CNAS 检 测 CNAS L0454

2011000708Z

(2011)国认监认字(134)号

Special Equipment Type Test Report

Report No. T14-313-13-016

Category of equipment:	**Passenger lift/Good lift**
Type of equipment:	**Machine-room-less passenger lift**
Name of product:	**Machine-room-less passenger lift**
Model of product:	**SOLON_NV**
Applicant:	**Sigma Elevator Co., Ltd.**
Manufacturer:	**Sigma Elevator Co., Ltd.**

NETEC

National Elevator Inspection and Testing Center

NOTICE

1. Each type test certificate issued by National Elevator Inspection and Testing Center (abbreviation NETEC) is corresponding to one type test report. The issue of type test certificate is based on the test conclusions of type test report.

2. Type test report is invalid without stamping the *Test Report Specialized Stamp* or issue date.

3. Type test certificate is invalid without stamping the *Test Report Specialized Stamp* or issue date.

4. Type test report is invalid without signatures of chief test, verification and approval.

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6. Type test report or certificate including annex is invalid if altered.

7. NETEC is only responsible for the test items and test conclusions of the sample. The test results and test conclusions just indicate sample statue at the time of test. Applicant is responsible for the authenticity of the information and technical documents of the sample.

8. Different opinions about type test report or certificate should be reported to NETEC within 15 days since receiving of type test report and certificate. NETEC will refuse after the time.

9. Type test report and certificate are invalid from the issue date. The term of validity is according to *TSG T7001 Rules for Type Test of Elevators(tryout)* promulgated by *General Administration of Quality Supervision Inspection and Quarantine of the People's Republic of China.*

10. It should be subject to the Chinese version, while the English version is for reference only.

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Type Test Report

Name of product		Machine-room-less passenger lift			
Model of product		SOLON_NV			
Serial No. of sample		SIT-EL-2013-003		Production date	2013-03-18
Main parameter		Rated speed	1.75m/s	Rated load	1000kg
Applicant	Name	Sigma Elevator Co., Ltd.			
	Address	No.2 Songlan Street, Economic & Technical Development Zone, Dalian, Liaoning			
Manufacturer	Name	Sigma Elevator Co., Ltd.			
	Address	No.2 Songlan Street, Economic & Technical Development Zone, Dalian, Liaoning			
Test date	2013-06-04 , 2013-07-09			Sample state	Normal
Test category	Type test			Test item	All application items
Installation place	The test tower of Sigma Elevator Co., Ltd.				
Test place	The test tower of Sigma Elevator Co., Ltd.				
Test condition	Ambient temperature: 21℃, relative humidity: 76%, voltage: 385V				
Test basis	*Regulation for type tests of lifts (2012), Rule for type test of traction and positive drive lifts (2012), GB 7588—2003 Safety rules for the construction and installation of electric lifts, EN81-1:1998 Safety rules for the construction and installation of lifts-Part 1: Electric lifts*				
Test conclusion	The type test is certificated.				
Note	~~Issued date of the Chinese version: July 11, 2013~~				

Reported by: 李廷玉	Institute approval No.: TS7610014-2017
Verified by:	
Issued by:	Issue date: 2013.07.09

Main technical parameter and configuration of the sample

Model & name of product		SOLON_NV Machine-room-less passenger lift
Applicable environment		Indoor
Rated speed		1.75m/s
Rated load		1000kg
Number of passengers		13
Working areas	Drive machine	On the car roof
	Control cabinet	Outside of the well, next to the top landing door
	Emergency operations	Outside of the well, next to the top landing door
	Test operations	Outside of the well, next to the top landing door
Traction machine	Model of traction machine	GTW8
	Structure type	Permanent magnet synchronous gearless
	Manufacturer of traction machine	Suzhou Torin Drive Equipment Co., Ltd.
	Pitch diameter of traction sheave	400mm
	Reduction gear ratio	/
	Location of traction machine	At the top of the well
	Mode of releasing brakes for emergency operation	Opening brakes by remote manual means
	Model of motor	GTW8-101P7A
	Manufacturer of motor	Suzhou Torin Drive Equipment Co., Ltd.
	Rated power	11.7kW
	Rated rotate speed	167r/min
	Rated voltage	380V
	Rated current	26.7A
	Rated frequency	27.8Hz
	Insulation grade	F

Main technical parameter and configuration of the sample (continued)

