

# AIRWORK & Heliseilerei GmbH

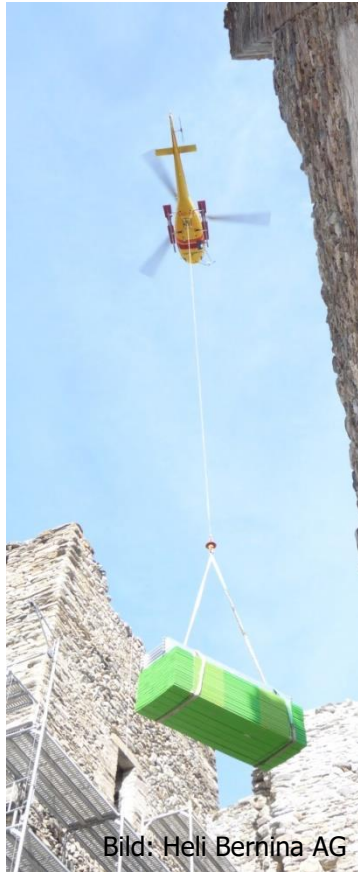


Bild: Heli Bernina AG



Bild: Air Glaciers SA



Bild: REGA



Bild: A&H ENG





Bild: REGA

## ***Drop test***

### **Basics**

**EASA Certification memorandum to CS-27./29.865**

**EASA CM-CS-005 simple PCDS**

### **Products**

**Textile fixed ropes for Human External Cargo (HEC)**

***and***

***steel cable for Rescue Hoist***



## *Organisation/location*

### **Location**

BG BAU Arbeitsschutzzentrum Haan/Düsseldorf



### **Organisation**

BG-Verkehr, Präventionszentrum Berlin



### **Participants**

AirWork (Equipment)



Berner Fachhochschule (Measurements)



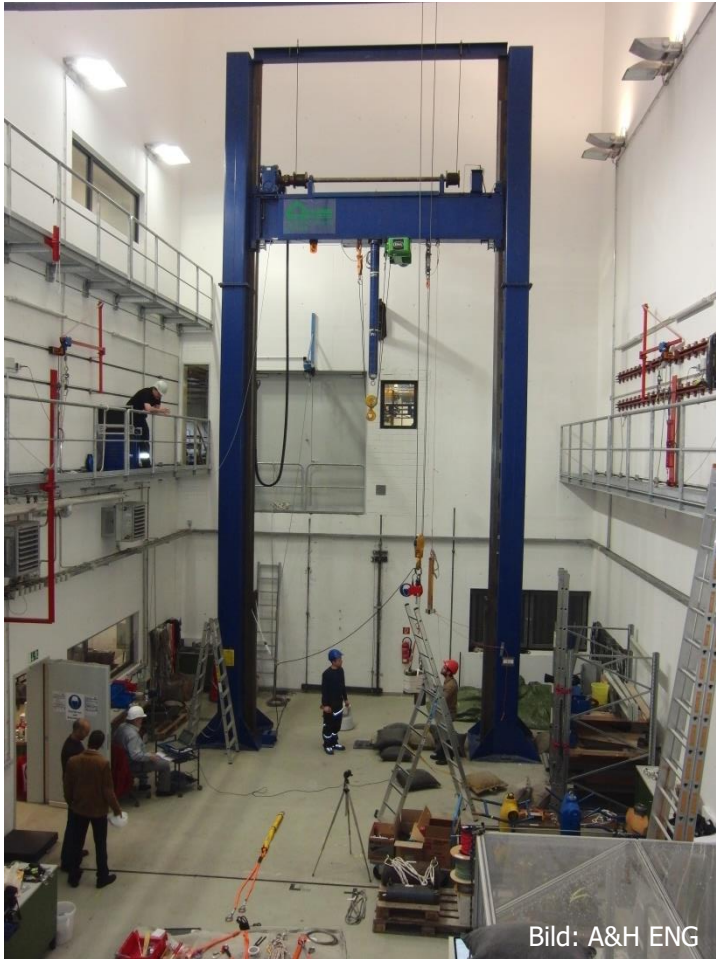
### **Guests**

EASA, Airbus





## *Testing facility*



**Mass252 kg**



## *Example operation*

### *Helicopter Double Cargo Hook for Human External Cargo*



### *Rescue Hoist*



## *Examples rope/cable*



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Recue Hoist steel cable MIL-DTL-831408

Hoist

UL max. 15.35 kN,  $\varnothing < 4.8$  mm

WLL 272 kg, safety factor 5.8 [-]

in accordance with test sample mass **252 kg = 6.2 [-]**



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Textile rope for rescue hoist (sample), Standard pending

