Intertek

TEST REPORT
EN 1154
Building hardware- Controlled door closing devices -Requirements and test methods

Report Reference No.	140327009GZU-001
Tested by (name and signature)	Credy Chen
Approved by (name and signature)	Blusea Dong
Date of issue	May 22, 2014
Contents	Total test report 13 pages including: Report text: 6 pages Appendix A for product photo: 1 page Appendix B for Product Drawing and Bill of Material: 2 pages Appendix C for Installation Instruction: 3 pages 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	Bestko Precision Limited
Address	Unit 303, Block A, Po Lung Centre, 11 Wang Chiu Road, Kowloon Bay, Hong Kong
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	Floor Hinge
Trade Mark	BESTKO
Model and/or type reference	TJ109E.100
Manufacturer	Bestko Precision Hardware (Shenzhen) Company Limited
Rating(s)	3 8 3 0 1 0

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 2, 2014
Date(s) of performance of test ..... :	April 2, 2014 to May 21, 2014

General remarks

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.

"(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:

Frameless Door Floor Hinge, model TJ109E.100, double action type with two adjustable closing speed valves (valve 1 for 70 to 25 degrees, valve 2 for 25 to 0 degree), no latch speed control, with hold open function(±90°), maximum open angle: ±125°.
Note: no equivalent model without hold-open function was provided by manufacturer.

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 105º open;

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

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

Fourth digit (suitability for use on fire/smoke doors): Grade 0: Not suitable for 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 0–No defined corrosion resistance.

EN 1154

<table>
<tr><th>Clause</th><th>Requirement – Test</th><th>Result - Remark</th><th>Verdict</th></tr>
<tr><td>4</td><td>CLASSIFICATION</td><td></td><td>—</td></tr>
<tr><td>4.1</td><td>Door closer shall be classified by six digit coding system:</td><td></td><td>—</td></tr>
<tr><td>4.2</td><td>Category of use:</td><td>3</td><td>—</td></tr>
<tr><td>4.3</td><td>Durability:</td><td>8</td><td>—</td></tr>
<tr><td>4.4</td><td>Door closer power size:</td><td>3</td><td>—</td></tr>
<tr><td>4.5</td><td>Suitability for use on fire/smoke doors:</td><td>0</td><td>—</td></tr>
<tr><td>4.6</td><td>Safety:</td><td>1</td><td>—</td></tr>
<tr><td>4.7</td><td>Corrosion resistance:</td><td>0</td><td>—</td></tr>
<tr><td>5</td><td>REQUIREMENTS</td><td></td><td>—</td></tr>
<tr><td>5.1</td><td>Product information
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.
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.</td><td>Detail instruction information was provided in the Product Instruction.
Power size 3 and relevant recommended door specification were list in the installation instruction.
Claimed Maximum opening: 125°.</td><td>P</td></tr>
<tr><td>5.2</td><td>Performance
<table>
<tr><th rowspan="2">Door closer Power size</th><th colspan="2">Closing moment 0° to 4°</th><th>88° to 92°</th><th>Any other angle</th><th>Opening moment 0° to 60°</th><th>Door closer efficiency 0° to 4°</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>
<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>
</table></td><td></td><td>—</td></tr>
<tr><td>5.2.1</td><td>General
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:</td><td>See below clauses</td><td>P</td></tr>
</table>

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 for double action door closer, total 500 000 cycles completed. Cycle angle: 0 to ±（80~85） degrees			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	23,2	23,3	
		Maximum closing moment (88°~ 92°), Nm	N/A	N/A	
		Minimum closing moment at any other angle, Nm	6,6	6,5	
		After 500,000 test cycles			
		Rotating direction	CW	CCW	
		Maximum closing moment (0°~ 4°), Nm	19,4	20,0	
		Maximum closing moment (88°~ 92°), Nm	N/A	N/A	
		Minimum closing moment at any other angle, Nm	6,0	5,8	
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	36,4	37,4	
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, %:	74,3	75,4	
		After 500,000 test cycles			
		Rotating direction	CW	CCW	
		Efficiency, %:	71,4	70,2	
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: 1"72 to hold-open; Setting closing time: 3"88 After 500,000 test cycles: Final closing time: 3"45 The adjustable range of closing time: 1"90 to hold-open.			P

