# Service Bulletin A&H-SB_2013-01

Ref. ISO 850

Applies to all short and longline models, i.e. TLL, TLP, TLME, TLK, TLD, TLDS, TLG, TLM, TLS, TLSS, and to all WLL classes, serial numbers and lengths.
Applicable for all helicopter types, weight classes and primary lifting hooks.

TERMS: short (< 20 m) and longlines (> 20 m), external load operations (ELO, i.e. all types of transport except logging), logging (LOG), lifting accessory (LA), shock absorber (VM-DP).

## USE OF SHOCK ABSORBERS FOR ALL ASSIGNMENT TYPES

(Applications: external load operations [ELO] and logging [LOG]; EASA term: helicopter external sling load operations [HESLO])


### Abstract

Measurement flights performed in the years 2011 and 2012 revealed that hard impacts, especially during load lifting and depositing, can quickly increase the strain to a multiple of the static load; thus forces involved are higher than has generally been assumed so far. The use of a shock absorber (VM-DP) can considerably reduce load peaks (by ~ 30 %).

These results match the empirical observation that dispensing with shock absorbers shortens a rope's life span due to the decrease of its breaking strength.

Conclusion: strong energies acting on the system also have an influence on the ageing of components (wear, distortion, rupture). This applies both to the ropes and the accessories, but also to helicopter systems (especially with regard to the cargo hook).


### Measures

Users: it is strongly recommended that users employ a shock absorber during all types of transport (ELO and LOG).

Producers: A&H is constantly adapting its basis of calculation in accordance with the most recent research findings and continuously performing tests on the construction characteristics of its products.

### Exceptions

In certain circumstances, such as construction work assignments with mast components, the fine load oscillations caused by the shock absorber (between 2 and 4 cm in the case of new shock absorbers) might have a negative influence. Usually, no abrupt impacts are to be expected during construction or mast assembly assignments by helicopter. A hazard analysis can provide information about the foreseeable risk.

In these cases it might even make sense to operate without a shock absorber.

### 1. Procedural indications

### 1.A. Lifting accessories (LA) and helicopter

1.A.1. short and longlines

(a) manual hook release: TLK, TLG, TLD, TLDS, TLM, TLS, TLSS; all WLL, all S/N, all lengths

(b) electric hook release: TLL, TLP, TLME; all WLL, all S/N, all lengths

1.A.2. shock absorber

(a) manual hook release: VM-DP_xx*_1.5**ELO

(b) electric hook release: VM-DP_xx*_1.5**ELO for transports, VM-DP_xx_1.5LOG for logging

* xx represents the weight class; ** 1.5 m of rope/sling length (SL) is the standard length

1.A.3. Helicopter / primary cargo hook

All types and weight classes.

### 1.B. Departments concerned

Personnel responsible for maintenance, crew and ground personnel (marshallers) must be immediately informed about this service bulletin.

### 1.C. Reasons and advantages

The adoption of a shock absorber significantly reduces strong impacts (load peaks) on the system, especially during the lifting/depositing of cargo and/or in case of contact with obstacles, of dropping loads, abrupt lifting of ropes, etc.

The use of a shock absorber as a permanent first connection to the primary cargo hook offers the additional advantage of needing only one primary fitting with CE-conformity (otherwise every single rope must be equipped with an appropriate fitting, see Alert Service Bulletins (ASB) of helicopter/cargo hook producers). Short and longlines can then be rigged using standard accessories, which helps reduce costs.

### 1.D. Utilisation

The shock absorber must be placed between the helicopter's primary cargo hook and the first short or longline (fig. 5.A.).

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## 1.E. Compatibilities

### 1.E.1. Compatibility with other components

Helicopter and installed equipment: see "Alert Service Bulletins" of the respective producers.

Uninstalled equipment: not applicable.

### 1.E.2. Compatibility with maintenance measures

Not applicable.

## 1.F. Qualification/certifications

Shock absorbers, like short/longlines and slinging equipment, are also parts of load lifting devices and thus subject to the machinery directive 2006/42/EC, article 1.d and e., as well as annex I, art. 4.

If the shock absorbers are manufactured in accordance with FAR or CS 27./29.865 (attaching means), see point 1.N.

The acknowledged rule of technology applied is the Marshaller Syllabus, chapter 3.2. (FH-SY, 1996 - 2012, FOCA).

## 1.G. Manpower requirements (one-time)

| Qualification | Mechanic | Electrician | Pilot | Marshaller |
|---|---|---|---|---|
| Manpower | -- | approx. 1 h* | -- | -- |

* only in case of electric cargo hooks

## 1.H. Weight and position of centre of gravity (W/B)

Not applicable.

## 1.I. Influences on the current load

Not applicable.