Suspension System	Number of ropes	4
	Suspension ratio	2:1
	Model of rope	10 8×19S+NF1620/1770 ϕ10 mm
	Mode of wrapping	Single
Drive and control system	Model	SOLON-NV
	Manufacture	Sigma Elevator Co., Ltd.
	Location of control cabinet	Outside of the well, next to the top landing door
	Location of emergency and test operation panel(s)	In control cabinet
	Model of drive device	AS380B-4T0015
	Manufacture of drive device	Shanghai Sigriner STEP Electric Co., Ltd.
	Model of controller	AS380B-4T0015
	Manufacture of controller	Shanghai Sigriner STEP Electric Co., Ltd.
	Control device	Micro-processor
	Speed control mode	AC variable frequency control
	Control mode	Selective collective control
	Communication mode	Serial
Landing door locking devices	Model	XTA-3
	Manufacture	Hangzhou Xizi Trust Tech Co., Ltd.
Car door locking devices	Model	/
	Manufacture	/
Overspeed governor	Model	XSQ115-13
	Manufacture	Ningbo Shenling Lift Accessories Co., Ltd.
Safety gear	Model	PS35A
	Manufacture	Otis Elevator Korea

Main technical parameter and configuration of the sample (continued)

Safety circuits	Model	iAstar-AS
	Manufacture	Shanghai STEP Electric Corporation
	Function	connection device for Information collection of electric safety circuits
Ascending car overspeed protection	Model	FZD12
	Manufacture	Suzhou Torin Drive Equipment Co., Ltd.
	Action position	Traction sheave
Car buffer	Model and quantity	YH73A/210 1 set
	Manufacture	Hebei Dongfang Fuda Machinery Co., Ltd.
Counterweight buffer	Model and quantity	YH73A/210 1 set
	Manufacture	Hebei Dongfang Fuda Machinery Co., Ltd.
Car guide rail	Model	T89/B
	Manufacture	Suzhou Savera Shangwu Elevator Riding Systems Co., Ltd.
Counterweight guide rail	Model	TK3A
	Manufacture	Suzhou Savera Shangwu Elevator Riding Systems Co., Ltd.
Mode of landing door		Center opening door
Mode of car door		Center opening door
Car dimension		1500mm×1450mm×2250mm
Well dimension		2390mm×1830mm×47000mm
Landing/stop/door		13/5/5
Traveling height		38m

Part 1 Technical document examination

No.	Items No.	Examination items	Examination results	Conclusion
1	2.1.1	General requirements of machine, machinery and pulley rooms	Comply with requirements	Pass
2	2.1.2	Access	Comply with requirements	Pass
3	2.1.3	Mechanical strength, floor surface of machine, machinery and pulley rooms	Comply with requirements	Pass
4	2.1.4	Dimensions of machine and machinery rooms	Comply with requirements	Pass
5	2.1.5	Doors, trap doors and other openings of machine and machinery rooms	Comply with requirements	Pass
6	2.1.6	Ventilation, lighting, socket outlets and handing of equipment of machine and machinery rooms	Comply with requirements	Pass
7	2.1.7	Dimensions of pulley rooms	/	/
8	2.1.8	Doors, trap doors and other openings of pulley rooms	/	/
9	2.1.9	Lighting, socket outlets and stopping device of pulley rooms	/	/
10	2.2.1	Well enclosure	Comply with requirements	Pass
11	2.2.2.1	Inspection doors	/	/
12	2.2.2.2	Emergency doors	/	/
13	2.2.2.3	Inspection traps	/	/
14	2.2.3	Strength of the walls and the ceiling	Comply with requirements	Pass
15	2.2.4	Strength of the pit floor	Comply with requirements	Pass
16	2.2.5	Requirements for landing door toe guard	Comply with requirements	Pass
17	2.2.6	Lighting of the well	Comply with requirements	Pass
18	2.3.1	Protection of any spaces located below the car, the counterweight or the balancing weight	/	/
19	2.3.2	Protection of the traveling area of the counterweight	Comply with requirements	Pass

