

Instructions for use and maintenance, part 4

(Translation of the original instructions for use and maintenance (AWA), part 4)

Load element for transport ropes

Mod. SLE1 and SLE2



EC Machinery Directive 2006/42/EC

§ 1 (1) d), annex I, art 1.7, 1.7.4, 1.7.4.2, 4

EASA CS-27./29.865 and corresponding articles; requirements in light of the state of the art fulfilled

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Part	0	1	2	3	4
	Index	Definitions	Maintenance: steel	Maintenance: textiles	Use of specific product

Revision E: what is new or has been modified? Watch this symbol:

Classification

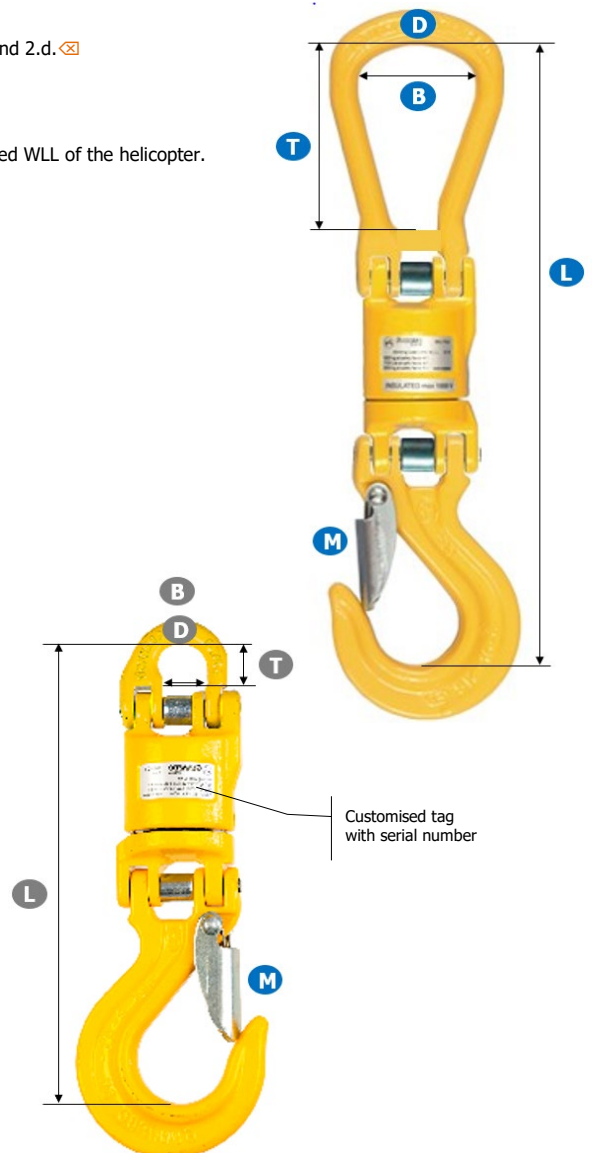
SLE1 and SLE2 are lifting accessories in conformity with machinery directive 2006/42/EC, art. 1.d and 2.d.

General description

Handy load elements (SLE) with swivel, big (SLE1) or small (SLE2) suspension link and safety latch hook. Size and geometric design are calculated to withstand more than the indicated WLL of the helicopter. 1000 V insulated. EN 1677 fittings, steel quality class 8, colour yellow.

SLE1 with big suspension link					
Size*	7/8-8	10-8	13-8	16-8	18/20-8
Length L	265	340	410	490	560
Width B	50	66	72	82	105
Inner height T	78	100	112	135	159
Hook aperture M	27	34	42	54	59
Diameter D	14	18	22	25	30
Weight in kg	1.4	2.9	5.9	10.3	15.4
Drones WLL kN	< 5	--	--	--	--
Helicopters WLL kN	< 5	< 5	< 10	< 20-30	< 30-60
P/N	SLE1_1	SLE1_2	SLE1_3	SLE1_4	SLE1_5

SLE2 with small suspension link					
Size*	7/8-8	10-8	13-8	16-8	18/20-8
Length L	195	245	310	370	420
Width B	18	25	30	36	43
Inner height T	22	26	33	40	47
Hook aperture M	27	34	42	54	59
Diameter D	9	11	15	19	22
Weight in kg	1.2	2.5	5.3	9.2	13.6
Drones WLL kN	< 5	--	--	--	--
Helicopters WLL kN	< 5	< 5	< 10	< 20-30	< 30-60
P/N	SLE2_1	SLE2_2	SLE2_3	SLE2_4	SLE2_5



Other applications and specifications on request, in particular the installation of an inbuilt low-torque swivel. Just contact us!

