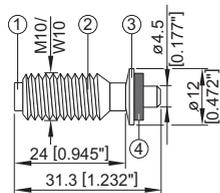


X-BT stainless steel threaded studs

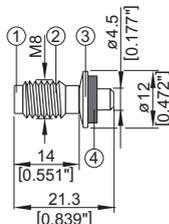
Product data

Dimensions

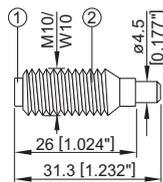
X-BT W10-24-6 SN12-R
X-BT M10-24-6 SN12-R



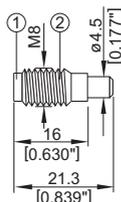
X-BT M8-15-6 SN12-R



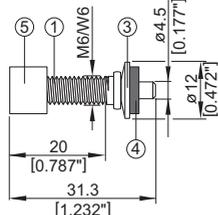
X-BT W10-24-6-R
X-BT M10-24-6-R



X-BT M8-15-6-R



X-BT W6-24-6 SN12-R
X-BT M6-24-6 SN12-R



General information

Material specifications

① Shank:

CR 500 (CrNiMo alloy)	equivalent to A4 / S31803 (1.4462)
	AISI grade 316 material
N 08926 (1.4529) ¹	Available on request

② Threaded sleeve: S 31600

(X2CrNiMo 17132)

③ SN12-R washers: S 31635

(X5CrNiMo 17-12-2+2H)

④ Sealing washers: Elastomer, black *

* Resistant to UV, salt water, water, ozone, oils, etc.

¹⁾ For High Corrosion Resistance HCR material inquire at Hilti

Designation according to Unified Numbering System (UNS)

Fastening tool

DX 351-BT / BTG

See fastener selection for more details.

Approvals

ICC ESR-2347 (USA), ABS, LR, UL, DNV



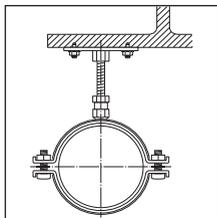
Applications

Examples

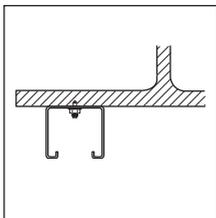
Threaded stud applications especially for:

- High strength steel
- Coated steel structures
- Through penetration of base steel is not allowed

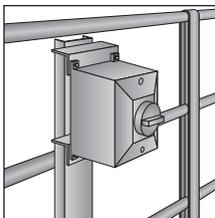
Grating with X-FCM-R



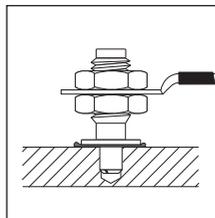
Base plates



Installation rails



Junction box, etc.

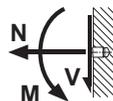


Earthing / Bonding

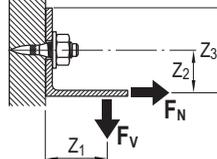
Load data

Recommended loads

Steel grade: Europe, USA	S235, A36	S355, Grade 50 and stronger steel
Tension, N_{rec} [kN/lb]	1.8 / 405	2.3 / 517
Shear, V_{rec} [kN/lb]	2.6 / 584	3.4 / 764
Moment, M_{rec} [Nm/lb]	8.2 / 6	8.2 / 6
Torque, T_{rec} [Nm/lb]	8 / 5.9	8 / 5.9



Example:



Conditions for recommended loads:

- Global factor of safety for static pull-out > 3 (based on 5% fractile value)
- Minimum edge distance = 6 mm [$1/4"$].
- Effect of base metal vibration and stress considered.
- Redundancy (multiple fastening) must be provided.
- The recommended loads in the table refer to the resistance of the individual fastening and may not be the same as the loads F_N and F_V acting on the fastened part.

Note: If relevant, prying forces need to be considered in design, see example. Moment acting on fastener shank only in case of a gap between base and fastened material.

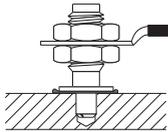
Cyclic loading:

- Anchorage of **X-BT-R** threaded stud in steel base material is not affected by cyclic loading.
- Fatigue strength is governed by fracture of the shank. Inquire at Hilti for test data if high cycle loading has to be considered in the design.

