ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Industrie Service

EC type-examination certificate

Certificate no.:	ABV 851
Notified body:	TÜV SÜD Industrie Service GmbH Westendstr. 199 80686 München – Germany
Applicant/ Certificate holder:	INTORQ GmbH & Co. KG Wülmser Weg 5 31855 Aerzen – Germany
Date of application:	2010-04-15
Manufacturer of the test sample:	INTORQ GmbH & Co. KG Wülmser Weg 5 31855 Aerzen – Germany
Product:	Braking device acting on the shaft of the traction sheave, as part of the protection device against overspeed for the car moving in upwards direction
Type:	BFK464-25S
Test laboratory:	TÜV SÜD Industrie Service GmbH Prüflaboratorium für Produkte der Fördertechnik Prüfbereich Aufzüge und Sicherheitsbauteile Westendstr. 199 80686 München – Germany
Date and number of the test report:	2010-10-07 ABV 851
EC-Directive:	95 / 16 / EC
Result:	The safety component conforms to the essential safety requirements of the Directive for the respective scope of application stated on page 1 - 2 of the annex to this EC type-examination certificate.
Date of issue:	2010-10-08

Certification body for lifts and safety components
Identification number: 0036

Christian Rührmeyer

TÜV SÜD Industrie Service GmbH 09 36 Benannte Stelle

TÜV®

Industrie Service

Enclosure of EC type-examination certificate no. ABV 851 dated 2010-10-08

Authorised manufacturers – production sites (stated: 2010-10-08):

INTORQ GmbH & Co. KG
Wülmser Weg 5
31855 Aerzen - Germany

- END OF DOCUMENT -

Base: letter of INTORQ GmbH & Co. KG dated 2010-04-15

Industrie Service

Annex to the EC type-examination certificate no. ABV 851 dated 2010-10-08

1. Scope of Application

1.1 Permissible brake moment when the braking device acts on the shaft of the traction sheave while the car is moving upward — 1200 Nm

1.2 Maximum tripping speed of the overspeed governor and maximum rated speed

The maximum tripping speed and the maximum rated speed must be calculated on the basis of the traction sheaves maximum tripping rotary speed and maximum rated rotary speed as outlined in sections 1.2.1 and 1.2.2 taking into account traction sheave diameter and car suspension.

$$v = \frac{D \times \Pi \times n}{60 \times i}$$

v = speed (m/s)
D= Diameter of the traction sheave from rope's centre to rope's centre (m)
Π= 3.14
n = Rotary speed (min^{-1})
i = Ratio of the car suspension

1.2.1 Maximum tripping rotary speed of the traction sheave — 455 min^{-1}

1.2.2 Maximum rated rotary speed of the traction sheave — 396 min^{-1}

2. Conditions

2.1 Since the brake device represents only a part oft the protection device against overspeed for the car moving in upwards direction an overspeed governor as per EN 81-1, paragraph 9.9 must be used to monitor the upward speed and the brake device must be triggered (engaged) via the overspeed governor's electric safety device.

Alternatively, the speed may also be monitored and the brake device engaged by a device other than an overspeed governor as per paragraph 9.9 if the device shows the same safety characteristics and has been type tested.

2.2 In order to recognise the loss of redundancy the movement of each brake circuit (each anchors) is to be monitored separately and directly (e.g. by micro switches). If a brake circuit fails to engage (close) while the lift machine is at standstill, next movement of the lift must be prevented.

2.3 In cases where the lift machine moves despite the brake being engaged (closed), the lift machine must be stopped at the next operating sequence at the latest and the next movement of the lift must be prevented. (The car may, for example, be prevented from travelling by querying the position of the micro switch which is used to monitor the mechanical movement of the brake circuits, should both brake circuits fail to open).

2.4 According to EN 81-1, paragraph 9.10.4 d a braking device must act directly on the traction sheave or on the same shaft on which the traction sheave is situated in the immediate vicinity thereof.

If the braking device does not act in the immediate vicinity of the traction sheave on the same shaft on which the traction sheave is situated, the standard is not complied with. In cases involving shaft failure in the extended area between the traction sheave and the braking device, safety would no longer be ensured by the latter if the lift car made an uncontrolled upward movement.

