



Industrie Service

# Type examination certificate

about the safety technical assessment of a rope drive  
for lifts according to Directive 95/16/EC ("Lifts Directive"),

**Mehr Sicherheit.  
Mehr Wert.**

**Certificate number:** G 454/1

**Applicant/  
certificate holder:** Gustav Wolf Seil- und Drahtwerke GmbH & Co. KG  
Sundernstr. 40  
D-33332 Gütersloh

**Date of submission:** 2007-09-06

**Manufacturer:** Gustav Wolf Seil- und Drahtwerke GmbH & Co. KG  
Sundernstr. 40  
D-33332 Gütersloh

**Product, type:** Rope drive, for use as part of the machine  
for traction drive lifts  
of type PAWO F3 ( $d_{\text{Nenn}} = 6 \text{ mm}$ )

**Test laboratory:** TÜV SÜD Industrie Service GmbH  
Abteilung Aufzüge und Sicherheitsbauteile  
Gottlieb-Daimler-Str. 7, D-70794 Filderstadt

Date: 2007-10-08

Our signs:  
IS-FSA-STG/Be

Document:  
BS\_G454-1e.doc

**Basis of examination :** Directive 95/16/EC (June of 1995)  
EN 81-1:1998 +AC:1999 / DIN EN 81-1:2000-05  
EN 81-2:1998 +AC:1999 / DIN EN 81-2:2000-05  
Test report (a) and letter (b) of  
Universität Stuttgart, Institut für Fördertechnik und  
Logistik, Abteilung Seiltechnologie, Holzgartenstraße  
15B, 70174 Stuttgart  
dated (a) 2006-10-10 (page 1 up to 9) and dated (b)  
2007-08-22

The document consists of  
1 page  
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**Result:** The rope drive conforms to the essential safety re-  
quirements of Directive 95/16/EC (June of 1995)  
for the respective scope of application stated on the  
annex to this type examination certificate

**Validity:** 2012-10-09

Department  
Lifts and safety components

Peter Retzbach

The expert

Armin Becker





## 1 Scope of application

Traction drive lifts falling within the scope of validity of Directive 95/16/EC (Lifts Directive) or whose rope drive / drive are modernised according to EN 81-1:1998+AC:1999 number 12.2.1a).

## 2 Conditions

- 2.1 The requirements of Directive 95/16/CE ('Lifts Directive') concerning the deviations of the rope drive from the harmonised standard EN 81-1:1998, number 9 are guaranteed, if the steel wire rope PAWO F3 with the construction 6x19 S + IWRC sZ U,  $R_0 = 1960 \text{ N/mm}^2$ , with a nominal rope diameter  $d_{\text{Nenn}} = 6 \text{ mm}$ , minimum breaking load  $\geq 27,5 \text{ kN}$ , right-hand regular lay, is used and
- the rope safety is at least  $v = 14$ ,
  - the diameter of the traction sheave is at least  $D_T \geq 240 \text{ mm}$ ,
  - the pulley diameters are at least  $D_R \geq 240 \text{ mm}$ ,
  - the traction sheave is designed with a hardened groove made of steel or cast iron (V-groove with groove angle  $\gamma = 40^\circ$  up to  $55^\circ$ , a groove with undercut (undercut angle  $\varphi = 98^\circ$ ) or a semi-circular groove),
  - the diverter pulleys are designed with a semi-circular groove made of steel or cast iron (hardened or unhardened) or made of plastics and
  - the part of the rope with the strongest load at most overruns the traction sheave and two diverter pulleys
- 2.2 Determination when the ropes have to be discarded must be either (it depends which case occurs first)
- according to DIN 15 020
    - 19 broken wires within a length of  $30 \times d$
    - 10 broken wires within a length of  $6 \times d$
  - or according to definition of the rope manufacturer (of the wire-rope factory Gustav Wolf Seil- und Drahtwerke GmbH & Co. KG) with a diameter reduction of more than 6% related to the nominal rope diameter (see also number 3.1 of this report)
- 2.3 Rope traction of the suspension ropes must be calculated according to EN 81-1:1998+AC:1999, Annex M (informative) or equal.
- 2.4 The safety factor of the suspension ropes must be calculated according to EN 81-1:1998+AC:1999, Annex N.
- 2.5 The safety factor of the ropes must be at least  $v = 14$ .
- 2.6 The diameter of the traction sheave shall be at least  $D_T \geq 240 \text{ mm}$ .
- 2.7 The pulley diameter shall be at least  $D_R \geq 240 \text{ mm}$ .
- 2.8 The traction sheave is designed with a hardened groove made of steel or cast iron (V-groove with groove angle  $\gamma = 40^\circ$  up to  $55^\circ$ , a groove with undercut (undercut angle  $\varphi = 98^\circ$ ) or a semi-circular groove).
- 2.9 In the case of reversed bending, the distance from two points of contact of the rope on two consecutive stationary pulleys shall not be less than 200 times the rope diameter (1200 mm). (EN 81-1:1998+AC:1999, Annex N.2.2)





- 2.10 The part of the rope with the strongest load at most shall overrun the traction sheave and two diverter pulleys.
- 2.11 All additional requirements of EN 81-1:1998+AC:1999 regarding rope drives must be kept, e.g. like:
- junction of the rope termination (80% of the minimum breaking load)
  - distribution of load of suspension
  - protection for traction sheaves and pulleys (bracket for derailing of the driving rope, nip guards)
  - visual examination on the traction sheave is guaranteed

### 3 Notices

- 3.1 A criterion - divergent from the DIN 15020 - concerning discarding the rope, has been defined by the rope manufacturer. According to this, the rope is to be discarded with a diameter reduction of more than 6% related to the nominal rope diameter.
- 3.2 For juridical reasons this type examination certificate is not equivalent to an EC-type examination certificate according to annex V part A (EC-type examination for safety components according to annex IV) of the Directive 95/16/EC.  
The list of safety components (annex IV of Directive 95/16/EC) doesn't contain rope drives. For that reason no EC-type examination certificate according to annex V part A (EC-type examination for safety components) of the Directive 95/16/EC, can be issued for that.
- 3.3 If new discoveries should result, the test laboratory reserves the right, to give additional conditions concerning the use of the rope drive, or to modify existing conditions.
- 3.4 For the notified body, this test report can be enclosed with the required reading documents as a help for decision.
- 3.5 This type examination certificate no. G 454/1 only shall be used together with this annex and can be used until 2012-10-09.

### 4 Documents

The basis of certificate no. G 454/1 is the expert opinion no. G 454/1 dated 2007-10-08, of the department Lifts and safety components, reference IS-FSA-STG/Be.