2.2 General prohibitions (Exerpt AWA Part 1, page 6 and 7)

"Forbidden" is a disagreeable word but, as manufacturers, we have to dissociate ourselves from some practices. The following list derives from the acknowledged rules of technology (standards), negative experiences (accident reports) and basic principles of physics.

The enlisted prohibitions serve the unique purpose of guaranteeing safety and they apply to all products and all types of applications.

FORBIDDEN:

... Covering, removal or modification of labels or other identification marks on all components.
> A product and its specific characteristics must be recognizable by its label. If the label is missing or not legible the product cannot be considered safe.

... Application of shrink hoses on textile components.
> The heat development, especially the heat accumulation under the shrink hose, can lead to immediate, massive and often hidden damage of the textile components.

... Employment of lifting accessories without the use of a low-torque swivel.
> Rotating cargo can "kill" even a new rope within just one work cycle.

... Replacing accessories with products that are not certified or which are of a different quality class as was their condition upon delivery.
> Within the same sizes, the differences in the WLL can amount up to 25%. Some so-called Far East merchandise on the market doesn't fulfil the required quality standards.

... Mounting of accessories or bolts which are not certified.
> If the screws connecting the low-torque swivel with the lifting hook, or their shaft are too short or if their quality class is not sufficient, the bolt may break or be deformed.

... Leaving of textile ropes on metallic or tarmac surfaces under the boiling sun.
> Under the gleaming sun, bitumen and metal can easily develop temperatures of over 100°C; the temperature tolerances of most textile materials, however, are below 100°C.

... Making knots, loops, formation of splices or other joints in the middle part of ropes, chains, lifting straps, round slings.
> Knots, clamps, etc. inhibit the flow of forces and can reduce, partly even in an extreme manner, the carrying capacity or the breaking load of the devices. A simple knot may cause a reduction of up to - 50%.
(Mach. dir. 2006/42/EC, annex I, art. 4.1.2.5.a) and c)

... Attachment of loads by tying ropes (TLDS, TLK, TLG, etc.) directly around the cargo.
> Due to the ropes' material, the "tying" slinging technique and subsequent rigging to the safety hook is not possible and not intended, especially because in this case it wouldn't be possible to attach a low-torque swivel to the lower rope extremity.

... Tying the single legs of multiple-leg slinging devices, such as 2-leg slings (TWLS), 3-leg slings (THLS), 4-leg slings (FLS).
> Due to the slings' material, the "tying" slinging technique and rigging to the safety hook is not possible and not intended.

... Throwing or dropping lifting accessories (shock absorbers, transport ropes, multiple-leg slings, slinging equipment, lanyards, etc.) from a height of more than 2 m above the ground. Parts could be damaged and persons put at risk.
> These actions would damage the accessories, ropes, thimbles in particular, as well as the outlets of steel ropes near to the pressings. Moreover, persons could be put at risk.

... Dropping payloads together with the transport rope from the cabin, when the rope is attached to the primary cargo hook.
> With a rope length of 20 m, the shock load provoked by the dropping of 50 kg of payload reaches peaks of 5.8 tons [sic]!

... Dragging, lugging, pulling of loads over the ground (forest, open terrain, construction sites, etc.) by helicopter, as the forces acting on the rope (impacts, twitching, cracking, whipping) could damage the rope or the accessories attached to it.
> Shock loads can generate forces which may exceed a rope's breaking load.

... Uncontrolled low-level flights in open terrain or uncontrolled depositing of heavy, and in particular of vertically transported loads (tree trunks, rods) when there is the risk of colliding with obstacles.
> When a load is deposited without control on the ground, the shock load can generate forces which may exceed a rope's breaking load. Such impacts can also damage the helicopter.

In the above-mentioned cases, the carrying capacity of the working tools can be annulled and, therefore, prevent single components from functioning.

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

Pay careful attention to other prohibitions indicated, for example, in the instructions for use and maintenance of other products, in advertising brochures of round sling producers, as well as in the Marshaller Syllabus, pages 3.2.7-6 and 3.2.8.

2.3 Other possible risks

"Other possible risks" are those which might lead to dangerous situations and must therefore be avoided at all costs. In any case, the supervision of a task specialist (marshaller) or another qualified person on the ground is strictly required:

Flying in loads without the help of a marshalling task specialist implies high risks. In the event of uncontrolled ground contact and resulting damages to the lifting accessories and the helicopter, the producer declines any responsibility.
> Hard, uncontrolled impacts can generate forces which may exceed a rope's breaking load and cause damages to the helicopter structure.

Rigging objects by tying a rope around them.
> The entwining and contemporary lifting of objects causes damages due to frictional and torsional strain.

Slings/ropes getting caught in rocks, walls, trees, etc.
> Whenever a rope gets clamped, the part below the jamming point will be compressed while the above is torn. This may lead to sudden rope breakage.

Wrong positioning of the accessories during the working phase.
> Wrongly positioned accessories, such as a safety hook jammed into an eye which is too small, can be severely damaged due to the deviation of the force flow.

Pressing and rubbing against cutting edges, sharp corners or other materials.
> Both actions generate forces which can damage the slinging equipment mechanically or as a result of the development of heat.

Contact with power lines.
> Touching current can be lethal (induced and discharged voltage), components can get locally overheated and hence be damaged.

Electrostatic discharges.
> Usually, the current is within the milliampere range, but the potential also seems to depend on the helicopter's or its main rotor's size (surface). Getting in touch with the current can lead to perilous vegetative damages (heart fibrillations, joint pains, etc.)

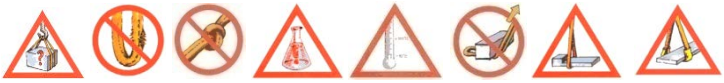
Shock load forces exceeding the dynamic safety factor of 2.5 (CS 27.865, Marshaller Syllabus, chapter 3.2.4 et seq.)
> Hard, uncontrolled impacts on the rope may be caused by the dropping of cargo attached to the rope, by sudden hoisting of a loose rope, by the breakage of loads (tree trunks) during their depositing on the ground, etc.

Dysfunctional swivel joints, which do not rotate when a load is attached (without lubricant, with polluted lubricants, etc.).

> Dysfunctional swivel joints must be instantly repaired or replaced, as torsion can damage any type of rope within seconds.

Depositing of ropes and landing of the helicopter on ropes; danger caused by rope nooses when the tail rotor draws near the rope; rope movement caused by down wash.

> Any rope can form nooses, but textile ropes in particular can be moved by the down wash effect, since the tail rotor gets quite close to the ground during landing.



In the above-mentioned cases, the carrying capacity of the working tools can be annulled and, therefore, prevent single components from functioning.

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

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When adopting the "tying" slinging technique, only slinging equipment such as round slings, wire rope chokers, round steel chains and lifting straps must be used.

2.4 Residual risk

All types of lifting accessories (textile or steel) hold the residual risk of internal damage that cannot be seen from the outside. Hence, handling of such devices requires special attention, thoroughly trained maintenance personnel and task specialists on the ground.