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

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: 125° The controlled angle: 70°	P
5.2.8	Overload performance The door closer shall be capable of withstanding the closing overload tests:	Power size 3; 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

Door closer power size	Test door mass, kg	Overload test weight, kg
1	20	15
2	40	18
3	**60**	**21**
4	80	24
5	100	27
6	120	30
7	160	33

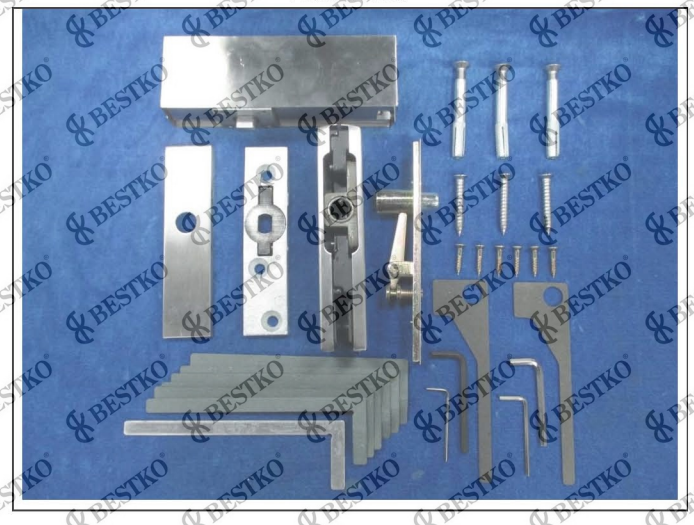
5.2.9	Temperature dependence A set closing time of 5 seconds at an ambient temperature of 20 degree C, shall not increase to more than 25 seconds or decrease to less than 3 seconds when tested at –15 degree C and 40 degree C:	Closing time at 20°C: 5"09 Closing time at -15°C: 19"65 Closing time at 40°C: 4"16	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	No latch control valve *valve 1 was for control of 25 to 0 degree.	N/A
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

EN 1154			
Clause	Requirement – Test	Result - Remark	Verdict
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
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 2,1mm; After 500 000 test cycles, measured free play is 4,2mm	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:	Grade 0 No define corrosion resistance.	N/A
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.....	Grade 0 Not suitable for use on fire/smoke door assemblies.	N/A

