



liftinstituut
SINCE 1933

TYPE EXAMINATION CERTIFICATE FOR LIFTCOMPONENTS

Issued by Liftinstituut B.V.

Certificate no. : NL 12-400-1002-166-01 Revision no.: 6

Description of the product : Lift suspension means

Trademark : Conti® Polyrope

Type no. : Conti® Polyrope 25-6x2.0 ; Conti® Polyrope 25-6x2.0 DP
Conti® Polyrope 33-8x2.0 ; Conti® Polyrope 33-8x2.0 DP
Conti® Polyrope 50-12x2.0 ; Conti® Polyrope 50-12x2.0 DP

Name and address of the manufacturer : ContiTech Power Transmission Group
Continentalstrasse 1
29451, Dannenberg
Germany

Name and address of the certificate holder : ContiTech Power Transmission Group
Philipsbornstrasse 1
30165, Hannover
Germany

Certificate issued on the following requirements : Lift directive 2014/33/EU annex I

Certificate based on the following standard : Parts of: EN 81-20:2020 and EN 81-50:2020

Test laboratory : None

Date and number of the laboratory report : None

Date of type examination : February 2022

Additional document with this certificate : Report belonging to the type examination certificate
no.: NL 12-400-1002-166-01 Rev. 6


Additional remarks : This revision replaces certificate NL 12-400-1002-166-01 Rev. 5
of 20-02-2017

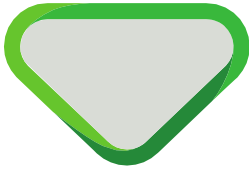
Conclusion : The product meets the requirements / standards referred to in
this certificate taking into account any additional remarks
mentioned above.

Amsterdam

Date : 25-02-2022
Valid until : 25-02-2027


ing A.J. van Ommen
International Business
Manager


Certification decision by



Report type-examination

Report belonging to type-examination : NL12-400-1002-166-01
certificate number

Date of issue of original certificate : September 4, 2012

Certificate applies to : Lift Component

Revision number / date : 6 / 25-02-2022

Requirements : Lifts Directive 2014/33/EU Annex 1
Standard(s): EN 81-20:2020
under exclusion of articles see Annex 3

Project number : P210436

1. General specifications

Description of the product : Lift suspension means

Trademark : Conti Polyrope

Type no. : Conti Polyrope 25-6x2.0 (DP)
Conti Polyrope 33-8x2.0 (DP)
Conti Polyrope 50-12x2.0 (DP)

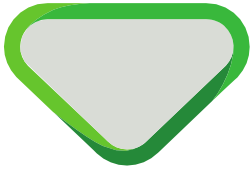
Name and address of the manufacturer : ContiTech Power Transmission Group
Continentalstrasse 1
29451, Dannenberg
Germany

Laboratory : None

Address of examination : ContiTech Power Transmission Group
Continentalstrasse 1
29451, Dannenberg
Germany

Date / Data of examination : February 2022

Examination performed by : A. van den Burg



2. Description lift component

The Conti Polyrope is a composite high strength Polyurethane coated suspension rope intended to be used as suspension means for lifts.

The Polyrope is composed of either 6 metallic ropes for 25 mm width, 8 metallic ropes for 33 mm width or 12 metallic ropes in case of 50 mm width, embedded in black Polyurethane.

The diameter of the metallic ropes, construction type 7x7, is 2,0 mm.

There are two variants, one with a flat backside and one variant with a grooved back side indicated with "DP" which stands for Double Profile (see Annex 1).

Both variants can be delivered in 25 mm width, 33 mm width and in 50 mm width.

The Polyrope shall be applied in combination with a dedicated traction pulley with semicircular grooves.

The variant with flat backside can be used on a traction pulley with a minimum diameter of 85 mm and diverting pulleys of at least 100 mm.

The DP variant can be used on a traction pulley and diverting pulleys with a minimum diameter of 100 mm.

For Polyrope with flat backside, diverting pulleys may have either the same grooves as the traction sheave in case of twisted application, or a convex shape (crowned) for alignment and a rim to protect against extreme sideward movements, in case the flat side is used as running surface.

The crowning radius is 500 mm for Polyrope width 25 mm, 650 mm for Polyrope width 33 mm and 900 mm for Polyrope width 50 mm.