X-BT for fastenings of earthing and bonding device

Protective earthing circuits (According to EN 60439-1 and EN 60204-1)

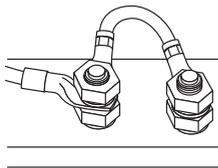
Single point connection



Fasteners
X-BT M10-24-6 SN12-R,
X-BT W10-24-6 SN12-R,
X-BT M6-24-6 SN12-R,
X-BT W6-24-6 SN12-R

Maximum connected cable size
≤ 10 mm² Copper
AWG 8

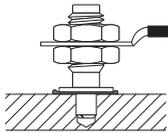
Double point connection



Fasteners
X-BT M10-24-6 SN12-R,
X-BT W10-24-6 SN12-R,
X-BT M6-24-6 SN12-R,
X-BT W6-24-6 SN12-R

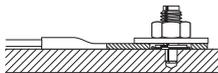
Maximum connected cable size
≤ 16 mm² Copper
AWG 6

External lightning protection systems (According to EN 50164-1)



Fasteners
X-BT M10-24-6 SN12-R,
X-BT W10-24-6 SN12-R,
X-BT M6-24-6 SN12-R,
X-BT W6-24-6 SN12-R

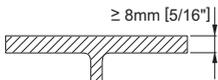
Test class = **N**
 $I_{max} = 50 \text{ kA}$
 Time = $t_d \leq 2 \text{ ms}$



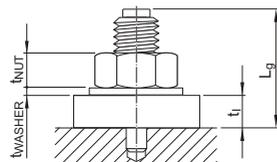
Test class = **H**
 $I_{max} = 100 \text{ kA}$
 Time = $t_d \leq 2 \text{ ms}$

Application requirements

Thickness of base material



Thickness of fastened material



X-BT M8: $t_1 \leq L_g - t_{washer} - t_{nut} \leq 7.0 \text{ mm}$
X-BT M10 / X-BT W10: $t_1 \leq L_g - t_{washer} - t_{nut} \leq 15.0 \text{ mm}$
X-BT M6 / X-BT W6: $t_1 \leq L_g - t_{washer} - t_{nut} \leq 14.0 \text{ mm}$

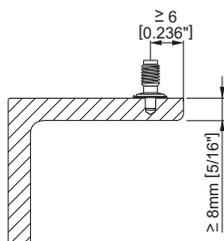
Note:

For X-BT with SN 12R sealing washer $t_1 \geq 2.0 \text{ mm}$

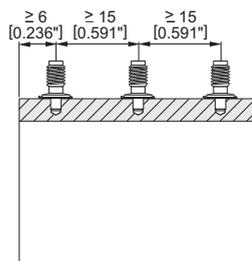
For X-BT M6 / W6 with SN 12R sealing washer $t_1 \geq 1.0 \text{ mm}$

Spacing and edge distances

Edge distance: ≥ 6 mm



Spacing: ≥ 15 mm

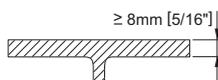


Corrosion information

The corrosion resistance of Hilti CR500 and S31803 stainless steel material is equivalent to AISI 316 (A4) steel grade.

Studs made of N 08926 (HCR) material with higher corrosion resistance, e.g. for use in road tunnels or swimming pools, are available on special order.

Application limit



- $t_{II} \geq 8$ mm [$\frac{5}{16}$ "'] \rightarrow No through penetration
- No limits with regards to steel strength

Fastener selection

Fasteners

Designation	Item no.	Tool
X-BT M8-15-6 SN12-R	377074	DX 351-BTG
X-BT M10-24-6 SN12-R	377078	DX 351-BT
X-BT W10-24-6 SN12-R	377076	DX 351-BT
X-BT M8 without washer	377073	DX 351-BTG
X-BT M10 without washer	377077	DX 351-BT
X-BT W10 without washer	377075	DX 351-BT
X-BT M6-24-6 SN12-R	432266	DX 351-BT
X-BT W6-24-6 SN12-R	432267	DX 351-BT