## 1.J. History of software changes performed

Not applicable.

## 1.K. References (mirrors or vertical references)

The length of the short or longline increases by approximately 1.8 to 2 m.

## 1.L. Documents concerned

Aircraft: AFM supplement, primary cargo hook.

Short and longlines, shock absorber: instructions for use and maintenance (AWA), parts 1, 2, 3 and 4.

## 1.M. Exchangeability or compatibility of components

Exchangeability: no restrictions.

Compatibility: the shock absorber must comply with the helicopter's weight class or with the WLL of the short/longline. A smaller WLL value will lead to overstressing and rupture; a higher WLL will lead to a reduced elongation of the shock absorber and thus an excessive reduction in the damping effect.

## 1.N. Legality

All load lifting devices (lifting accessories, slinging equipment) are subject to the EC-machinery directive 2006/42/EC, art. 1.c) and d), as well as annex I, art 4.2. The legally binding, acknowledged rule of technology is the Marshaller Syllabus, chapter 3.2 (FOCA 1996 – 2012).

NB: The latest information to emerge from measurement flights indicates that calculations/constructions carried out in accordance with EC mach. dir. 2006/42/EC or FAR/CS 27./29.865 (load attaching means), as well as the Marshaller Syllabus, chapter 3.2, are not sufficient.

Dispensing with a shock absorber can cause damage to the short/longlines and to the helicopter and will result in the immediate disclaiming of all responsibility.

## 1.O. Interfaces

Between helicopter primary cargo hook and shock absorber primary fitting:

- primary fitting (check ASBs of helicopter/cargo hook producers). For various solutions see 2.C.

Between safety hook on shock absorber and thimble/round washer or Goggel protective casing:

- All accessories must be adjusted to each other (WLL, geometry, function).

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## 2. Material data

### 2.A. Costs – availability – supply

For information on prices and availability of shock absorbers or special design fittings for helicopter primary cargo hooks turn to AirWork & Heliseilerei GmbH (A&H) (tel.: +41 41 420 49 64, mail: office@air-work.com, web: www.air-work.com).

### 2.B. Interfaces

Shock absorbers must be designed and built for the specific short/longline (WLL, fittings, electric equipment if required).

The adoption of shock absorbers by other producers remains the operator's responsibility (including self-made products as stated in EC machinery directive 2006/42/EC, art. 2.i "manufacturer").

### 2.C. Accessories for various primary cargo hook models

AirWork & Heliseilerei (A&H) can provide clients with a great number of special design fittings for various primary cargo hook models.

## 3. Procedural indications

### 3.A. General

The size/calculation of shock absorbers depends on the payload and the type of application.

### 3.B. Utilisation procedure

#### 3.B.1. Indications regarding the primary cargo hook

Prior to its first use, the primary fitting applied to the primary cargo hook must be checked to make sure it fulfils the requirements specified in the ASBs. Its correct size and functioning must also be verified.

#### 3.B.2. Indications regarding the shock absorber

The primary fitting must be attached to the shock absorber following the producer's indications.

### 3.C. Identification

Shock absorbers by A&H are tagged with a label providing information on the production (PROD:) and expiry (EXP) date. The life span of the shock absorber ropes is limited to 300 flight hours (this applies to the elastic rope alone, the accessories must be assessed through regular inspection, see AWA, part 2). The appropriate documentation is the operator's responsibility.

### 3.D. Instructions for use and maintenance

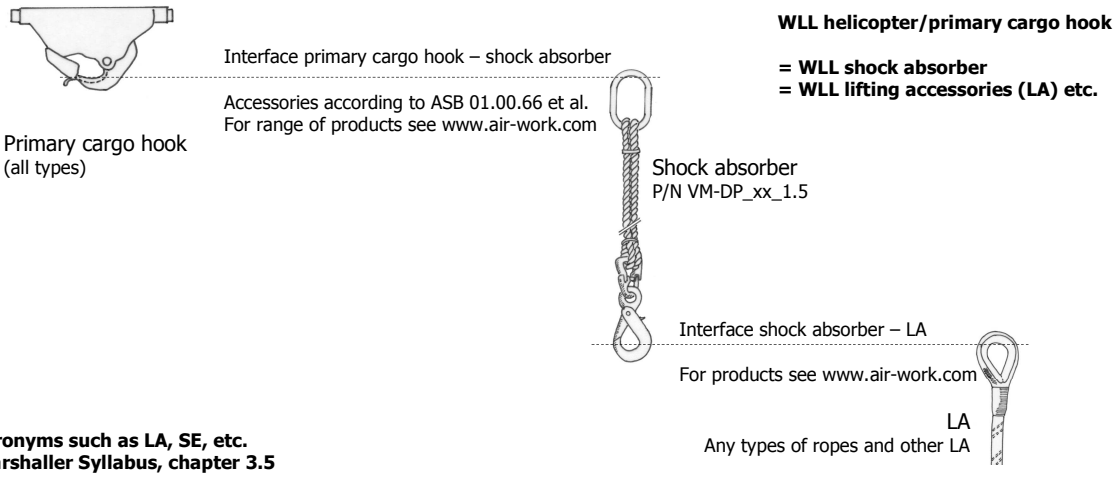
Instructions for use and maintenance (AWA), parts 1, 2, 3 and 4.

