

Report No 152353/A

Test of

H102-300 Anti-ligature hinge

Tested to

BS EN 1935:2002
Building hardware-
Single-axis hinges-
Clause 5.3 Shear strength

For

Royde & Tucker
Bilton Road
Cadwell Lane
Hitchin
Hertfordshire
SG4 0SB

TESTED TO BSEN 1935:2002
TEST CONCLUSIONS

Samples of:

Manufacturer Royde & Tucker
 Product Anti-ligature Hinge
 Model H102-300
 Size 100x71x5mm

have been tested in accordance with:

BSEN 1935: 2002 (Building hardware – Single-axis hinges.)

by Warrington APT Laboratories Ltd. [a UKAS accredited Testing Laboratory (No. 0621),and EC Notified Body number 1104]

At Key Industrial Park, Fernside Rd., Willenhall, West Midlands. WV13 3YA.

Results as detailed below:

Clause No.	Description	Compliance
5.1 / 6.4 / 7.1.2	Initial measurements	Yes
5.2.1 / 7.3.2	Load deformation test	Yes
5.2.2 / 7.3.3	Overload test	Yes
5.3 / 7.4	Shear strength	Yes
5.4 / 7.5	Endurance test	Yes
5.5 / 7.1.5	Corrosion resistance	N/A
5.6 / Annex B	Extra requirements for Fire-resistant doors	Yes
5.7 / Annex C	Extra requirements for burglary-resistant doors	No
5.8	Families of hinges	Yes
8	Marking	Yes

Classification

Model No.	Category of duty	Number of test cycles	Test door mass	Fire resistance	Safety	Corrosion resistance	Security	Hinge grade
H102-300	4	7	6	1	1	0	0	13

No inferences can be made regarding performance against other requirements of this standard

NOTE.

Tests marked "Not UKAS Accredited" are not covered by the Laboratory UKAS accreditation schedule.

Tests marked " NA" are not applicable to the type of device under test.

Tests marked "NT" not be applied to the device under test.

TESTED TO BSEN 1935:2002

AUTHORISATION

Tests performed by: Alan Fairfield, Laboratory Technician

Report issued by: Alan Fairfield, Laboratory Technician

Signed

Date

For and on behalf of Warrington APT laboratories Ltd

Report authorised by: Ian Keeling, Technical Manager

Signed

Date

For and on behalf of Warrington APT laboratories Ltd

Report issued: 21 July 2007



0621

NOTE.

Tests marked "Not UKAS Accredited" are not covered by the Laboratory UKAS accreditation schedule.

Tests marked NT were not tested

Tests marked NA are not applicable to the product on test.

Warrington APT Laboratories Ltd. is an EC Notified Body Number 1104

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TEST DETAILS

CLIENT DETAILS

Company name Royde & Tucker
 Address Bilton Road
 Cadwell Lane
 Hitchin
 Herfordshire
 SG4 0SB
 Contact Jeff Jones

ORDER DETAILS

Order number 21093
 Dated 12/01/06

SAMPLE DETAILS

Product Anti-ligature Hinge
 Model H102-300
 Markings None
 Manufacturer Royde & Tucker
 Date of Manufacture Not Shown
 Other information Fixed pin
 Concealed Bearings
 Size 100x71x5mm
 Material Grade 304 stainless steel
 Number and type of fixings 8 off supplied woodscrews

TEST DETAILS

Test reference nos. 152353
 Date sample received 16/01/06
 Date test started 19/04/06
 Date test completed 22/05/06
 Specification tests conducted to BSEN 1935: 2002 Building hardware – Single –axis hinges.
 Class and or Category Grade 13
 Special Test requirements none
 Other reports to be used in conjunction with this report 134798

STANDARD REQUIREMENTS

Test door mass - for
 Load deformation test 240Kg
 Overload test 360Kg
 Endurance test 120Kg
 Endurance test cycles 200,000
 Corrosion resistance grade N/a hours neutral salt spray exposure.

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TEST RESULTS

SAMPLE 1 – STATIC LOAD TESTS

Clause No.	Detail	Requirement	Test Result	P = Pass F = Fail
6.3	Mounting	Screws tightened to required torque	8Nm	Pass
5.1 /6.4	Initial measurements	Door mass set to Cycled for 20 cycles Torque to initiate movement at 0° 30° 60° 90° Maximum permitted torque	120kg. Yes 1.78Nm 1.62Nm 1.44Nm 1.28Nm 4.00Nm	Pass
5.2.1 7.3.2	Load deformation	Door mass set to Cycled for 20 cycles Lateral displacement under load <2mm Vertical displacement under load <4mm Door mass reduced to Cycled for 5 cycles Lateral displacement after deformation Vertical displacement after deformation Within shaded area of graph Hinge condition after test	240kg. Yes 0.94mm 0.51mm 120kg. Yes 0.11mm 0.11mm Yes No damage	Pass
5.2.2 7.3.3	Overload	Door mass set to Cycled for 5 cycles Time under load (1 – 2 mins) Door mass reduced to Hinge condition after test	360kg. Yes 2 Minute 120kg. No damage	Pass