No.	Items No.	Examination items	Examination results	Conclusion
20	2.3.3	Protection where the well contains several lifts	/	/
21	2.3.4	Clearances between car, counterweight or balancing weight	Comply with requirements	Pass
22	2.3.5	The horizontal distance between the inner surface of the lift well and components of the car	Comply with requirements	Pass
23	2.4.1.1	Top clearances for traction drive lifts	Comply with requirements	Pass
24	2.4.1.2	The further guided travel of counterweight guide rail	Comply with requirements	Pass
25	2.4.2	Top clearances for positive drive lifts	/	/
26	2.4.3	Requirements for pit floor and access	Comply with requirements	Pass
27	2.4.4	Dimensions of pit	Comply with requirements	Pass
28	2.5.1	Traction evaluation	Comply with requirements	Pass
29	2.5.2	Calculations of the safety factor of the suspension ropes	Comply with requirements	Pass
30	2.5.3	Calculations of the ratio between the pith diameter of sheaves, pulley or drums and the nominal diameter of the suspension ropes	Comply with requirements	Pass
31	2.5.4	Selections and calculations of guide rails	Comply with requirements	Pass
32	2.5.5	Calculations of the fleet angle	/	/
33	2.5.6.1	Selections and calculations of overspeed governor	Comply with requirements	Pass
34	2.5.6.2	Selections and calculations of safety gear	Comply with requirements	Pass
35	2.5.6.3	Selections and calculations s of buffer	Comply with requirements	Pass
36	2.5.6.4	Selection calculations of ascending car overspeed protection means	Comply with requirements	Pass
37	2.5.7.1	Calculations of the available car area	Comply with requirements	Pass
38	2.5.7.2	Calculations of the effective area of ventilation apertures	Comply with requirements	Pass

No.	Items No.	Examination items	Examination results	Conclusion
39	2.5.8	Calculations for overarea goods lifts	/	/
40	2.5.9	Calculations of suspension of vertically sliding doors	/	/
41	2.6.1	The design of avoiding the risk of shearing	Comply with requirements	Pass
42	2.6.2	The kinetic energy of horizontally sliding doors	Comply with requirements	Pass
43	2.6.3	Protection against the risk of falling	Comply with requirements	Pass
44	2.6.4	Door guides	Comply with requirements	Pass
45	2.6.5	The horizontal distance between the car door and the closed landing doors	Comply with requirements	Pass
46	2.7.1	Safety circuits	Comply with requirements	Pass
47	2.7.2	Safety chain, control chain, main chain, brake chain	Comply with requirements	Pass
48	2.8.1	Type test reports of mechanical safety components	Comply with requirements	Pass
49	2.8.2	Type test reports of electrical safety components	Comply with requirements	Pass
50	2.9	Type test reports of major components	Comply with requirements	Pass
51	2.10	Quality certificates or test reports of other components	Comply with requirements	Pass
52	2.11	Reliability test	Comply with requirements	Pass
53	2.12.1	The structure and the dimension of the doors with glass	/	/
54	2.12.2	The means to avoid dragging	/	/
55	2.12.3	The structure and the dimension of the walls with glass	/	/
56	2.12.4	Marking of the glass panels	/	/
57	2.12.5	Glass used for the car roof	/	/
58	2.13	Behaviour of lifts in the event of fire	/	/
59	2.14	Design files for coverage products	/	/

Part 2 Test items and test results

No.	Items No.	Test items	Test results	Conclusion
1	3.1.1	Main switches	Comply with requirements	Pass
2	3.1.2	Stopping device	Comply with requirements	Pass
3	3.1.3	Final limit switches	Comply with requirements	Pass
4	3.1.4	Phase break and reversal protection device	Comply with requirements	Pass
5	3.1.5	Stopping the machine and checking its stopped condition	Comply with requirements	Pass
6	3.1.6	Power supply of the brake	Comply with requirements	Pass
7	3.1.7	Protection measure of the earthing to the electric safety chain	Comply with requirements	Pass
8	3.1.8	Electric safety devices and their operation	Comply with requirements	Pass
9	3.1.9	Motor run time limiter	Comply with requirements	Pass
10	3.1.10	Protection of motors operation	Comply with requirements	Pass
11	3.1.11	Protection against electric faults	Comply with requirements	Pass
12	3.2.1	Safety contacts and components of safety circuits	Comply with requirements	Pass
13	3.2.2	Contactors and relay-contactors	Comply with requirements	Pass
14	3.2.3	Devices connected after electrical safety devices	/	/
15	3.2.4	Lighting and socket outlets	Comply with requirements	Pass
16	3.3.1	Control of normal operation	Comply with requirements	Pass
17	3.3.2	Control of leveling and re-levelling with doors open	/	/
18	3.3.3	Control of inspection operation	Comply with requirements	Pass
19	3.3.4	Control of emergency electrical operation	Comply with requirements	Pass
20	3.3.5	Control of docking operation	/	/