Hoist

UL max. 27 kN,  $\varnothing$  6mm

WLL 272 kg, safety factor 10.2 [-]

in accordance with test sample mass **252 kg, 10.9 [-]**



## *Example ropes/cable*



«Kernmantel rope with low elongation» EN 1891 A

UL max. 37 kN,  $\varnothing$  12 – 12.5 mm, Polyamide

WLL 270 kg, safety factor 14 [-]

in accordance with test sample mass **252 kg = 14.9 [-]**

simple PCDS



Textile fixed rope A&H EQU, EASA CS-27.865

UL max. 53 kN,  $\varnothing$  8 mm, HMPE

WLL 385 kg, safety factor 14 [-]

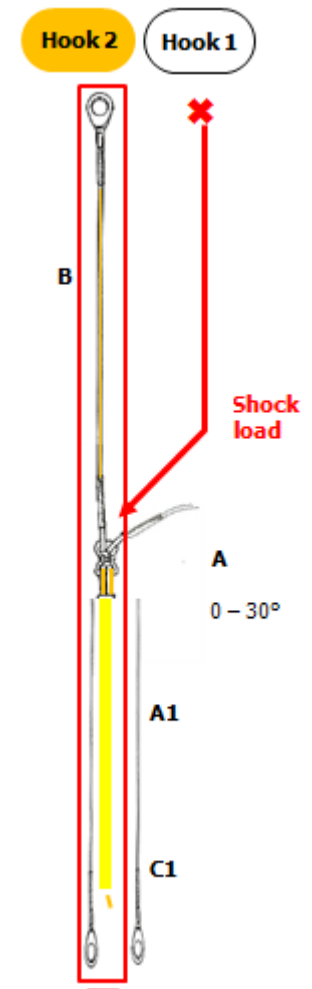
in accordance with test sample mass **252 kg = 21.45 [-]**

complex PCDS

## Test requirements

HEC fixed rope with double cargo hook Y-rope

- Release of Primary Cargo Hook
- GAP height 170 mm fall in secondary cargo l
- Load simple PCDS 252 kg
- Load complex PCDS 602 kg





## *Test requirements*

Rescue hoist steel cable

- Slack rope
- GAP height 170 mm
- Load 252 kg



## Results

Rescue hoist steel cable MIL-DTL-831408, Hoist

UL max. 15.35 kN,  $\varnothing < 4.8$  mm, WLL 272 kg, safety factor 5.8 [-]

**Drop hight 170 mm, mass 252 kg**

- Shock Load 12.68 kN
- g-Load 5.13

**For occupational safety and healt accepted: 4 g**

Gap to UL max. **2.67 kN (close to UL)**

Gap g-load **+ 1.13 g**

**Design Load EASA CS-27.305(a): 3.5 g**

Gap g-load **+ 1.63 g**

Bild: BPOL



## ***Results***

Rescue hoist textile rope, standard pending, Hoist

UL max. 27 kN,  $\varnothing$  6 mm, WLL 272 kg, safety factor 10.9 [-]

**Drop hight 170 mm, mass 252 kg**

- Shock Load      8.54 kN
- g-Load              3.45

**For occupational safety and healt accepted: 4 g**

Gap to UL max.      18.46 kN

Gap g-load            - 0.55 g

**Design Load EASA CS-27.305(a): 3.5 g**

Gap g-load            - 0.05 g





Bild: A&H ENG

## ***Results***

Fixed rope 270 kg EN 1891 «Kernmantel rope» simple PCDS

UL max. 37.0 kN,  $\varnothing$  12.5 mm, WLL 270 kg, safety factor 14 [-]

**Drop hight 170 mm, mass 252 kg**

- Shock Load 5.87 kN
- g-Load 2.38

**For occupational safety and healt accepted: 4 g**

Gap to UL max. 31.13 kN

Gap g-load - 1.6 g

**Design Load EASA CS-27.305(a): 3.5 g**

Gap g-load - 1.12 g



## Results

Fixed rope 600 kg EASA CS-27.865

complex PCDS

UL max. 53 kN,  $\varnothing$  8 mm, WLL 386 kg, safety factor 14 [-]

### Drop hight 170 mm, mass 252 kg

- Shock Load 15.68 kN 8.32 with shock absorber
- g-Load 6.34 3.37

### For occupational safety and healt accepted: 4 g

Gap to UL max. 37.32 kN 44.68 kN

Gap g-load + 2.34 g - 0.63 g

### Design Load EASA CS-27.305(a): 3.5 g

Gap g-load + 2.84 g - 0.13 g

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