**********End of page**********

Appendix A

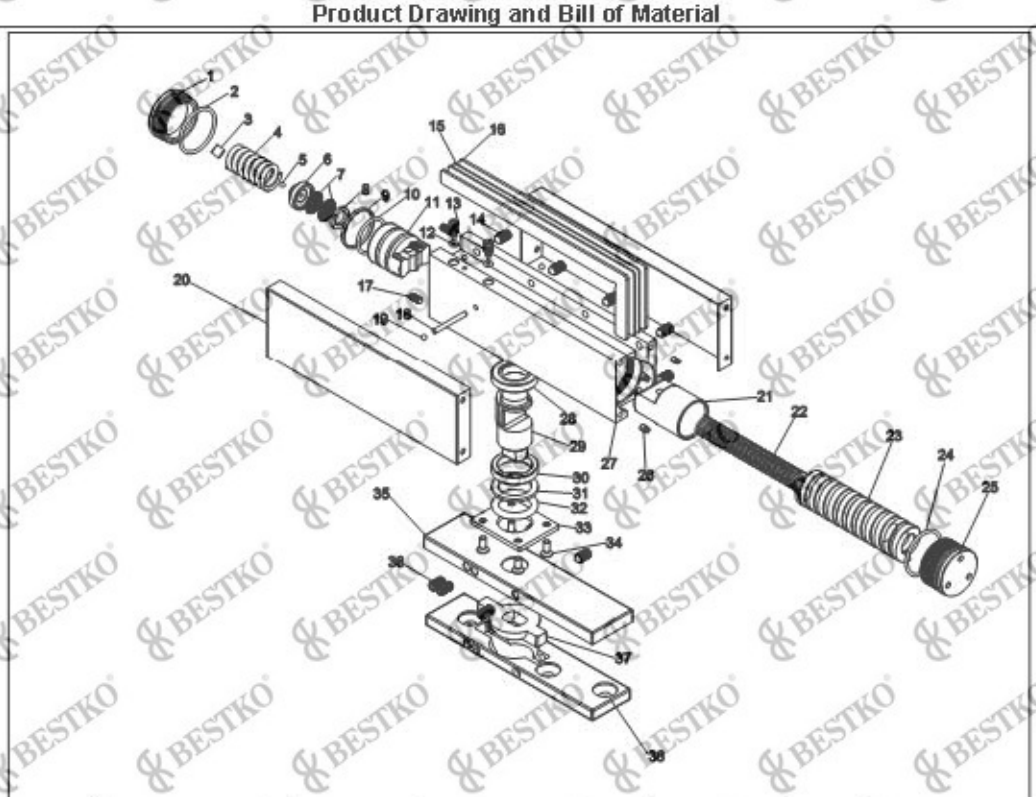
Product Photo



**********End of page**********

Appendix B

Product Drawing and Bill of Material



No.	Code	Name of Component	Material	Qty.	Finishing

No.	Code	Name of Component	Material	Qty.	Finishing
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					