* The indicated size refers to the type designation (e.g. SKLI-7/8-8)



Also see AIRBUS SAFETY INFORMATION NOTICE n° 3170-S-00 on Helicopter External Sling Load Operations (HESLO)

D&X Conformity

All lifting accessories and slinging equipment by A&H EQU are state of the art products in compliance with EC machinery directive 2006/42/EC, as well as the relevant legislation regarding helicopter aviation, and meet all safety requirements therein.

The products are delivered with an EC declaration of conformity (EC DoC). The instructions for use and maintenance (AWA) can be found at www.air-work.swiss, Equipment/AWA and are usually available in 4 languages. ☒

Use

Correct use

Load elements are used for lifting loads in combination with a transport rope and perform the functions of secondary lifting hook, swivel joint and stabilisation weight at the bottom of the rope. The SLE1 D&X or SLE2 (hereinafter referred to as SLE only) ☒ should be over-dimensioned in proportion to the working load limit WLL, in order to grant

- sufficient space inside the hook for the slinging equipment (especially round slings);
- sufficient mass at the rope end to reduce flapping and to facilitate rope control.

Note to a) FH-SY Manual, p. 3.2.2-5, "Geometry - lifting hooks" and DGUV Information 214-911, page 83.

Regel der Technik nach DIN/EN	Regel der Technik für den Helikoptertransport	Lasthaken mit Rundschlingen		
Paarweise angeschlagene Anschlagmittel werden mit einem 2-Stranggehänge oder einer Traverse angeschlagen	Lasthaken Dimension 13-8 (WLL 5.4 to) im Verhältnis zur Last (>1 to) überdimensioniert, aber: Links: 45°-Rundschlingen 2to = Haken nicht optimal bis kritisch Mitte: 30°-Rundschlingen 2to = besser, aber Rundschlingen überlappen Rechts: 30°-Rundschlingen 2to, Haken Dimension 16-8 = Rundschlingen genügend Platz	Lasthaken Dimension 13-8 (WLL 5.4 to) im Verhältnis zur Last (1to) überdimensioniert, aber: 45°-Rundschlingen 2 to = Haken nicht optimal bis kritisch 30°-Rundschlingen 2 to = besser, aber Rundschlingen überlappen 30°-Rundschlingen 2 to, Haken Dimensionen 16-8 = Rundschlingen optimal platziert		

The D&X SLE1 or SLE2 ☒ must be attached to the safety hook of a rope or several ropes connected together.

The required size D&X [...] ☒ may depend on the topography in which the helicopter service company operates (short flights with large altitude differences = SLE must be heavier; long flights at high speed = SLE must be heavier; short flights with little altitude differences = SLE must be only a little over-dimensioned). The appropriate size and weight must be ascertained within the flight company; additional mass may be necessary.

If used in the correct way, the D&X SLE1 or SLE2 ☒ guarantees safe handling.

It is designed to be used only and exclusively in the above mentioned way, that is, for the lifting of loads by means of a helicopter.



D&X Also check AWA, part 1, 1.9 (Suitability and correct use of work equipment) and 1.12 (Normal, reasonable, correct, foreseeable use/incorrect use/misuse)

Suitability

SLE are specifically designed and manufactured for the loads indicated in the chart. They also perform the function of stabilisation weight at the bottom of a rope or several ropes connected together.

Qualification

All of our lifting and slinging equipment are approved lifting accessories (§ 1.d) in conformity with machinery directive 2006/42/EC and thus classified as machinery; they carry a CE-marking and are delivered with an EC declaration of conformity issued by the manufacturer. Exceptions from this rule are specifically indicated and delivered with a certificate of conformity (COC) or other certificates of compliance according to customer wishes.



Also check AWA, part 1, 1.3 Definition of lifting accessories (LA) ☒

User training



Personnel assigned to using this device must have adequate instruction and training prior to its first use. During the introduction to its use and subsequent in-depth training, particular stress should be placed on gaining a good knowledge of the present instructions for its use and maintenance.

Training has to be repeated at least once a year and proof of this must be demonstrable. Please document the type, amount and the date of training in an appropriate way.

D&X Also check AWA, part 1, 1.1 User training ☒

Your SLE (description of the single components)

Construction and technical data

SLE load elements are designed and built to carry the maximum external load possible for the type of helicopter used, i.e. for its corresponding weight class, and/or for the intended type of intervention. Example:

- Helicopter mod. AS 350 B3: max. working load limit (WLL) = 1400 kg
- Intended use: general external transport operations, **no logging** (HESLO 1, 2, 3 and 4; Part-SPO annex VIII; AMC1 SPO.SPEC.HESLO.100)
- Calculation based on: DGUV Information 214-911, EASA CS-27./29.865 External Loads and related articles.
- Service life: see label and technical documentation; must be replaced when deformed or damaged.