For Polyrope with double profile, diverting pulleys may have either the same grooves as the traction sheave, or a grooved shape to keep the polyrope aligned, depending on the side of the Polyrope that runs over the sheave (twisted application not allowed).

The minimum breaking load (after running in for approx. 0,1 % of lifetime) is:

30 kN for Conti Polyrope 25-6x2.0 and Conti Polyrope 25-6x2.0 DP.

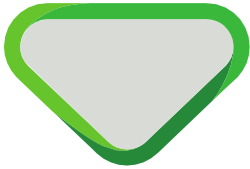
40 kN for Conti Polyrope 33-8x2.0 and Conti Polyrope 33-8x2.0 DP

60 kN for Conti Polyrope 50-12x2.0 and Conti Polyrope 50-12x2.0 DP.

The material to be used for the traction pulley is steel, preferably 42CrMo4 or equivalent and preferably hardened to 55-62 HRC or hard surface coating like Cr or Ni coating, the recommended groove surface roughness is $R_a \leq 3,2 \mu\text{m}$.

The material to be used for the diverting pulleys is steel or PA preferably with low friction properties, the recommended groove surface roughness is $R_a \leq 5 \mu\text{m}$.

Other relevant data of the Polyrope and pulleys is given in Annex 1.



3. Examinations and tests

A description of the endurance and traction tests performed is given in the Test Report type-examination NL 12-400-1002-166-01 Rev. 1.

4. Results

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

Fatigue tests on a bending machine showed that the specified number of cycles of bending and reversed bending 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.

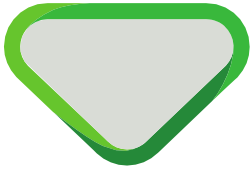
As it is not well possible to visually inspect the Polyrope for wear of the load carrying internal part, it is decided to demand a reliable counter that stops the lift before significant wear or strength reduction occurs.

The discard criterion of the Polyrope is either clear visible damage to the coating, wires sticking through the coating, reaching of the allowable number of trips as described in the conditions of this report or reaching the application time limit of 15 years.

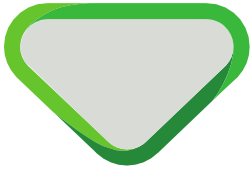
5. Conditions

Additional to or in deviation of the applicable demands in the considered requirements / standards (see certificate and/or page 1 of this report), the following conditions shall be taken into account:

- Applying a friction coefficient of $\mu = 0,25$, 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 81-50:2014 Art. 5.11.
For the calculation “ μ ” can be taken equal to “f”.
- Applying a friction coefficient of $\mu = 0,5$ it shall be checked by calculation according EN 81-50:2014 Art. 5.11 that the car cannot be raised when the counterweight rests on the buffer while the machine is rotating in upward direction. For the calculation “ μ ” can be taken equal to “f”.
As an alternative, it is allowed to apply slack Polyrope detection safety contacts opening the safety circuit of the lift to prevent the lifting of the empty car or counterweight if either the car or counterweight is stalled.
- Before the lift is put into service, the tests as described in EN 81-20:2014 Art. 6.3.3 shall be performed.



- 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 lift shall be suspended by at least 2 Polyropes.
- Also in case the lift is suspended by 2 Polyropes, it is accepted that the minimum safety factor is 12 (this could be considered a deviation from EN 81-20 art. 5.5.2.2).
- The Polyrope and pulley shall be according the descriptions of Chapter 2.
- The Polyropes shall be replaced after a servicetime of 15 years at maximum.
- The maximum allowed number of trips is depending on the number and type of pulleys that is passed by the most often bended part of the Polyrope.
Allowed number of trips until replacement of the Polyropes:
 - 4.000.000 for lifts with 2 simple bends and 1 reversed bend.
 - 6.000.000 for lifts with 1 simple and 1 reversed bend (or 2 simple bends).
 - 12.000.000 for lifts with 1 simple bend only
- The lift shall be equipped with a counter that automatically stops the lift at floor level directly 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 Polyropes). 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 Polyrope life. Furthermore every change of the Polyropes shall be reported in the lift maintenance book.
- For additional safety and prolonged correct levelling and positioning of the lift, the lift shall be provided with a relevelling system and a system in the lift controller that detects extreme slip of the suspension system during the trip.
- The allowable fleet angle is $0,5^\circ$ at maximum for both traction pulleys and diverting pulleys (angle between groove of pulley or normal to pulley axis and Polyrope).
- Twisting of the Polyrope for a maximum of 180° is allowed provided the distance between the pulleys is at least 600 mm in case of Polyrope with 25 mm width, at least 800 mm in case of Polyrope with 33 mm width and at least 1200 mm in case of Polyrope with 50 mm width.
- The maximum difference in angle of wrap between the Polyropes that run on one pulley is $5,0^\circ$.
- Maximum allowable Polyrope speed is 4,0 m/s. Higher speeds may be allowed but only after careful verification in practice has taken place.
- The installation and maintenance manual shall be delivered with the Polyrope 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 Polyropes, there shall be a clear warning indicating that it is not allowed to lubricate the ropes.
- The end connections of the Polyrope shall be self tightening wedge type sockets, they shall be made of metallic material and shall resist 80% of the minimum