Shaft failure in the extended area must therefore be ruled out by appropriate design and sufficient dimensioning. In order to eliminate or reduce influencing factors which may lead to failure wherever possible, the following requirements must be satisfied:

- Minimization of bending length between traction sheave and braking device or traction sheave and the next bearing (the next bearing must form part of the drive unit)
- Static defined bearing (e. g. 2-fold borne shaft) otherwise measures are required to obtain a defined loading
- As far as possible, prevention of a reduction in load-bearing capacity in the area of reversed bending stress (reduction in load-bearing capacity caused, for example, by stress concentration and cross-sectional reductions)
- Between traction sheave and braking device the shaft must be continuous (made from one piece)
- Cross-sectional influences on the shaft are only permitted if they act on the following connections: traction sheave – shaft, braking device – shaft, torque of the transmitting component – shaft (situated between traction sheave and braking device).

The manufacturer of the drive unit must provide calculation evidence that the connection traction sheave - shaft and the shaft itself is sufficiently safe. If necessary, evidence must be provided for the intended measures, too (see static undefined bearing).

The calculation evidence must be enclosed with the technical documentation of the lift.

3. Remarks

3.1 The braking device exists of two brake circuits. Redundancy requirements necessitate that a sufficient braking effect as outlined in section 12.4.2.1 of EN 81.1 is still maintained if one of the brake circuit fails. It is not assumed that two brake circuits will fail simultaneously.

3.2 The permissible brake moment must be applied to the lift system in such a manner that they do not decelerate more than 1 g_n, if the empty car is moving upwards.

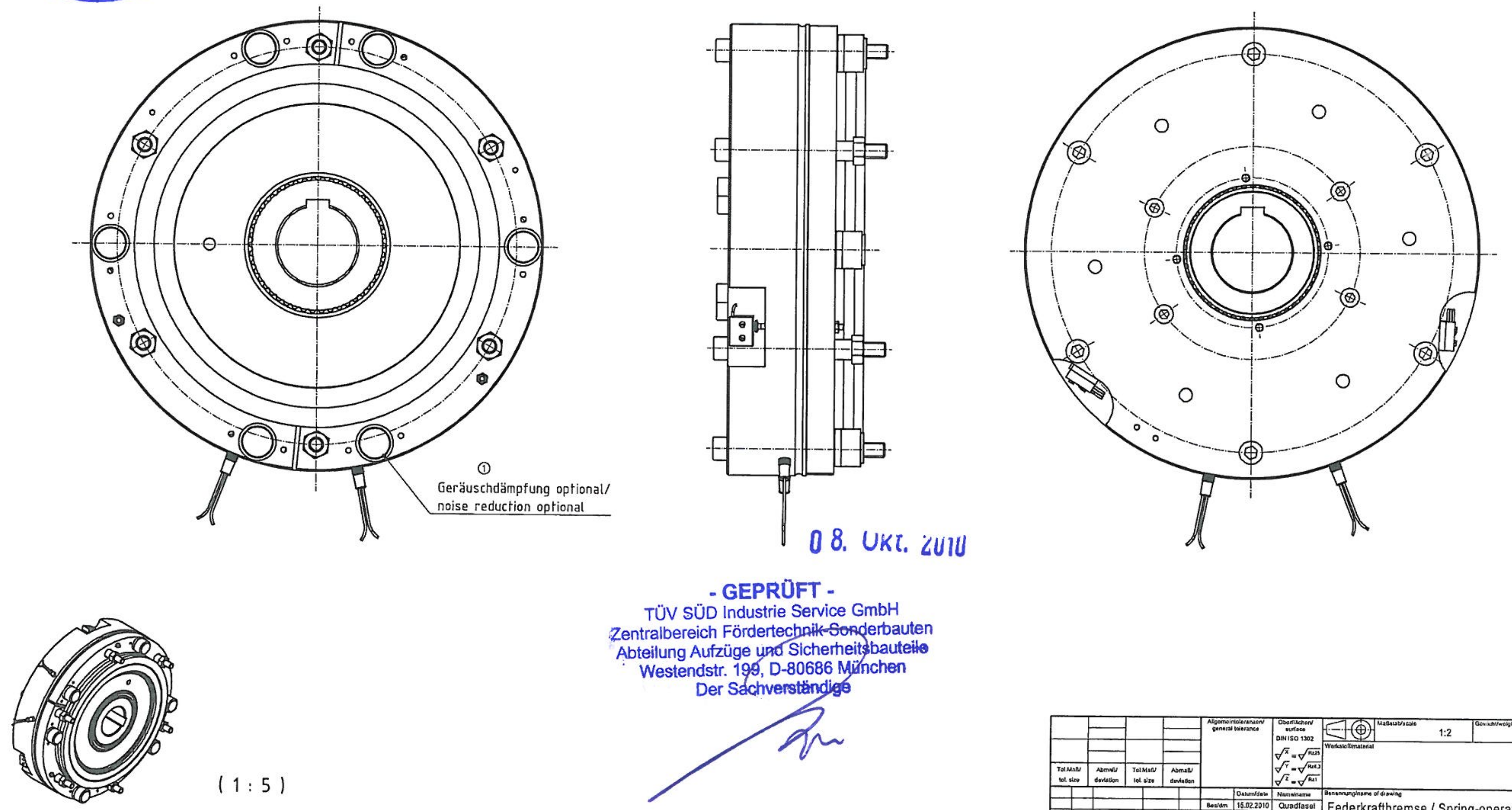
3.3 In the scope of this type-examination it was found out, that the brake device also functions as a brake for normal operation, is designed as a redundant system and therefore meets the requirements to be used also as a part of the protection device against overspeed for the car moving in upwards direction.

