

EU-TYPE EXAMINATION CERTIFICATE

Issued by Liftinstituut B.V.
identification number Notified Body 0400,
commissioned by Decree no. 2018-0000125182

Certificate no. : NL19-400-1002-051-02 Revision no.: 1

Description of the product : Double disk brake to be used as part of the Ascending Car
Overspeed Protection means and stopping element of the
Unintended Car Movement Protection

Trademark, type : FCRD 90 G6 2x65 Nm FCRD 112 G6 2x125 Nm
FCRD 90 G6 2x80 Nm FCRD 112 G6 2x160 Nm
FCRD 90 G6 2x100 Nm FCRD 112 G6 2x200 Nm
FCRD 112 G6 2x100 Nm FCRD 112 G6 2x220 Nm

Name and address of the manufacturer : MOTEURS LEROY SOMER
Usine de Rabion, rue de la Brigade RAC, 16005 Angoulême, France
Usine de Mansle, Route de Luxé - 16230 Mansle St-Groux, France
Leroy Somer Electro-Technique (Fuzhou) Co., Ltd
No.1, Aimosheng Road, Gaishan Town, Cangshan District, Fuzhou,
Fujian, P.R. China 350026
Nidec Industrial Automation India Private Ltd
A 221, Sector 83 Noida 201 305 Gautam Budha Nagar U.P, India

Name and address of the certificate holder : MOTEURS LEROY SOMER
Boulevard Marcellin Leroy
16005 Angouleme Cedex - France

Certificate issued on the following requirements : Lifts Directive 2014/33/EU

Certificate based on the following standard : EN 81-20:2014, EN 81-50:2014

Test laboratory : None

Date and number of the laboratory report : None

Date of EU-type examination : Original: September 12, 2019
Rev. 1: January 15, 2020


Additional document with this certificate : Report belonging to the EU-type examination certificate
no.: NL19-400-1002-051-02 rev. 1

Additional remarks : None

Conclusion : The safety component meets the requirements of the Lifts
Directive 2014/33/EU taking into account any additional remarks
mentioned above.

Amsterdam

Date : 15-01-2020
Valid until : 12-09-2024


ing. P.J. Peeters
Manager Certification
Certification decision by

Report EU-type examination

Report belonging to EU-type examination certificate number : NL19-400-1002-051-02
Date of issue of original certificate : September 12, 2019
Certificate applies to : Safety component
Revision number / date : 1 / 15 January 2020
Requirements : Lifts Directive 2014/33/EU
Standard(s):
EN 81-20:2014, EN 81-50:2014
Project number : P180280

1. General specifications

Description of the product : Double disk brake to be used as part of the Ascending Car Overspeed Protection means and stopping element of the Unintended Car Movement Protection

Trademark, type : FCRD 90 G6 2x65 Nm
FCRD 90 G6 2x80 Nm
FCRD 90 G6 2x100 Nm
FCRD 112 G6 2x100 Nm
FCRD 112 G6 2x125 Nm
FCRD 112 G6 2x160 Nm
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China 350026

	Nidec Industrial Automation India Private Ltd A 221, Sector 83 Noida 201 305 Gautam Budha Nagar U.P, India
Laboratory	: None
Address of examined component	: Boulevard Marcellin Leroy 16005 Angouleme Cedex - France
Data of examination	: Original: September 12, 2019 Rev. 1: January 15, 2020
Examination performed by	: A. van den Burg H.D. Kramer

2. Description safety component

The specified disk brakes (FCRD 90 G6 and FCRD112 G6) are intended to be used as holding brakes for the application in lift installations equipped with controlled drive systems. The brake consists of two independent electro-mechanical disk brakes. The brake is fixed on the lift motor flange by three stud bolts. The brake disks made of aluminium alloy are fitted, on both sides, with asbestos-free lining which are bonded. The disks are connected to the motor shaft by splines. The first disk acts on the motor flange and the moving plate of the first brake. The second disk acts on the brake housing of the first brake and the moving plate of the second brake. The brake is delivered "ready for use" from the factory. Due to the low wear of the linings, no air gap adjustment is necessary during the whole life of the brake. Even if the air gap can be technically adjusted, this operation is forbidden when the brake is installed on the lift. Nevertheless, the air gap must be regularly checked (permissible max air gap needs to be indicated on the brake). According to the EN 81-20, the state (opened/closed) of each brake is monitored by switches that must be connected to the motor controller, so if one of the brakes doesn't open or close, the lift must not start. Delay times and ranges of the type of brakes have shown to be in accordance with the specifications stated in this report

