



TEST REPORT EN 1154 Building hardware- Controlled door closing devices -Requirements and test methods							
Report Reference No.	: 150227031GZU-002						
Tested by (name and signature).....	: Alan Lai <i>Alan Lai</i>						
Approved by (name and signature) .:	: Credy Chen <i>Credy Chen</i>						
Date of issue	: May 19, 2015						
Contents	: Total test report 15 pages including: Report text: 9 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	: KENWA CO., LTD.						
Address	: 12 th FLOOR, TOWER WEST, UMEDA SKY BUILDING, 1-30 OYODONAKA 1-CHOME KITA-KU, OSAKA 531-0076 JAPAN						
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 wooden door							
Trade Mark.....	: NHN						
Model and/or type reference	: PDC-103WS, PDC-103W						
Manufacturer	: A019						
Rating(s).....	: <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">8</td> <td style="text-align: center;">3</td> <td style="text-align: center;">1/0*</td> <td style="text-align: center;">1</td> <td style="text-align: center;">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.							

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 : April 23, 2013 and May 2, 2013									
Date(s) of performance of test : May 2, 2013 to June 24, 2013									
General remarks									
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"(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.									
When determining the test result, measurement uncertainty has been considered.									
General product information:									
Concealed floor spring for wooden door, model: PDC-103WS and PDC-103W, 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	
PDC-103WS	<u>150°</u>	<u>3</u>	<u>Yes</u>	<u>Yes</u>	<u>No</u>	<u>No</u>	<u>Yes</u>	<u>Yes</u>	
PDC-103W	150°	3	Yes	Yes	No	No	No	Yes	
Test data on this report was base on PDC-103WS with hold open function.									
* Such closing device PDC-103WS with fixed mechanical hold-pen 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 PDC-103WS with fixed mechanical hold-pen 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 Installation 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	Performance					—
	Door closer	Closing moment			Opening moment	Door closer efficiency
	Power size	0° to 4°		88° to 92°	0° to 60°	0° to 4°
		Nm min.	Nm max.	Nm min.	Nm max.	% min.
	1	9	<13	3	26	50
	2	13	<18	4	36	50
	3	18	<26	6	47	55
	4	26	<37	9	62	60
	5	37	<54	12	83	65
	6	54	<87	18	134	65
	7	87	<140	29	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	19,5	19,4	
		Maximum closing moment (88°~ 92°), Nm	N/A*	N/A*	
		Minimum closing moment at any other angle, Nm	5,1	5,1	
		After 500,000 test cycles			
		Rotating direction	CW	CCW	
		Maximum closing moment (0°~ 4°), Nm	18,9	19,0	
		Maximum closing moment (88°~ 92°), Nm	N/A*	N/A*	
		Minimum closing moment at any other angle, Nm	4,7	4,8	
*the hold-open facility acted at 88°~ 92°					
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	32,5	31,9	
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, %:	61,7	60,9	
		After 500,000 test cycles			
		Rotating direction	CW	CCW	
Efficiency, %:	61,4	61,8			
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"19 to more than 5 minutes; Setting closing time: 3"76 -After 500,000 test cycles: Final closing time: 3"96 The adjustable range of closing time: 2"32 to more than 5 minutes.			P