This type examination only refers to the requirements pertaining to brake devices as per EN 81-1, paragraph 9.10.

Checking whether the requirements as per paragraph 12.4 have been complied with is not part of this type examination.

3.4 In order to provide identification, information about the basic design and it's functioning and to show which parts have been tested pertaining to the tested and approved type, drawing no. BFK46425-013 (page 3) dated 15 February 2010 with last modification 8. September 2010 is to be enclosed with the EC type-examination certificate and the Annex thereto. The installation conditions and connection requirements are presented or described in separate documents (e.g. assembly and operating instructions).

3.5 The EC type-examination certificate may only be used in connection with the pertinent annex and the list of the authorized manufacturers (according to enclosure). This enclosure shall be updated and re-edited following information of the certificate holder.



0 8. Okt. 2010

- GEPRÜFT -
TÜV SÜD Industrie Service GmbH
Zentralbereich Fördertechnik-Sonderbauten
Abteilung Aufzüge und Sicherheitsbauteile
Westendstr. 199, D-80686 München
Der Sachverständige

Allgemeintoleranzen/general tolerance	
Oberflächen/surface	DIN ISO 1302
Maßstab/scale	1:2
Gewicht/weight	
Werkstoff/material	
Benennung/name of drawing	Federkraftbremse / Spring-operated brake Typ / type BFK464-25S
Bearb/drn	15.02.2010 Quadfasel
Geprüft/chkd	15.02.2010 Gauger
Norm/appr	
Zeichnungsnummer/drawing no.	BFK46425-013
Blatt/sheet	3 / 3
CAD	INTORQ
Datei/file	BFK46425-013.iam
Ersatz für/mock-up for	

Ind./ind.	Anz./quan.	Änder-Nr./revision no.	Datum/date	Name/name
1	1	221749	08.09.2010	Qua.

Tol.Maß/tol. size	Abmaß/deviation	Tol.Maß/tol. size	Abmaß/deviation

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Industrie Service

Type-examination certificate

Certificate no.:	ESV 851
Certification office:	TÜV SÜD Industrie Service GmbH Westendstr. 199 80686 München - Germany
Applicant/ certificate holder:	INTORQ GmbH & Co. KG Wülmser Weg 5 31855 Aerzen - Germany
Date of application:	2011-04-19
Manufacturer of the test sample:	INTORQ GmbH & Co. KG Wülmser Weg 5 31855 Aerzen - Germany
Product:	Braking element acting on the shaft of the traction sheave, as a part of the protection device against unintended car movement
Type:	BFK464-25S
Test laboratory:	TÜV SÜD Industrie Service GmbH Prüflaboratorium für Produkte der Fördertechnik Prüfbereich Aufzüge und Sicherheitsbauteile Westendstr. 199 80686 München - Germany
Date and number of the test report:	2011-09-02 ESV 851
Examination basis:	EN 81-1:1998 + A3:2009 (D), issue December 2009
Result:	The safety component conforms to the requirements of examination basis for the respective scope of application stated on page 1 - 2 of the annex to this type-examination certificate.
Date of issue:	2011-09-05

Certification office for products of conveyor systems
Lifts and safety components

p. p. Siegfried Melzer

TÜV SÜD Industrie Service GmbH

TÜV®

Industrie Service

Annex to the type-examination certificate no. ESV 851 dated 2011-09-05

1 Scope of application

1.1 Nominal brake torques and response times with relation to a brand-new brake element

Nominal brake torque* [Nm]	Overexitation [Yes / No]	Maximum response times** [ms]		
		t_0	t_{50}	t_{90}
2 x 600 = 1200	No	21	49	76
2 x 600 = 1200	Yes	31	59	86

Explanations:

* **Nominal brake torque:** Brake torque assured for installation operation by the safety component manufacturer.

