

TYPE EXAMINATION CERTIFICATE FOR LIFTCOMPONENTS

Issued by Liftinstituut B.V.

Certificate no. : NL 10-400-1002-130-01 Revision no.: 6

Description of the product : Coated suspension rope for lifts

Trademark, type : Brugg CTP 8,1 G2

Name and address of the manufacturer : Brugg Drahtseil AG
Wydenstrasse 36
5242 Birr
Switzerland

Name and address of the certificate holder : Brugg Drahtseil AG
Wydenstrasse 36
5242 Birr
Switzerland

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

Certificate based on the following standards : Parts of: EN 81-1, EN 81-20, EN 81-50

Test laboratory : None

Date and number of the laboratory report : None


Date of type examination : December 2009 - July 2010 and September 2013, June 2014, November 2015

Additional document with this certificate : Report belonging to the type examination certificate no.: NL 10-400-1002-130-01 Rev. 6

Additional remark : None

Conclusion : The lift component meets the requirements referred to in this certificate taking into account any additional remarks mentioned above.

Date of issue : June 7, 2016
Valid until : June 7, 2021


ing. J.L. van Vliet
Managing Director


Certification decision by



Report type-examination

Report belonging to type-examination : NL 10-400-1002-130-01
certificate no.

Date of issue of original certificate : October 5, 2010

No., date of revision : 6, 07-06-2016

Concerns : lift component

Revision concerns : See Annex 2

Requirements : Lifts Directive 2014/33/EU
Parts of: EN 81-1, EN 81-20, EN 81-50

Project no. : P160185-01

1. General specifications

Name and address manufacturer : Brugg Drahtseil AG
Wydenstrasse 36
5242 Birr
Switzerland

Description of lift component : Coated suspension rope system

Type : Brugg CTP 8,1 G2

Laboratory : Brugg Drahtseil AG
Wydenstrasse 36
5242 Birr
Switzerland

Date / data of examination : August 2013 - September 2013, June 2014
November 2015

Examination performed by : A. van den Burg



2. Description lift component

The Brugg CTP 8,1 G2 is a high strength with black Polyurethane coated suspension rope intended to be used for lifts, the rope shall be applied in combination with a traction pulley with a semicircular traction groove.

The diameter of the metallic part of the rope is 6,2 mm, the outside diameter of the coating is 8,1 mm.

Main data of rope:

Rope diameter external/internal:	8,1/6,2 mm
Ropeconstruction:	6x19 Warrington + SES (IWRC), PU coated.
Minimum breaking load:	33,56 kN.
Specific mass:	0,179 kg/m.

Main data of traction pulley:

Effective pulley diameter:	≥ 120 mm (centre – centre of rope).
Groove shape:	semicircular radius 4,3 mm with a surfaceroughness of RA=1,6 µm (machined).
Groove opening angle:	$\gamma = 45^{\circ}$.
Groove material:	- C 45 - C 45 Hardened - 42CrMo4
Tollerances:	according ISO 2768-1 class m (middle)

Main data of deflection pulley(s):

Effective pulley diameter:	≥ 120 mm (centre – centre of rope).
Groove shape:	semicircular radius 4,3 mm.
Pulley material:	Steel, cast iron or suitable plastic material eg. PA or PU.

3. Examinations and tests

A description of the endurance and traction tests performed is given in the Test Report type-examination NL 10-400-1002-130-01 Rev. 4

4. Results

After the final examination, the technical file, the component and the installation and maintenance manual were found in accordance with the requirements.

Fatigue tests on a bending machine showed that the allowed number of bendings under maximum allowed tension did not lead to notable loss of strength.

The traction tests resulted in the requirements for the minimum and maximum allowed friction coefficient as stated in the chapter conditions of this report. As it is not well possible to visually inspect the rope for wear of the load carrying internal part, it is decided to demand a reliable counter that stops the lift after a pre determined number of trips.

The discard criterion of the rope is either clear visible damage to the coating of the rope, reaching the number of wires sticking through the coating as described in the Elevator Inspection Manual for CTP ropes or reaching of the allowable number of trips as described in the conditions of this report.