EN 1154			
Clause	Requirement – Test	Result - Remark	Verdict
5.2.7	Angles of operation 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:	Maximum open angle: 150° The controlled angle: 135°	P
5.2.8	Overload performance The door closer shall be capable of withstanding the closing overload tests:	After 5000 and 500,000 cycles Overload weight: 21 kg Cycle: 5 times for each side; The floor spring functioned normally after overload and no visible oil leakage were found.	P
5.2.9	Temperature dependence 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:	Closing time at 20°C: 5"17 Closing time at -15°C: 3"87 Closing time at 40°C: 3"51	P
5.2.10	Fluid leakage Throughout the test programme there shall be no leakage of fluid from the door closer:	Not found any fluid leakage throughout the test	P
5.2.11	Damage 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:	Not found any damage throughout the test	P
5.2.12	Latch control (optional) Accelerated closing shall be effective over a maximum range of 15 degree from the closed position, and shall be adjustable	Latch control could be adjustable to enable accelerated closing controlled angle 0° to 15°	P
5.2.13	Backcheck (optional) The door closer shall be capable of arresting the test door before 90 degree position:	No backcheck function	N/A
5.2.14	Delay closing (optional) The delay time shall not be less than 20 seconds. The delay zone shall not extend below the 65 degree open position. The moment required to override manually the delay action shall not exceed 150 Nm. The delay time at the conclusion of 500 test cycles shall be between 10 seconds to 30 seconds:	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 2,02mm; After 500 000 test cycles, measured free play is 3,23mm		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	19,4 19,5	
		Maximum closing moment (88°~ 92°), Nm	N/A* N/A*	
		Minimum closing moment at any other angle, Nm	4,6 4,3	
		After 240 hours corrosion test		
		Rotating direction:	CW CCW	
		Maximum closing moment (0°~ 4°), Nm	19,1 19,1	
		Maximum closing moment (88°~ 92°), Nm	N/A* N/A*	
		Minimum closing moment at any other angle, Nm	4,5 4,4	
*the hold-open facility acted at 88°~ 92°				
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.....	PDC-103W was suitable for used on fire/smoke door assemblies, refer to Annex A for detail. * Such closing device PDC-103WS with fixed mechanical hold-open is not allowed to use on fire/smoke door assemblies		P
6	Test apparatus			—
7	Test methods			—
8	Marking			—

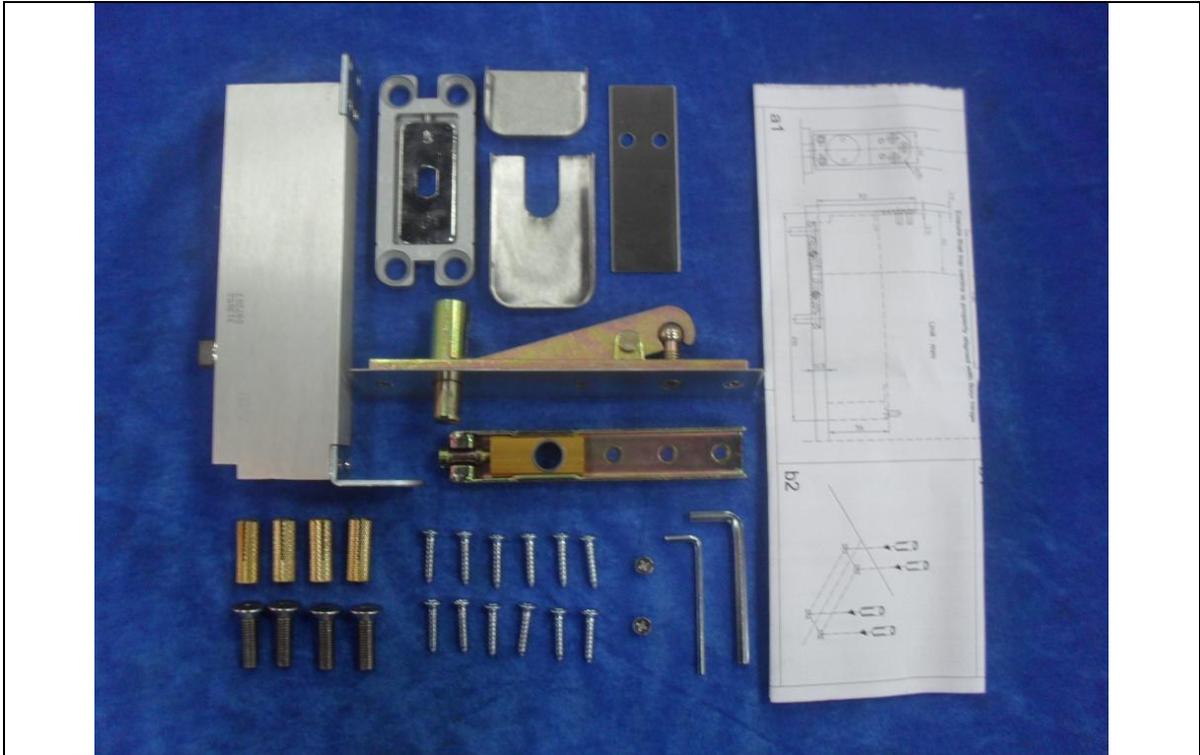
EN 1154			
Clause	Requirement – Test	Result - Remark	Verdict
	<p>Each door closer and separately supplied accessory manufactured to this standard shall be marked with the following:</p> <p>a) the manufacturer's name or trademark, or other means of identification;</p> <p>b) product model identification;</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 PDC-103W did not include a hold-open device.</p> <p>* Such closing device PDC-103WS 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	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 photo