** **Response times:** t_x time difference between the drop of the braking power until establishing X% of the nominal brake torque, t_{50} optionally calculated $t_{50} = (t_{10} + t_{90})/2$ or value taken from the examination recording

1.2 Assigned execution features

- Type of powering / deactivation — Continuous current / continuous current end
- Brake control — Parallel
- Nominal air gap — 0.45 mm
- Damping elements — YES
- Overexcitation — double nonrelease voltage
- Maximum tripping rotary speed — 455 min^{-1}

2 Conditions

2.1 The above mentioned safety component represents only part of a protective equipment against unintended movement of the elevator car. Only in combination with a detecting and triggering component (two separate components also possible), which must be subjected to an own type-examination, can the system created fulfil the requirements for a safety component in accordance with Annex F.8, EN 81-1:1998 + A3:2009 (D).

2.2 The safety component is used in combination with the brake device as part of the ascending car overspeed protection means and as a drive brake.

2.3 The installer of a lift must create an examination instruction in accordance with D.2 p) of EN 81-1:1998 + A3:2009 (D) for lift(s) to fulfil the overall concept, add it to the lift documentation and provide any necessary tools or measuring devices, which allow a safe examination (e. g., with closed shaft doors).

2.4 The dimension configuration of the lift system must be designed as regards the brake torques in such a way that the permissible value of deceleration does not exceed 1 g_n in either direction. Excluded are decelerations, which are caused by an instantaneous roller safety gear up to a rated speed of the lift system of 0.63 m/s for instance.

2.5 The traction and its variance must be taken into account as regards its braking distance (transferable power / torque) and included in the calculation.

2.6 For installer of a lift, the compliance of the component with the type examined component and the assured nominal brake torques and response times must be confirmed in writing (e. g., type plate and/or supplement in the declaration of conformity).

2.7 The information evaluation for self-monitoring must prevent an operational starting of the lift in the event of a fault.

2.8 According to the norm requirements, the brake element of the protective device must impact directly on the traction sheave or on the same shaft in the immediate vicinity of the traction sheave.

If the brake element does not impact in the immediate vicinity of the traction sheave on the same shaft, on which the traction sheave is also arranged, a deviation from the norm exists. A failure of the shaft in the area between the traction sheave and the brake element must be ruled out using corresponding construction designs and sufficient measurements. The manufacturer of the entire drive must prove the sufficient safety of the connection brake element – shaft and traction sheave – shaft as well as the shaft itself in calculations. This proof must be added to the technical documentation of the lift.

3 Remarks

3.1 As part of the type-examination, it was detected that the brake element has a redundant design and that the correct function is monitored by sensors.

The examination of compliance with all requirements under Section 12.4 [EN 81-1:1998 + A3:2009 (D)], deterioration of the brake torques/breaking forces due to wear and tear and the operation-related change of the drive capability are not part of this type examination.

This type-examination refers to the partial requirements for the protection device against unintended car movement only according to EN 81-1:1998 + A3:2009 (D), Section 9.11.

3.2 In order to provide identification, information about the basic design and functioning and to show the environmental conditions and connection requirements, drawing with the relevant latest identification from the associated EC type-examination certification no. ABV 851/X is to be enclosed with the type-examination certificate and the annex thereto.

3.3 The type-examination certificate may only be used in connection with the pertinent annex and the list of the authorized manufacturers (according to enclosure of the corresponding EC type-examination certification no. ABV 851/X).

