

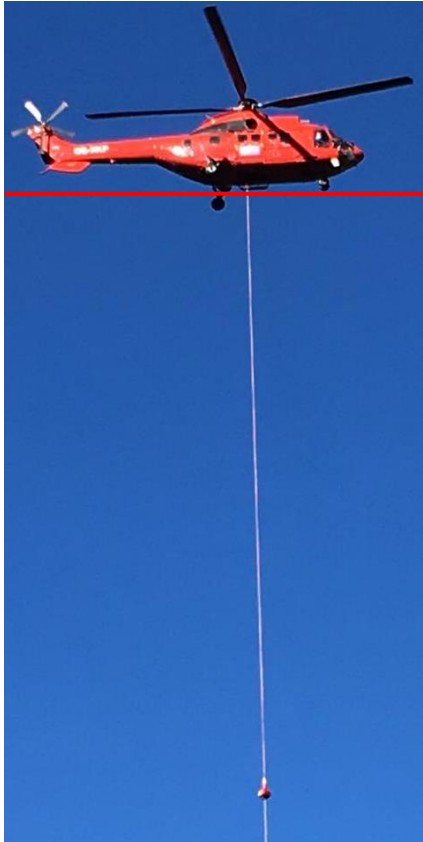


where swiss manufacturing matters

- Suisse company since 1997 Martin Brunner GmbH → 2011 Heli Hook AG
- In-house R&D, Production, Assembly and Maintenance
- Products for non human external cargo (NHEC)



§ § § Legal Situation § § §



- CS 27 < 3175kg (helicopter)
- CS 29 < 9072kg (helicopter)

} Certification Standard EASA

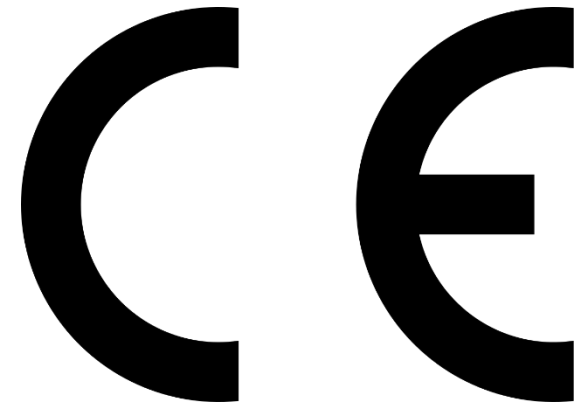
- European Machine Directive 2006/42/EC (NHEC)

- CS 27.865 / CS 29.865 → 2.5 x work load limit = design load
- CS 27.303 / CS 29.303 → 1.5 x design load = **3.75 x work load limit**
= **ultimate load limit**

- 2006/42/EC → **4 x ultimate load limit**

European Machine Directive 2006/42/EC

1. Inspection of the relevant regulations → Laws / Harmonised Standards / Directives
 2. Design according to essential health and safety requirements
 3. Technical File
 4. Conformity assessment
 5. Declaration of Conformity
 6. CE marking
-
7. Voluntary check of the technical file by an European notified body
 8. Type examination of European notified body



- Helicopter
- Primary hook
- Short-/Longline
- Swivel & Cone
- Cargo Hook
- Load suspension device
- Load



Short-/Longline:

