TRANSLATION OF THE ORIGINAL OPERATING INSTRUCTIONS
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# Operating instructions for forged shackles for general hoisting purposes (TVS, VS, TGVS and GVS)

**General principles regarding the utilisation of lifting accessories and their components:**

*The operating instructions are to be stored together with the certificate and the EC declaration of conformity.*

The falling of loads, caused by the failure and / or incorrect utilisation and handling of lifting equipment or its individual parts constitutes a direct risk to the life or health of the people who are present in the danger zone of lifting processes.

These operating instructions contain information with regard to the safe utilisation and handling of the lifting accessories and their components. Before using the lifting equipment, the assigned persons are to be briefed with regard to handling and utilisation by a qualified person.

The following principles apply:

- The Working Load Limit (WLL) (see label) of the lifting equipment must correspond to the load. The lifting equipment may not be used if the label is missing or is illegible.
- No danger areas (e.g. crushing points, cutting points, trapping or impact points) may occur that may hinder or endanger the person carrying out the slinging process and / or the transport.
- The base material and the constructive design of the load must be able to hold the applied forces without deformation.
- Stress that leads to a non-uniform load distribution, e.g. which is caused as a result of an off-centre introduction of force must be taken into account when selecting the lifting accessories and their components.
- In the event that extreme stress or strong dynamic strain (shock influences) may occur, this must be taken into account when selecting the lifting equipment and the Working Load Limit (WLL).
- The lifting equipment may not be used for the transportation of persons. No persons are ever permitted to remain present in the danger area of a suspended load.
- The lifting equipment may not come into contact with acids and other aggressive agents. Attention must also be paid to the fact that acid fumes may occur in certain production processes.
- Never make unauthorised amendments to the lifting equipment (e.g. grinding, welding, bending, and attachment of parts)!
- The lifting equipment may not be exposed to any forbidden manipulation of temperature.
- Only original spare parts may be used.
- The relevant additional regulations must be observed when transporting hazardous substances.
- Lifting accessories and their components must be stored in such a manner that they are protected against being damaged and do not cause any danger.
- If damaged, the lifting equipment must be immediately taken out of circulation and has to undergo maintenance work.
- When ready to be discarded, lifting equipment is to be correctly disposed of. Attention: Any substances present that are hazardous to the environment (e.g. greases and oils) are to be disposed of separately.

**Inspection and maintenance:**

On a regular basis before being used, lifting equipment is to be closely inspected with regard to correct utilisation and faultless condition (e.g. screw fit, absence of strong corrosion and deformation, etc.), for example by the person carrying out the slinging process. Defective lifting equipment may not be used. It has to be tested at least once a year by a qualified person whilst taking the relevant standards and trade association regulations (e.g. DGUV Regel 100-500) into account. Every three years lifting equipment must be tested by a qualified person using a proper testing device in order to check that the product is free of cracks. The user must observe the results of the risk assessment in accordance with the occupational safety directives. The re-testing period is shortened in the event that the products are exposed to critical operating conditions. Inspection records are to be kept.

The testing coefficient (EC-Machinery Directive 2006/42/EC point 4.4.1) is defined according to the Standard DIN EN 1677ff.

**Attention: In the event of violation, the operating permission will become void.**

**Before use, the shackles are to be inspected with regard to the following points:**

- The thread of the bolt and of the nut may not be damaged.
- Binders and bolts may not be bent or displays impermissible wear (max. permitted wear: Pitch +5%; Wear –10% in accordance with DGUV Regel 100-500).
- The surface must be free of cracks, indentations and further faults that could endanger utilisation.
- Shackles may only be used with the appropriate nuts. Always use original parts with the same nominal size and grade as replacement parts.

In the event that one of the points is not met, the shackles may not be used for hoisting processes under any circumstances.

**General assembly instructions:**

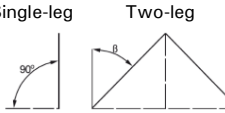
The shackles are to be attached to the load in such a manner that the shackle bolts are correctly screwed into the shackle eyes. This means:

- Screwing in handtight using a suitable tool.
- The flange must be tightly positioned on the shackle eye.
- The designated pin retainer must be attached.
- The bolt can be loaded only centrally, a one-sided load is not allowed.