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Appendix B

Product drawings and bill of material

No.	Name	Sizes	Q'ty	Material	No.	Name	Sizes	Q'ty	Material
1	Body	893-B□	1	6005 T6	17	O-ring	P15	1	NBR70
2	Piston	ø28x73L	1	SCM21	18	O-ring	ø26xø2	3	NBR70
3	Seat	ø11.5x15.5L	1	Cu	19	Plug	ø30.7x15L	1	6061 T5
4	O-ring	S7	1	NBR70	20	Spring	ø5.5x110L	1	82B
5	Steel ball	3/16"	1	65Mn	21	Spring	ø3.2x110L	1	82B
6	Spring	ø0.9x12L	1	82B	22	End cap	ø30.7x11.2L	1	6061 T5
7	Ring 1	ø12.3x9.7L	1	POM	23	End cap	ø30.7x20.5L	1	6061 T5
8	Pin 1	ø2x9.7L	1	SS41	24	O-ring	ø23.5xø2	1	NBR70
9	Pin 2	ø7x22.5L	1	SCM21	25	Valve	M6x16.5L	1	Cu
10	Washer	ø15x7.5x1L	2	SPHC	26	Valve	M6x27L	1	Cu
11	Needle	ø2x9.8L	14	SCM21	27	O-ring	P4	2	NBR70
12	Roller	ø20x10L	1	65Mn	28	Washer	ø6.2x2L	2	SS41
13	Ring 2	ø28.3x2	1	F4	29	Washer	ø13.9x1L	1	S45C
14	Pinion	ø15xø10x61.5L	1	SCM21	30	Steel ball	1/8"	1	65Mn
15	Needle bearing#1510		1	65Mn	31	Spring	ø2.6x110L	1	82B
16	Needle bearing#1010		1	65Mn					

PDC-103WS

No.	Name	Sizes	Q'ty	Material	No.	Name	Sizes	Q'ty	Material
1	Body	893-B□	1	6005 T6	17	O-ring	P15	1	NBR70
2	Piston	ø28x73L	1	SCM21	18	O-ring	ø26xø2	3	NBR70
3	Seat	ø11.5x15.5L	1	Cu	19	Plug	ø30.7x15L	1	6061 T5
4	O-ring	S7	1	NBR70	20	Spring	ø5.5x110L	1	82B
5	Steel ball	3/16"	1	65Mn	21	Spring	ø3.2x110L	1	82B
6	Spring	ø0.9x12L	1	82B	22	End cap	ø30.7x11.2L	1	6061 T5
7	Ring 1	ø12.3x9.7L	1	POM	23	End cap	ø30.7x20.5L	1	6061 T5
8	Pin 1	ø2x9.7L	1	SS41	24	O-ring	ø23.5xø2	1	NBR70
9	Pin 2	ø7x22.5L	1	SCM21	25	Valve	M6x16.5L	1	Cu
10	Washer	ø15x7.5x1L	2	SPHC	26	Valve	M6x27L	1	Cu
11	Needle	ø2x9.8L	14	SCM21	27	O-ring	P4	2	NBR70
12	Roller	ø20x10L	1	65Mn	28	Washer	ø6.2x2L	2	SS41
13	Ring 2	ø28.3x2	1	F4	29	Washer	ø13.9x1L	1	S45C
14	Pinion	ø15xø10x61.5L	1	SCM21	30	Steel ball	1/8"	1	65Mn
15	Needle bearing#1510		1	65Mn	31	Spring	ø2.6x110L	1	82B
16	Needle bearing#1010		1	65Mn					