Industrie Service

Enclosure of EC type-examination certificate no. ABV 851 dated 2010-10-08

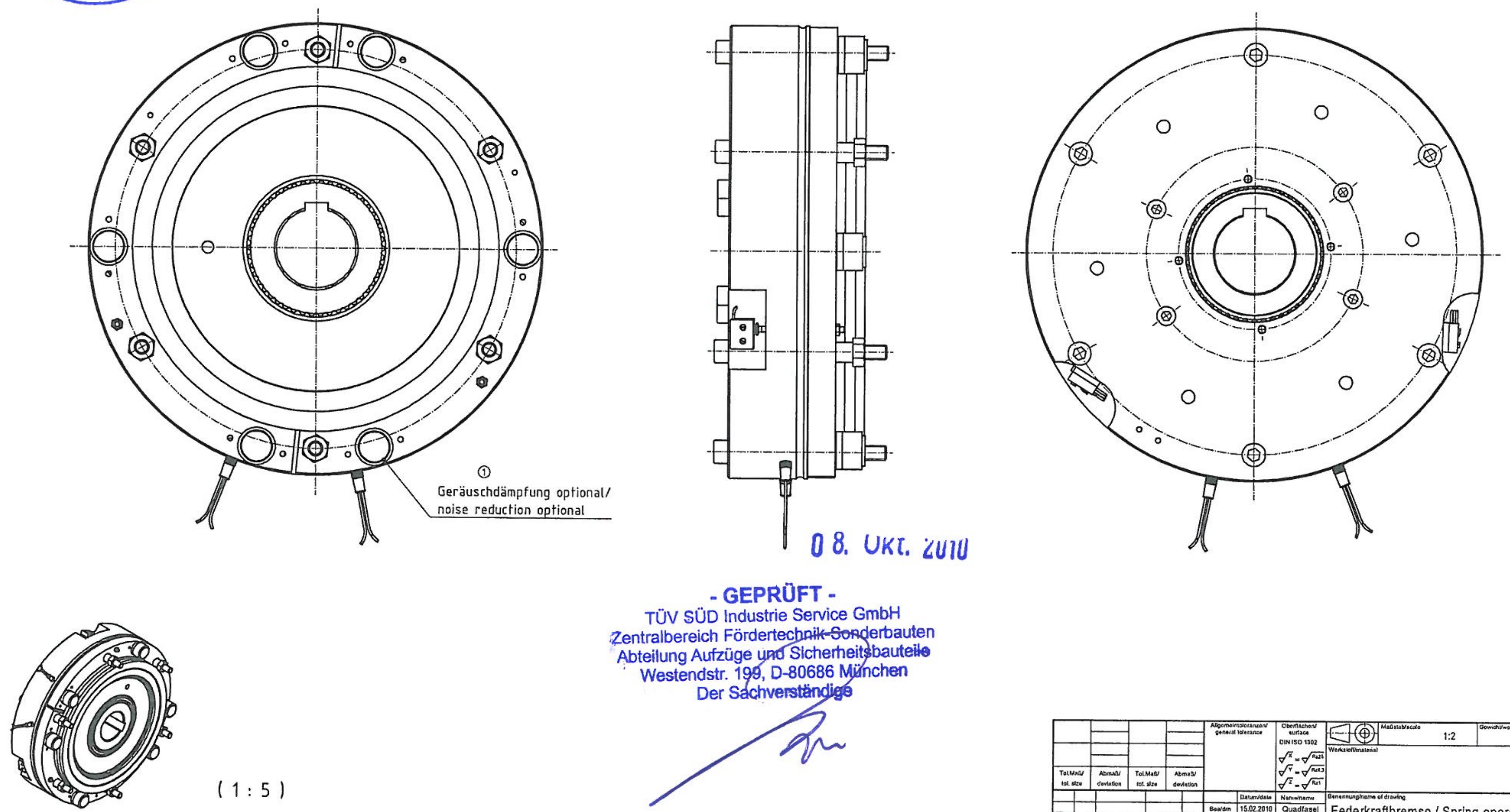
Authorised manufacturers – production sites (stated: 2011-05-27):

INTORQ GmbH & Co. KG
Wülmser Weg 5
31855 Aerzen – Germany

INTORQ (Shanghai) Co., LTD
No.600, Xin Yuan Nan Road
Building No.6 / Zone B
Nan Hui District, Lingang
Shanghai, China 201306

- END OF DOCUMENT -

Base: letter of INTORQ GmbH & Co. KG dated 2011-04-28



TÜV SÜD Industrie Service GmbH

08. OKT. 2010

- GEPRÜFT -
TÜV SÜD Industrie Service GmbH
Zentralbereich Fördertechnik-Sonderbauten
Abteilung Aufzüge und Sicherheitsbauteile
Westendstr. 199, D-80686 München
Der Sachverständige

Ind./ind.	Anz./quan.	Änder-Nr./revision no.	Datum/date	Name/name
1	1	221749	08.09.2010	Qua.

	Datum/date	Name/name
Bearb/drn	15.02.2010	Quadfasel
Gepr/chkd	15.02.2010	Gauger
Norm/appr		

Maßstab/scale: 1:2

Benennung/name of drawing: Federkraftbremse / Spring-operated brake

Typ / type BFK464-25S

Zeichnungsnummer/drawing no.: BFK46425-013

Blatt/sheet: 3 / 3

CAD

INTORQ

Datei/file: BFK46425-013.iam