Note: For High Corrosion Resistance HCR material inquire at Hilti

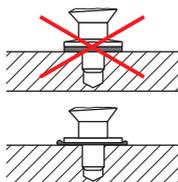
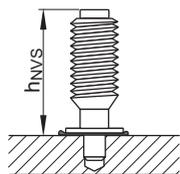
Cartridge selection and tool energy setting

6.8/11 M high precision brown cartridge

Fine adjustment by installation tests on site

Fastening quality assurance

Fastening inspection

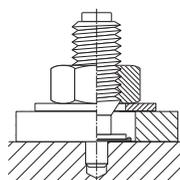


X-BT M8
 $h_{NVS} = 15.7-16.8 \text{ mm}$

**X-BT M10 / X-BT W10 and
 X-BT M6 / X-BT W6**
 $h_{NVS} = 25.7-26.8 \text{ mm}$

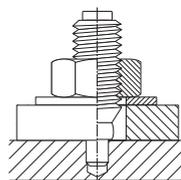
Installation

X-BT with washer



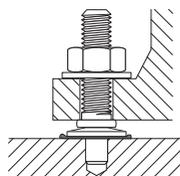
Fastened material hole \varnothing
 $\geq 13 \text{ mm}$

X-BT without washer

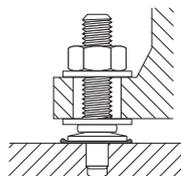


Fastened material hole \varnothing
 $\geq 11 \text{ mm}$ for X-BT M/W10
 $\geq 9 \text{ mm}$ for X-BT M8

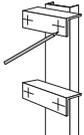
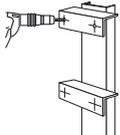
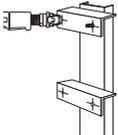
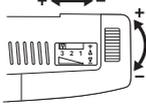
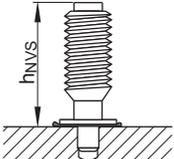
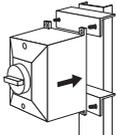
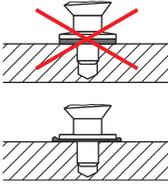
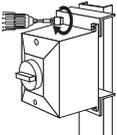
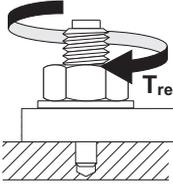
X-BT M6 / X-BT W6



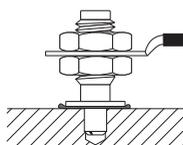
Fastened material with
 pre-drilled hole diameter
 $< 7 \text{ mm}$



Fastened material with
 pre-drilled hole diameter
 $\geq 7 \text{ mm}$

<p>1. Mark location for each fastening</p>	<p>2. Pre-drill with TX-BT 4/7 step shank drill bit</p>	<p>3. Drive X-BT-R studs into drilled hole</p>	<p>4. Hang unit on studs. Put on washers and hand tighten nuts</p>	<p>5. Tighten using a screwdriver with torque clutch</p>						
	 <p>Pre-drill until the shoulder grinds a shiny ring (to ensure proper drilling depth)</p>  <p>Before fastener installation: the drilled hole must be clear of liquids and debris. The area around the drilled hole must be free from liquids and debris.</p>	 <p>Adjust power on DX 351 BT so that the fastener standoff h_{NVS} is not greater than:</p> <p>$h_{NVS} \leq 26.8 \text{ mm}$ (X-BT M/W10 ...-R, X-BT M/W6...-R) $h_{NVS} \leq 16.8 \text{ mm}$ (X-BT M8...-R)</p>  	 <p>Sealing washer must be properly compressed!</p> 	 <p>Tightening torque: $T_{rec} \leq 8 \text{ Nm}$ (5.9 ft-lb)!</p>  <table border="1" data-bbox="812 742 985 829"> <tr> <td>Hilti screwdriver:</td> <td>Torque setting:</td> </tr> <tr> <td>SF 121-A</td> <td>11</td> </tr> <tr> <td>SF 150-A</td> <td>9</td> </tr> </table>	Hilti screwdriver:	Torque setting:	SF 121-A	11	SF 150-A	9
Hilti screwdriver:	Torque setting:									
SF 121-A	11									
SF 150-A	9									

X-BT for fastenings of earthing and bonding device



Hold the lower nut with a spanner whilst tightening the second nut.
The tightening torque can be in a range of about 20 Nm.