PDC-103W

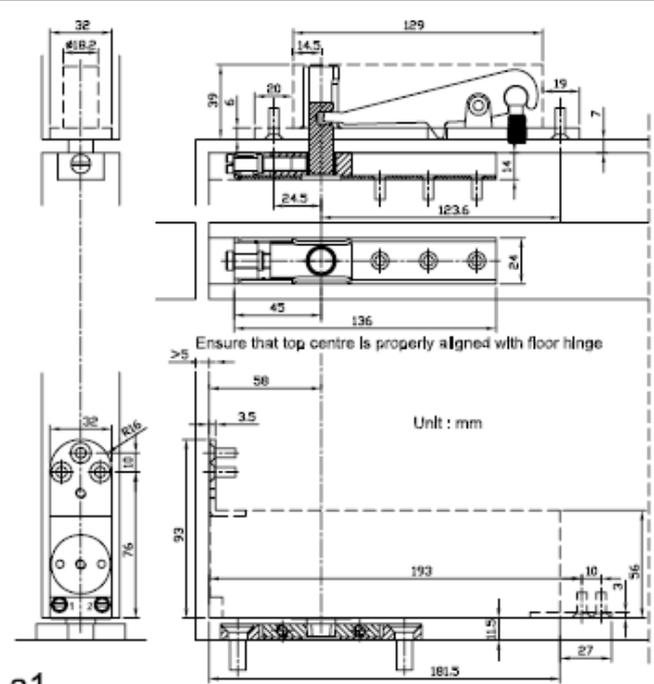
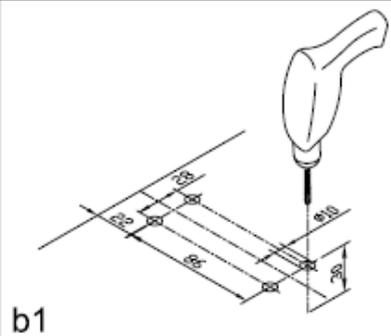
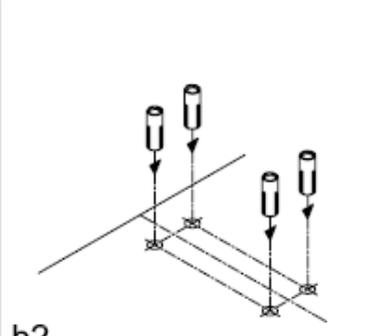
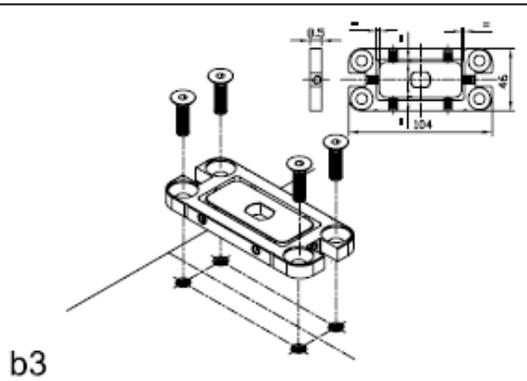
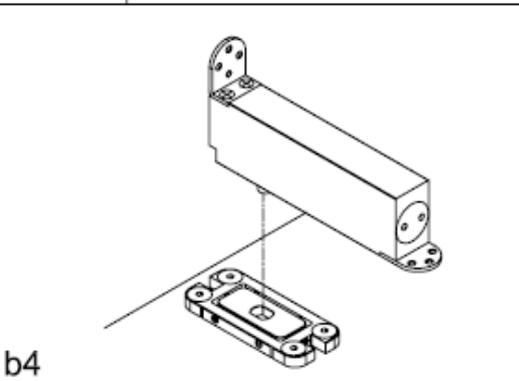
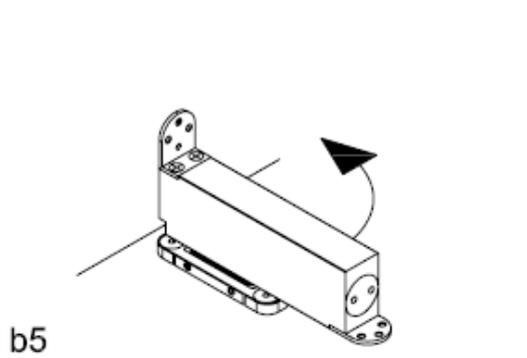
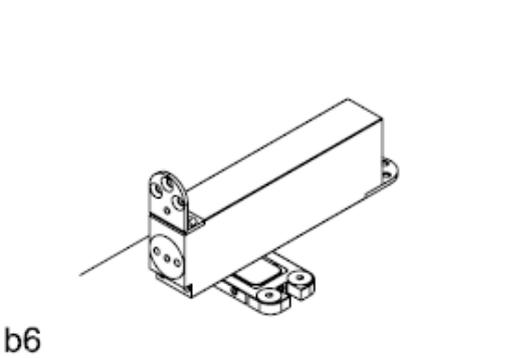
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Appendix C

