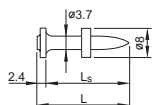


X-CR Stainless Steel Nails for Concrete, Sand lime Masonry and Steel

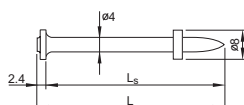
Product data

Dimensions

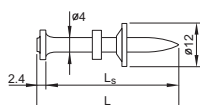
X-CR __ P8



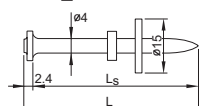
X-CR __ P8



X-CR __ P8 S12



X-CR_P8 S15



General information

Material specifications

Nail shank: CrNiMo Alloy
 $f_u \geq 1800 \text{ N/mm}^2$
(49 HRC)

Zinc coating: X-CR 48 P8S15 has
5–13 μm

Zinc coating to improve anchorage in concrete

Recommended fastening tools

DX 460, DX 36, DX-E72

See **X-CR fastener program** in the next pages and **Tools and equipment** chapter for more details

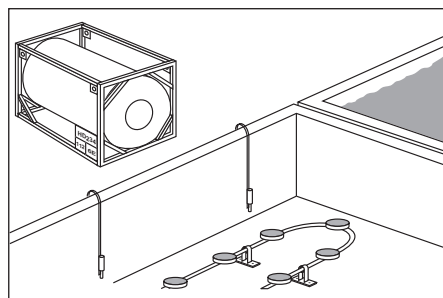
Approvals

DIBt (Germany): X-CR 48 P8 S15
ICC (USA): X-CR
with $d_{nom} = 3.7 \text{ mm}$
all types

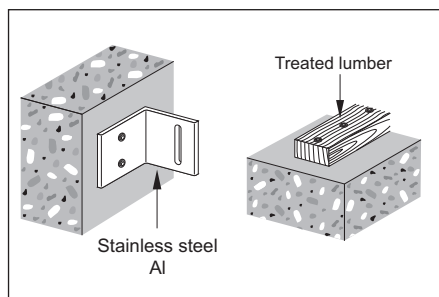


Applications

Examples



Exposure to weather or otherwise corrosive conditions

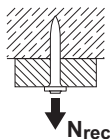


Noble or corrosive fastened material

Load data

DX Standard: Recommended loads

Fastening wood to concrete, sandlime masonry or steel



Fastening wood to concrete, sandlime masonry:

$$N_{\text{rec}} = V_{\text{rec}} = 0.4 \text{ kN}$$

Fastening wood to steel:

$$N_{\text{rec}} = V_{\text{rec}} = 0.6 \text{ kN}$$

Design conditions:

- For safety relevant fastenings sufficient redundancy of the entire system is required: minimum 5 fastenings per fastened unit with normal weight concrete base material.
- All visible failures must be replaced.
- Valid for concrete and sandlime masonry with strength of $f_{\text{cc}} < 40 \text{ N/mm}^2$.
- Valid for predominantly static loading.

Soft material:

- Working loads depend on strength and thickness of material fastened. Do not use working loads in excess of those for wood.
- Depth penetration and other conditions same as for fastening wood
- Use R23 or R36 ($\varnothing 4.5 \text{ mm}$ hole) washer to control penetration and to increase pull-over strength. Separately available from Hilti.

DX-Kwik (with pre-drilling): Recommended loads

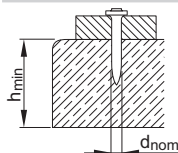
	$N_{\text{rec},1}$ [kN]	$N_{\text{rec},2}$ [kN]	V_{rec} [kN]	M_{rec} [Nm]
X-CR 39/44	2.0	0.6	2.0	5.5
X-CR 48	3.0	0.9	3.0	5.5

Conditions:

- $N_{\text{rec},1}$: concrete in compressive zone.
- $N_{\text{rec},2}$: concrete in tension zone.
- Static or cyclic (5000 load applications) loading.
- $f_{\text{cc}} \geq 25 \text{ N/mm}^2$. For higher concrete strengths, higher loadings may be possible if supported by testing.
- A sufficient redundancy has to be ensured, that the failure of a single fastening will not lead to collapse of the entire system.
- Recommended loads are based on failure of the fastener anchorage in the concrete. Thickness and quality of the fastened material may lower the loadings.
- Observance of all pre-drilling requirements, fastened thickness limits, and recommended details.

Application requirements

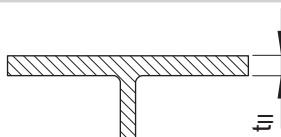
Thickness of base material



Concrete

$h_{\min} = 80 \text{ mm}$ ($d_{\text{nom}} = 3.7 \text{ mm}$)

$h_{\min} = 90 \text{ mm}$ ($d_{\text{nom}} \geq 4.0 \text{ mm}$)



Steel

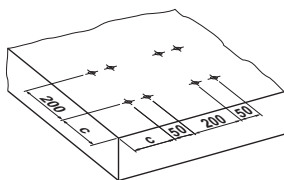
$t_{II} \geq 5 \text{ mm}$ for fastening of wood

Thickness of fastened material

$t_I \leq 25.0 \text{ mm}$ (detailed information see fastener selection)

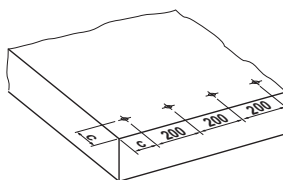
Spacing and edge distances (mm)

Pairs



	reinforced*	non-reinforced
c	100	150

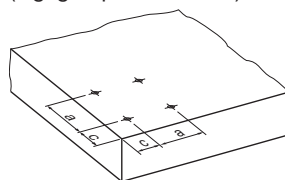
Row along edge



	reinforced*	non-reinforced
c	80	150

General

(e.g. group of fasteners)



	reinforced*	non-reinforced
c	80	150
a	80	100

* Minimum $\varnothing 6 \text{ mm}$ reinforcing steel continuous along all edges and around all corners. Edge bar must be enclosed by stirrups.

