



**LIFTING  
CHAINS**

## User information

### General information

Pewag prides itself on its versatile and multi-faceted quality products that suit a wide range of applications. Different construction, loading and lashing methods for general lifting applications do not pose a particular challenge for our universally applicable lifting accessories as they were manufactured with precisely these different demands in mind.

All information on design and load capacities in the catalogues (Uniform Load Method) take this range into account. There is also an alternative method in existence for rating the product load capacity, for which the specific application scenario of the chain and all operating conditions must be known. In such a case, please contact the pewag Technical Service team, as the information contained in the catalogues does not apply to such processes.

If the pewag lifting accessories are used correctly and by competent persons, they have a long lifespan and provide the highest possible safety standards. Material and personal damage can be avoided by reading this user information carefully and handling all lifting processes in a responsible, provident manner.

### Changes to the condition as delivered

We urgently recommend using only the original parts that are included in the scope of delivery with pewag lifting chains (bolts, safety pins, screws etc.) Modifying the original condition of the lifting accessories by bending, grinding, removal of parts, welding, drilling, stamping etc. means exposing yourself and others to unnecessary danger. In such a case, safety can no longer be guaranteed and usage becomes dangerous.

Risk factors and conditions include heating the chains to a temperature of more than 380 °C (Pewag Winner 400) and removing safety parts such as safety pins, safety catches etc. Do not apply any surface coatings to pewag chain slings, i.e. do not subject them to hot galvanizing or electro galvanizing.

If any surface treatments are required, please make sure to double - check with the pewag service department first.

Dipping or removing a coating with chemicals is potentially dangerous processes that may give rise to hazards. We urgently recommend customers to check with the pewag technical team first.

For hazardous or dangerous conditions, please refer to the table on page 153.

### Temperature effects

The table on page 153 lists the load reduction values in case of extreme temperatures. These apply until the chain and/or the lifting accessories have reached room temperature. Pewag lifting accessories must on no account be used outside the indicated temperature range. If this has been the case, the chains must be removed from service.

### Effects of acids, caustics and chemicals

Pewag lifting accessories must not be used in acids or caustic solutions or be exposed to their vapors. Please be aware of this requirement at all times as certain production processes release acids and/or vapors! If the use of pewag lifting accessories with highly concentrated chemicals in combination with high temperatures cannot be avoided, please make sure to obtain the express approval of such usage by a pewag expert.

### Hazardous conditions

The working load limits in this catalogue have been determined on the basis that the product is not being used in hazardous conditions. Hazardous conditions are present when lifting accessories are used offshore or for the lifting of persons or potentially dangerous goods such as liquid metal, corrosive or caustic substances or nuclear material. If the chain sling is to be used for such purposes, the extent of the risk is to be assessed by an expert, the load capacity must be adjusted accordingly and incorrect usage in hazardous conditions must be avoided at all cost. As a rule, usage in hazardous conditions should be avoided.

### Prevention is better than cure!

Before using any lifting accessory, several inspections must be performed:

- ★ Does the lifting chain correspond to the order?
- ★ Has the inspection certificate or certificate of conformity been supplied?
- ★ Do the markings and load capacities stated on the chain sling correspond to the information given on the inspection certificate or certificate of conformity?
- ★ Have all the particularities of the chain sling been entered into a register of lifting equipment, if required?
- ★ Has the operating manual outlining the correct use of the chain sling been supplied and read and understood by all personnel?

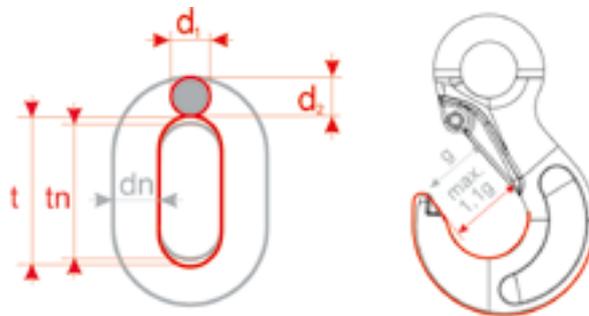
Please check the lifting accessories for visible signs of damage or wear prior to each use. In case of any doubt or damage, do not use the chain slings and have them inspected by a competent person.

