TEST REPORT

Your Ref: -

Date: 02 Mar 2006

Our Ref: 54S056648/LGJ

DID: 6865 3780

Fax: 6862 1433

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, Nishinippori 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.

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:

4	8	3	0	1	0

Leong Gene Jhou
Associate Engineer

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

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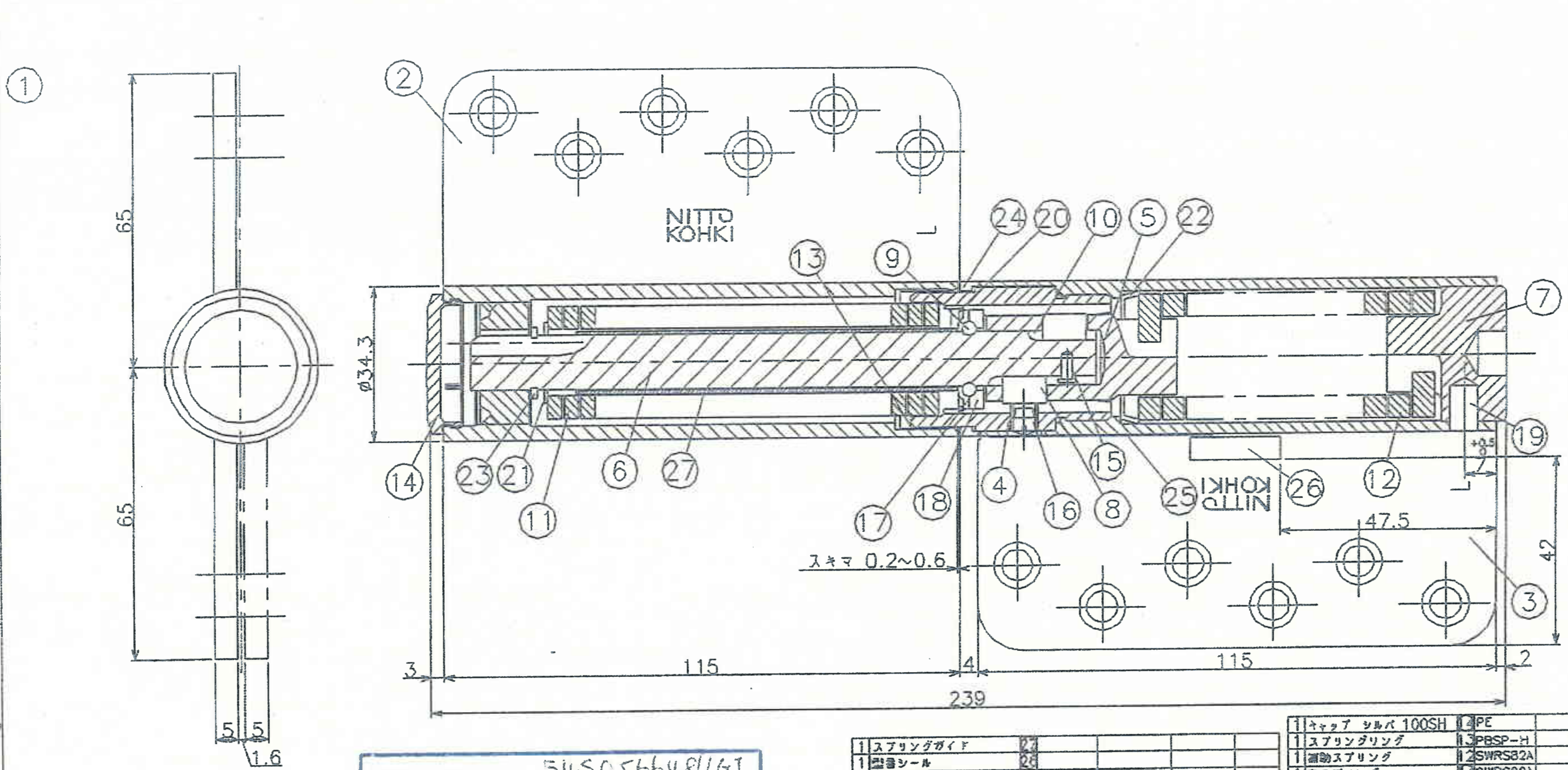
August 2003