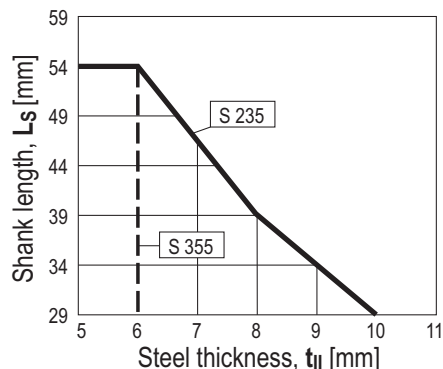
Corrosion information

For fastenings exposed to weather or other corrosive conditions. Not for use in highly corrosive surroundings like swimming pools or highway tunnels.

For further detailed information on corrosion see relevant chapter in **Direct Fastening Principles and Technique** section.

Application limits

Steel



Fastener selection

DX Standard – fastening wood or soft material

Required nail shank length

Wood: $L_s = h_{ET} + t_l$ [mm]

Soft material: $L_s = h_{ET} + t_l - 2.4 - h_{cs}$ [mm]

$h_{cs} \approx 3$ mm if possible

Required depth of penetration h_{ET}

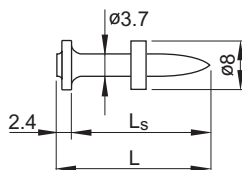
Normal weight concrete NWC

h_{ET} according to concrete strength f_{cc}

f_{cc} [N/mm ²]	15	25	35
h_{ET} [mm]	32	27	22

Light weight concrete LWC:

$h_{ET} = 32\text{--}37$ mm



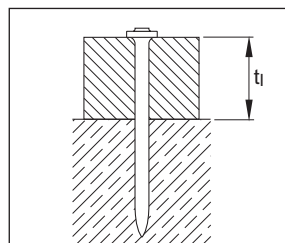
Sandlime masonry SLM

h_{ET} according to concrete strength f_{cc}

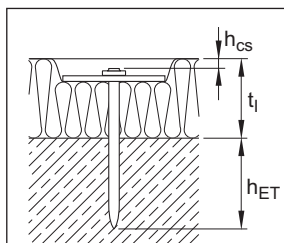
f_{cc} [N/mm ²]	15	25	35
h_{ET} [mm]	32	27	27

Steel

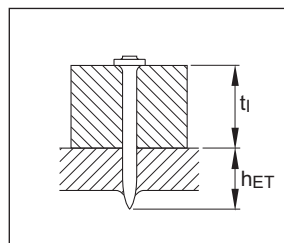
$h_{ET} \geq 10$ mm



Normal weight concrete NWC



Sandlime masonry SLM



Steel

Fastener program

Fasteners				Tool
Designation	Item no	L _s [mm]	d _{nom} [mm]	Designation
X-CR 24 P8	247359	24	3.7	DX 460, DX 36, DX-E 72 ¹⁾
X-CR 29 P8	247360	29	3.7	DX 460, DX 36, DX-E 72 ¹⁾
X-CR 34 P8	247361	34	3.7	DX 460, DX 36, DX-E 72 ¹⁾
X-CR 39 P8	247362	39	4.0	DX 460, DX 36, DX-E 72 ¹⁾
X-CR 44 P8	247363	44	4.0	DX 460, DX 36, DX-E 72 ¹⁾
X-CR 54 P8	247429	54	4.0	DX 460, DX 36, DX-E 72 ¹⁾
X-CR 39 P8 S12	247354	39	4.0	DX 460, DX 36 ²⁾
X-CR 44 P8 S12	247355	44	4.0	DX 460, DX 36 ²⁾
X-CR 48 P8 S15	258121	48	4.0	DX 460, DX 36 ²⁾
X-CR 52 P8 S15	2052687	52	4.0	DX 460

Method: ¹⁾ **DX Standard** (without pre-drilling)

²⁾ **DX-Kwik** (with pre-drilling)

Cartridge selection
DX Standard

Steel: **6.8/11M yellow, red or black cartridge**

Concrete: **6.8/11M yellow or red cartridge**

Masonry: **6.8/11M green cartridge**

DX-Kwik

Concrete: **6.8/11M yellow or red or black cartridge**

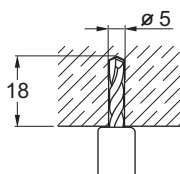
Tool energy adjustment by setting tests on site.

Fastening quality assurance

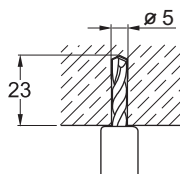
Installation instruction

DX-Kwik

Pre-drilling details (not through fastened material)

**X-CR 39 / X-CR 44**

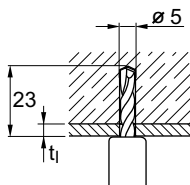
Fastener	t_f [mm]	Drill bit	Item no
X-CR 39	≤ 2	TX-C-5/18	00061793
X-CR 44	2-7	TX-C-5/18	

**X-CR 48**

Fastener	t_f [mm]	Drill bit	Item no
X-CR 48	≤ 5	TX-C-5/23	00061787

Details valid for C20/25 – C45/55 ($f_{cc} = 25-55 \text{ N/mm}^2$ / $f_c = 20-45 \text{ N/mm}^2$)

Pre-drilling details (through fastened material)

**X-CR 48**

Fastener	t_f [mm]	Drill bit	Item no
X-CR 48	≤ 2	TX-C-5/23	00061787

Details valid for C20/25 – C50/60

These are abbreviated instructions which may vary by application.

ALWAYS review/follow the instructions accompanying the product.