Inspections by a competent person must be performed in accordance with national legislation, but at least once every 12 months. If the chain sling is frequently used at its full load capacity, more frequent inspections are required! Please note that the chain sling must also be inspected after unusual events, for instance uncontrolled exposure to heat. We recommend subjecting the chain sling to a load capacity test with 2 times the load capacity every two years, followed by a visual inspection, or another type of crack test.

### Visual inspection criteria

If at least once of the criteria listed below manifests itself during the visual inspection, all parts must be removed from service:

- ★ Breakage of a component
- ★ Illegible or missing marking of the chain sling (i.e. information on identification data and/or load capacity)
- ★ Deformation of suspension or sling parts or the chain itself
- ★ Elongation of the chain resulting in  $t > 1,05 t_n$
- ★ Wear as determined by the mean value of two measurements of diameters  $d_1$  and  $d_2$  carried out at a right angle as shown. The chain must be removed from service life if:  $dm = (d_1 + d_2) / 2 \leq 0,9 d_n$



- ★ Visible damage such as cuts, notches, grooves, surface cracks, discoloration due to excessive heat exposure, signs of subsequent welding, bent or twisted links or other flaws.
- ★ Obvious wear or chemical removal of material if the admissible dimensional changes as outlined in the table supplied has been exceeded, e.g. pitting corrosion
- ★ Cracks and cross - cracks that are visible to the naked eye
- ★ Missing or non - functional safety device as well as signs of widening or twisting of hooks, i.e. noticeable enlargement of the opening or other forms of deformation. The critical point is reached when the opening exceeds 10% of the nominal value or if the safety catch is open, as this indicates that the hook is overloaded.

### Correct maintenance

Please note that all maintenance activities of pewag lifting accessories must be handled by competent persons to minimize the risk of improper use.

### Precise documentation

All inspections and their results must be recorded and these records be kept throughout the service life of the chain slings. Precise records of this sort constitute the best basis for effective maintenance.

### Clean storage

Pewag lifting chains must always be stored in a clean and dried condition and protected against corrosion, i.e. slightly lubricated.

**Maximal approved dimensional change:**

**For Grade 100 chains and accessories**

Designation	Dimensions	Admissible deviation
Chain	dm	-10%
	t	5%
Links	d	-15%
	t	10%
Hooks*	e	5%
	d <sub>2</sub> and h	-10%
	g	10%
CW, CARW, CLW	Halves loose	No changing admissible
	e	5%
BWW, GWH	c	-10%
	e	5%
	d	-15%
	d <sub>1</sub>	5%
SCH, GSCH, U	Δ Angle change	≤ 3%
	Bolt loose	No changing admissible
	e	5%
SM	d, d <sub>1</sub> , d <sub>2</sub> and M	-10%
	e	5%
	g	10%
	d	-10%
BA	d <sub>2</sub>	-10%
FA	d <sub>1</sub>	-10%
Clevis and Connex - pim	d	-10%
LHW, KLHW, WLH(B)W	dw	-10%
	h	-10%
	Opening of hook	2 x s Max.

\* HSW, WS, FW, PW, KHSW, DFW, GKHSW, SH, KSCHW, KCHW, KFW, KPW, KVS, XKW, KOW, KRW

**For Grade 120 chains and accessories**

Designation	Dimensions	Admissible Deviation
Chain	dn	-10%
	tn	5%
Links	Wear at edges	d = dn
	d	-15%
	t	10%
Hooks	e	5%
	d <sub>2</sub> and h	-10%
	g	10%
Connecting links	Halves must be moveable	No changing admissible
	e	5%
	c	-10%
Clevis and Connex bolts	d	-10%
	d	-10%

### Proper use of chain slings

#### The right angle of inclination

To ensure safe handling, the slinging points and chain sling types must be selected in such a way that the angles of inclination of all chain strands (legs) lie within the data given on the load capacity tag. Preferably, all angles of inclination should be the same. Avoid angles of inclination of less than 15° because of the high risk of load instability. Never use chain slings with the angle of inclination exceeding 60°!