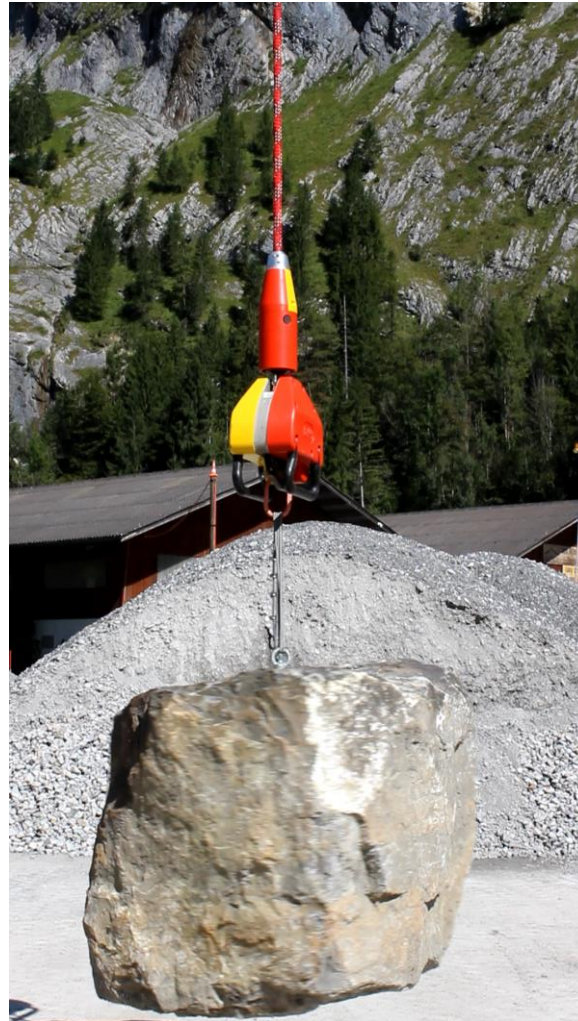
- Lightweight fiber core
- Electric conductor
4 x 2.5mm²
- Protective shell is a Multifil / Monofil web
- Bend and wear protection
- Safety factor 10
- Good flight characteristic
- Lifetime 6 years



Cone:

- Highly shock resistant synthetic material
- Internal contact pins
- Quick Connect System

Lifting operations must be untwisted according to the valid technical rules.