breaking load of the Polyrope, the angle of the housing and wedge shall be equal and in between 20° and 25°. Other types of end connectors are allowed only after a written declaration is received that will function as an extension to this certificate.

- All other relevant rope and pulley related requirements of EN 81-20:2014 shall be fulfilled, the most important are:
 - The minimum number of Polyropes is 2.
 - The load shall be equally distributed between the Polyropes.
 - In case the lift is suspended by 2 Polyropes, in accordance with EN 81-20:2014 art. 5.5.5.3, an electric safety device in conformity with Art. 5.11.2 shall stop the lift in case of abnormal relative extension of one Polyrope.
- The Polyrope shall be applied in a weather protected environment, it is allowed to apply the Polyropes in a lift well with glass walls provided the glass protects against Ultra violet radiation (UV protection ≥ 98%).
- The application temperature shall be in between -10 °C and +60 °C.

6. Conclusions

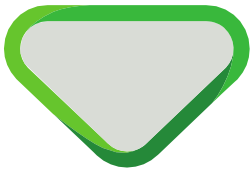
Based upon the results of the type-examination Liftinstituut B.V. issues a type-examination certificate.

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.

Prepared by:

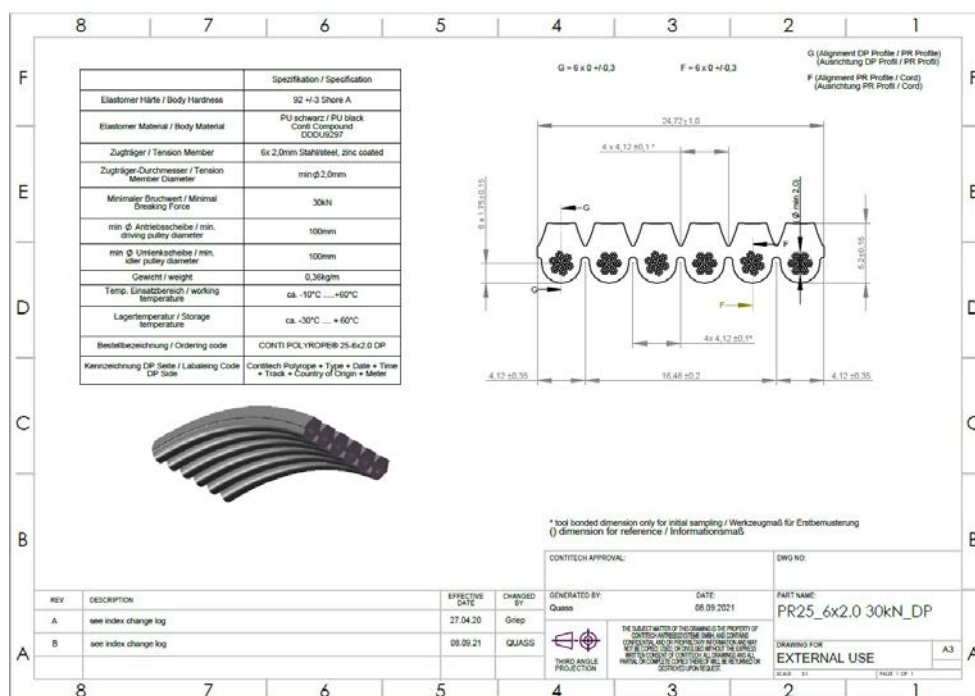
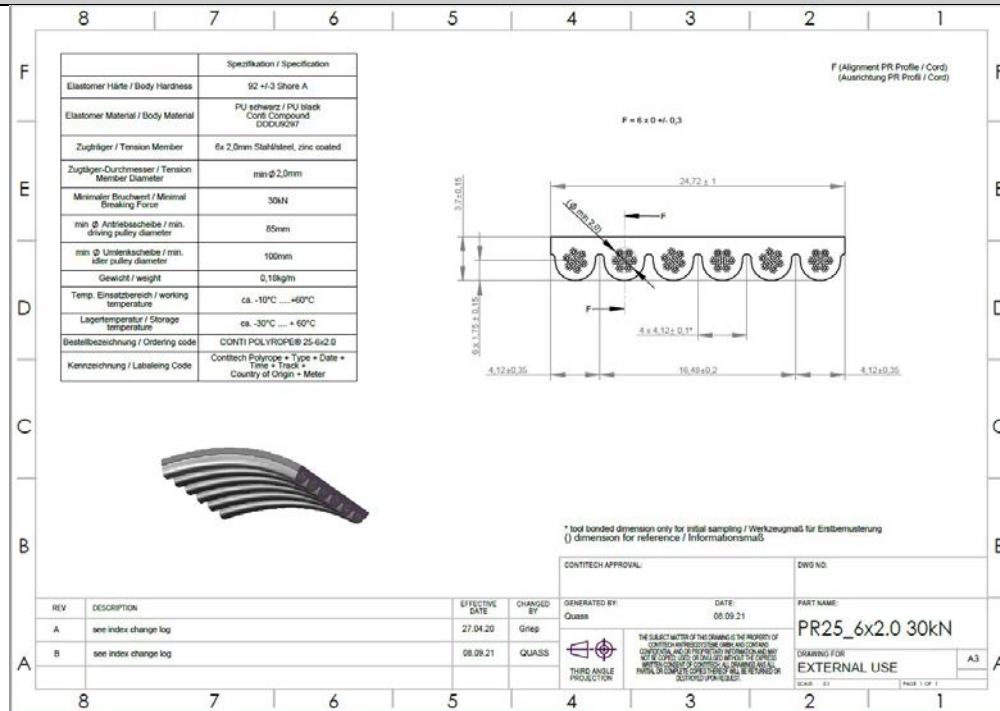
A. van den Burg
Product specialist Certification

