

Instructions for use for SB screws with 6-hr. head and nut ISO 4017 and EN 15048-1, steel 8.8, hot-dip galvanized

Area of use

- Assemblies for non-prestressed screw connections in steel and metal constructions according to EN 15048-1
- These parts are used in shear/hole soffit joints of category A and non-prestressed tension joints of category D according to EN 1993-1-8

Processing instructions

- Installation is governed by EN 1090-2 and EN 1993-1-8/NA
- Washers are generally not required in normal round holes. If the SB assembly is used with washers, only ISO 7090 300 HV HDG washers are permitted. In this case, select the performance statement “with washer”

Instructions/notes

- The SB assembly consists of an ISO 4017 hex head bolt and an ISO 4032 hex nut
- Marking SB (= construction screws) on the screw head and nut
- CE marking
- Pay attention to the properties of hot-dip galvanizing (required thread tolerances for the working bolt/nut connection)

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CE Mark: What It Indicates and How to Recognize It



Following the enactment of some European regulations, structural bolting has taken on a fundamental role in metal carpentry. The term structural bolting refers to articles that, subject to CE marking, allow for the traceability of products.

Specifically, the European standards that define the characteristics of such bolting are EN14399 and EN15048. Through these standards, two types of structural bolting are identified in relation to the type of assembly to be made:

EN15048 specifies assemblies not for preload.



Instructions for use for hexagon head screws HV EN 14399-4, steel 10.9, hot-dip galvanized, manufacturer -P-

Secure fastening

- Safe achievement of the preload force thanks to the defined friction properties for the preload (K-class K1)
- High fitting accuracy and excellent assembly properties

High performance and durability

- High-quality corrosion protection with hot-dip galvanized steel

Easy handling

- An inspection certificate is not required due to the identification number stamped on the screw head (production lot) 3.1

Saves money

- Since the strength of the screw is better used thanks to the large width of the key, a smaller number of HV assemblies or smaller dimensions of the screws are sufficient

Area of use

- High-strength prestressing assemblies for screw connections in steel and metal constructions.
- These parts are used in shear/hole soffit joints, anti-slip joints and tension joints of categories A to E according to EN 1993-1-8. HV assemblies are suitable for both prestressed and non-prestressed connections.

Processing instructions

- Installation is governed by EN 1090-2 and EN 1993-1-8/NA.
- The EN 1090-2 standard also contains regulations for checking and testing connections.
- These screws may only be used with HV nuts according to EN 14399-4 and HV washers according to EN 14399-6 (order separately).

Instructions/notes

- Previous standard DIN 6914 (screw with hexagonal head HV)
- with CE marking
- All parts of the assembly (bolt, nut and washer) must be from the same manufacturer. They are marked with the symbol -P -.
- A compliant HV assembly must include 1 HV screw, 1 HV nut and 2 HV washers from the same manufacturer
- Don't forget to order the HV nut and 2 washers to use the HV screw
- If you need a 3.1 certificate, state it when ordering
- If a certificate of conformity is required, please specify when ordering

EN14399 specifies prestressed assemblies.

UNI EN 15048 and UNI EN 14399: Differences and Fields of Applications

Depending on the type of assembly, the elements used are different. In the following paragraphs, we will analyze in detail how the two classes differ and what are the reference specifications.

As mentioned in the previous paragraph, structural bolting is regulated by two main standards: UNI EN 15048 and UNI EN 14399. These are two bolt standards based on which the elements used in the formation of the assemblies change:

- The elements of EN 15048 are essentially a screw and a nut, products that form non-preload assemblies called SB (Structural Bolt)
- The elements of EN 14399 are a screw, a nut, and a washer, products that form preload assemblies made with HV, HR, and HRC systems

Specifically, preload assemblies – EN 14399 – are controlled tightening assemblies that find greater application in cases where the structure or joint to be made is subjected to tensile forces. As a controlled tightening assembly, the preload is applied using a torque wrench, thus controlling the tightening torque.



The HV, HR, and HRC initials indicate a different breakage in case of stress, although the three systems are equivalent. For example, the HV system involves the use of a lower nut that, if stressed, will be the element destined to fall. In the HR system, instead, the nut is higher and associated with a more extended screw thread; in case of stress, the bolt will yield.

Regarding non-preload assemblies - EN 15048, unlike the previous ones, do not require controlled tightening but manual tightening is sufficient. The elements of UNI EN 15048 are mainly produced with high-strength steels, generally in grade 8.8 defined as the structural grade for screw products in

reference to the standard, available in 2 versions: partially threaded and fully threaded. Some types of non-preload assemblies are also produced in stainless steel and, although not as widely distributed as the first, they can be supplied upon request.

These assemblies are called SB (Structural Bolt), a label that describes a special marking whose characteristics will be described in the following paragraphs.

UNI EN 15048: Kits and Products

All structural bolting is supplied in sealed packages by the manufacturer. The EN 14399 and EN 15048 standards do not allow for open packaging, and the customer must therefore acquire the assembly in the quantities provided by the package.

In fact, for both standards, there are very specific rules regarding packaging:

- Single packages, containing nut + screw + screw for SB systems and nut + washers for HV, HR, and HRC systems from a single batch of each piece
- Separate packages, containing nuts, screws, and washers all coming from a single batch on which the manufacturer must report the tightening characteristics.

To better understand the product's expected performance, the package label must also present indicative values for setting the torque wrench for assembly.

CE Mark: What It Indicates and How to Recognize It

The UNI EN 15048 standard stipulates that all individual products making up the assembly (screw, nut, and washer upon request) must be subjected to CE marking, with the assembly manufacturer's mark, and special SB (Structural Bolting) mark.

Regarding SB Assemblies (EN 15048), these must refer to the following main features:

- Standard diameters from M12 to M36;
- Underhead fillet radius not increased;
- Partial or total threading for the entire length of the screw.

Regarding the CE mark, it applies to the product, in this case, the screw and nut assembly (the washers, since they do not necessarily form part of the assembly batch, do not have marking). To recognize the true CE marking on labels, they must present various information such as:

- Identification number of the certifying body for the CE mark;
- Name or brand of the assembly manufacturer;
- CE conformity certificate number;
- Reference to the EN 15048 standard;

- Product designation according to the different parts of EN 15048;
- Declaration of any hazardous substances.

The CE mark must therefore be affixed to construction products for which the manufacturer has provided the Declaration of Performance (DOP). This document describes information related to the essential characteristics of the product and compliance with the reference standards.

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