Installation instruction

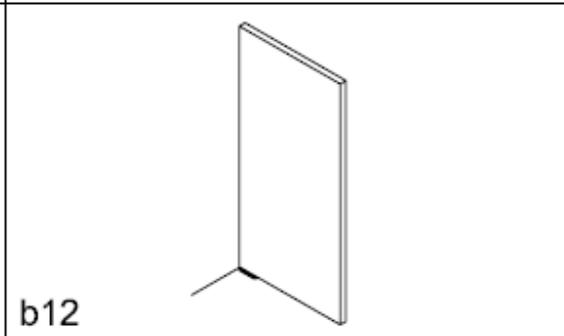
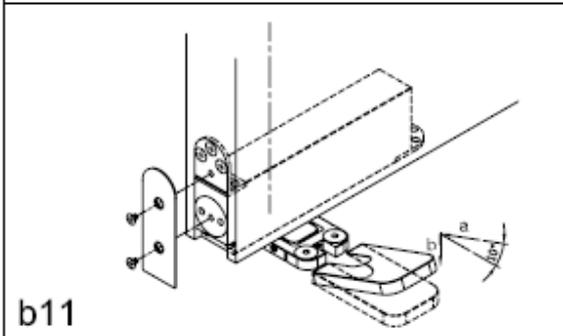
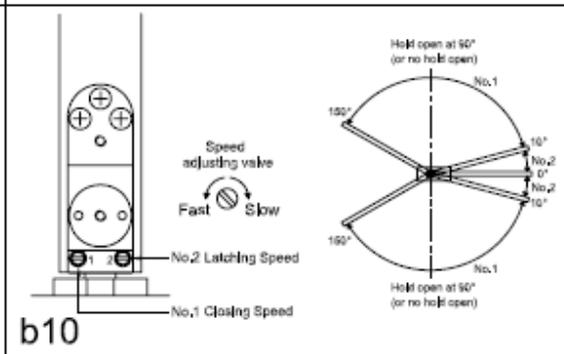
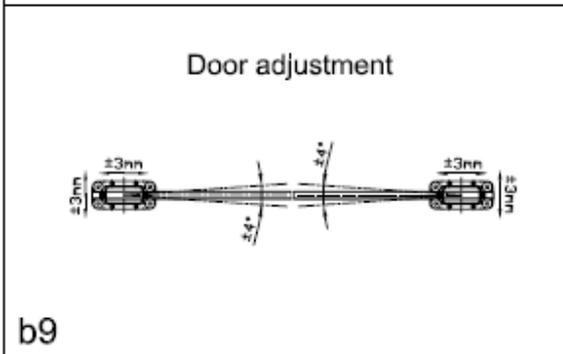
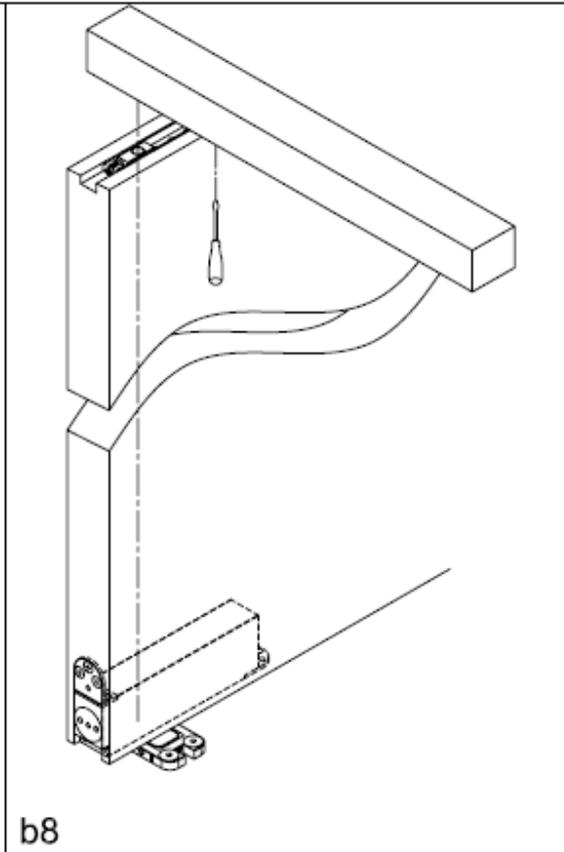
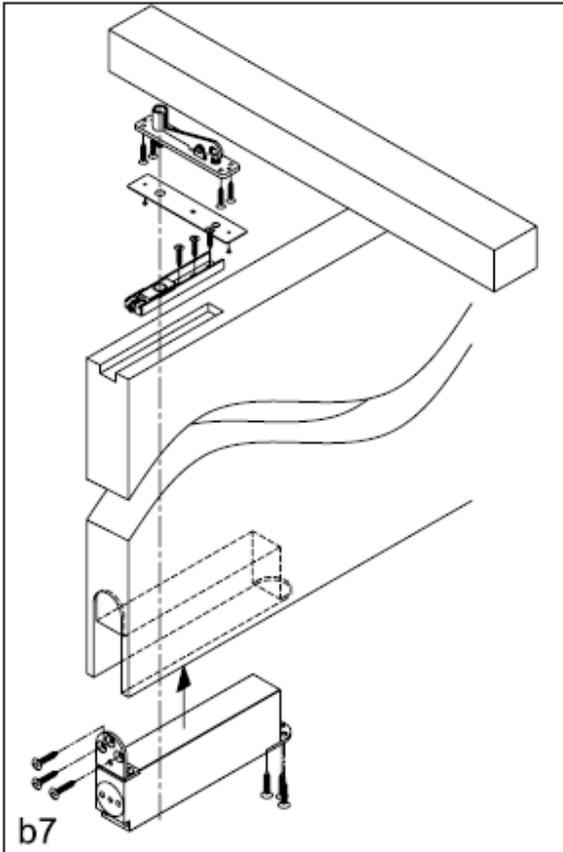
83-4 INSTALLATION INSTRUCTIONS NHN PIVOT CLOSER
MODEL NO. PDC-103W / PDC103W-S