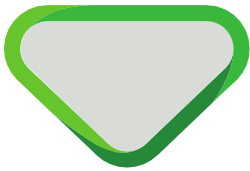
Certification decision by:



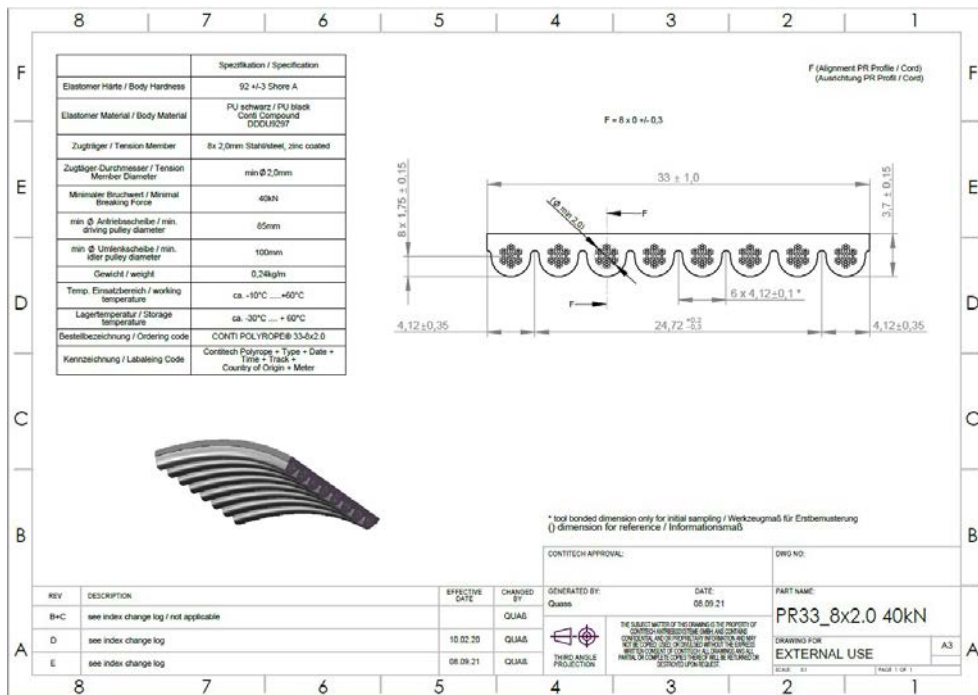
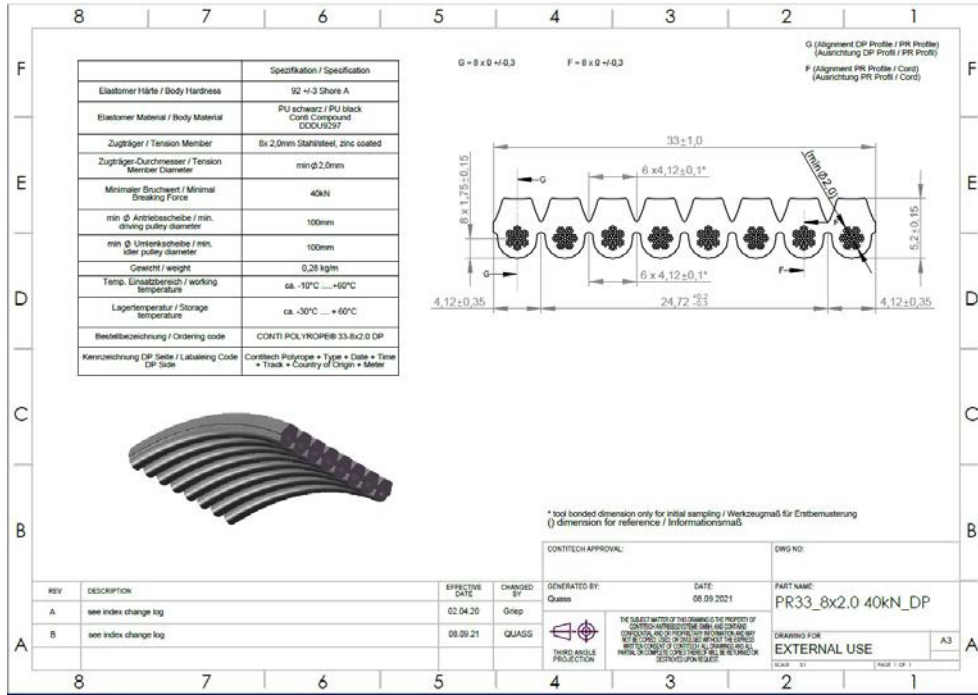
Annexes

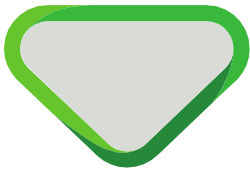
Annex 1 : Drawings of the Polyrope 25 mm, 33 mm and 50 mm wide and geometry of traction sheave.