No.	Items No.	Test items	Test results	Conclusion
21	3.3.6	Additional requirement of docking operation	/	/
22	3.3.7	Load control	Comply with requirements	Pass
23	3.4.1	Manual means of emergency operation	Comply with requirements	Pass
24	3.4.2	Emergency alarm device (according to GB 7588)	Comply with requirements	Pass
25	3.4.3	Emergency alarm device (according to GB/T 24475—2009)	/	/
26	3.5.1	Overspeed governor	Comply with requirements	Pass
27	3.5.2	Safety Gear	Comply with requirements	Pass
28	3.5.3	Buffer	Comply with requirements	Pass
29	3.5.4	Ascending car overspeed protection means	Comply with requirements	Pass
30	3.5.5	Traction machine	Comply with requirements	Pass
31	3.5.6	Protection of machinery	Comply with requirements	Pass
32	3.5.7	Notices, markings and operating instructions	Comply with requirements	Pass
33	3.6.1	Suspension	Comply with requirements	Pass
34	3.6.2	Rope/chain terminations	Comply with requirements	Pass
35	3.6.3	Distribution of load between the rope or the chains	Comply with requirements	Pass
36	3.6.4	Compensation with ropes	/	/
37	3.6.5	Winding up of ropes	/	/
38	3.7.1	Dimensions and clearance of the landing doors and the car doors	Comply with requirements	Pass
39	3.7.2	Mechanical strength of the landing doors and the car doors	Comply with requirements	Pass
40	3.7.3	Protection of automatic power operated horizontally sliding doors	Comply with requirements	Pass

No.	Items No.	Test items	Test results	Conclusion
41	3.7.4	Locking and closed landing door check	Comply with requirements	Pass
42	3.7.5	Locking and closed car door check	Comply with requirements	Pass
43	3.7.6	Suspension of vertically sliding doors	/	/
44	3.8.1	Available car area and rated load	Comply with requirements	Pass
45	3.8.2	Walls and apron of the car	Comply with requirements	Pass
46	3.8.3	Emergency trap doors and emergency doors	/	/
47	3.8.4	Equipment on top of the car	Comply with requirements	Pass
48	3.8.5	Ventilation and lighting of the car	Comply with requirements	Pass
49	3.8.6	Counterweight or balancing weight	Comply with requirements	Pass
50	3.8.7	Guide rails	Comply with requirements	Pass
51	3.9.1	Balancing coefficient	Testing value: 0.465 See appendix 1	Pass
52	3.9.2	Running speed	v: 1.759m/s 100.5%v_{rated}	Pass
53	3.9.3	Traction conditions	Comply with requirements	Pass
54	3.9.4	Running noise	See appendix 2	Pass
55	3.9.5	Acceleration and retardation	Comply with requirements	Pass
56	3.9.6	Vertical vibrating or horizontal vibration	Comply with requirements	Pass
57	3.9.7	Time of opening or closing doors	Opening doors: 3.22s Closing doors: 3.42s See appendix 3	Pass
58	3.9.8	Stopping accuracy and leveling accuracy	Stopping accuracy: +2.6mm Leveling accuracy: +5.0mm See appendix 3	Pass
59	3.9.9	Safety gear test	Comply with requirements	Pass
60	3.9.10	Fireman service(if any)	/	/

No.	Items No.	Test items	Test results	Conclusion
61	3.9.11	Additional test of exceeding area for good lifts	/	/
62	3.9.12	Additional test for vehicle lifts	/	/
63	3.10.1	Machinery inside the well	Comply with requirements	Pass
64	3.10.2	Machinery outside of the well	Comply with requirements	Pass
65	3.10.3	Devices for emergency and test operations	Comply with requirements	Pass
66	3.11.1	Input signals	/	/
67	3.11.2	Stopped position of the lift	/	/
68	3.11.3	Prohibition sign	/	/
69	3.11.4	Interface requirements between the fire alarm system and the lift control system	/	/
70	3.11.5	Behaviour of the lift on the receipt of a fire detection signal	/	/
71	3.11.6	Designated landing	/	/
72	3.12	Protection for special environment	/	/

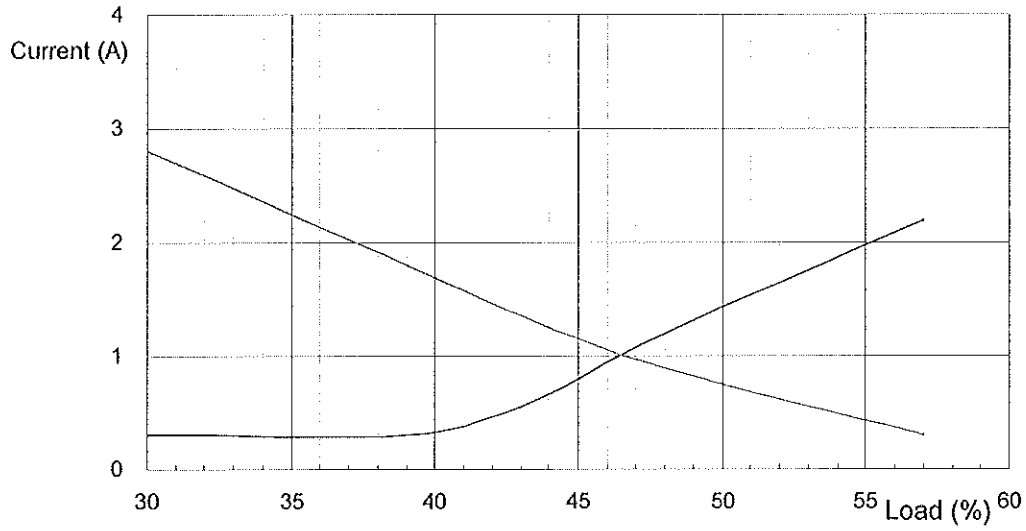
Appendix 1 Test data of balance coefficient