Each individual component of the structure is certified and undergoes regular checks (quality assurance) by the producer on delivery and during manufacturing.

The SLE's design and geometry feature an extra-large hook which allows safe rigging of up to 4 round slings.

SLE load elements consist of the following components:

Model with big SKO suspension link, P/N: SLE1:

SKN hook	SKLI swivel joint	SKO suspension link	Comment
			Any hook of the same size can be connected without any difficulty.

Model with small SKT suspension link, P/N: SLE2_x



Attention! When using the small SKT suspension link, check its geometric compatibility with the hook on the rope to avoid any risk of jamming!

Each individual component of the structure is certified and undergoes regular checks (quality assurance) by the producer on delivery and during manufacturing. Steel quality class 8 (EN 1677-1).



Special properties

- Size and geometric design are calculated to withstand more than the WLL of the helicopter
- SLE1 and SLE2 are particularly flexible (on 2 axes).
- The low-torque swivel is 1000 V insulated.



For other configurations and connections see www.air-work.swiss, Equipment



Labels must not be removed. A product without label cannot be considered safe. If you have any questions, please contact the producer.

Parameters, limit conditions, interfaces

Configurations allowed

Ropes manufactured by AirWork & Heliseilerei GmbH (A&H), including all their single components, are specifically designed for external load transport by helicopter. The employment of bigger sizes of SLE for smaller loads is consented, but it is forbidden to employ smaller sizes of SLE for bigger loads.



Load element (SLE1_x) Safety hook with Connex link Rope (symbolic illustration) Thimble Shock absorber (VM-DP_xx_1.5)



A&H strongly recommends the use of a shock absorber. See also A&H-SB_2013-1 on www.air-work.swiss



For the lifting and transport of loads, it is compulsory to place a low-torque swivel between the rope and the cargo (rule of technology). Without a low-torque swivel, due to load rotation, the rope can be already irreparably damaged during one flight cycle.



The use of other components by other producers, mainly secondary or remote cargo hooks, can compromise the aforementioned characteristics or lead to dysfunctions (see also AWA part 1, "Warranty" and "Disclaimer").

Helicopter service for professional load transport

Loads allowed; usable limits

Interfaces to other systems and/or components of a load lifting device



For more information, also check AWA part 1, technical definitions

Preliminary procedures

Check the SLE: the swivel must freely rotate even when a load is attached.

Check list for first-time operation

- Do all components have the same performance values (WLL in kN or kg)?
- Are the performance values (WLL in kN or kg) of all LLD components compatible with the helicopter's maximum carrying capacity?
- Do all the connecting links fit with their appropriate connection points (bolt with swivel joint/rope end, safety hooks with thimbles, etc.)?
- Do all accessories of the slinging equipment meet the requirements of the cargo hook manufacturer?
- Are all people involved in the operation adequately instructed regarding the use of the product?

Start-up procedure

Rig the SLE to the lowest rope. Roll out the rope on a flat surface until it is fully extended. During this procedure, make sure that it is not tense and that sharp bends cannot be formed during lifting. Do not drag the rope over the ground more than necessary.

Before hoisting the rope, please make sure that the cargo hook is placed vertically on the ground by a marshaller who should also guide the rope until the cargo hook leaves ground contact



DANGER SLEs have a certain amount of mass leading to the risk that, while oscillating, they may hit persons standing too close.



Tip: Guide the rope and the SLE with your hand until the load element is out of the danger zone or until the load is attached and the rope in tension.

End of operation procedure

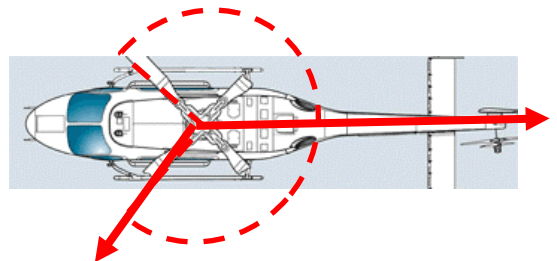
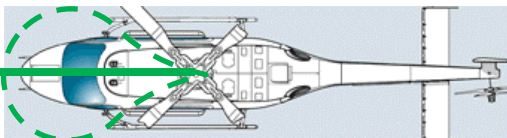
On ending the flying operation, an instructed person must help the pilot to deposit the rope on the ground. Usually the rope is deposited in a forward direction, within the pilot's field of vision.

In case the pilot is obliged to deposit the rope without the help of an instructed person, make sure that the landing site is big enough (or sufficiently sloping in a rearward direction) to avoid the rope getting caught under the helicopter (skids, wheels, tail rotor).