Shackles are to be attached in such a manner that they can assume the strain in the direction of the longitudinal axis. Unstable positions and flexural strain to the shackles are to be avoided. When using shackles in multi-leg slinging equipment, special attention is to be given to angle of inclination β.

Based upon the working load limit $WLL_{0°}$ stated in the factory certification, the working load limit of the shackle is calculated using the following formula:

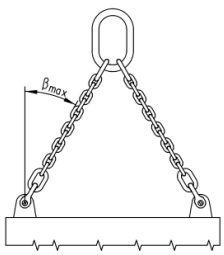
$$WLL = WLL_{0°} \times a \times b \times c$$



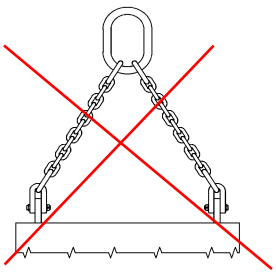

| Angle of inclination β | 0° | 0°-45° | 45°-60° | 0°-45° | 45°-60° |
|---|---|---|---|---|---|
| **Factor a** | | | | | |
| symmetrical | 1 | 1.4 | 1 | 2.1 | 1.5 |
| asymmetrical | 1 | 1 | 1 | 1.5 | 1 |

| Working temperature in °C | **Factor b** |
|---|---|
| minus 40°C - plus 200°C | 1 |
| plus 200°C - plus 300°C | 0.9 |
| plus 300°C - plus 400°C | 0.75 |
| above 400°C | **not allowed** |

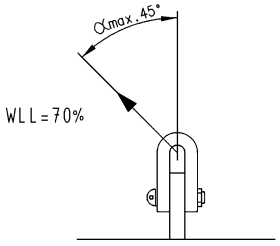
| Lateral strain α | **Factor c** |
|---|---|
| 0° - 6° | 1 |
| 6° - 45° | 0.7 |
| > 45° | **not allowed** |




Correct

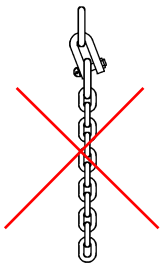


Flexural strain reduced WLL (Factor c)




Lateral strain (Factor c)

Correct



Incorrect

Translation of the original operating instructions
In case of doubts or misunderstanding, the German version of the document is decisive.

Conformity Declaration

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|---|---|
| **EG-Konformitätserklärung** | **Im Sinne der EG Richtlinie Maschinen 2006/42 EG und weiter ergänzender Richtlinien.** |
| **EC Conformity Declaration** | **As defined by the EC Guideline Machines 2006/42 EC and other complementary guidelines.** |
| **Déclaration de conformité CE** | **Dans le sens des directives CE Machines 2006/42 CE et des directives complémentaires.** |
| **EG-Conformiteitsverklaring** | **Overeenkomstig de EG-richtlijn Machines 2006/42 EG en verdere aanvullende richtlijnen.** |
| **Declaración de conformidad CEE** | **Conforme a la Directiva CE de Máquinas 2006/42 CE y otras Directivas suplementarias.** |
| **Dichiarazione di conformità CE** | **Ai sensi della direttiva CE sulle macchine 2006/42 CE e altre direttive integrative.** |
| **EY-yhdenmukaisuustodistus** | **Koneista annetun EY-direktiivin 2006/42 EY ja muiden lisädirektiivien tarkoittamassa mielessä.** |
| **EF-Overensstemmelseserklæring** | **I overensstemmelse med EF-retningslinie maskiner 2006/42 EF og videre supplerende retningslinier.** |
| **EG-Konformitetsförklaring** | **I enlighet med EG:s Maskindirektiv 2006/42 EG samt vidare kompletterande direktiv.** |

Der Unterzeichnende, bevollmächtigt von der
The undersigned, empowered by
Le soussigné, mandataire de
De ondergetekende, gemachtigde van de firma
El suscrito, autorizado por la
Il sottoscritto, delegato dalla
Allekirjoittanut, yhtiön
Den undertegnede, befuldmægtiget af
förklarar undertecknad, bemyndigad av