Remote Hook



Manual Hook



Opening mechanism

Release load
> 9kg



Locking mechanism



Risks

1. Unwanted spontaneous opening of the hook
2. Unwanted spontaneous opening of the keeper
3. Not properly closed hook

Cause

1. Impacts
2. flashover of the longline / an oversize ring; failure of the spring
3. Contamination / Freezing

Risks

1. Unwanted spontaneous opening of the hook

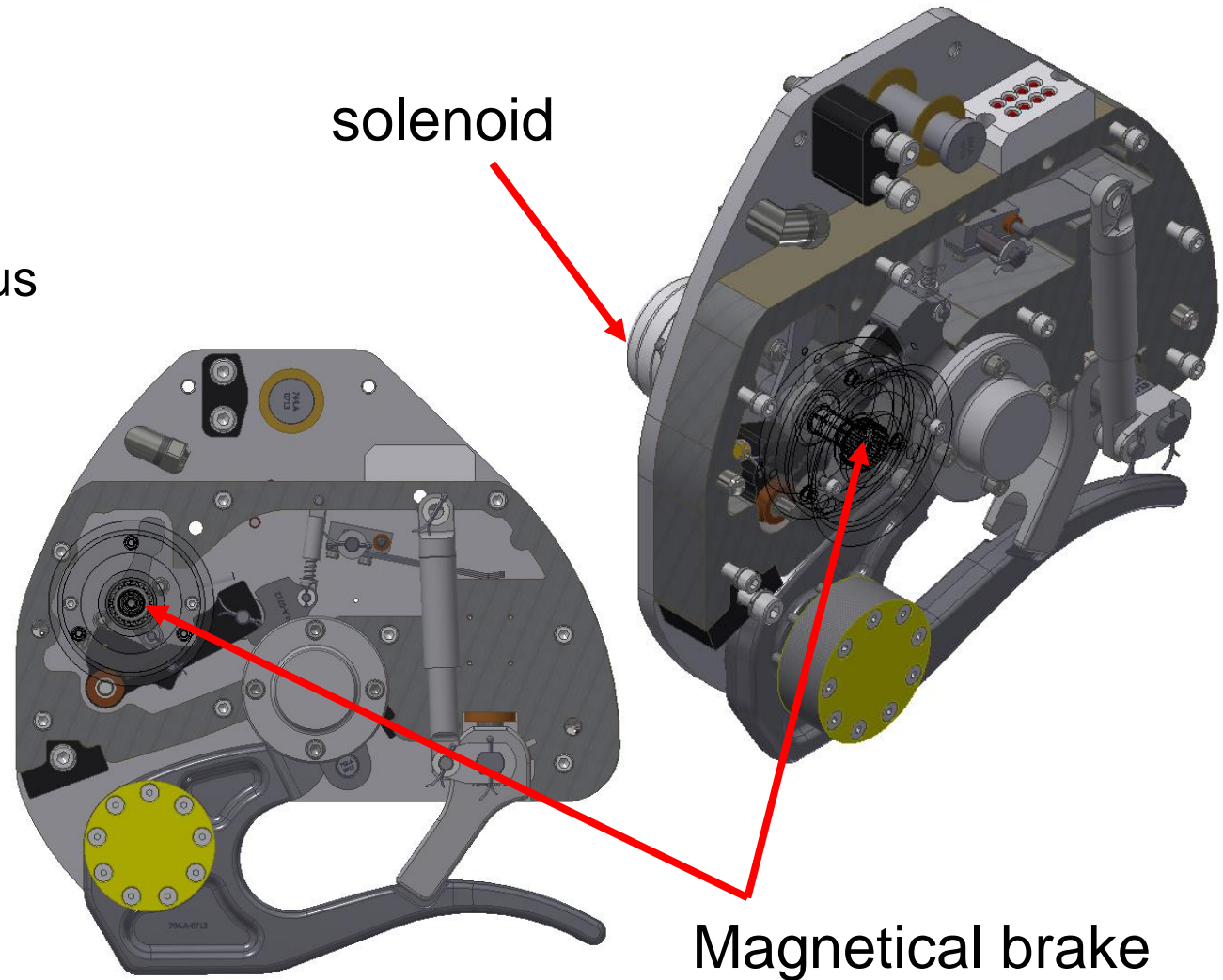


Risks

1. Unwanted spontaneous opening of the hook
→ Impacts

Solution

1. Magnetical brake on release shaft