5. Conditions

On the type-examination certificate the following conditions apply:

- Applying a friction coefficient of $\mu = 0,3$, the availability of enough rope traction when the car loaded with 125 % of the nominal load is stationary at the bottom floor shall be calculated according EN 81-20 art. 5.5.3 a) or EN 81-1:1998+A3:2009 Annex M.
- Applying a friction coefficient of $\mu = 0,6$ it shall be checked by calculation according EN 81-20 art. 5.5.3 c) or EN 81-1:1998+A3:2009 Annex M that the car cannot be raised when the counterweight rests on the buffer while the machine is rotating in upward direction. As an alternative for this requirement, additional slack rope safety contacts according EN 81-20 art. 5.5.3 c) 2) may be applied.
- The safety factor of the suspension ropes shall be 12 at minimum (Minimum breaking load of rope divided by Maximum load in the rope ≥ 12).
- The rope and pulley shall be according the description of Chapter 2.
- For pulleys with diameter ≥ 160 mm, the maximum number of trips is 4.800.000 divided by the number of pulleys that the most often bended part of the rope passes.
- For pulleys with diameter ≥ 120 mm but smaller than 160 mm, the maximum number of trips is 2.400.000 divided by the number of pulleys that the most often bended part of the rope passes.
- The allowable fleetangle is $0,5^{\circ}$ (angle between groove of pulley and rope). For pulleys with diameter ≥ 160 mm, this angle may be increased to a maximum of $1,0^{\circ}$ in case the number of trips is limited to 2.400.000 divided by the number of pulleys that the most often bended part of the ropes passes.
- Reversed bends over pulleys at a fixed distance as defined in EN 81-50 art. 5.12.2.3 or EN 81-1:1998+A3:2009 Annex N.2.2 are not allowed.
- The lift shall be equipped with a counter that automatically stops the lift at floor level immediately after the maximum number of trips is reached, every change of travel direction is considered to be one trip (the counter shall keep the information at least for one month without external power and it shall be effectively protected against manipulation or resetting without replacing the

ropes). In order to prevent manipulation, it shall be possible to check the total number of trips the lift has made even after a reset of the counter that checks the rope life. Furthermore every change of ropes shall be reported in the lift maintenance book.

- Maximum allowable nominal rope speed 3,5 m/s.
- Before putting the lift into service, the traction shall be tested according EN 81-20 art. 6.3.3. or Annex D.2. h) of EN 81-1:1998+A3:2009.
- The installation and maintenance manual shall be delivered with the rope and shall be available at the lift where this suspension system is applied.
- Near the traction machine and/or on the carroof near to the ropes, there shall be a clear warning indicating that it is not allowed to lubricate the ropes.
- All other relevant rope and pulley related requirements of EN 81-20 or EN 81-1 shall be fulfilled:
 - The rope terminations shall resist 80% of the minimum breaking load.
 - The minimum number of suspension ropes is 2.
 - The load shall be equally distributed between the ropes.
- It is allowed to apply these ropes in a lift well with glass walls.

6. Conclusions

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

The type-examination certificate is only valid for products which are in conformity with the same specifications as the type certified product. The type-examination 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 type-examination certificate.

In any case the certificate holder shall request Liftinstituut B.V. for a review of the validity of the type examination certificate, taking into account the current product specifications, current requirements and current state of the art, every 5 years.

Prepared by:



A. van den Burg
Product Specialist Certification

Certification decision by:



Annexes

Annex 1 : Picture of part of one of the rope samples.



Annex 2 : Overview of revisions of certificate and report

REVISIONS OF CERTIFICATE AND REPORT, BELONGING TO THE CERTIFICATE

Rev.:	Date	Summary of revision
-	October 5, 2010	Original
1.0	June 28, 2011	Update for new black rope coating with lower maximum friction coefficient. Deflection pulley of cast iron or suitable plastic material eg. PA or PU allowed. Rope discard criteria described more clear. Requirements for traction calculation defined more strict. Reversed bends explicitly excluded at this moment. Application in well with glass walls explicitly allowed.
2	February 5, 2013	Layout update, productname changed from SDR to CTP.
3	October 8, 2013	Allowable pulley diameter reduced to 120 mm for a maximum of 2,4 million bendings. Coating surface roughness changed and name of product changed into CTP 8,1 G2. Allowable ropespeed changed to 3,5 m/s. Picture of Annex 1 updated. Several minor textual changes.
4	June 27, 2014	CTP discard criterion updated.
5	November 30, 2015	Update to EN 81-20 and pulley materials C45 Hardened and 24CrMo4 added.
6	June 7, 2016	Update to 2014/33/EU and EN 81-1, EN 81-20, EN 81-50