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erklärt, daß das (die) umseitig bezeichnete(n) Anschlagmittel in der von uns in Verkehr gebrachten Ausführung bei bestimmungsgemäßer Benutzung mit den grundliegenden Sicherheits- und Gesundheitsanforderungen übereinstimmen.

declares that sling gear, listed overleaf, conform in its marketed design with the requisite basic safety and health requirement, provided they are used in accordance with their intended purpose.

déclare que le matériel de levage décrit au verso et employé conformément aux prescriptions, dans l'exécution mise en circulation par nos soins, est conforme aux exigences fondamentales de sécurité et de santé.

verklaart dat de op de achterzijde aangegeven aanslagmiddelen in de door ons in het verkeer gebrachte uitvoering bij doelmatig gebruik met de pricipiële eisen omtrent veiligheid en gezonderheid overeenstemmen.

declara que el/(los) dispositivo/(s) de suspensión mencionado/(s) al dorso en la forma lanzada al mercado concuerdan con los requiremientos básicos impuestos a la seguridad y a la salud bajo la condición de una aplicación de acuerdo con los fines previstos.

dichiara che il(i) dispositivo(i) di arresto definito(i) a tergo, nel modello da noi distribuito, se usato(i) nel modo dovuto risponde (rispondono) ai requisiti basilari de sicurezza e sanitari.

valtuuttamana vakuuttaa, että kääntöpuolella mainittu/tut kiinnitysväline/et myyntiin tuomassamme moudossa ja sitä/niitä asianmukaisesti käytettynä ovat perustavanlaatuisten turvallisuus- ja terveysvaatimusten kanssa yhdenmukaisia.

erklærer, at det (de) omstående anslagsmidel (-midler) i den udførelse, som vi har givet den ud, ved bestemmelsens benyttelse stemmer ovcrens med de grundlæggende sikkerheds- og sundhedskrav.

att det (de) på omstående sida uppförda anslagmedlet (-medlen) i det av oss sålda utförandet vid ändamålsenlig sanvändning överensstämmer med de grundläggande kraven beträffande säkerhet och hälsa.

| | | | | | |
|---|---|---|---|---|---|
| **EG-Richtlinien** | **EG Richtlinien Maschinen** geändert durch | **2006/42 EG** | **Harmonisierte Normen** | EN ISO 12100 | **EN 818-1** |
| **EC Guidelines** | **EC Guideline for Machines** amended by | | **Harmonized standards** | | **EN 818-2** |
| **Directives CE** | **Directives CE Machines** modifiée en | | **Normes harmonisées** | | **EN 818-3** |
| **EG-richtlijnen** | **EG-richtlijn machines** gewijzigd door | | **Overeenkomstige normen** | | **EN 818-4** |
| **Directivas CEE** | **Directiva CEE 'Maquinas'** modificada por | | **Normas armonizadas** | | **EN 818-5** |
| **Direttive CE** | **Direttive CE sulle macchine** cambiate con | | **Norme armonizzate** | | **EN 818-6** |
| **EY-direktiivit** | **Koneista annettu EY-direktiivi** muutettu direktiiveillä | | **Harmonisoidut standardit** | | **EN 818-7** |
| **EF-retningslinier** | **EF retningslinie maskiner** forandret gennem | | **Harmonerede normer** | | **EN 1677-1** |
| **EG-Direktiv** | **EG:s Maskindirektiv** andrat genom | | **Harmoniserade standarder** | | **EN 1677-2** |
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| | | | | | **EN 13889** |
| | | | | | **EN 13155** |

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| **Angewendete nationale Normen**<br>**Applied national standards**<br>**Normes nationales appliquées**<br>**Toegepaste nationale normen**<br>**Normas nacionales aplicadas**<br>**Norme nazionali applicate**<br>**Sovelletut kansalliset standardit**<br>**Brugte nationale normer**<br>**Nationella normer som tillämpats** | DIN 685-2<br>DIN 685-3<br>DIN 685-4<br>DIN 685-5 | DIN 5688-1<br>DIN 5688-3<br>DIN 5692 | DIN 5687-1<br>PAS 1061 | DIN 695<br>DIN 32891<br>DIN 766<br>DIN 764-1<br>DIN 764-2 |

Aberspach / Qualitätsmanager
Unterschrift

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