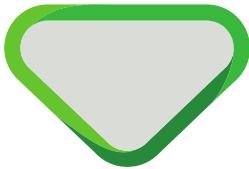


Report EU-type examination

Report belonging to EU-type examination certificate number	: NL13-400-1002-182-02
Date of issue of original certificate	: 07-01-2016
Certificate applies to	: Safety component
Revision number / date	: 4 / 06-08-2024
Assessment basis	: Lifts Directive 2014/33/EU Standards: EN 81-20:2020 & EN 81-50:2020
Project number	: P000307

1. General specifications

Description of the product	: Brakes as part of Ascending Safety Device (ASD) and/or Unintended Car Movement Protection (UCMP)
Trademark	: Akiş
Type no.	: DEMF1, DEMF2, DEMF3, DEMF4, DEMF5, DEMF6, DEMF7, and DEMF8.
Name and address of the manufacturer	: Akiş Asansör Makina Motor Döküm San. ve Tic. Ltd. Şti. Konya Organize Sanayi Bölgesi, Ziyaeddin Caddesi 6. Sokak No:2, Selçuklu 42300, Konya, Türkiye
Laboratory	: None
Address of examined safety component	: Akiş Asansör Makina Motor Döküm San. ve Tic. Ltd. Şti. Konya Organize Sanayi Bölgesi, Ziyaeddin Caddesi 6. Sokak No:2, Selçuklu 42300, Konya, Türkiye
Date of examination	: 02-08-2024
Examination performed by	: Tolga Göktaş



2. Description safety component

This DEMF brake series acts individually on the same shaft as the traction sheave. In that case the traction shaft and the brake connection to that shaft shall be proven to have sufficient strength and built in redundancy.

The brakes are applied as an addition on geared machines, which are already equipped with a normal brake, these brake series are characterized as DEMF1, DEMF2, DEMF3, DEMF4, DEMF5, DEMF6, DEMF7 and DEMF8 (table 1 & 2). The design of brake types DEMF7 and DEMF8 differs from the others, but the functionality is the same.

Brake types DEMF1, DEMF2, DEMF3, DEMF4, DEMF5 and DEMF6 consists of a round shaped mirror activated by one magnetic coil and a round-shaped friction disk (Annex 1a).

Brake types DEMF7 and DEMF8 however have a rectangular mirror, activated by 2 magnetic coils, which also forces a round shaped friction disk (Annex 1b).

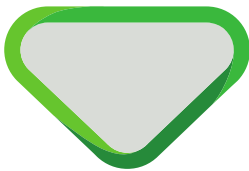
The brake torque for each type is determined by the applied number of springs and this shall not be adjusted in the field. To prevent this, every fixation bolt of the housing of the brake is marked.

The brake lining is glued on both sides of the aluminum friction disc. The brake setting is sufficient until the air gap between brake socket and armature exceeds 0,50mm. In case the maximum air gap is exceeded, the brake will not be lifted because a higher exciting voltage demanded will not be allowed by the magnetic coil.

These brakes can only be used as braking element for Ascending Safety Device (ASD) according to clause 5.6.6 of EN 81-20:2020 and/or as braking element for Unintended Car Movement Protection (UCMP) according to clause 5.6.7 of EN 81-20:2020.

ASD

The ascending safety device shall be actuated by a governor overspeed contact or an equivalent EU-type tested device which was no part of this investigation.



UCMP

The brake can be used as braking element for Unintended Car Movement Protection. Each brake is separately provided with a monitoring contact. The controller of the lift where these brakes are used, must check the signals from each brake contact prior to each start. If a failure is detected, the lift must be put out of service permanently.

The brake delay times t_{10} and/or t_{90} as indicated in this report shall be used to check by means of calculation that the stopping distance of the car fulfils the requirements.

t_{10} means the time from activation till the moment that 10% of the nominal brake torque has been reached and t_{90} means the time from activation till the moment that 90% of the nominal brake torque has been reached.

A value of brake delay time between t_{10} and t_{90} can be interpolated.

The defined and measured nominal torque per brake is the minimum guaranteed torque under the conditions which the manufacturer prescribes during the lifetime of the brake.