SAMPLE 2 - SHEAR TESTS

Sample a		Fixed leaf details	2 Knuckles	Pass
5.3 7.4	Shear load test	Fixing screw torque Force applied Force held for (1 minute)	8Nm 10KN 60s	Pass
5.3 7.4	Examination Grades 1-14	Condition of hinges Change in lateral position of leaves < 3mm	Satisfactory 0.51mm	Pass
5.3 7.4	Examination Grade 14 only	Hinge opens to 90° with torque <220Nm	N/a	N/a
Sample b		Fixed leaf details	1 Knuckles	Pass
5.3 7.4	Shear load test	Fixing screw torque Force applied Force held for (1 minute)	8Nm 10KN 60s	Pass
5.3 7.4	Examination Grades 1-14	Condition of hinges Change in lateral position of leaves < 3mm	Satisfactory 0.51mm	Pass
5.3 7.4	Examination Grade 14 only	Hinge opens to 90° with torque <220Nm	N/a	N/a

** Tests marked NA are not applicable to the device tested

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SAMPLE 3 – ENDURANCE TESTS

Clause No.	Detail	Requirement	Test Result	P = Pass F = Fail ** NA
6.3	Mounting	Screws tightened to required torque	8Nm	Pass
5.4 /6.4	Initial measurements	Door mass set to Cycled for 20 cycles Torque to initiate movement at 0° 30° 60° 90° Maximum permitted torque	120kg. Yes 1.78Nm 1.62Nm 1.45Nm 1.27Nm 4.00Nm	Pass
5.4 7.5	Endurance test	Door mass set to Cycled for 200,000 cycles Screws retightened to Torque to initiate movement at 0° 30° 60° 90° Maximum permitted torque Lateral wear after endurance Vertical wear after endurance Within shaded area of graph Hinge condition after test	120kg. Yes 8Nm 1.20Nm 1.20Nm 0.90Nm 0.80Nm 4.00Nm 0.03mm 0.35mm Yes No Damage	Pass
5.4 7.3.3	Overload	Door mass set to Cycled for 5 cycles Time under load (1 – 2 mins) Door mass reduced to Hinge condition after test	360kg. Yes 1 minute 120kg. No damage	Pass

** Tests marked NA not applicable to the device tested

Hinge condition after test

Details: On completion of the endurance and overload tests there were no visible cracks, deformation or breakage of any of the components, and the hinge was found to be satisfactory.

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SAMPLE 4 – CORROSION TESTS

7.1.5	Neutral salt spray exposure	Exposure time. Condition after test. Operates satisfactorily. No tarnishing of uncoated surfaces. No more than 1 spot per 650mm ² of area on coated surfaces.	Hours	
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Comments

Hinge completed hours exposure time in salt spray chamber.

FIRE DOOR USAGE. (Annex B)

Fire test evidence,

FD timber doors report no. 1.38907

FD steel doors report no.

Details

BURGLARY RESISTANCE. (Annex C)

Fastenings not accessible from outside face.

Outward opening pins only removable when door is open or hinge bolts withstand shear test.

Details: N/A

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8 Marking

Requirement	Result	P = Pass F = Fail
Hinges should be clearly marked with the following		
Manufacturers Name or Trademark	Royde and Tucker or RT	Pass
The Hinge grade according to clause 4.9	Grade 13	Pass
The number of this European Standard	BSEN 1935: 2002	Pass
The packaging in which the hinges are supplied should be clearly marked with the following		
The classification box	4,7,6,1,1,0,0,13	Pass
Size of hinge	100mm x 71mm	Pass
Finish of hinge	304 stainless steel	Pass
The manufacturers reference number	H102-300	Pass
Handing in accordance with ISO R - 1226		N/A
Lubrication details **	Not required	Pass

** lubrication details can be included in technical literature.

Uncertainty of measurements

Where the tolerance given for a specified value is in one direction only, i.e.

Mass + 5kg – 0kg.

The value to be measured must be adjusted to the mid tolerance value with a tolerance of $\pm \frac{1}{2}$ the unidirectional tolerance. i.e.

Mass + 5kg – 0kg. Becomes Mass + 2.5 kg \pm 2.5 kg.

The uncertainty of measurements calculated for a confidence level of 95% throughout these tests are within the limits of the tolerances detailed in the standard.

Observations and Comments

All of the test evidence contained in this report apart from the shear test was assessed from the previous test 134798 which carried out on the standard version of this hinge.

-End of Report-