**********End of page**********

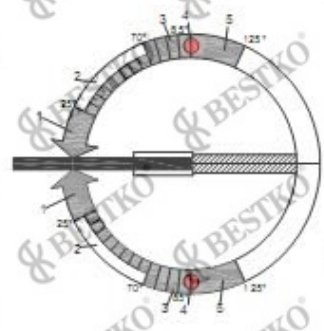
Appendix C

Installation Instruction

BESTKO®

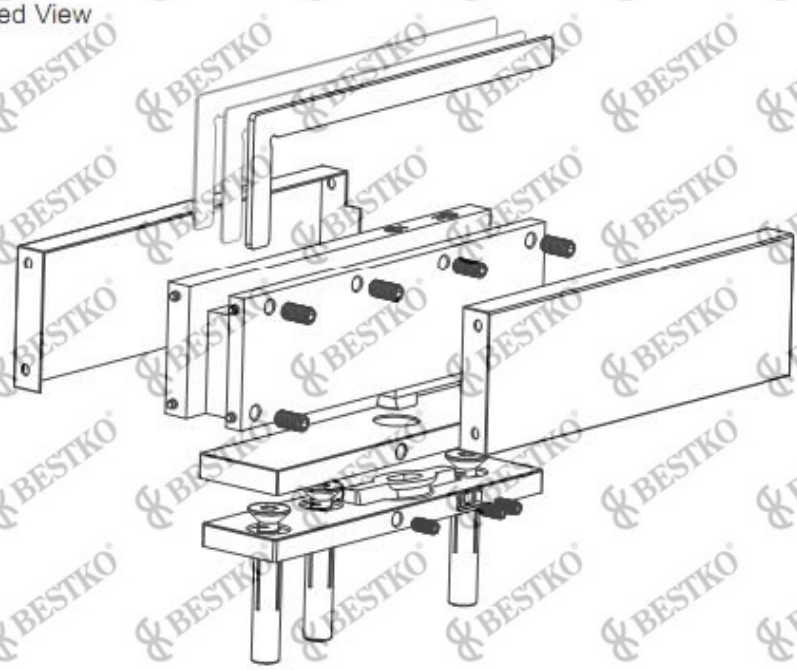
www.bestko.com

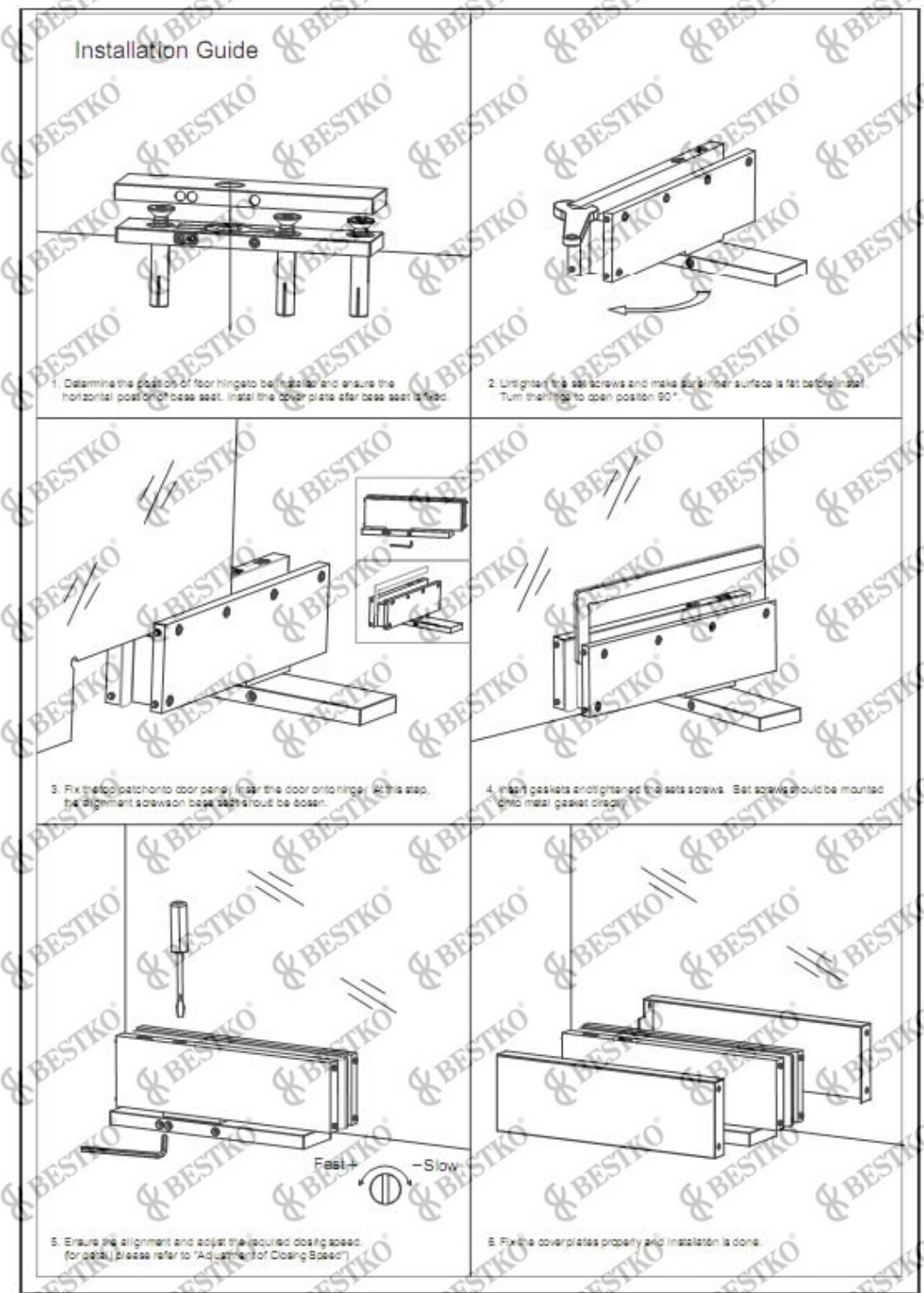
APPLAUSE FLOOR HINGE (FRAMELESS)



1. Closing range : 25°-0° (adjusted by valve 2)
2. Closing range : 70°-25° (adjusted by valve 1)
3. Closing range: 85°-70° (non-adjustable)
4. Hold-open : 90°
5. Open angle : 125° (maximum)

Exploded View




Installation Guide
1. Determine the position of floor hinge to be installed and ensure the horizontal position of base seat. Install the cover plate after base seat is fixed.
2. Untighten the set screws and make sure inner surface is flat before install. Turn the hinge to open position 90°.
3. Fix the top patch onto door panel, insert the door onto hinge. At this step, the alignment screw on base seat should be loosen.
4. Insert gaskets and tighten the sets screws. Set screws should be mounted onto metal gasket closely.
Fast+
-Slow
5. Ensure the alignment and adjust the required closing speed. (for detail, please refer to "Adjustment of Closing Speed")
6. Fix the cover plates properly and installation is done.

EN	**Standard:** **EN1154 Power Size 3**
	**Tested door weight:** **60kg**
	**Maximum door width:** **1050mm**
	**Suitable door thickness:** **10-13.5mm**
	**Tested temperature:** **-15°C to 40°C**
	**Do not remove the adjustment screws, or function and warranty will be rendered.**

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

Revision Page

Revision No.	Date	Changes	Author	Reviewer
0	May 22, 2014	First issue	Credy Chen	Blusea Dong