

TEST REPORT



Your Ref: -

Date: 02 Mar 2006

Our Ref: 54S056648/LGJ

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DID: 6865 3780

Fax: 6862 1433

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Subject:

Cyclic movement endurance test on "Nitto Kohki" 200 NK series, model 213L size 3 flag type auto hinge closing devices with non-backcheck function. The flag type auto hinge is a pair of closing devices consisted of spring hinge and damper hinge. For the test, the pair of auto hinge closing devices was installed along the door frame with spring hinge on top and damper hinge at the bottom at location according to the installation manual.

Tested for :

Nitto Kohki Co. Ltd
40-3, Nishinipori 2-Chome,
Arakawa-Ku,
TOKYO 116-0013

Attn: Mr. Naoshi Takashima

Date submitted:

05 Dec 2005

Test duration:

06 Dec 2005 to 19 Jan 2006

Method of test:

- 1.0 EN 1154: 1997 + A1 (except clause 7.2 & 7.4): Building hardware-Controlled door closing devices – Requirements and test methods.

The test was conducted at PSB Corporation fire test laboratory located at No. 10, Tuas Avenue 10, Singapore 639134.



LA-2001-0212-A
LA-2001-0213-F
LA-2001-0214-E
LA-2001-0215-B
LA-2001-0216-G
LA-2001-0217-G

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Description of sample:

- 2.0 The description of the flag type auto hinge closing devices submitted for the test, is as follows:
- 2.1 Set of auto hinges : Spring hinge 213-L (refer to drawing 5H1117-01) and Damper hinge 213-L (refer to drawing 5H1117-02)
- 2.2 Brand : "NITTO KOHKI" models 213L size 3, Non backcheck function
- 2.3 Overall dimension : 239mm(L) x 130mm(W) x 5mm(thickness)

Results:

- 3.0 The door closer was given with the following descriptions:
- 3.1 Marking on closer body : **NITTO KOHKI 213L**
- 3.2 The manufacturer's installation instructions were provided.
- 3.3 There was no manual hold open device.
- 3.4 The control regulators operated only by means of a tool.
- 3.5 Adjustment of closing action was by means of tool.
- 3.6 There was no delayed action function.

4.0 Measurement after 5,000 test cycles

Description		Measurements	EN 1154 : 1997+ A1 Clause 7.3 Requirements Size 3
Between 0° to 4°	Closing moment	20.5 N.m	18 to < 26 N.m
	Opening moment	32.1 N.m	-
Between 88° to 92°	Closing moment	9.6 N.m	6 N.m minimum
	Opening moment	12.3 N.m	-
Min. closing torque at max. opening angle permitted by the closer	Closing moment	15.3 N.m	4 N.m minimum
Between 0° to 60°	Opening moment	32.6 N.m	47 N.m maximum
Between 0° to 4°	Efficiency	64 %	55 % minimum
Closing time from 90°			
Adjustability		2.9	3 sec. or less
		> 20	20 sec. or more
Closing overload test		Yes	Able to withstand

5.0 Verification after 100,000 test cycles

Description	Measurements	EN 1154 : 1997+ A1 Clause 7.3 Requirements Size 3
Backcheck	N.A	The test door shall stop before the 90° open position.



6.0 Measurement after 500,000 test cycles

Description		Measurements	EN 1154 : 1997+ A1 Clause 7.3 Requirements Size 3
Time taken to close from 90° to fully closed position		3.9 secs (original value : 4.9 sec)	Shall be less than 2 times or more than 0.7 times the original value. (i.e Between 3.4 and 9.8 sec)
Between 0° to 4°	Closing moment	19.1 N.m	18 to < 26 N.m
	Opening moment	29.3 N.m	-
Between 88° to 92°	Closing moment	9.0 N.m	6 N.m minimum
	Opening moment	16.9 N.m	-
Min. closing torque at max. opening angle permitted by the closer	Closing moment	12.1 N.m	4 N.m minimum
Between 0° to 60°	Opening moment	30.0 N.m	47 N.m maximum
Between 0° to 4°	Efficiency	65 %	55 % minimum
Closing time from 90°			
Adjustability		2.8	3 sec. or less
		> 20	20 sec. or more
Closing overload test		Yes	Able to withstand

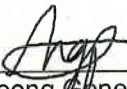
7.0 Observations throughout test


Description	Measurements	EN 1154 : 1997+ A1 Clause 7.3 Requirements Size 3
Fluid leakage	No Leakage	No fluid leakage from door closer.
Damage	No damaged	No damage to door closer or its arms that would adversely affect its performance.

Conclusion:

- 8.0 According to EN 1154: 1997 + A1 clause 7.3 (except clause 7.2 & 7.4): Cyclic movement endurance test, the test results obtained show that "Nitto Kohki" model 213L size 3, flag type auto hinge closing devices with non-backcheck function meets with the requirements and is classified as:

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 Leong Gene Jhou
 Associate Engineer


 Sharon Tong
 Senior Engineer
 (Fire Safety & Security Products)
 Mechanical

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August 2003

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