

TEST REPORT

Performance test

Report Reference No.....: GZ12090564-6R3
 Supersede Report No GZ12090564-6R2 dated June 19, 2013

Tested by (name and signature).....: Credy Chen *Credy Chen*

Approved by (name and signature).....: Blusea Dong *Blusea Dong*

Date of issue.....: June 21, 2013

Contents.....: Total test report 11 pages including:
 Report text: 5 pages
 Appendix A for product photos: 2 pages
 Appendix B for product drawings: 2 pages
 Appendix C for product instruction: 2 pages

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.....: Clause 5.2 Static load and Clause 5.4 Durability of EN 1935:2002/AC:2003

Non-standard test method.....: N/A

Test item description.....: Concealed Hinge

Trade Mark.....: BESTKO

Model and/or type reference.....: WJ201 and WJ201B

Manufacturer.....: Bestko Precision Hardware (Shenzhen) Company Limited

Rating(s).....: —

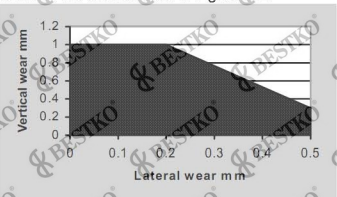
CONCLUSION:

The submitted samples **COMPLIED WITH** requirement of Clause 5.2 static load and 5.4 durability of EN 1935:2002/AC:2003, Grade 14, and requirement of Clause 5.3 shear strength of EN 1935:2002/AC:2003 Grade 13.

Test item particulars
Classification of installation and use : —
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 : September 12, 2012 and May 16, 2013
Date(s) of performance of test : September 12, 2012 to November 16, 2012 May 16, 2013 to June 14, 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:
This report include two models conceal hinge, model WJ201 and WJ201B. The two hinges have same material and similar structure, the difference is the jamb mounting of hinge which reflected in jamb side part.
The model WJ201 was subjected to fully standard test, in order to assess potential performance differences between the two models, model WJ201B undergoing evaluation, customer-supplied technical drawings of each model are reviewed and compared to those of mainly tested model WJ201, and model WJ201B subjected to Static Load Test and Shear Strength Test.
Details see Appendix B.
Schedule of Components:
See Appendix B – Product Drawings for component list and raw material information.
Amendment 1:
The original Report Reference No. GZ12090564-6, dated December 4, 2012 modified on March 18, 2013 to include the following changes and/or addition:
1. Revised the typo in BOM .
Amendment 2:
The Report Reference No. GZ12090564-6R1, dated March 18, 2013 modified on June 19, 2013 to include the following changes and/or addition:
1. Added grouping model WJ201B and test data of related test.
Amendment 3:
The Report Reference No. GZ12090564-6R3, dated June 19, 2013 modified on June 21, 2013 to include the following changes and/or addition:
1. Revised the report page number.

EN 1935			
Clause	Requirement – Test	Result - Remark	Verdict
5	REQUIREMENTS		—
5.1	Initial friction torque measurements The maximum permissible frictional torque shall be: 4 Nm for hinge grade 12 to 14	For Model WJ201: 0 degree: 2,5 Nm 30 degree: 2,2 Nm 60 degree: 2,1 Nm 90 degree: 2,5 Nm For Model WJ201B: 0 degree: 2,0 Nm 30 degree: 2,6 Nm 60 degree: 2,9 Nm 90 degree: 1,6Nm	P
5.2	Static load (Requirement of EN1935:2002/AC:2003 Grade 14)		—
5.2.1	Load deformation The total mass of the hinged test element plus any additional load is equal to the load deformation mass of 320Kg	Both two models subjected Loading: 320 Kg	
5.2.1 (a)	The vertical displacement under load shall not exceed 2 mm	WJ201: 0,08 mm WJ201B: 1,34 mm	P
5.2.1 (b)	The lateral displacement under load shall not exceed 4 mm	WJ201: 0,60mm WJ201B: 1,13 mm	P
5.2.1 (c)	Residual displacement after unloading shall be within the shaped area of Figure G.1 Figure G.1 — Limits of allowable deformation in static load tests Lateral displacement (mm)	For Model WJ201: Lateral displacement: 0,03 mm Vertical displacement: 0,10 mm For Model WJ201B: Lateral displacement: 0,16 mm Vertical displacement: 0,14 mm	P

EN 1935			
Clause	Requirement – Test	Result - Remark	Verdict
5.2.1 (d)	No visible cracking or breakage.....	WJ201 & WJ201B: No defects were found	P
5.2.2	Overload The total mass of the hinged test element plus any additional load is equal to the load overload mass of 480 Kg.....	Both two models subjected overload mass: 480Kg	—
5.2.2 (e)	Shall be no breakage of any hinge leaf, knuckle, barrel, pin and no any cracking visible to normal or corrected vision.....	WJ201 & WJ201B: No defects were found	P
5.2.2 (f)	Shall remain connection to the frame even though the hinge may have been rendered inoperable ...	WJ201 & WJ201B: Connected to the frame well and operable	P
5.3	Shear strength(Requirement of EN1935:2002/AC:2003 Grade 13)		—
5.3 (g)	Shall be no breakage or cracking, or lateral deformation greater than 3 mm.....	For Model WJ201: When load 10 kN force, the lateral deformation: 2,87 mm For Model WJ201B: When load 10 kN force, the lateral deformation: 2,80 mm When load 10 kN force, the lateral deformation: 2,87 mm	P
5.3 (h)	Additional lateral and vertical displacements after test shall no exceed 1 mm Shall operate for 20 cycles without breakage of any hinge leaf, knuckle, barrel or pin.....	For Model WJ201: Lateral: 0,68mm Vertical: 0,05mm Not found any breakage after test For Model WJ201B: Lateral: 0,86mm Vertical: 0,20mm Not found any breakage after test	P
5.3 (i)	Unlimited permanent deformation.....	Only for grade 14 burglar resistant door hinge	N/A
5.4	Durability(Requirement of EN1935:2002/AC:2003 Grade 14)		—