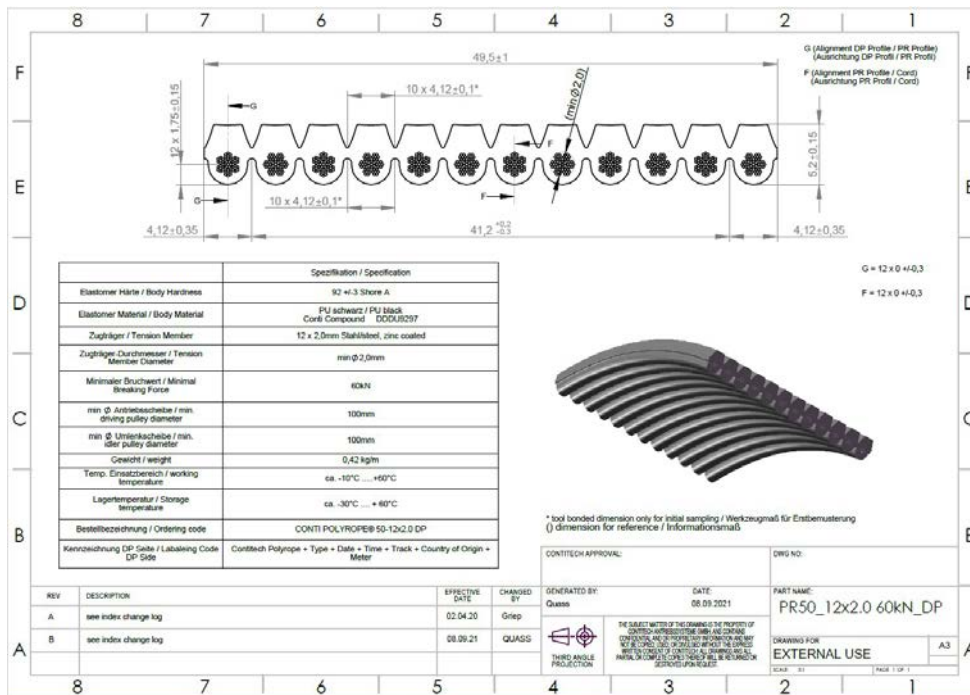
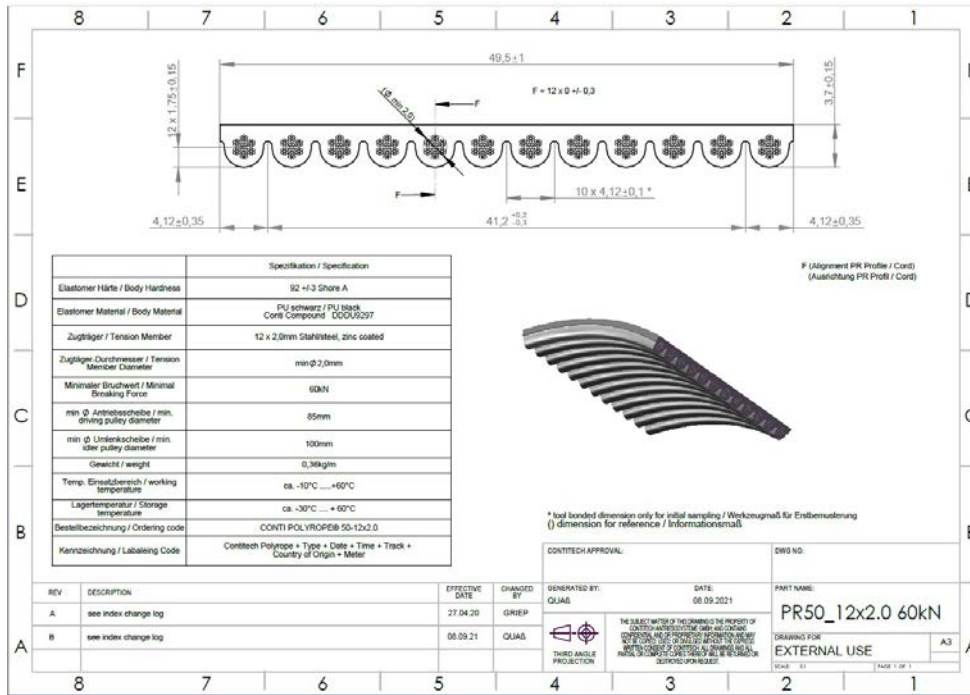