 <p>a1</p>	 <p>b1</p>
 <p>b2</p>	 <p>b3</p>
 <p>b4</p>	 <p>b5</p>
 <p>b6</p>	<p>1/2</p>

E & O. E. ©Kenwa, Osaka-Japan. 1310A-PDC103W

INSTALLATION INSTRUCTIONS NHN PIVOT CLOSER
MODEL NO. PDC-103W / PDC103W-S



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E. & O. E. ©Kenwa, Osaka-Japan. 1310A-PDC103W

B2. Installation instruction

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

Appendix D

Markings

KENWA CO., LTD.
 Model: PDC-103WS
 Classification: 383013
 Standard: EN 1154:1996/A1:2002/AC:2006
 Batch number: 317022

KENWA CO., LTD.
 Model: PDC-103W
 Classification: 383113
 Standard: EN 1154:1996/A1:2002/AC:2006
 Batch number: 317022

Product marking

	KENWA CO., LTD. 12 th FLOOR, TOWER WEST, UMEDA SKY BUILDING, 1-30 OYODONAKA 1-CHOME KITA-KU, OSAKA 531-0076 JAPAN		13			
	Certificate Number	EN 1154:1996/A1:2002/AC:2006	3	8	3	1 1 3

CE marking (For PDC-103W only)

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Revision Page

Revision No.	Date	Changes	Author	Reviewer
Original	May 19, 2015	First issue	Alan Lai	Credy Chen

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