EN 1935			
Clause	Requirement – Test	Result - Remark	Verdict
5.4 (j)	<p>The displacements from the datum surface shall be within the shaded area of Figure G.2.</p>  <p>Figure G.2 — Limits of allowable wear in durability test</p> <p>Lateral wear of the hinge (mm).....</p> <p>Vertical wear of the hinge (mm).....</p>	<p>For Model WJ201:</p> <p>Installed according to installation instruction provided by applicant. See Appendix C.</p> <p>Test weight: 160kg.</p> <p>After 200,000 cycles,</p> <p>0,10 mm;</p> <p>0,83 mm.</p>	P
5.4 (k)	<p>Maximum permissible frictional torque measured after the first 20 cycles and also after completion of test shall be 4 Nm grade 12 to 14.....</p>	<p>For Model WJ201:</p> <p>Initial:</p> <p>0 degree: 2,2 Nm</p> <p>30 degree: 2,0 Nm</p> <p>60 degree: 1,4 Nm</p> <p>90 degree: 1,2 Nm</p> <p>Final:</p> <p>0 degree: 2,1 Nm</p> <p>30 degree: 2,0 Nm</p> <p>60 degree: 1,3 Nm</p> <p>90 degree: 1,3Nm</p>	P

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Appendix A
Product Photos



Overall view (1)



Overall view (2)

Appendix A
Product Photos



WJ201B Overall view (1)

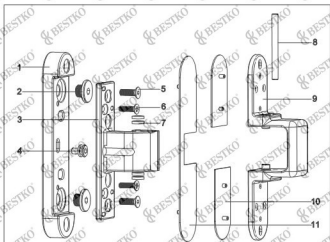


WJ201B Overall view (2)

Appendix B

Product Drawings and Bill of Material

Concealed Hinge - WJ201 (160kg loading)



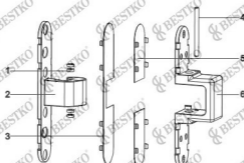
No.	Code	Name of Component	Material	Qty.	Finishing
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					

WJ201

Appendix B

Product Drawings and Bill of Material

Concealed Hinge - WJ201B (160kg loading)



No.	Code	Name of Component	Material	Qty.	Finishing
1					
2					
3					
4					
5					
6					

WJ201B

Appendix C

Product Installation Guide

Installation Guide



1. Prepare notches on door leaf and door jamb with template provided.



2. Fix hinge body onto door leaf, mounting base onto door jamb correspondingly.



3. Connect hinge body with mounting base by mounting screws, install but not tighten fully.



4. Correct the verticality by adjusting the screw members on mounting base.



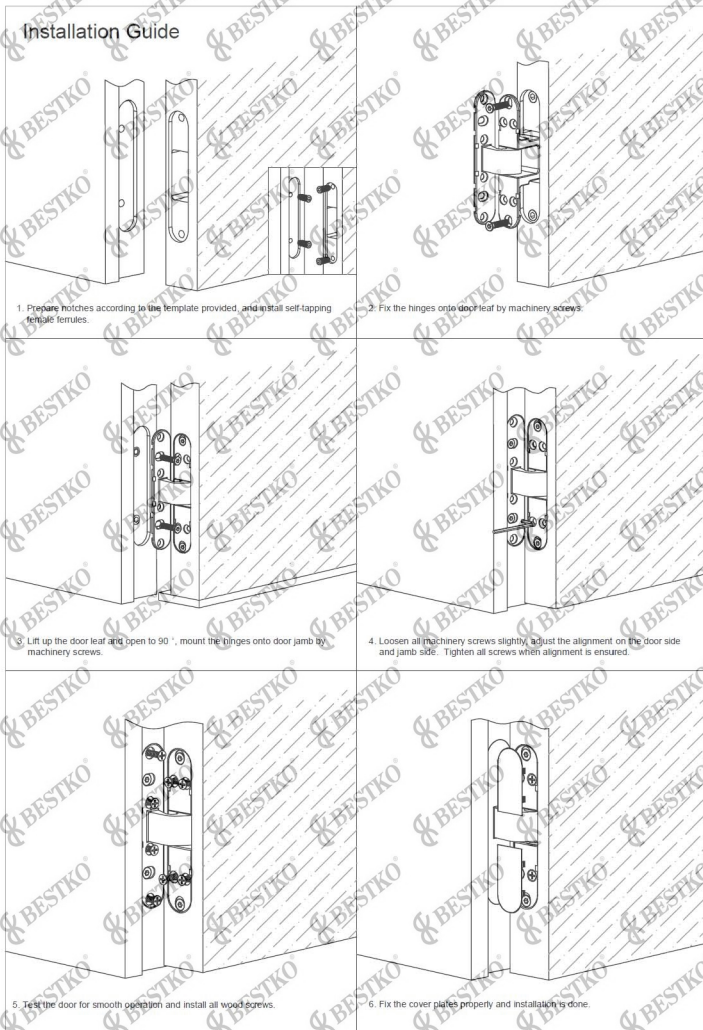
5. Correct the alignment by adjusting by adjusting socket screw on hinge body.



6. Tighten all the set screws and fixing screws, fix the cover plates properly and installation is done.

Appendix C

Product Installation Guide



WJ201B

*****End of report*****