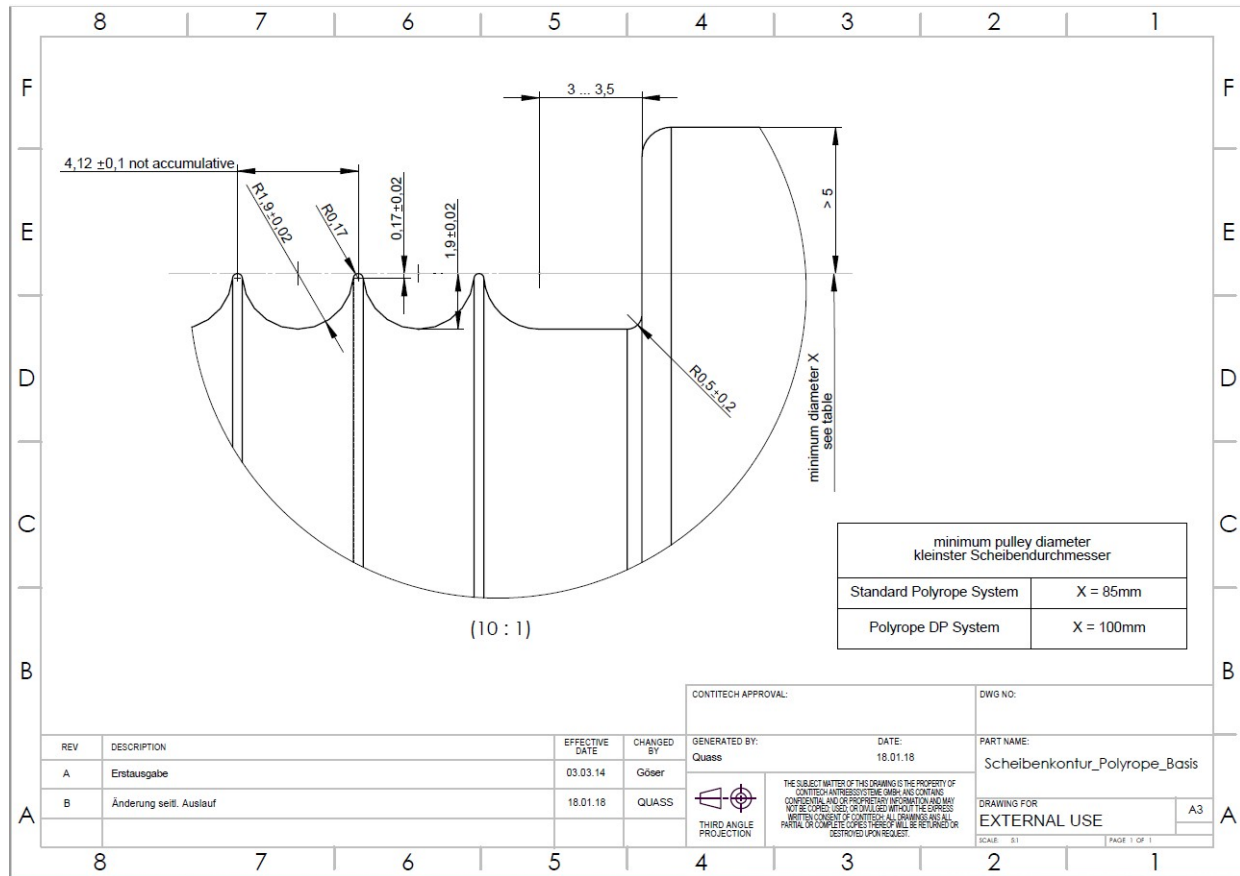
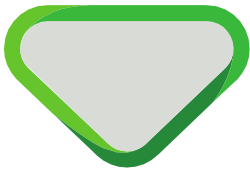
liftinstituut
SINCE 1933





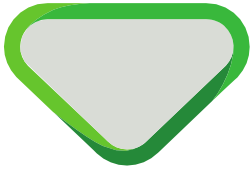
liftinstituut
SINCE 1933





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

Title	Document number	Date
Baumusterprüfung tragmittel Typ:Conti ® POLYROPE	21-08-12	21-08-12
Drawing Conti Polyrope DP	Rückenrippen stand 05.06.13.dwg	14-06-2013
Scheibenkontur_Polyrope_Basis	Rev. B, Änderung seitl. Auslauf	18-01-2018
Lifetime tests	for cert. ext. Polyrope	4-04-2014
Polyrope+Polyrope DP Summary pulleys	State 04.2014 page 1-9	3-03-2014



Annex 3. Reviewed deviations from the standards

EN 81-20 par.	Requirement	Accepted design
5.5.1.2 a)	Diameter of rope ≥ 8 mm	See Chapter 2 / Annex 1
5.5.1.2 b)	Construction according EN 12385-5	See Chapter 2 / Annex 1

Annex 4 Revision of the certificate and its report

Rev.:	Date	Summary of revision
-	September 4, 2012	Original
1	March 21, 2013	Groove surface requirements corrected. Several minor textual and editorial corrections.
2	May 26, 2014	Minimum traction sheave diameter for Conti Polyrope 25-6x2.0 reduced to 85 mm. Conti Polyrope 25-6x2.0 DP, Conti Polyrope 50-12x2.0 and Conti Polyrope 50-12x2.0 DP and their respective pulleys and application conditions added to the certificate. Optional slack Polyrope contact added to conditions. Higher Polyrope and lift speeds allowed under conditions.
3	November 23, 2015	Conti Polyrope 33-8x2.0 (DP) added
4	November 30, 2015	November 2015 added to date of type examination.
5	February 20, 2017	Update of certificate and report template Update to 2014/33/EU, EN 81-20:2014, EN 81-50:2014
6	Februari 25, 2022	Recertification after 5 years. Update to EN 81-20:2020, EN 81-50:2020 Drawings Annex 1 of polyrope and traction sheave updated Annex 2 updated.