



Industrie Service

CONFORMITY EXAMINATION CERTIFICATE

Certificate No.:	CA 563/1
Certification Body:	TÜV SÜD Industrie Service GmbH Gottlieb-Daimler-Str. 7 70794 Filderstadt - Germany
Certificate Holder:	Draka EHC 2151 North Church Street Rocky Mount, NC 27804 - USA
Manufacturer	Bekaert Advanced Cords Aalter NV Léon Bekaertlaan 5 9880 Aalter - Belgium
Product:	Rope drive with a rope with plastic coating (TPU) for use as part of the drive for traction drive lifts
Type:	Draka CSR (Coated Steel Rope) (7X7+7X19 W) (d _{Nom} = 6.5 mm)
Directive:	2014/33/EU (February 2014)
Reference Standards:	- EN 81-20:2020 - EN 81-50:2020
Test report:	CA 561-1_563-1 dated 2022-06-30
Outcome:	The product conforms to the essential health and safety requirements of the mentioned Directive if the requirements of the annex to this conformity examination certificate are kept.
Date of Issue:	2022-07-29
Valid until:	2027-07-28

Achim Janocha
Certification Body LCC



**Annex to the conformity examination certificate
No. CA 563/1 dated 2022-07-29**



1 Scope of application

1.1 Rope drive with a rope with plastic coating (TPU) for use as part of the drive for traction drive lifts

Type: **Draka CSR (Coated Steel Rope) (7X7+7X19 W)**
Nominal rope diameter: **6.5 mm**

1.2 Technical data

Nominal diameter d_{Nom} including plastic coating (TPU)	6.5 mm
Diameter inner steel rope d_{St}	5 mm
Rope construction	7x7+7x19 W sZ
Lay and direction	right-hand regular lay
Nominal wire strength R_0	> 1770 N/mm ²
Minimum breaking load F_{min}	28 kN

Table 1: Technical data

1.3 The rope drive with a rope with plastic coating of type Draka CSR (Coated Steel Rope) (7X7+7X19 W) ($d_{Nom} = 6.5$ mm) shall be used in lifts according to the following definitions:

Draka CSR 7X7+7X19 W ($d_{Nom} = 6.5$ mm)				
Suspension	1:1	1:1	2:1	2:1
With additional pulley	no	yes	no	yes
Maximum number of trips	3.0 million	1.5 million	1.0 million	0.75 million
Numbers of bends of the rope part with highest levels of wear	1	2	3	4

Table 2: Definitions for use

2 Conditions of application

2.1 The requirements of Directive 2014/33/EU ('Lifts Directive') concerning the deviations of the rope drive from the harmonised standard EN 81-20:2020 (D), number 5.5 are guaranteed, if the steel wire rope of type Draka CSR (Coated Steel Rope) with the construction 7x7+7x19 W sZ with the parameters: $R_0 > 1770$ N/mm², minimum breaking load $F_{min} = 28$ KN, with a nominal rope diameter $d_{Nom} = 6.5$ mm, right-hand regular lay, is used and

- the rope safety shall be at least $v = 12$,
- the ropes shall only be used in completely closed lift wells,
- lubrication of the ropes is not allowed,
- the ropes shall not be exposed to open fire or sparks (attention at the mounting works of the ropes),
- the junction of the rope termination shall be installed without major lateral deflection and
- no reversed bending is applied on the rope.

**Annex to the conformity examination certificate
No. CA 563/1 dated 2022-07-29**



Industrie Service

2.2 Decision for rope discard

The ropes have to be discarded after reaching a determined value of time or trips as shown in table 3 (it depends which case occurs first) OR when one of the other discard criteria described below occurs.

Every change of direction shall be counted as one complete trip by the automatic counter device.

Discard criterion Draka CSR (Coated Steel Rope) (7X7+7X19 W) (d_{Nom} = 6.5 mm)				
Suspension	1:1	1:1	2:1	2:1
With additional pulley	no	yes	no	yes
Maximum number of trips	3.0 million	1.5 million	1.0 million	0.75 million
Maximum number of years till replacement of the ropes	10 Years	10 Years	10 Years	10 Years

Table 3: Discard criterion

In addition, according to the manufacturer, the ropes must be regularly inspected over the whole length and discarded:

- in case of positional displacement of the steel rope inside the plastic coating,
- in case of recognizable ingress of moisture into the plastic coating,
- in case of deformation of the plastic coating (e.g. blistering, crease, necking),
- in case of deformation of the plastic coating caused by persistent torsions of the ropes,
- in case of coating cracks clearly visible at straight rope sections under tension that extend to the inner steel rope with a number greater than 3 over a length of 10 cm
- in case of plastic coating damage with large separations of a length greater than 1.5 cm
- in case of escaping steel wire throughout the plastic coating with a number greater than 3 over a length of 100 cm and
- in case of wire rope strand breakage

2.3 The discard criteria described in Section 2.2 through cracks in the plastic coating shall be applied only when caused by wear. In case of cracks in the plastic coating caused during installation of the ropes or added from external damage (e.g. installation and maintenance), the Draka CSR (Coated Steel Rope) (7X7+7X19 W) ropes must be replaced immediately.