Risks

2. Unwanted spontaneous opening of the keeper



Risks

2. Unwanted spontaneous opening of the keeper
→ flashover of the longline / of an oversize ring



Solution

2. Geometry of the ring
Geometry of the hook



Risks

2. Unwanted spontaneous opening of the keeper



Risks

2. Unwanted spontaneous opening of the keeper
→ flashover of the longline / of an oversize ring

Solution

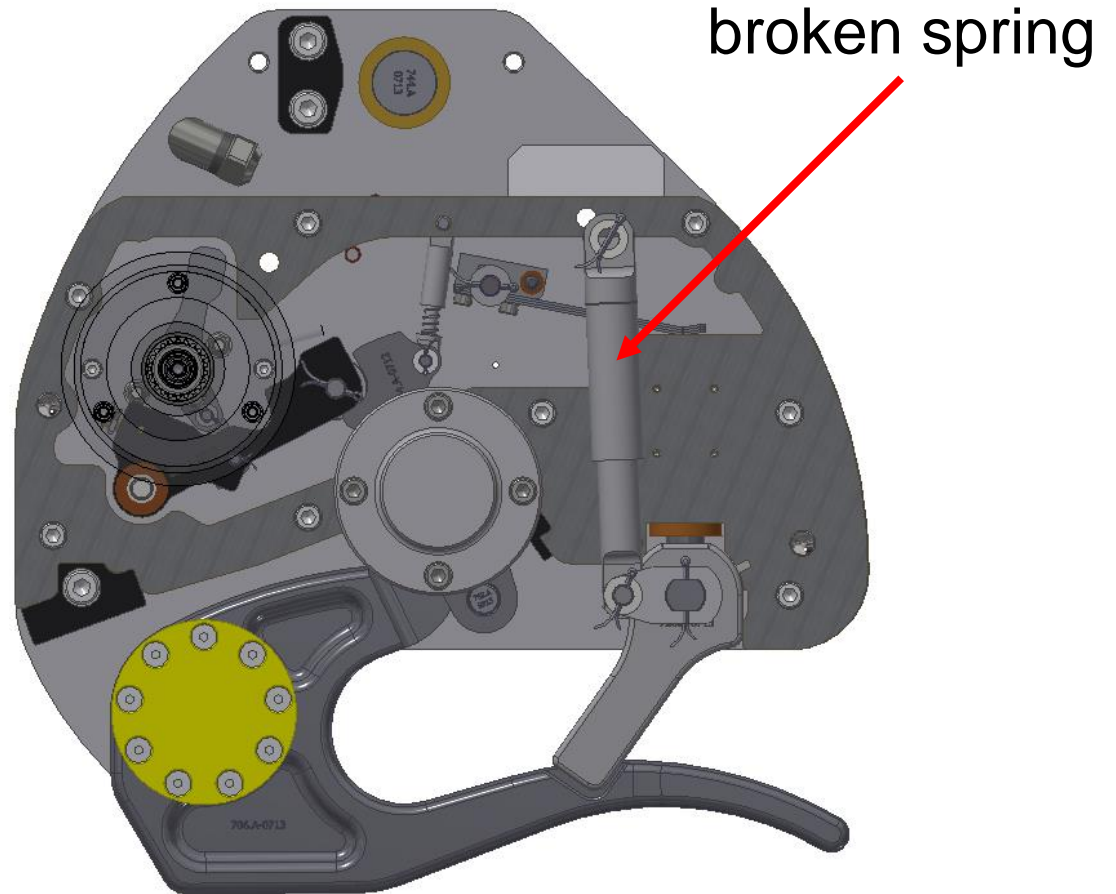
2. Keeper is mechanical locked by a bolt when a load > 40kg is attached