See annex 1 for a general overview of the product

Technical details and limits of use

Type indication	FCRD 90	FCRD 90	FCRD 90
Nominal braking torque [Nm]	2 x 65	2 x 80	2 x 100
Maximum theoretical torque @ 88 rpm [Nm]	2 x 104	2 x 128	2 x 160
Minimum static torque new brake @ 6 rpm [Nm]	2 x 78	2 x 96	2 x 120
Maximum allowed speed [RPM]	1152	1152	1152
Brake lining diameters outside / inside [mm]	ø152 x ø132	ø152 x ø132	ø152 x ø132
Brake lining material	Bremskerl 9013	Bremskerl 9013	Bremskerl 9013
Moving plate material	Cast iron	Cast iron	Steel
Indication of pressure springs	RST010RC011 (654181)	RST010RC011 (654181)	RST010RC011 (654181)
Number of pressure springs	7	9	11

Type indication	FCRD 112	FCRD 112	FCRD 112	FCRD 112	FCRD 112
Nominal braking torque [Nm]	2 x 100	2 x 125	2 x 160	2 x 200	2 x 220
Maximum theoretical torque @ 88 rpm [Nm]	2x 160	2 x 200	2 x 256	2 x 320	2 x 352
Minimum static torque new brake @ 6 rpm [Nm]	2 x 120	2 x 150	2 x 192	2 x 240	2 x 264
Maximum allowed speed [RPM]	1647	1647	1647	1647	1647
Brake lining diameters outside / inside [mm]	ø152 x ø132	ø152 x ø132	ø152 x ø132	ø152 x ø132	ø152 x ø132
Brake lining material	Bremskerl 9013	Bremskerl 9013	Bremskerl 9013	Bremskerl 9013	Bremskerl 9013
Moving plate material	Cast iron	Cast iron	Cast iron	Steel	Steel
Indication of pressure springs	RST010RC011 (654181)	RST010RC011 (654181)	RST010RC011 (654181)	RST010RC011 (654181)	RST010RC011 (654181)
Number of pressure springs	9	11	15	18	20

Delay times to be taken into account for UCMP applications

		FCRD 90 G6			FCRD 112 G6				
Brake type	[Nm]	65	80	100	100	125	160	200	220
t ₁₀	ms	<50			<70				
t ₅₀	ms	<75			<100				
t ₉₀	ms	<100			<130				

Delay times to be taken into account for UCMP applications (for Schindler)

Specific delay times for client (Schindler) have been confirmed to be within clients limits according tests, see test report results T33R676.

		FCRD 90 G6			FCRD 112 G6				
Brake type	[Nm]	65	80	100	100	125	160	200	220
ta ₆₀	ms	<100							
ta ₉₀	ms	<150							
ta ₁₀₀	ms	<600							

Principal drawings of the brakes are shown in the annexes of this report.

3. Examinations and tests

The examination covered a check whether compliance with the Lift Directive 2014/33/EU is met, based on the harmonized product standards EN 81-20:2014 and EN 81-50:2014.

The examination included:

- Examination of the technical file (See annex 2):
- Check of performed calculations
- Examination of the representative model in order to establish conformity with the technical file.
- Inspections and tests to check compliance with the requirements.

The brakes are tested on a test bench that consist of an electro motor with additional inertias coupled to a lift machine to which the two brakes are mounted. Verification tests are performed to check the capability of the brakes to absorb the maximum specified amount of energy at the maximum allowed tripping speed of the Ascending Car Overspeed Protection (ACOP).

The maximum tripping speed of the ACOP according the EN 81-20 is 1,5 times the nominal speed. For the energy test, the required inertia is calculated and the test is performed at 1,5 times the nominal speed. The nominal speed is 768 rotations/minute for FCRD90 and 1098 rotations/minute for FCRD112.

Only the brake types FCRD90 for 100 Nm and the FCRD112 for 220 Nm are actually tested in order to prove that the brakes are capable to neutralise the maximum specified amount of energy of 36 KJ for FCRD90 and 190 KJ for FCRD112

The other sizes are assumed to function properly as well by comparison on theoretical grounds.

The tests have been witnessed to verify the delay times until the brakes produce 10%, 50% and 90% of the nominal torque (t₁₀, t₅₀ and t₉₀).

For stability reasons, the time t₅₀ is calculated as the average from t₁₀ and t₉₀.

4. Results

Within the framework of the certification activities, the following items were checked and found in order:

- The models of the tested brakes
- Relevant layout drawings and cross section drawings of the concerning brakes
- Brake lining material specifications
- The results of the strength calculations
- The test results

The full capacity brake tests passed without remarks and did not lead to permanent deformations notable brake lining wear or loss of stability.

After the final examinations the brakes and the technical file were found in accordance with the requirements.