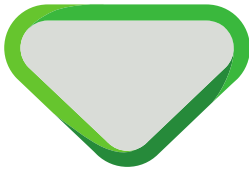
Table 1: Brake specifications (mirror)

Brake	DEMF1	DEMF2	DEMF3	DEMF4	DEMF5	DEMF6	DEMF7	DEMF8
Springs #	4 x 5	4 x 6	4 x 6	4 x 5	4 x 6	4 x 6	12 x 10	12 x 10
Coils #	1						12	12
Exciting / Holding voltage [VDC]	197 / 110			110 / 70			197 / 110	110 / 70
Max. air gap [mm]	0,45	0,45	0,45	0,45	0,45	0,45	0,50	0,50
Nominal Torque [Nm]	2 x 400	2 x 550	2 x 550	2 x 400	2 x 550	2 x 550	2 x 1100	2 x 1100
t_{10} [ms]	220	210	150	220	210	150	180	180
t_{90} [ms]	320	480	480	320	480	480	350	350

Table 2: Friction disk specifications

Type	Disc brake
Brake material	YÜKSEL BALATACILIK SAN.TİC.A.Ş.
Brake lining thickness [mm]	3
Nominal air gap [mm]	0,45 ± 0,05
Max. air cap after wear [mm]	0,5
Dimensions springs L x Do x Di x d [mm]	40,5 x 12,5 x 7,0 x 2,75

See annex 1a and 1b for a general overview of the described products.

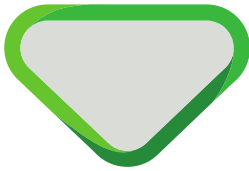


3. Examinations and tests

The examination covered a check whether compliance with the Lifts Directive 2014/33/EU is met, based on the harmonized product standard EN 81-20:2020, clauses 5.6.6, 5.6.7 and EN 81-50:2020, clauses 5.7 and 5.8.

The examination included:

- Examination of the technical file (See annex 2);
- Check of performed calculations according to EN 81-20:2020;
- Examination of the representative model in order to establish conformity with the technical file;
- Inspections and tests to check compliance with the requirements;
- Every brake type has been mounted on the end of the test shaft. This test shaft has been driven by a chain with a ratio together of 1:2 to a DC-motor. The air gaps of the brakes are prepared by Akiş in accordance with the maximum allowable gap in the service manual. The number of springs is prepared by Akiş in accordance with the technical information of the brakes. The housing of the brake is attached to an empty housing of a motor, only with the purpose of supporting the brake;
- In the test shaft a torque meter is mounted, whose force measurement can be read, and the output signal can be stored by a digital oscilloscope. Also the control supply voltage of the brake coil can be stored by the same digital oscilloscope. The measured torques are read every 10 msec and stored by this digital oscilloscope;
- Additional tests are performed with a separate oscilloscope to determine the delay times t_{10} and t_{90} of the brakes;
- Each brake can be supplied with the following exciting DC-voltages: 197VDC and 110VDC;
The delay times t_{10} and t_{90} are determined for each of these supplied voltages;
- The electromotor is run with a speed that assures the maximum tripping speed. These maximum tripping rpm's are calculated based on the maximum tripping speed of the applied overspeed governor, which overspeed tripping contact activates the brake as ASD. After some test runs, the brake holding voltage is cut and the brake set is applied for approximately 1 to 1,5 second, while the electromotor continues giving full torque at tripping rpm's. This test is done 5 times for each brake part at a minimum;
- The results of the torque measurement have been recorded and studied. From these results both the dynamic torque and the reaction times t_{10} and t_{90} have been determined. Immediately after each test the temperature of the brake housing and brake discs was checked. Afterwards the air gap has been compared with the start value and the brake shoes were disassembled and checked for wear;
- The test has been performed with brake contactors on the DC side. The power to the brake shall always be interrupted on DC side to ensure the specified delay times.



4. Results

After the final examination the product and the technical file were found in accordance with the requirements. The functional tests passed without remarks.

The tests showed that the measured torque of the brake was within limits of the calculated torque by the manufacturer and that the brake is capable of absorbing sufficient kinetic energy.

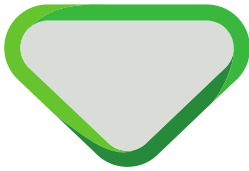
4.1 Calculations

The calculations were found accordance with the requirements.