数	品名	部番	材質	図番	型番	重量(kg)
1	スプリングヒンジ組立	1				
1	C部品L ソルバ 213	2	SPHC			
1	C部品L ソルバ 213	3	SPHC			
1	ローラ受皿（左開き用）	4	SUJ2			
1	ローラ保持器（左開き用）	5	SUJ2			
1	スプリングシャフト S型	6	SUJ2			
1	スプリングセット軸	7	SS41			
2	ローラー φ6X10L	8	SUJ2			
13	ベアリング用鋼球 1/8	9	SUJ2			
6g	グリース	10				
1	主スプリング	11	SWRS82A			
1	補助スプリング	12	SWRS82A			
1	スプリングリング	13	PBSP-H			
1	キャップ ソルバ 100SH	14	PE			
1	ロック止めピン	15	SUS303		P-1	
1	プリセット用止めネジ	16				
1	抜け止めワッシャー	17				
1	スラスト軸受	18				
1	スプリングセット用ピン(O)	19				
1	穴用止め輪	20				
1	スプリング押え板	21				
1	グリース仕切板	22				
1	軸用止め輪	23				
1	ナイロンリングB ソルバ	24				
1	プリセット操作ラベル	25				
1	型番シール	26				
1	スプリングガイド	27				

普通寸法公差 (mm)

寸法区分		削り加工	寸法区分		C.R面取り(±)
を超え	以下	穴(+) 軸(-) 長(±)	を超え	以下	
—	5	0.08	—	0.5	0.1
5	10	0.1	0.5	3	0.2
10	25	0.15	3	6	0.5
25	50	0.2	6	—	1
50	100	0.3			角度(±)
100	200	0.4	—	10	1°30′
200	400	0.6	10	50	1°
			50	120	30′
			120	400	15′
			400	—	10′