1.1 Test date

Items \ Direction		Up	Down	Up	Down	Up	Down	Up	Down	Up	Down
Load	%	30		39		43.5		48		57	
	kg	300		390		435		480		570	
Voltage *V*		386	385	385	385	386	385	386	386	367	376
Current *A*		0.3	2.8	0.3	1.8	0.6	1.2	1.2	0.9	2.2	0.3

1.2 Test chart

Balancing coefficient：0.465



Appendix 2 Test date of noise

Unit: dB (A)

Landing	Car doors		Landing doors		Background	Running noise in car		
	Opening	Closing	Opening	Closing		Up	Down	Background
Main floor: 1	53.6	59.5	54.2	59.2	39.0	53.2	52.8	38.0
7	54.2	59.2	55.3	59.4	39.0			
13	55.6	58.8	56.2	59.6	40.0			
Standard	≤65					≤55		
Note	Measuring position: Tester stands at the center of the sound source (traction machine), faces to the traction sheave							

Appendix 3 Test date of opening and closing doors

Unit: s

Opening doors type: Centre opening doors Opening doors width: 900mm Opening/closing doors time ≤4.0s	/	1	2	3	Average
	Opening	3.20	3.24	3.22	3.22
	Closing	3.44	3.40	3.42	3.42
Note	/				

Appendix 4 Test date of stopping accuracy

Unit: mm

Stopping	Direction	No load	Rated load
1—2	Up	+2.2	+1.0
2—1	Down	+1.0	+0.2
7—12	Up	+2.6	+1.6
12—7	Down	+1.0	+0.6
1—13	Up	+1.2	+0.4
13—1	Down	+1.0	+0.2
Standard	±10		
Note	/		

检 测
CNAS L0454

2011000708Z

(2011)国认监认字(134)号

TX

Certificate of Type Test for Special Equipment

No. TX 3130-014-13 0016

Applicant's name and address:	Sigma Elevator Co., Ltd. No.2 Songlan Street, Economic & Technical Development Zone, Dalian, Liaoning
Manufacturer's name and address:	Sigma Elevator Co., Ltd. No.2 Songlan Street, Economic & Technical Development Zone, Dalian, Liaoning
Name of product:	Machine-room-less passenger lift
(Type of equipment):	(Machine-room-less passenger lift)
Model and specifications:	SOLON_NV *v*=1.75m/s Q=1000kg
Configuration of product:	Configuration of traction and positive drive lift
Type test report No.:	T14-313-13-016

This certificate is valid for products of the models and specifications below (without change of the product configuration):

For machine-room-less passenger whose rated speeds are not more than 1.75m/s and rated loads are not more than 1000kg.

After type test, this product is accord with *Regulation for type tests of lifts (2012), Rule for type test of traction and positive drive lifts (2012), GB 7588-2003* and *EN81-1:1998.*

Issue date: 2013.8.07

Issued date of the Chinese version: July 11, 2013

NETEC

National Elevator Inspection and Testing Center

Note:

1. This certificate is to confirm the products on type and the tested sample on conformity, only valid for the products that are in conformance with the tested sample mentioned above.
2. The holder of this certificate has responsibilities to ensure that the products conform to the requirements of the codes and regulations, and to ensure that the products are consistent with the tested sample mentioned above.

Appendix

Configuration of Traction and Positive Drive Lift

No. TX 3130-014-13 0016

Applicable environment	Indoor
Drive mode	Traction
Speed control mode	AC variable frequency speed control
Suspension ratio	2:1
Location of control cabinet	Outside of the well, next to the top landing door
Location of traction machine	At the top of the well
Location of emergency operation panel	In control cabinet
Location of test operation panel	In control cabinet
Mode of lift ascending car overspeed protection means	Overspeed governor –traction machine brakes

Issue date: 2013-07-09

Issued date of the Chinese version: July 11, 2013