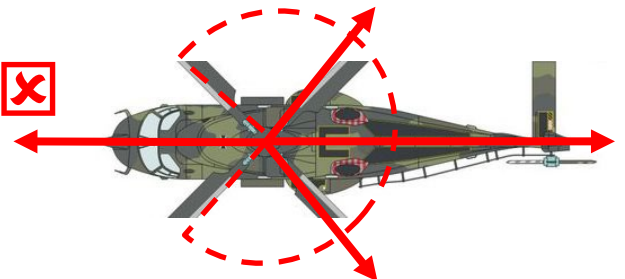
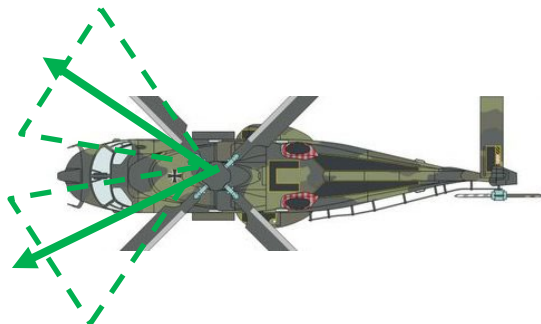
Depositing the rope and landing the helicopter on the rope:



- danger caused by rope nooses when the tail rotor draws near the rope;
- rope movement caused by down wash.
- be careful with skids and landing gear/undercarriages.



Helicopter with skids: Depositing of rope on take-off or landing area (symbolic illustration of a BELL 429, free picture from the web)



Helicopter with undercarriage: Depositing of rope on take-off or landing area (symbolic illustration of a NH90, free picture from the web)



Avoid sharp bends, knots or overtorquing of the rope.

Restoration / repackaging of the SLE

Before returning, first check the SLE, then stow it in a transport bag or hang it up on a hook inside the vehicle.

Transport / Storage

During transport by helicopter or lorry, the rope must be stored in a bag, case or hung up on a hook and kept far from other equipment or hazardous substances which might damage it.

For storage in a warehouse, please let the SLE hang loose from a hook or place it in a cardboard box.



Tip for repackaging Never place the SLE at the very bottom of a sack/bag, as the sack cloth might be damaged when touching the ground.

Possible inappropriate uses

(Ways of using the SLE that are inappropriate and for which it is not designed)

Any use that is not in conformity with the regulations (inappropriate use) of the SLE or its individual components can lead to evident or hidden damages to the same and, therefore, compromise its safety characteristics. In the event of inappropriate use, the producer disclaims all responsibility.

Several examples of inappropriate uses:



Possible inappropriate uses are described in AWA, part 1, 2.2.



Attention: This list is incomplete. Therefore, avoid similar situations that deviate from appropriate use.

Be careful to avoid other possible risks

The following factors could lead to dangerous situations and, therefore, must absolutely be avoided or supervised by a marshaller or another skilled person:



For more information, check AWA part 1

Residual risk

All types of ropes (textile and steel) run the residual risk of internal damage that cannot be seen from the outside. Hence, handling of such devices requires special attention.



See Safety Information Notice A&H-SIN_SKLI_DE/EN at www.air-work.swiss, Documents.

Maintenance and repair



Disassembly and reassembly of the SKLI swivel must be carried out exclusively by competent personnel disposing of expert knowledge. If the SKLI is disassembled by the user, all liability is transferred to the latter.



Also check and read AWA part 2 (maintenance: steel) and 3 (maintenance: textiles)

Engineering & manufacturer

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ISO 9001:2015, SQS n° 32488

EASA Part 21 G POA, CH.21.G.0022

NATO NCAGE SAC17



Conditions for product use

This product has been manufactured in compliance with EC-machinery directive 2006/42/EC, § 1 (1) d).

These instructions (AWA), in accordance with machinery directive 2006/42/EC, annex I, sections 1.7.4.1 and 1.7.4.2, as well as the EC declaration of conformity in accordance with 2006/42/EC, annex II, are an integral part of this product and must be compiled in the user's or a generally accepted common language. However, only the original German version is legally binding. In absence of valid instructions for use and maintenance (AWA) or without adequate training prior to use of the product, the latter cannot be considered safe.

Gaining a good knowledge of the present AWA must be part of user training carried out by the producer, its authorised representative (qualified person) and the person responsible for training in the user's company.



In the case of lending, demonstration, display, sale, discount trading or user training, these instructions for use and maintenance (AWA) must be enclosed/attached.

Picture credits

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Question to the persons responsible for training and work materials:

Have you read, understood and given instructions on parts 1 to 4?



A&H Services offers an extensive inspection and testing service for all its in-house products.



A&H Engineering – A&H Equipment – A&H Services – A&H Expert