部品名	材質	質量	記事	部品番号
スプリングヒンジ 213-L ASSY				

熱処理 / 表面処理

作成年月日: '05年 11月 17日

尺度: 1 : 1

単位/mm

面の指示記号

承認 / 検図 / 設計 / 製図

部品番号: 5H1117-01

製品名: 丁番型

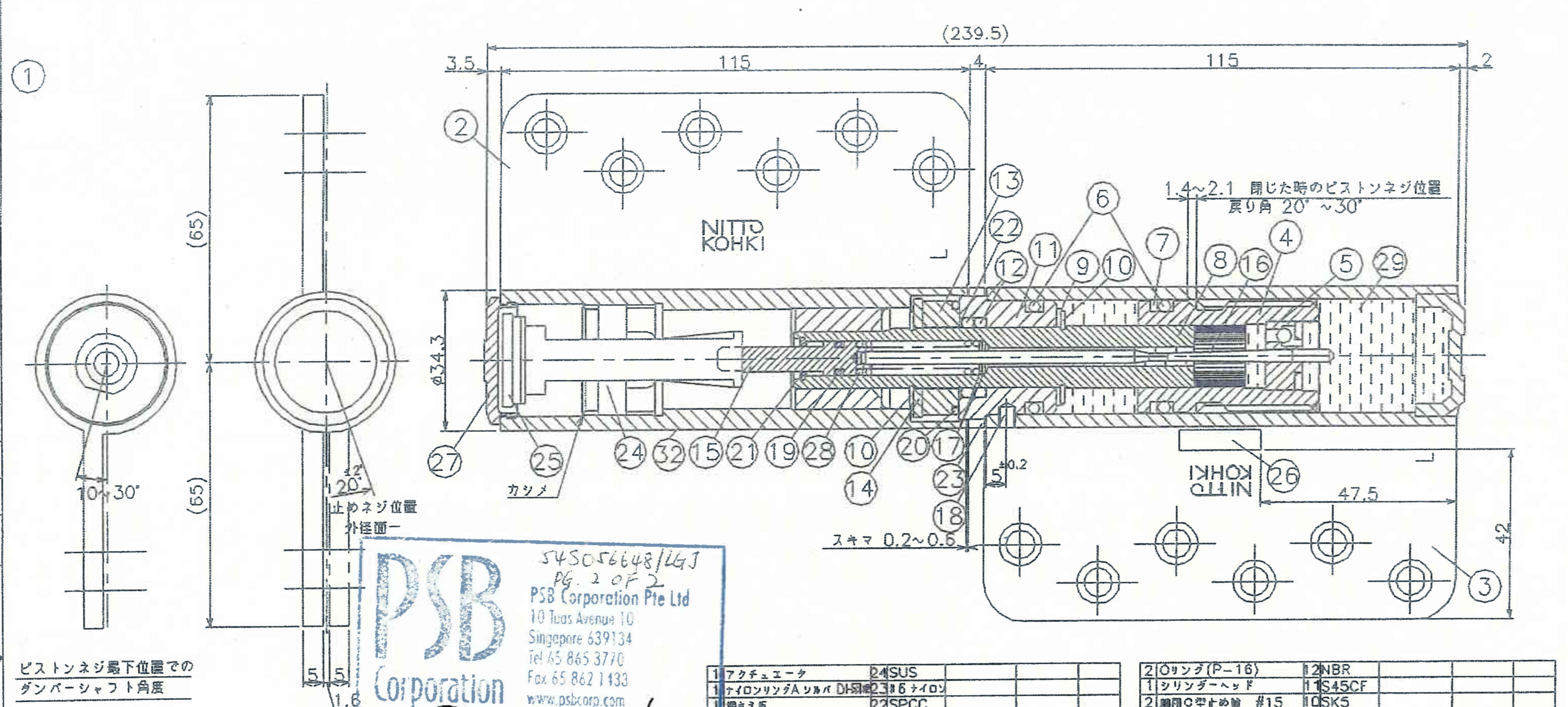
型式: 213-L

日東工器株式会社

符号 / 年月日 / 変更通知番号 / 変更理由及び箇所 / 記印 / 検図 / 承認

共通統番

545056648/LGJ
PG. 1 OF 2



数	品名	番号	材質	図番	型番	重量(kg)
適量	ダンパーオイル	29	NS3			
1	圧縮スプリング	28	SWP-B			
1	キャップ シルバ 100DH	27	PE			
1	型番シール 213L	26	SK5			
1	センサーキャップ	25	ABS			
1	アクチュエータ	24	SUS			
1	ナイロンリングA シルバ DH用	23	#6 ナイロン			
1	押さえ板	22	SPCC			
1	穴用止め輪 IRTW-10	21	SK5			
1	Oリング (S-24)	20	NBR			
1	Oリング (P-5)	19	NBR			
1	六角穴付止めネジ M4X6L	18			Wd' イワトネジ	
2	平座金小形丸 M4	17	SPCC			
1	調速棒 PC用	16	SK4			
1	調速ホルダー	15	SUS303			
1	スラスト受板	14	SPCC			
1	スラストベアリング	13				
2	Oリング (P-16)	12	NBR			
1	シリンダーヘッド	11	S45CF			
2	軸用C型止め輪 #15	10	SK5			
1	ライナー	9				
1	ダンパーシャフト	8	S45C			
1	バックアップリング	7	テフロン			
2	Oリング (P-22A)	6	NBR			
1	バルブ座組立	5	鉄系焼結			
1	ピストンネジ(左開き用) 右ネジ	4	FC30			
1	B羽根L シルバ213	3	SPHC			
1	A羽根L シルバ213	2	SPHC			
(1)	ダンパーヒンジ 213-L ASSY	1				

普通寸法公差 (mm)

寸法区分		削り加工
−	5	0.08
5	10	0.1
10	25	0.15
25	50	0.2
50	100	0.3
100	200	0.4
200	400	0.6

寸法区分		公差
−	0.5	0.1
0.5	3	0.2
3	6	0.5
6	−	1

寸法区分		角度
−	10	1°30'
10	50	1°
50	120	30'
120	400	15'
400	−	10'

部品名	材質	質量	記事	部品番号
ダンパーヒンジ 213-L ASSY				

作成年月日: 05年 11月 17日

尺度: 1 : 1

単位/mm

部品番号: 5H1117-02

製品名: 丁番型

型式: 213-L

日東工器株式会社

符号	年月日	変更通知番号	変更理由及び個所	記印	検図	承認