## 4. Annex

Not applicable.

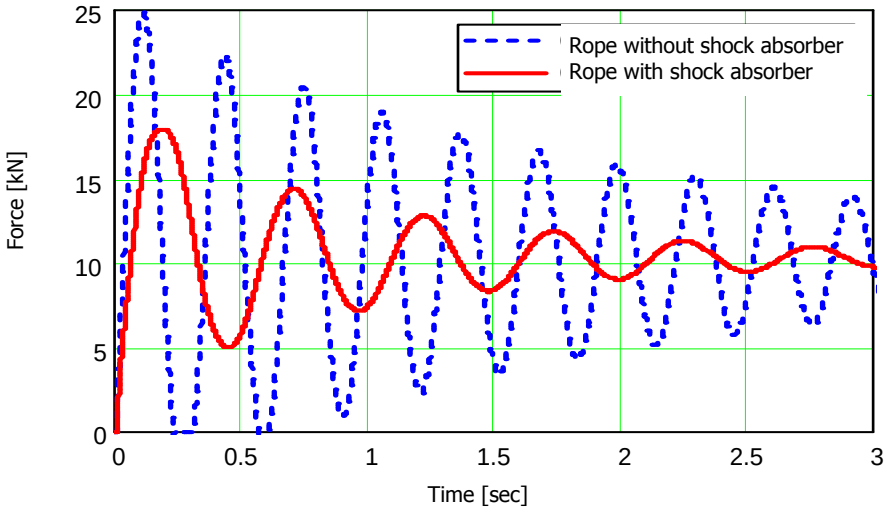
## 5. Figures (representative illustrations)

### 5.A. Shock absorber



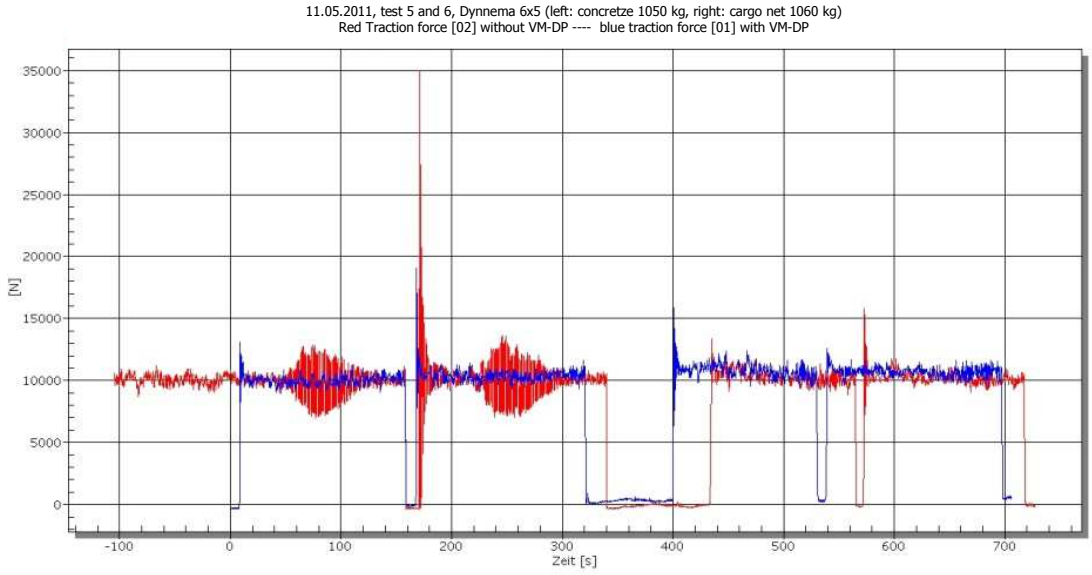

**For acronyms such as LA, SE, etc.**
**see Marshaller Syllabus, chapter 3.5**

### 5.B. Diagram: oscillation behaviour of different rope configurations




Source: Bern University of Applied Sciences, Burgdorf, © 2012 Berner Fachhochschule

### 5.C. Diagram: standard load flight, with (blue) and without (red) shock absorber




Source: BG-Verkehr, RP Berlin and A&H Engineering © 2012

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