LIFTINSTITUUT

TYPE EXAMINATION CERTIFICATE

FOR LIFTCOMPONENTS

Issued by Liftinstituut B.V.

Certificate no.	: NL19-400-1002-313-01	Revision no.: -
Description of the product	: Suspension rope for lifts	
Trademark, type	: 8 x 19 (W) IWRC Diameter 6,5 mm and 6,0 mm	
Name and address of the manufacturer	: Young Heung Iron & Steel Co., Ltd 193, Gongdan-ro, Seongsan-Gu ChangWon City, Gyungnam, Korea and Dae Heung Industrial Co., Ltd 731, Hamui-ro, Daesan-Myeon, Haman-Gun Gyeongnam, 52013, Korea.	
Name and address of the certificate holder	: HOGER ELEVATOR COMPONENTS GRAVIT MAKİNE SANAYİ VE TİCARET A.Ş. ATAŞEHİR FERHATPAŞA M.FEVZİ ÇAKMAK CAD. 33. SOKAK NO.15 34888 İSTANBUL TURKEY	
Certificate issued on the following requirements	: Lifts Directive 2014/33/EU	
Certificate based on the following standard	: EN 12385-5 Parts of :EN 81-20:2014	
Test laboratory	: None	
Date and number of the laboratory report	: None	
Date of type examination	: November 2018 – March 2019	
Additional document with this certificate	: Report belonging to the type examination certificate no.: NL19-400-1002-213-01 Rev.0	
Additional remarks	: None	
Conclusion	: The lift component meets the requirements referred to in this certificate taking into account any additional remarks mentioned above	

Amsterdam

Date : 21-03-2019
Valid until : 21-03-2024

ing. P.J. Peeters
Manager

Certification decision by

Report type-examination

Report belonging to type-examination certificate number	:	NL19-400-1002-313-01
Date of issue of original certificate	:	21-03-2019
Product description	:	Lift Component
Revision number / date	:	- / -
Requirements	:	Lifts Directive 2014/33/EU Standard(s): EN 12385-5 and EN 81-20:2014 under exclusion of art. 5.5.1.2.a) and art. 5.5.2.1
Project number	:	P180343

1. General specifications

Name and address manufacturer	:	Young Heung Iron & Steel Co., Ltd 193, Gongdan-ro, Seongsan-Gu ChangWon City, Gyungnam, Korea and Dae Heung Industrial Co., Ltd 731, Hamui-ro, Daesan-Myeon, Haman-Gun, Gyeongnam, 52013, Korea.
Description of component	:	Suspension rope for lifts
Type	:	8 x 19 (W) IWRC Diameter 6,5 mm and 6,0 mm
Laboratory	:	None
Address of examined component	:	See manufacturer
Date / Data of examination	:	November 2018 – March 2019
Examination performed by	:	A. van den Burg, E. Verkaik

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2. Description component

The Young Heung 8 x 19 (W) IWRC diameter 6,5 mm and 6,0 mm are high strength suspension ropes intended to be used for lifts, the ropes shall be applied in combination with the specified traction sheaves and diverting pulleys if required. Application of the rope with the specified small pulleys requires a reduction of the load in the ropes in order to reach sufficient lifetime (increased minimum safety factor).
The calculation of the required safety factor shall be made using the methods and formulas specified in EN 81-50:2014 art. 5.12.

Main data of the 6,5 mm rope:

Rope diameter:	6,5 mm
Rope construction:	8 x 19(W) IWRC
Minimum breaking load:	31,1 kN.
Wire strength:	1770 N/mm^2

Main data of the 6,0 mm rope:

Rope diameter:	6,0 mm
Rope construction:	8 x 19(W) IWRC
Minimum breaking load:	26,5 kN.
Wire strength:	1770 N/mm^2

Main data of traction sheave:

Effective pulley diameter:	≥ 160 mm (centre – centre of rope).
Groove shape/condition:	V-groove / Hardened.
Groove angle:	$\gamma \geq 45^0$.

Main data of deflection pulley(s):

Effective pulley diameter:	≥ 160 mm (centre – centre of rope).
Groove shape:	semi-circular.