#### Edge-loading - know your limits

The maximum load capacity of pewag chain slings assumes that the individual chain legs are pulled straight under load, i.e. that they do not run over edges. However, if edge - loading is unavoidable, load protection (packing) should be used to avoid damage (see illustration):



If chains are guided over edges without proper protection, their load capacity is significantly reduced and safe usage can no longer be guaranteed. Where chain has to be looped around beams or other round - shaped loads, the diameter should be at least twice or 3 times the chain pitch. For smaller diameters, the load capacity of the chains must be reduced by 50%.

### Impact/shock loading

For the load capacities of pewag winner pro lifting chains to impact - or shock - loading. In cases of possible impact/shock, the load factors on page 153 apply.

#### Classification of impacts:

- ★ Slight impact may result from accelerated lifting or lowering operations
- ★ Medium impact may result from the chain slipping while adjusting itself to the shape of the load
- ★ Strong impact results for instance from the load falling into the unloaded chain

#### Vibrations

If they are used correctly, pewag lifting chains and accessories withstand high load cycles, with a standard rating of 20,000 load cycles. In case of high dynamic loads, there is a risk of the chain or components getting damaged. The employer's liability insurance association Metall Nord Süd recommends reducing stress at WLL by using a larger nominal thickness/size in such a case.

#### Symmetrical loading

For the load capacities of pewag lifting chains to apply, it is assumed that the individual chain strands are placed under load symmetrically. When the load is lifted, this results in equal angles of inclination and the individual strands are symmetrical to each other.

The load may be considered symmetrical when all of the following conditions apply:

- ★ The load is less than 80% of the indicated load capacity
- ★ The angles of inclination of all chain strands are not lower than 15° and are very similar (i.e. only differ by a maximum of 15°).
- ★ For 3 and 4 stranded lifting chains, it must be ensured that the corresponding plan angles are within 15° of each other.

**Be careful!**



The main part of the load is carried by just one leg.



The main part of the load is carried by two legs.

If not all of these parameters are complied with, the load cannot be considered symmetrical and the classification of the lifting operation must be left to an expert. In case of doubt, only one chain strand (leg) should be considered as load-bearing. For the corresponding load capacity values, please refer to the load capacity table on page 18 and 19 to determine the precise load capacity.

**Wrongful use defeats the purpose**

Pewag lifting chains offer perfect quality standards if they are used according to their intended purpose. In cases where not all individual legs are used simultaneously or where several lifting chains are used at the same time, different load capacities apply as outlined in the tables. In case of doubt regarding the intended purpose, the load capacity as indicated on the tag must be amended in accordance with the following table:

Type of Sling Chain	Number of Individual Strands Used	Use Factor in Relation to The Load Capacity Given on The Tag
2 leg	1	1/2
3 and 4 leg	2	2/3
3 and 4 leg	1	1/3
2 x single leg	2	1.4 up to 45°
2 x 2 leg	3 or 4	1.5 from 45° – 60°

**Precautions**

- ★ Hang any individual strands (leg) that you do not use back into the master link to prevent hazards caused by freely swinging chains or unintended hooking.
- ★ Before using several chain slings at the same time, make sure that the crane hook is big enough for all the master rings. Make sure that the master rings cannot fall out of the hook during lifting.
- ★ Angles of inclination of more than 45° must be avoided.
- ★ Use only chain slings of the same nominal thickness and grade at the same time.

Never tip - load the hook!