Failure of the spring

Risks

2. Unwanted spontaneous opening of the keeper

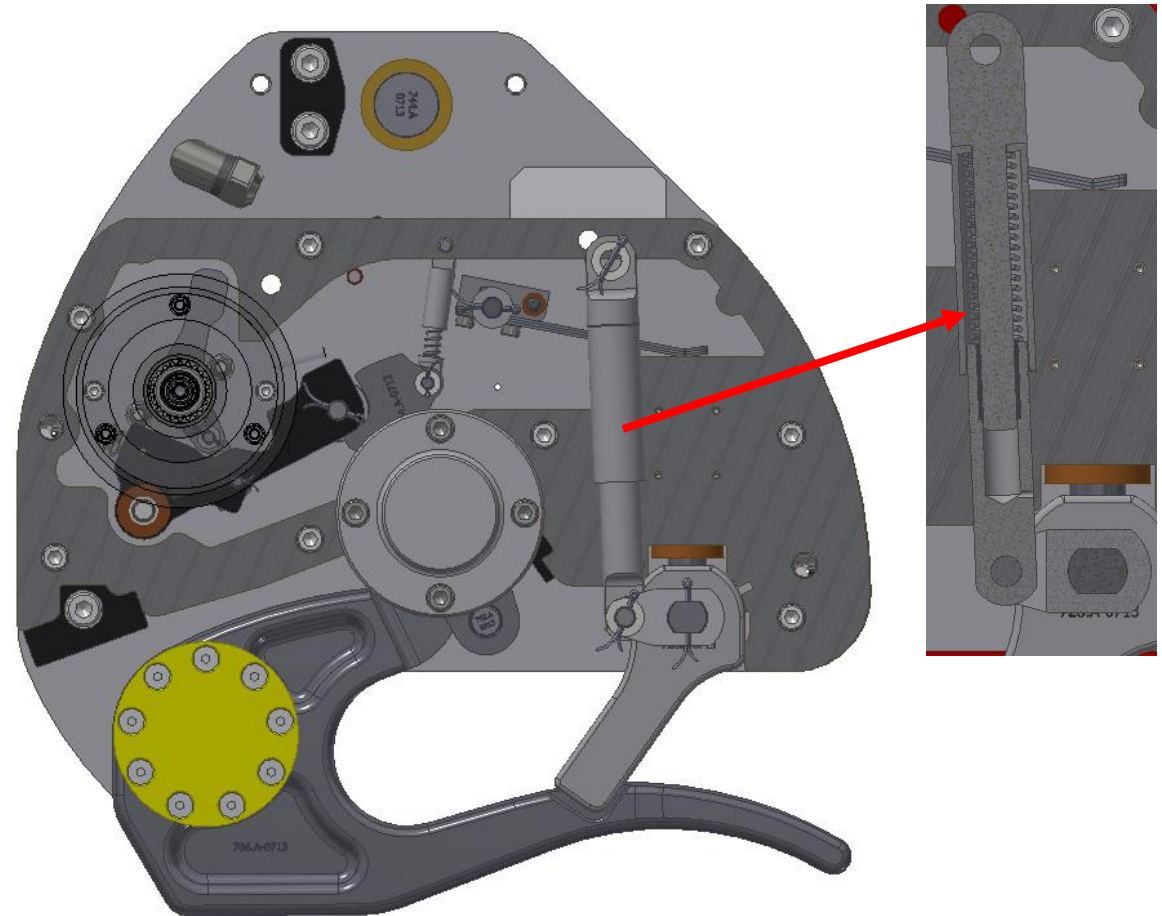


Risks

2. Unwanted spontaneous opening of the keeper
→ failure of the spring

Solution

2. Design of the spring
respectively the housing

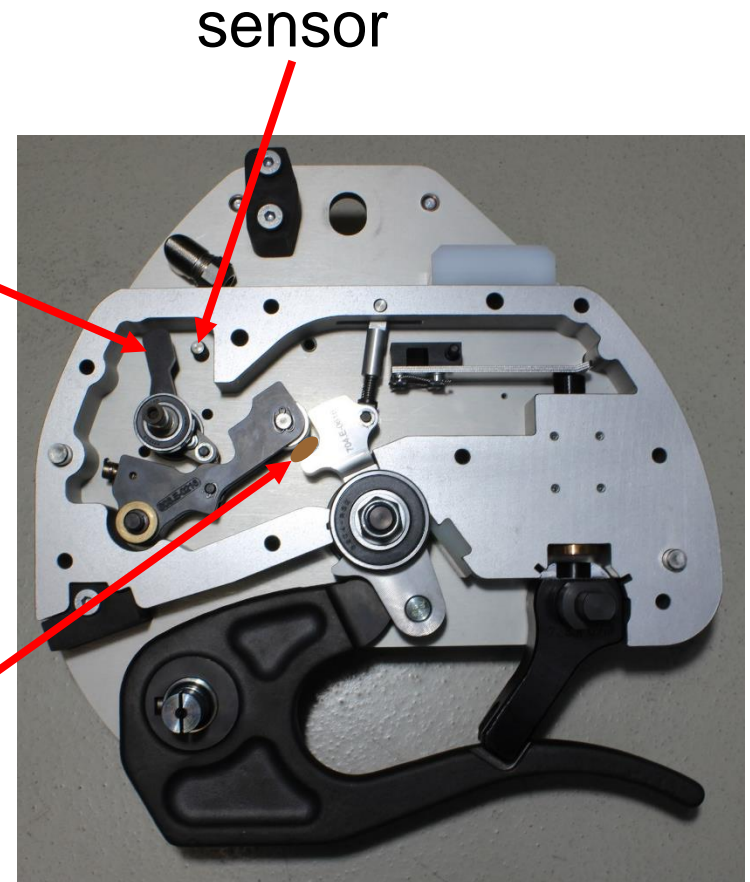


Risks

