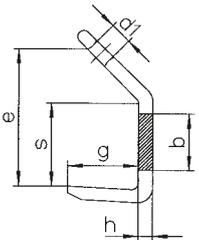


Original operating manual for Sheet Metal Plate Hook BH/S

| Sheet Metal Plate Hook BH/S | | | | | | | | | | | |
|---|-----------|------------|------|------------|-----|----|----|-----|-------|--------|--------------------|
|   | Chain | | Code | Dimensions | | | | | | Weight | Working Load Limit |
| | | | | e | s | b | h | d1 | g | | |
| | mm | inch | | mm | | | | | | kg | kg |
| 7+8 | 9/32+5/16 | BH/S 7/8 | 131 | 80 | 50 | 15 | 28 | 55 | 1.20 | 2,500 | |
| 10 | 3/8 | BH/S 10 | 170 | 100 | 70 | 20 | 36 | 65 | 2.89 | 4,000 | |
| 13 | 1/2 | BH/S 13 | 209 | 130 | 80 | 25 | 40 | 90 | 5.23 | 6,700 | |
| 16 | 5/8 | BH/S 16 | 263 | 160 | 100 | 30 | 50 | 110 | 9.79 | 10,000 | |
| 19 | 3/4 | BH/S 19/20 | 368 | 185 | 120 | 40 | 60 | 130 | 18.39 | 16,000 | |
| 22 | 7/8 | BH/S 22 | 368 | 220 | 140 | 50 | 75 | 150 | 31.65 | 19,000 | |

For lifting sheet metal stacks and boards. Recommended angle of inclination of the sling: 15-30°. Use min. 3-leg chain sling.

Special types available upon request
 Static test coefficient = 2.5; Safety factor = 4

These Sheet Metal Plate Hooks BH/S are designed for the assembly of chain slings and after reading the operating manual as well as the current national norms for lifting and transporting purposes. Since they are not provided with a safety device against accidental unhooking of the load, their use is restricted by special requirements. Sheet Metal Plate Hooks BH/S are combined with other components like KWB Star Alloy chains, connecting links and master links to build chain slings. This product meets the requirements of the EU Machinery Directive 2006/42/EC and is only to be used when taking into consideration the declaration of incorporation and after reading and understanding the operating manual. The operating manual must always be available to the user until the hooks are discarded. It is updated continuously and is only valid in its latest version, which can be downloaded from the following link www.kwb-ketten.at.

Conditions of use

Use purposes: these Sheet Metal Plate Hooks BH/S serve for loading and transporting sheet metal stacks and plates.

Load: due to narrow supporting surface, the lifting process must be carried out by means of a 3- or 4-leg chain sling. The working load limit of the lifting system must be the same as for a 2-leg chain sling – otherwise overloading will occur. The angle of inclination of the lifting system must be adjusted between 15° and 30° – e.g. by means of a shortening hook. The angle of spread at one side of the board must be approximately 10°. The supporting surface of the hook must be entirely shoved under the load.

Admissible operating temperature: -40 °C to 200 °C.

Impacts: the load must be applied without any impact or shock loading – otherwise the load could swing and the hook unhook.

- Sheet Metal Plate Hooks BH/S must only be used by competent personnel
- Sheet Metal Plate Hooks BH/S must be checked before each use for visible signs of damage



Restrictions of use

Under certain conditions, the use of Sheet Metal Plate Hooks BH/S is restricted (see table below). The table below describes certain loads with their corresponding reduction factors. Safe working load values can be calculated by multiplying the working load limit with the reduction factor defined in the table. If more restrictions of use are applicable during a lifting process, all corresponding reduction factors must be taken into account.

| Reduction factors | | | |
|-------------------|--|---|---|
| Temperature* | -40 °C to 200 °C | above 200 °C to 300 °C | above 300 °C to 380 °C |
| Reduction factor | 1 | 0.9 | 0.75 |
| Impact Load | Slight impacts created, for example, when accelerating during the lifting or lowering movement | Medium impacts created, for example, when the chain is loaded but it slips while adjusting to the shape of the load | Strong impacts created, for example, when the load falls onto an unloaded chain |
| Reduction factor | 1 | 0.7 | Impermissible |

* The use at temperatures below -40 °C and above 380 °C is forbidden!

All instructions given in this operating manual assume the absence of extremely dangerous conditions. Such extremely dangerous conditions include offshore activities, lifting of people and potentially dangerous loads, such as liquid metals or nuclear material. In these cases, the admissibility and extent of the risks are to be assessed by KWB.

Reasonably foreseeable misuse

Sheet Metal Plate Hooks BH/S are not designed to be used with food, cosmetics or pharmaceutical products, and must not be subjected to severe corrosive influences (e.g. acids, sewage...). They must not be used in explosion-protected areas or exposed to the fumes released by acids or chemicals. They must also not be used under other circumstances as the one described in Conditions of use and Restrictions of use – e.g. transverse or flexural loading. The use of this product with other inclination angles as the one given above could lead to the unhooking of the load. Sheet metal stacks and plate stacks of heights exceeding measures must not be lifted – they must be divided. The use of the sheet metal plate hook in a basket hitch is not permitted. Do not apply any surface coating procedure with damaging effects on the materials (e.g. hot galvanizing or electrogalvanizing) and do not subject them to heat, welding or drilling processes.