5. Conditions

Additional to or in deviation of the applicable demands in the considered requirements / standards (see certificate and page 1 of this report), the following conditions shall be taken into account (applicable standard, EN 81-1 or EN 81-20, is depending on local requirements):

- For application as Ascending Car Overspeed Protection, the requirements of EN 81-1 articles 9.10.1, 9.10.4.d), 9.10.5 and 9.10.10.a) or the requirements of EN 81-20 art. 5.6.6.1, 5.6.6.4 e) and 5.6.6.10 must be fulfilled.
- For application as Unintended Car Movement protection, the relevant requirements of EN 81-1 and/or EN 81-20 for UCMP concerning monitoring and stopping distance shall be checked to be fulfilled.
- The maximum rotational speed of the brakes at the moment of detection of the speed monitoring device according the requirements of art. 9.10.10 of EN 81-1 or art. 5.6.6.10 of EN 81-20 shall not be higher than 768 rotations/minute for FCRD90 and no higher than 1098 rotations/minute for FCRD112.
- When these brakes are additionally used as the braking system for lifts, compliance of the lift design with the requirements for lift brakes of EN 81-1 articles 12.4.1.1, 12.4.2.1, 12.4.2.2, 12.4.2.3, 12.4.2.4. or EN 81-20 articles 5.9.2.2.1.1, 5.9.2.2.2.1, 5.9.2.2.2.2, 5.9.2.2.2.3 and 5.9.2.2.2.7 shall be checked.
- Installation and maintenance instructions for the brake units shall be provided.

6. Conclusions

Based upon the results of the EU-type examination Liftinstituut B.V. issues an EU-type examination certificate.

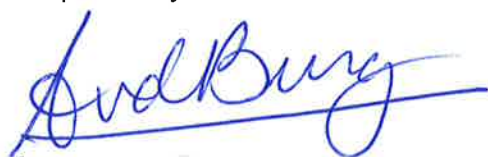
The EU-type examination certificate is only valid for products which are in conformity with the same specifications as the type certified product. The certificate is issued based on the requirements that are valid at the date of issue. In case of changes of the product specifications, changes in the requirements or changes in the state of the art the certificate holder shall request Liftinstituut B.V. to reconsider the validity of the certificate.

7. CE marking and EU Declaration of conformity

Every safety component that is placed on the market in complete conformity with the examined type must be provided with a CE marking according to article 18 of the Lift directive 2014/33/EU under consideration that conformity with eventually other applicable Directives is proven. Also every safety component must be accompanied by an EU declaration of conformity according to annex II of the Directive in which the name, address and Notified Body identification number of Liftinstituut B.V. must be included as well as the number of the EU-type examination certificate.

An EU type-certified safety component shall be random checked e.g. according to annex IX of the Lift directive 2014/33/EU before these safety components may be CE-marked and may be placed on the market. For further information see regulation 2.0.1 'Regulations for product certification' on www.liftinstituut.com.

Prepared by:



A. van den Burg
Product specialist Certification
Liftinstituut B.V.

Certification decision by:



Annexes

Annex 1 General overview of the product



Annex 2 Documents of the Technical File which were subject of the examination

Title	Document number	Date
FCRD-G6 Brake Installation Maintenance Manual	T420S234c	06-09-2019
Brake FCRD-G6 Certification Supporting Document	T33T026b	06-09-2019
FCRD Torques and UCMP times procedures	T33S051b	03-06-2019
FCRD response time measurement	T33S052a	10-09-2018
Calculation reports; Braking Torque	CA-17-48-02_Appendix-Bb	24-05-2019
Calculation reports; Energy Capacity	CA-17-48-02_Appendix-Ca	24-05-2019
Calculation reports; FCRD-G6 Calculations Disc	CA-17-48-02_Appendix-E2d	24-05-2019
Calculation reports; Clamping On Flange	CA-17-48-02_Appendix-E3c	24-05-2019
Calculation reports; FCRD90-112-G6 Springs Calculation	CA-17-48-02-Appendix-D1-a	24-05-2019
Test report FCRD90 65Nm	T33R669-7	02-04-2018
Test report FCRD90 80Nm	T33R669-8	02-04-2018
Test report FCRD90 100Nm	T33R669-9	02-04-2018
Test report FCRD112 100Nm	T33R670-6	02-04-2018
Test report FCRD112 125Nm	T33R670-7	02-04-2018
Test report FCRD112 160Nm	T33R670-8	02-04-2018
Test report FCRD112 200Nm	T33R670-9	02-04-2018
Test report FCRD112 220Nm	T33R670-10	02-04-2018

Annex 3. Reviewed deviations from the standards

EN xx-x par.	Requirement	Accepted design
X.X.X	-	-

Annex 4 Revision of the certificate and its report

Rev.:	Date	Summary of revision
-	September 12, 2019	Original
1	January 15, 2020	Manufacture addresses added