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# TYPE EXAMINATION CERTIFICATE FOR LIFTCOMPONENTS


Issued by Liftinstituut B.V.

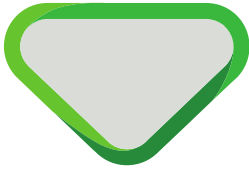
Certificate no. : NL15-400-1002-130-03      Revision no.: 2  
Description of the product : Coated suspension rope for lifts  
Trademark : Brugg Lifting AG  
Type no. : Brugg CTP 6.5 mm G2  
Name and address of the manufacturer : Brugg Lifting  
Wydenstrasse 36  
5242 Birr  
Switzerland  
Name and address of the certificate holder : Brugg Lifting  
Wydenstrasse 36  
5242 Birr  
Switzerland  
Certificate issued on the following requirements : Not applicable  
Certificate based on the following standard : Parts of: EN 81-1 and EN 81-20, EN 81-50  
Test laboratory : None  
Date and number of the laboratory report : None  
Date of type examination : May 2015 – October 2015, September 2021  
Additional document with this certificate : Report belonging to the type examination certificate no.: NL15-400-1002-130-03 Rev.2  
Additional remarks : This revision replaces certificate NL15-400-1002-130-03 rev.1 of 07-06-2016  
Conclusion : The lift component meets the requirements referred to in this certificate taking into account any additional remarks mentioned above.

Amsterdam

Date : 06-10-2021  
Valid until : 06-10-2026

  
ing A.J. van Ommen  
International Business  
Manager

  
Certification decision by



## Report type-examination

Report belonging to type-examination certificate number : NL15-400-1002-130-03  
Date of issue of original certificate : October 12, 2015  
Certificate applies to : Component  
Revision number / date : 02 /06-10-2021  
Requirements : Parts of: EN 81-20 :2020, EN 81-50 :2020  
Project number : P210071, P160185-01

### 1. General specifications

Description of the product : Coated suspension rope system  
Trademark : Brugg Lifting AG  
Type no. : Brugg CTP 6.5 G2  
Name and address of the manufacturer : Brugg Lifting AG  
Wydenstrasse 36  
5242 Birr  
Switzerland  
  
Laboratory : Brugg Lifting AG  
Wydenstrasse 36  
5242 Birr  
Switzerland  
  
Address of examined Component : Brugg Lifting AG  
Wydenstrasse 36  
5242 Birr  
Switzerland  
  
Date / Data of examination : May 2015- October 2015, September 2021  
Examination performed by : A. van den Burg



## 2. Description component

The Brugg CTP 6.5 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 semi-circular traction groove.

The surface of the rope is slightly rough.

The diameter of the metallic part of the rope is 4.9 mm, the outside diameter of the coating is 6.5 mm.

Main data of rope:

Rope diameter external/internal:	6.5/4.9 mm
Rope construction:	6x19 Seale + SES (IWRC), PU coated.
Minimum breaking load:	23.6 kN.
Specific mass:	0.11 kg/m

Main data of traction pulley

Effective pulley diameter	≥ 115 mm (centre – centre of rope).
Groove shape	semi-circular radius 3.4 – 3.65 mm with a surface roughness of RA=1,6 µm (machined).

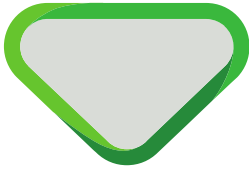
Groove opening angle	$\gamma = 45^{\circ}$ .
Groove material	<ul style="list-style-type: none"><li>- C 45</li><li>- C 45 Hardened</li><li>- 42CrMo4</li></ul>
Tollerances:	according ISO 2768-1 class m (middle)

Main data of deflection pulley(s)

Effective pulley diameter	≥ 115 mm (centre – centre of rope).
Groove shape	semi-circular radius 3.4 – 3.65 mm
Groove opening angle	$\gamma = 30^{\circ} - 45^{\circ}$
Pulley material	Steel, cast iron or suitable plastic material e.g. 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 15-400-1002-130-03 Rev. -



## 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 protruding wires through the coating as described in the Technical documentation 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).
- Applying a friction coefficient of  $\mu = 0.6$  it shall be checked by calculation according EN 81-20 art. 5.5.3 c) that it shall not be possible to raise the empty car or counterweight to a dangerous position if either the car or counterweight is stalled. 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  $\geq 12$ ).
- The rope and pulley shall be according the description of Chapter 2.
- The minimum diameter of the pulleys is 115 mm.
- The maximum number of trips is 3.000.000 divided by the number of pulleys that the most often bended part of the rope passes.
- The allowable fleet angle is  $0.5^\circ$  (angle between groove of pulley and rope).
- Reversed bends over pulleys mounted at a fixed distance as defined in EN 81-50 art. 5.12.2.3 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



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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 to EN 81-20 art. 6.3.3.
- 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 car roof 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 shall be fulfilled:
  - The rope terminations shall resist 80% of the minimum breaking load.
  - The minimum number of suspension ropes is 2.
  - An automatic device shall be provided for equalizing the tension of suspension ropes according to EN 81-20 art.5.5.5.
  - 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.

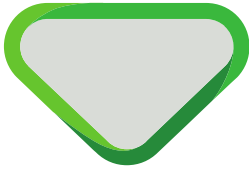
The type-examination certificate is only valid for products which are in conformity with the same specifications as the type certified product. The type-examination certificate is issued based on the requirements that are valid at the date of issue. In case of changes of the product specifications, changes 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  
Liftinstituut B.V.

Certification decision by:



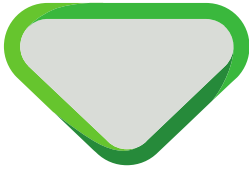
## Annexes

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



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

Title	Document number	Date
Brugg Lifting Data sheet of CTP6.5	ABV 10982_02 CTP G2 6,5	01.10.2021
Brugg lifting elevator ropes general catalogue	Brugg lifting 2020	2020
Datenzusammenfassung CTP_ 6.5 G2 (2021)	10982	029-10-2021
Elevator Inspection Manual for CTP® ropes	Birr, 02.11.2015	04-11-2015



**Annex 3. Reviewed deviations from the standards**

EN 81-20 par.	Requirement	Accepted design
5.5.1.2 a	The nominal diameter of the ropes shall be at least 8 mm	See chapter 2
5.5.2.1	The ratio between the pitch diameter of sheaves, pulleys or drums and the nominal diameter of the suspension ropes shall be at least 40	$D/d \geq 23.47$ (see chapter 2)

**Annex 4 Revision of the certificate and its report**

Rev.:	Date	Summary of revision
-	October 12, 2015	Original
1	June 7, 2016	Update to 2014/33/EU and EN 81-1, EN 81-20, EN 81-50
2	06-10-2021	Certification renewal, minor textual changes, name of manufacturer updated.