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Industrie Service

EC type-examination certificate

Certificate no.:	ABV 761/1
Notified body:	TÜV SÜD Industrie Service GmbH Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile Westendstraße 199, 80686 München - Germany
Applicant/ Certificate holder:	Chr. Mayr GmbH & Co. KG Eichenstraße 1 87665 Mauerstetten - Germany
Date of submission:	2006-05-23
Manufacturer:	Chr. Mayr GmbH & Co. KG Eichenstraße 1 87665 Mauerstetten - Germany
Product, type:	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 896.1 _ _._ _, Seize 200, 300, 500, 800, 1300, 1800
Test Laboratory:	TÜV SÜD Industrie Service GmbH Prüfbereich Aufzüge und Sicherheitsbauteile Westendstraße 199, 80686 München - Germany
Date and Number of test report:	2006-08-11 761/1
EC-directive:	95 / 16 / EC
Statement:	The safety component conforms to the directive's essential safety requirements for the respective scope of application stated on page 1 and 3 of the annex to this EC type-examination certificate.
Certificate date:	2006-08-11

Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile
Identification number: 0036

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Annex to the EC type-examination certificate no. ABV 761/1 dated 2006-08-11

1. Scope of Application

1.1 Permissible brake moment, maximum tripping rotary speed and maximum rated rotary speed of the traction sheave when the brake device acts on the shaft of the traction sheave while the car is moving upward

Seize	Permissible brake moment (Nm)	Max. tripping rotary speed of traction sheave (min^{-1})		Max. rated rotary speed of traction sheave (min^{-1})	
200	150 – 300	1000	500*	873	435*
300	225 - 500	800	500*	696	435*
500	380 - 800	730	300*	635	261*
800	600 - 1200	650	300*	565	261*
1300	980 - 1800	580	300*	504	261*
1800	1350 - 2300	500	300*	435	261*

* Maximum tripping rotary speed and rated rotary speed for design with overexitation (see for this "3. Remarks")

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 1.1 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

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.

If the overspeed governor's electrical safety device is actuated in the same way, irrespective of whether the car is travelling upwards or downwards (consequence: braking device also responds when the car is travelling downwards) and the lift travels with a rated speed of more than 1 m/s, the electrical safety device must respond at speed clearly below (approx. 10 %) the speed at which the overspeed governor is triggered (for the safety gear).

If the braking device is triggered via an additional (second) electrical safety device of the overspeed governor, this device only has to be activated when the triggering speed of the overspeed governor is reached.

2.2 The energy supply to the magnetic coin must be directly interrupted by the overspeed governor's electrical safety device or two independently actuated operational elements being dependent on this safety device. In case no speed governor is installed (cf.2.1) interruption has to be made analogue.

2.3 When the braking device responds (anchor in braking position) an electrical device must be actuated (e.g. micro switches). (The actuation of the overspeed governor's electrical safety device satisfies the requirement outlined in Section 9.10.5, i. e. that an electrical safety device in conformity with 14.1.2 must be operated upon response of the protection device).

2.4 The triggering of the braking device (release of the anchor plate for engagement by means of pressure springs) is not caused positive mechanically but electrically resp. electromagnetically by interruption of the energy supply to the magnetic coin of the braking device (see point 2.1).

However, the mechanically engagement of the braking device has to be absolutely guaranteed after the electrical safety device has responded.

In light of the above, the braking device must be made to engage at regular intervals, so that the anchor plates can be checked for correct closing. This may be done, for example, by engaging the braking device after every stop, in which case the braking device adopts an additional safety function, or once daily through (automatic) operation of the braking device when the lift is at standstill. If the anchor plates do not perform correctly (anchors fail to close) the lift must be kept at standstill.

2.5 Appropriate measures must ensure that it is evident in the machine room whether the braking device has responded in line with its intended use as a safety component (following failure of an item of operating equipment such as breakage of a gearing element or shaft) or whether the response was caused by other reasons (e. g. loss of power supply or reaction after every stop or as required under Section 2.4). It must also be evident how to proceed in emergency operation (moving the car through manual operation or return motion control) after the braking device has responded.

Once the braking device has responded in the intended way as a safety component, it should never be possible to move the lift machine via the return motion control.

2.6 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 braking device – shaft, 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 A code number for the brake moment effectively adjusted will be marked at the first blank in the type designation 896.1 _ _._ _ within the permissible scope of application (number "3" marks there the maximum brake moment with overexitation). A code number for design characteristics which are not directly part of the type-examination will be marked at the second, third and fourth blank (e. g. in the second blank: with flange plate, hand release; in the third blank: characteristics for electrical connection; in the fourth blank: with or without cover).

3.2 The permissible brake moments 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 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. E 079 09 000 000 2 61 dated 02 February 2005 with last modification dated 11 August 2006 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).

3.4 The EC type-examination certificate may only be used in connection with the pertinent Annex.