5. Conditions

Additional to or in deviation of the applicable demands in the considered requirements / standards (see certificate and/or page 1 of this report), the following conditions shall be taken into account:

- The brake types DEMF1, DEMF2, DEMF3, DEMF4, DEMF5, DEMF6, DEMF7 and DEMF8 will be applied on geared machines which chosen correctly by Akis;
- The number of springs should be placed in sequence order as indicated in Table 1;
- The installer of the lift needs to define the final complete UCMP solution taken into account the key-parameters of the mentioned machines with the mentioned brakes as UCMP stopping means. An additional calculation shall be done to check whether the deceleration and stopping distance of the car is within the required limits;
- The components shall be according to the descriptions of chapter 2 in this report;
- The brake must be interrupted at the DC side of the brake supply to ensure the specified delay times t_{10} and t_{90} ;
- The brake must be released by a continuous manual operation in compliance with clause 5.9.2.2.2.7 of EN 81-20: 2020;
- Installation-/ and maintenance manuals shall always be provided and present at the installation.



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 Lifts 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.

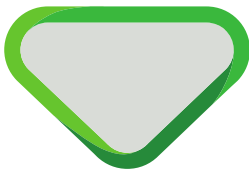
An EU-type certified safety component shall be random checked e.g. according to annex IX of the Lifts Directive 2014/33/EU before these safety components may be CE-marked and may be placed on the market. For further information see regulation 2.0.1 'Regulations for product certification' on www.liftinstituut.com.

Prepared by:

Tolga Gökteş
Product Specialist Certification

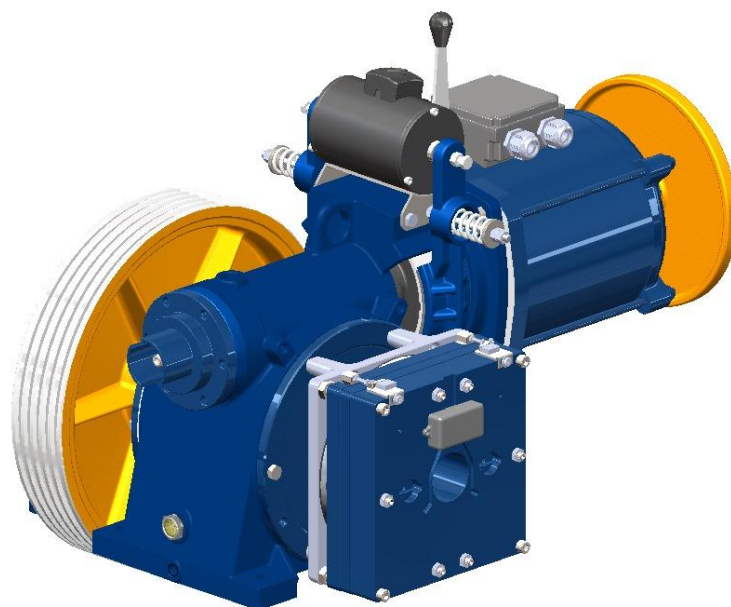
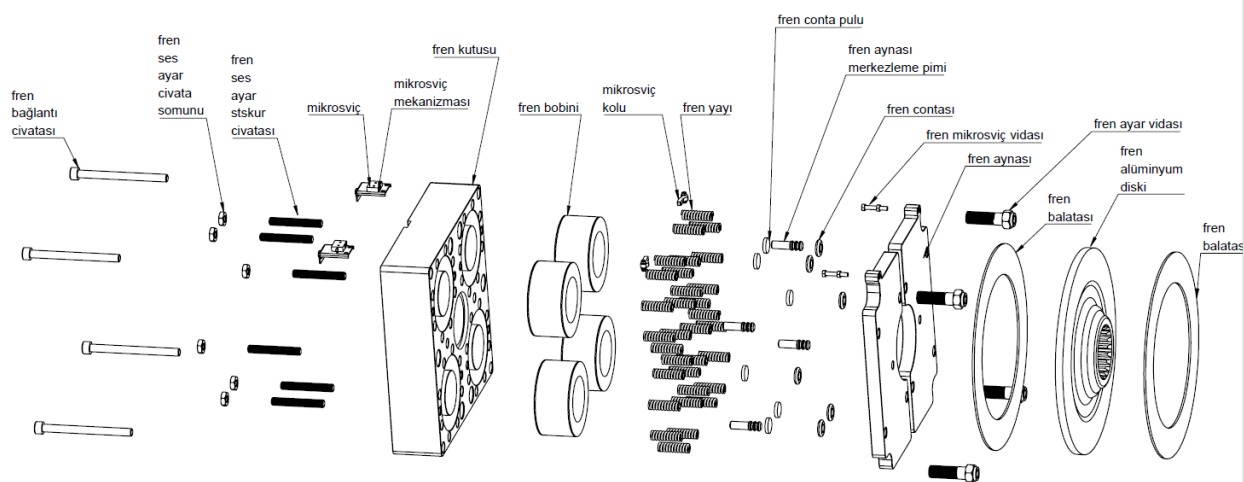
Certification decision by:

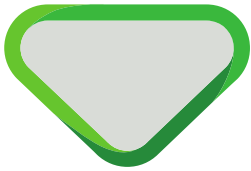
P.J. Schaareman
Product Manager C&S



Annexes

Annex 1a. General overview and application example of brake types: DEMF1, DEMF2, DEMF3, DEMF4, DEMF5 and DEMF6

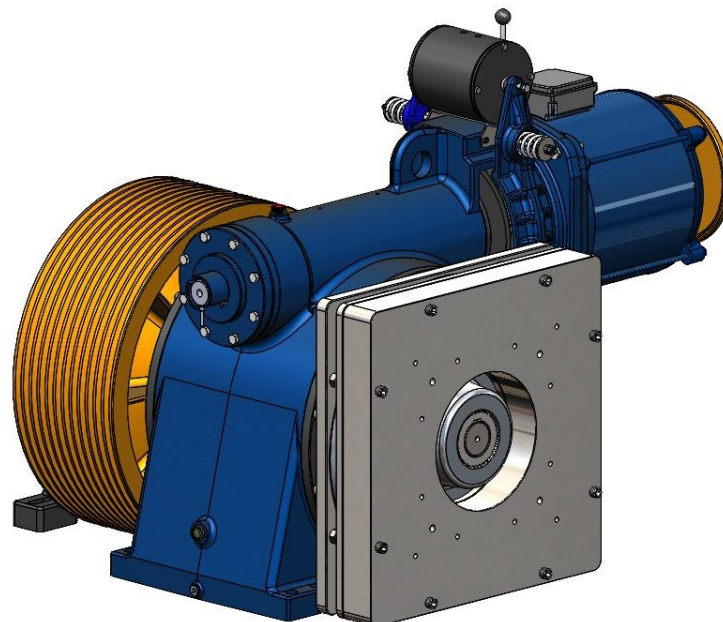
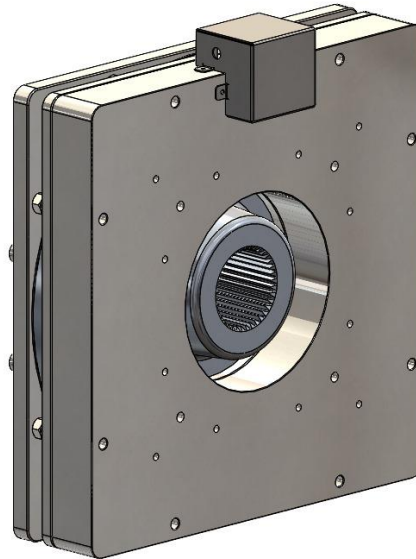


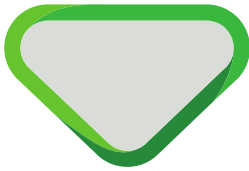


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Annex 1b. General overview and application example of brake DEMF7 and DEMF8





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

Title	Document number	Date
AK 2-6	Ver.1	08-06-2015
AK 6	Ver.1	08-06-2015
CF 260 A3 FREN	Ver.1	08-06-2015
Gearless son fren	Ver.1	08-06-2015
Shaft calculations	Ver.1	29-10-2015
Assembly, Application and Maintenance guide	Revision no.: 3	05-10-2022

Annex 3. Reviewed deviations from the standards

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

Annex 4. Revision of the certificate and its report

Rev.:	Date	Summary of revision
-	07-01-2016	Original
1	18-09-2017	Update to: - EN 81-20: 2014 & EN 81-50: 2014 - Lifts Directive 2014/33/EU - Adaptation of the brake type range
2	27-09-2018	- brake types AEMF1 and AEMF4 as additional application on geared machines type A3; - textual adaptations.
3	06-12-2022	- Removed the references to other brake applications outside the scope of this certificate - Added DEMF8 as a new type of brake - Updated to EN 81-20:2020 and EN 81-50:2020 - Renewal of the certificate with another 5 years
4	06-08-2024	- Updated Table-1 and Annex 1a / 1b - Increased nominal torque values for DEMF2 & DEMF5

--- End of report ---