See annex 1 for a general overview of the product.

3. Examinations and tests

The examination covered a check whether compliance with the Lift Directive 2014/33/EU is met, if possible based on the harmonized product standards EN 81-20:2014 and EN 12385-5.

Issues not covered by or not complying these Standards are directly related to the above mentioned essential requirements based on the risk assessment, where applicable with the aid of harmonized A-and B-standards.

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The examination included:

- Examination of the technical file (See annex 2):
- Examination of the representative sample in order to establish conformity with the technical file.
- Inspections and tests to check compliance with the requirements.
- A verification of the validity of the methods and formulas of art. 5.12 of EN 81-50:2014 for the application limits of this certificate and this rope type (traction pulleys ≥ 160 mm, diverting pulleys ≥ 160 mm and a minimum required safety factor ≤ 47 for 6,5 mm rope and and a minimum required safety factor ≤ 38 for 6,0 mm rope).

4. Results

After the examination, the product and the technical file were found in accordance with the requirements. The functional tests passed without remarks.
The load tests and bending fatigue tests passed without remarks and did not lead to loss of stability.
Bending fatigue tests simulating the defined traction sheave under maximum allowed tension have shown enough resistance to wear and no loss of strength.

Accepted deviations from the requirements of EN 81-20:2014 are:

- The nominal Diameter of the rope is 6,5 mm or 6,0 mm.
- The allowed ratio between the pitch diameter of the pulleys and the diameter of the rope is 24,61 for the 6,5 mm rope and 26,7 for the 6,0 mm rope where EN 81-20 demands a minimum ratio of 40.

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:

- The rope and pulleys shall be according the descriptions of Chapter 2.
- For application in lifts, the minimum required safety factor shall be determined using the methods and formulas described in EN 81-50:2014 art. 5.12.
- The outcome of the calculation of the minimum safety factor shall be a factor of 47 at maximum for the 6,5 mm rope and 38 at maximum for the 6,0 mm rope, higher required safety factors are not allowed (the actual safety factor in the lift of application may be higher).
- All other relevant rope and pulley related requirements of EN 81-20:2014 shall be fulfilled:
  - The rope terminations shall resist 80% of the minimum breaking load.

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- The minimum number of suspension ropes is 2.
- The load shall be equally distributed between the ropes.

– The ropes shall be replaced when one of the following conditions is reached:
  - A diameter reduction of 6% is measured.
  - The elongation of the rope is ≥ 1%.
  - More than 15 broken wires in one rope lay.
  - More than 8 broken wires in one rope lay predominating in one or two strands.
  - 4 broken wires are found concentrated in one strand.
  - 1 valley break per rope lay.

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:

E. Verkaik
Product specialist Certification
Liftinstituut B.V.

Certification decision by:

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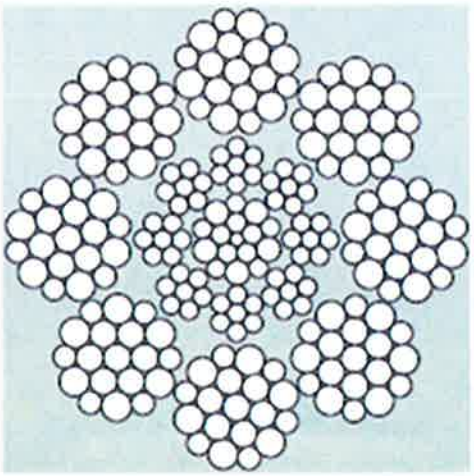
Annexes

Annex 1 : lay-out drawing showing the construction of the 6,5 / 6,0 mm rope.



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

Title	Document number	Date
Manufacturing Specifications	D 6,50 8x19(W)+8x7+1x16(W)	2016/04/19
Manufacturing Specifications	D 6,00 8x19(W)+8x7+1x16(W)	2016/08/12
Elevator wire rope	Catalog No: 2016.01	2016-01

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.
5.5.2.1	D/d ≥ 40	D/d ≥ 24,61, see chapters 2, 3 and 4.

Annex 4 Revision of the certificate and its report

Rev.:	Date	Summary of revision
-	21-03-2019	Original

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