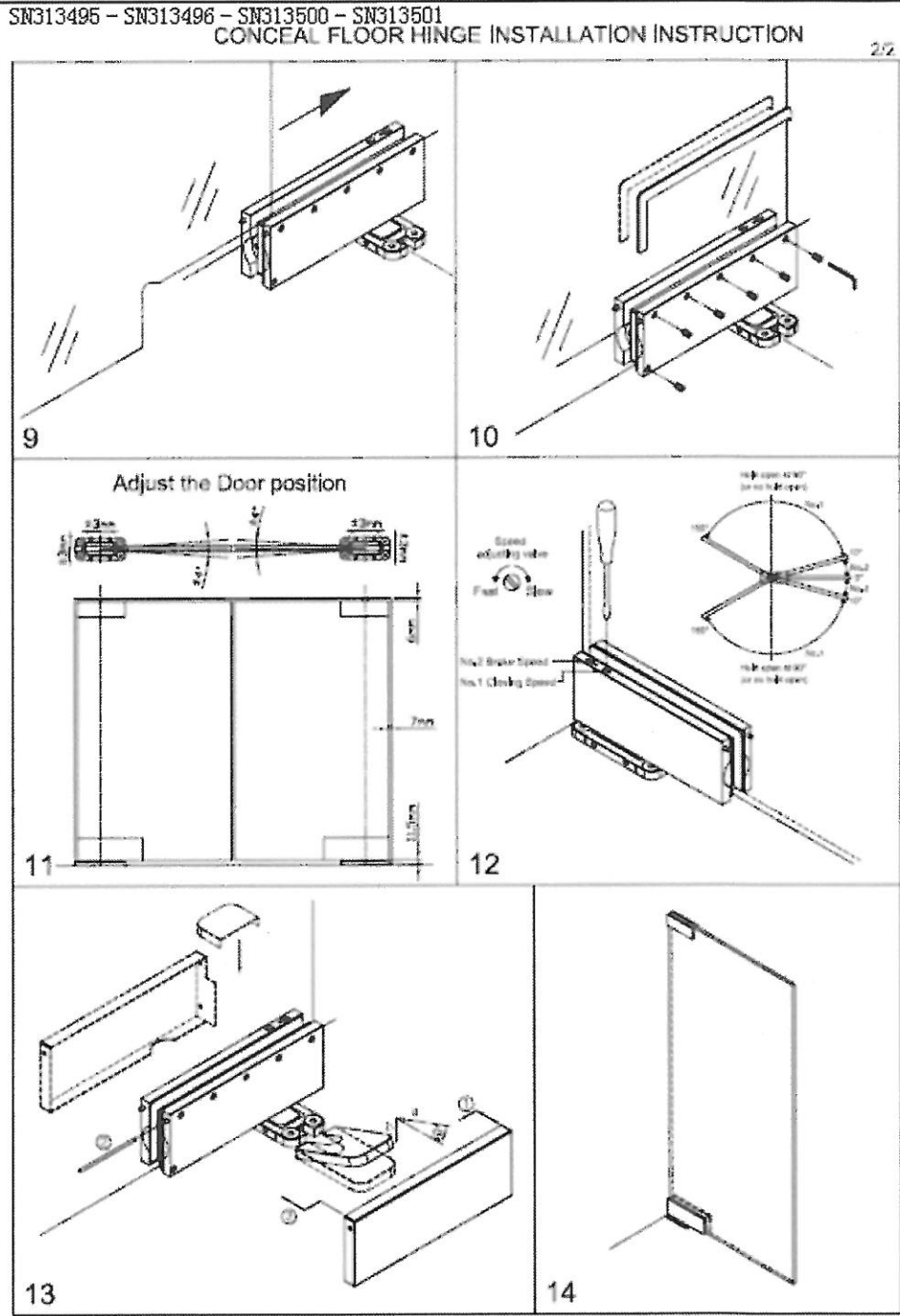
Installation instruction

SN313495 - SN313496 - SN313500 - SN313501
CONCEAL FLOOR HINGE INSTALLATION INSTRUCTION

75

1/2

	<p>Glass Cutout</p>  <p>Unit : mm</p>	 <p>Unit : mm</p>
		
		
		



*****End of Page*****


Appendix D

Markings

SAINT GOBAIN SEVA
 Model: SN313495-SN313496
 Classification:383013
 Standard: EN 1154:1996/A1:2002/AC:2006
 Batch number:317022

SAINT GOBAIN SEVA
 Model: SN313501-SN313500
 Classification:383113
 Standard: EN 1154:1996/A1:2002/AC:2006
 Batch number:317022

Product marking

	SAINT GOBAIN SEVA 43 Rue du Pont de Fer-BP 10176, 71105 Chalon-sur-Saone-France		13			
	Certificate Number	EN 1154:1996/A1:2002/AC:2006	3	8	3	1 1 3

CE marking (For SN313501-SN313500 only)

*****End of Page*****

Revision Page

Revision No.	Date	Changes	Author	Reviewer
0	2014-10-06	First issue	Jordan Lin	Credy Chen
1	2014-11-13	Revise the drawings which updated by client on Page 12	Jordan Lin	Credy Chen

*****End of Report*****