3. Not properly closed hook

Not in the final position

contamination



Risks

3. Not properly closed hook
→ e.g. Contamination / Freezing

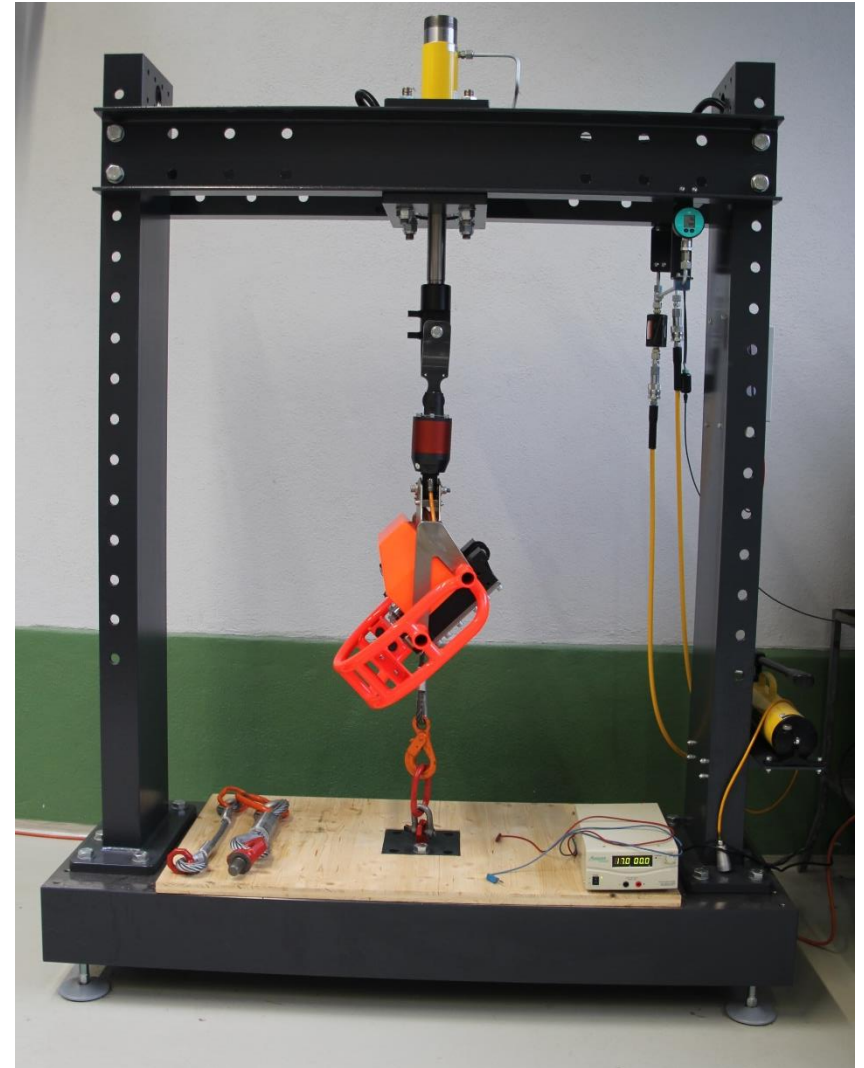
Solution

3. LED control light for pilot and flight assistant

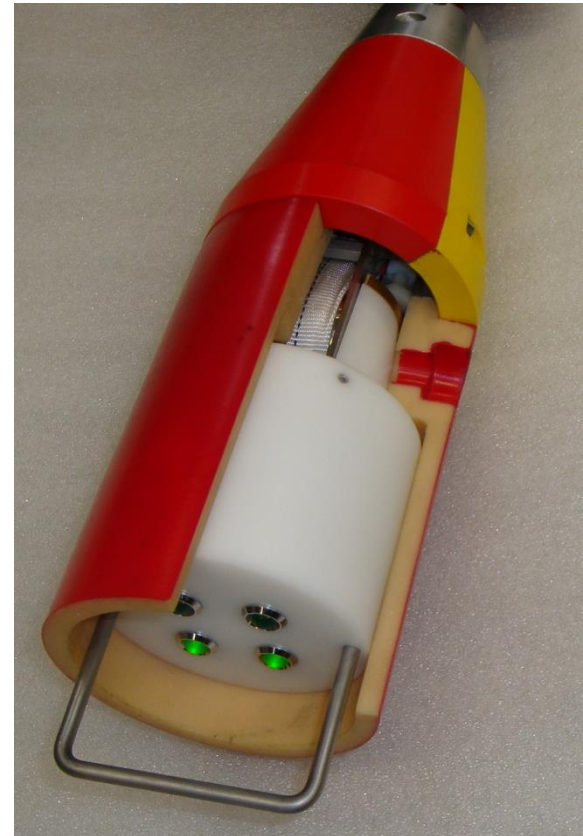
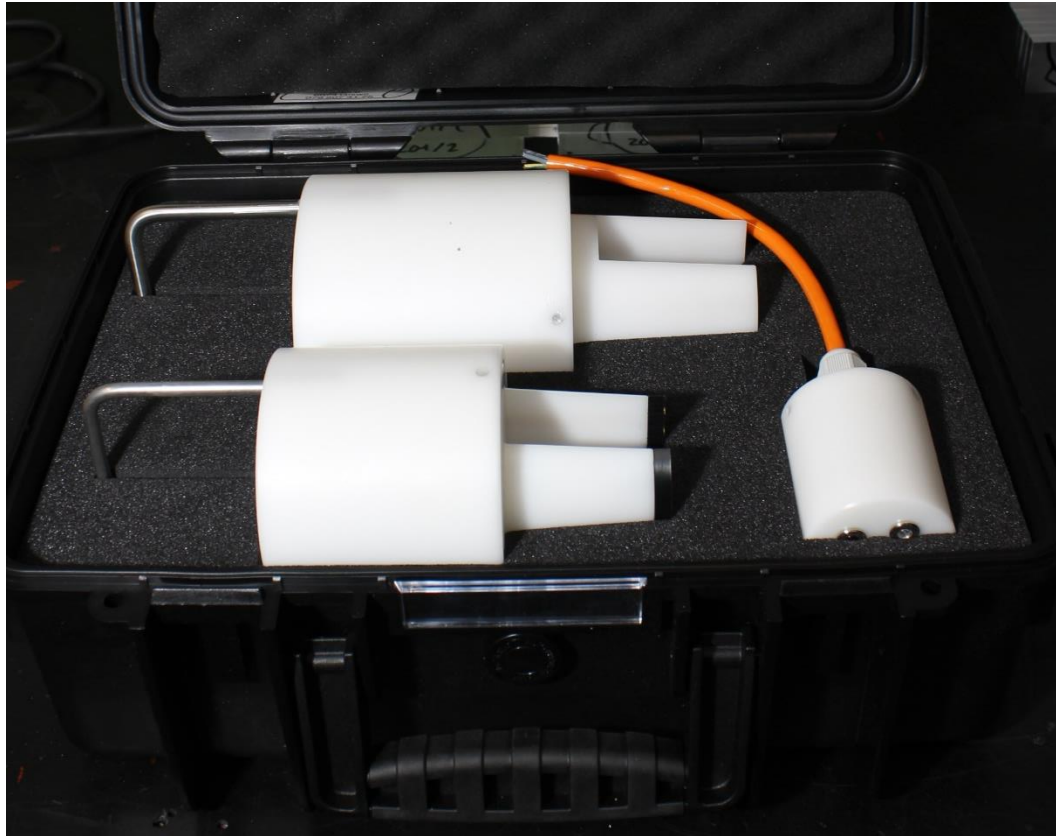


1. **Daily function test**
2. **Annual inspection**
3. **Periodic maintenance**
→ after 1000 hours / 10 years

→ according to European
Machine Directive 2006/42/EC



Failure diagnostics



Thank you for your attention

You can achieve us:

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