Assembly instructions

The assembly process may only be executed by a qualified person. KWB Star Alloy Sheet Metal Plate Hooks BH/S are attached at the eye of the hook to the chain by means of connecting links. The assignment of the right connecting link and chain dimension is determined by the product code (e.g. BH/S 13) and the grade (10), with which the hooks are also marked. For example, BH/S 13 must be used with V/S 13 connecting links and Star Alloy 13 mm chains. 13 indicates the diameter of the material which the chains are made of, 10 points out the grade. Hooks shall be assembled with their tips pointing inwards. When repairing Super Alloy chain slings (G8), Sheet Metal Plate Hooks BH/S can also be used as long as a misinterpretation of the right WLL by the user is excluded – e.g. by means of a unified coloration and correct identification. In this case, all Sheet Metal Plate Hooks BH/S are to be replaced in order to ensure chain slings of the same length. It is vital to pay attention to the right working load limit marking of the whole system (WLL on identification tag). The weakest part will determine the working load limit. The lifting accessory into which the sheet metal plate hook is to be incorporated must be declared in conformity with the provisions of the Directive 2006/42/EC. Only non-damaged parts must be assembled. Defective Sheet Metal Plate Hooks BH/S must not be assembled and used Sheet Metal Plate Hooks BH/S must be inspected before the assembly process as described below under the section Maintenance, Inspections and Repairs.

Safety precautions to be taken by the user

Gloves must be worn during the whole process. When conditions with restrictions of use take place, working load limit values must be reduced by the above reduction factors in order to assure the required security level.

Residual risks

Overloading because of exceeding the working load limit or not reducing the working load limit because of temperature influences can lead to failure of the Sheet Metal Plate Hooks BH/S. Other factors are unsatisfactory adjustment, transgression of the permitted angle of inclination or height of the stack, high vibrations with heavy load, transverse loading, asymmetric loading and the use of uninspected Sheet Metal Plate Hooks BH/S. In such cases, the load could fall causing injuries or fatalities among the workers who operate and work in the danger zone of the lifting equipment.

How to act in case of accidents or damages

After deformation of the hook because of overloading or other extraordinary events, take the lifting assembly out of service for inspection or repair by a qualified person.

Maintenance, Inspections and Repairs

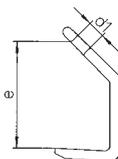
Maintenance: Sheet Metal Plate Hooks BH/S shall be cleaned regularly, dried when in contact with wet atmospheres and protected from corrosion, e.g. lightly oiled.

Inspections: Sheet Metal Plate Hooks BH/S need to be inspected in a clean condition – they must not contain oil, dirt or rust. Painting is only permissible if an evaluation of the sheet metal plate hook condition is possible. When cleaning, do not subject Sheet Metal Plate Hooks BH/S to processes which cause material embrittlement (e.g. pickling), overheating (e.g. flame cleaning), material abrasion (e.g. sand blasting), etc. Surface cracks or other defects must not be covered. Sheet Metal Plate Hooks BH/S must be checked before each use for visible signs of damage. Once a year an inspection must be carried out by a competent person. However, this period must be shortened in view of the conditions of use – e.g. because of frequent use with maximum load capacity or under conditions with restrictions of use, wear or corrosion. It is recommended to subject Sheet Metal Plate Hooks BH/S every two years to a crack test. There are different ways of crack testing: subjecting the sheet metal plate hook to a load test with 2 times the working load limit, followed by a visual inspection, a magnetic crack test or a dye-penetration method.

Withdrawal:

- Broken parts, deformation, notches, cracks of all types
- Signs of heat (e.g. discoloration or coating-burn off)
- In the case of doubts about the safety and correct functioning of the Sheet Metal Plate Hook BH/S
- Unrecognizable identification marking
- If wear or excessive corrosion occurs and the tolerable change of measurement is transgressed (see following table)

| Measure | Maximal permitted change |
|----------------|--------------------------|
| e | +5 % |
| d _i | +5 % |
| Fork angle | >90° |



Repair:

Sheet Metal Plate Hooks BH/S are only to be repaired by a qualified person. Welding, heat treatments, as well as the straightening of bent Sheet Metal Plate Hooks BH/S are not permitted. Inspections and repairs have to be documented and the corresponding reports have to be retained during the service life of the Sheet Metal Plate Hook BH/S.

Storage

KWB Star Alloy Sheet Metal Plate Hooks BH/S shall be stored cleaned, dried, protected from corrosion, e.g. lightly oiled. While stored, they must not be exposed to corrosive, mechanical or thermal influences.

Declaration of incorporation

In accordance with the requirements established in Annex II, part B, of the EU Machinery Directive 2006/42/EC for components in lifting accessories:

This is to inform you that the product mentioned in this original operating manual is designed to be incorporated in lifting accessories complying with all essential requirements of the EU Machinery Directive 2006/42/EC. This product must not be put into service until the final lifting accessory into which it is to be incorporated has been declared in conformity with the provisions of the Directive 2006/42/EC. Moreover, it is a precondition that this operating manual has been read and understood. This declaration has no legal effect if any changes to the product are introduced without KWB's approval.

Following essential safety and health requirements of Annex I of the Directive are applied and fulfilled:
1.1.3, 1.3.4, 1.5.4, 4.1.2.3, 4.1.2.5, 4.3, 4.4.1.

Additionally, we declare that the relevant technical documentation is compiled in accordance with part B of Annex VII and will be transmitted electronically due to a well-founded request by the national competent authority.

The person authorised to compile the technical documentation:
DI Bernhard Oswald; Mariazeller Straße 143; A-8605 Kapfenberg

Klagenfurt, 2011-09-01

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Technical changes and misprints are subject to alteration.