2.4 The rope traction of the suspension ropes must be calculated according to EN 81-50:2020 (D), number 5.11.2 or in an equivalent manner.

The manufacturer has specified experimentally the friction factor f for the calculation of the traction capability according to EN 81-50:2020 (D), number 5.11.2.

The following friction factor shall be applied for the calculation according to EN 81-50:2020 (D), number 5.11.2:

Car loading condition: $f = 0.25$

Car stalled condition: $f = 0.75$

Emergency braking condition: $f = 0.25$

2.5 The diameter of the traction sheave shall be $D_T \geq 120$ mm.

2.6 The traction sheave shall be designed with a hardened or unhardened semi-circular groove made of steel or cast iron (opening-angle $30^\circ \leq \gamma \leq 60^\circ$, radius $3.30 \text{ mm} \leq r \leq 3.6 \text{ mm}$).

2.7 The pulley diameter shall be $D_R \geq 120$ mm.

2.8 The pulley shall be designed with a semi-circular groove (opening-angle $30^\circ \leq \gamma \leq 60^\circ$, radius $3.30 \text{ mm} \leq r \leq 3.6 \text{ mm}$).

2.9 During examinations and tests before putting the lifts into service or during periodic examinations, the traction capability must be according to EN 81-20:2020 (D), number 6.3 and annex C.

2.10 The car shall be maintained at floor level without slip when loaded to 125 % of rated load according to EN 81-20:2020 (D).

**Annex to the conformity examination certificate
No. CA 563/1 dated 2022-07-29**



Industrie Service

- 2.11 It shall be ensured that any emergency braking causes the car, whether empty or with rated load, to decelerate with a value not exceeding the setting of the buffer, including reduced stroke buffer.
- 2.12 It shall not be possible to raise the empty car when the counterweight is resting on the buffers, and the lift machine is rotating in the “up” direction.
- 2.13 There shall be a use and maintenance manual with description regarding the detection of the discard criterion.
- 2.14 The lateral deflection angle of the ropes shall not exceed 0.5°.
- 2.15 All further requirements of EN 81-20:2020 (D) referring to rope drives must be met, e.g. like:
 - junction of the rope termination (80% of the minimum breaking load)
 - distribution of load of suspension
 - protections at traction sheaves and pulleys (bracket against derailing of the rope, nip guards)
 - visual examination on the traction sheave is guaranteed
- 2.16 Due to the determined maximum permissible trip number, the lifts must be equipped with a safety counter (e.g. safe from power cuts and non-resettable electrical counter). In case of reaching the determined maximum permissible trip number the elevator control system shall stop the lift safely at floor level and automatically shut down the lift system.
- 2.17 Cleaning of the ropes is only allowed by qualified personnel and shall be done according the methods recommended by the manufacturer (see elevator ropes user manual).

3 Remarks

- 3.1 The test results relate only to the test object and the associated examination of conformity.
- 3.2 The application area of the rope drive of type Draka CSR (Coated Steel Rope) (7X7+7X19 W) ($d_{Nom} = 6.5$ mm) is limited to the examined system configurations according the certificate no. CA 563/1. For an extension of the operating range further examinations with the deviating rope configurations shall be performed.
- 3.3 A criterion - divergent from the DIN 15020-1 - concerning discarding the rope, has been defined by the rope manufacturer.
- 3.4 When using the rope drive in fire fighter lifts according to EN 81-72, the requirements of EN 81-72 must be observed. If necessary, additional tests are required to meet these requirements.
- 3.5 If new knowledge should occur, the notified body reserves the right to give additional conditions concerning the use of the rope drive, or to modify existing conditions.
- 3.6 The certificate concerning the examination of conformity may be used only in connection with the pertinent Annex and the list of authorized manufacturers (see enclosure of the certificate). This enclosure will possibly be updated as specified by the certificate holder and issued with a new stand.
- 3.7 The certificate no. CA 563/1 can be added to the required reading technical dossier as a help for decision of the notified body.
- 3.8 The product shall be clearly labelled with the name of the manufacturer and the type specification, to be able to check the conformity of the examined product with the series production.
- 3.9 In order to avoid reversed bending of the ropes, the twisting of the ropes shall be prevented during installation. A description regarding the correct laying of the ropes as well as an indication of possible risks through diagonal pull shall be enclosed in form of an assembly instruction.
- 3.10 Every change of direction shall be counted as one complete trip by the automatic counter device.
- 3.11 The examination of the rope termination was not part of this examination of conformity. The rope termination must be designed according to the state of the art (e.g. meet the requirements of EN 13411-6, EN 13411-7 or EN 13411-8).
- 3.12 The manufacturer has created an instructions manual to detect the criteria for rope discard of the rope drive of type Draka CSR (Coated Steel Rope) (7X7+7X19 W) ($d_{Nom} = 6.5$ mm) (see document to detect the criteria for rope discard dated 2022-06-23 (2 pages)).

**Enclosure to the conformity examination certificate
No. CA 563/1 dated 2022-07-29**



Industrie Service

Authorised Manufacturer of Serial Production – Production Sites (valid from: 2022-06-22):

Company Bekaert Advanced Cords Aalter NV
Address Léon Bekaertlaan 5
9880 Aalter - Belgium

- END OF DOCUMENT -