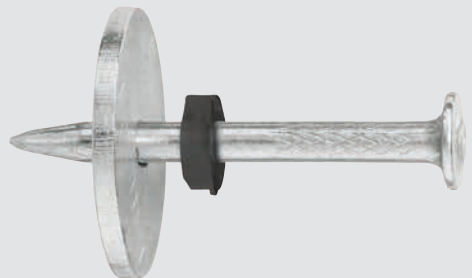




X-C DATA SHEET

**Nail for fastening to concrete
and sand lime masonry**

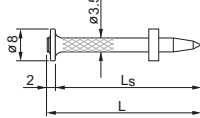


X-C Nail – Fastening to concrete and sand lime masonry

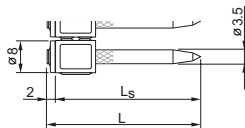
Product data

Dimensions

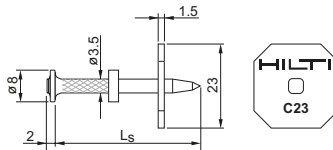
X-C __ P8



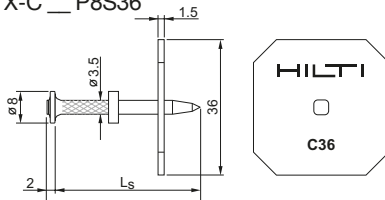
X-C __ MX



X-C __ P8S23



X-C __ P8S36



Material specifications

Carbon steel shank: HRC 56.5
HRC 58 *)

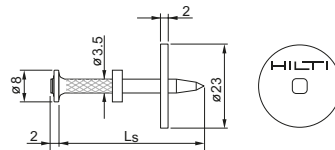
Zinc coating: 5–20 μm

*) X-C 82, 97 and 117 P8 ($d_{\text{nom}} = 3.7 \text{ mm}$)

Recommended fastening tools

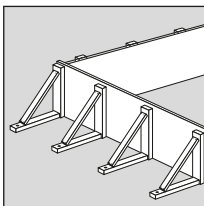
- See fastener program in the next pages.

X-C __ P8S23T (for tunneling applications)

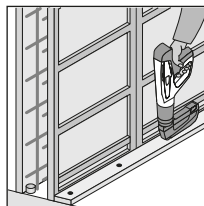


Applications

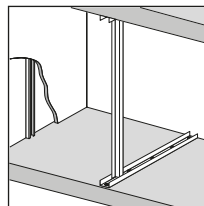
Examples



Conventional formwork



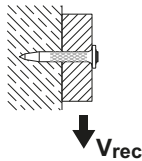
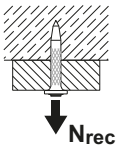
System formwork



Drywall track to concrete

Performance data

Recommended resistance under tension and shear load



Fastening wood to concrete:

N_{rec}	V_{rec}	h_{ET}
0.4 kN	0.4 kN	≥ 27 mm
0.3 kN	0.3 kN	≥ 22 mm
0.2 kN	0.2 kN	≥ 18 mm
0.1 kN	0.1 kN	≥ 14 mm

Fastenings to sandlime masonry:

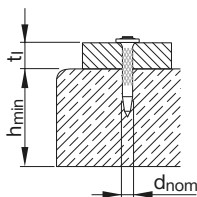
$$N_{rec} = V_{rec} = 0.4 \text{ kN for } h_{ET} \geq 27 \text{ mm}$$

Conditions:

- For safety relevant fastenings sufficient redundancy of the entire system is required: minimum 5 fastenings per fastened unit.
- All visible failures must be replaced.
- Valid for concrete with strength of $f_{cc} < 45 \text{ N/mm}^2$.
- Valid for predominantly static loading.
- Failure of the fastened material is not considered in recommended loads.
- To limit penetration of nail in soft material and to increase pullover load, use nails with washers.
- For more details in relation to base material properties, please refer to the chapter **Fastener selection guide** in the Direct Fastening Manual (DFTM).

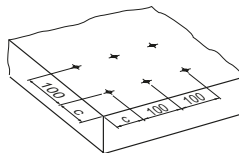
Application recommendation

Base material and fastened material thickness



Concrete
 $h_{min} = 80 \text{ mm}$
 $t_1 \leq 50.0 \text{ mm}$

Fastener positioning in base material



Edge distance: $c \geq 70 \text{ mm}$
 Spacing: $s \geq 100 \text{ mm}$

Fastener shank length recommendation

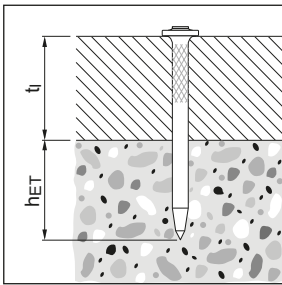
For standard fastening: $L_S = h_{ET} + t_i$ [mm]

For flush fastening: $L_S = h_{ET} + t_i - 5$ [mm]

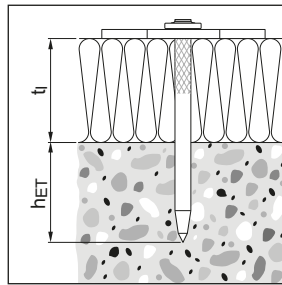
Concrete: $h_{ET} = 22$ mm

Sandlime masonry: $h_{ET} = 27$ mm

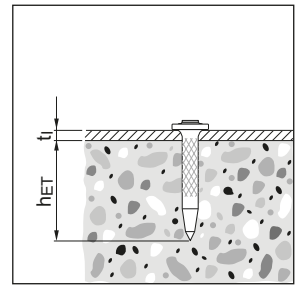
Fastening
wood to concrete
 $t_i = 15 - 40$ mm



Fastening
insulation to concrete
 $t_i = 15 - 40$ mm



Fastening
steel to concrete
 $t_i = 0.6 - 2$ mm



Corrosion information

- The intended use for safety relevant and permanent applications only comprises fastenings which are not directly exposed to external weather conditions or moist atmospheres.
- For more details, please refer to following technical document: Hilti Corrosion Handbook.

System recommendation

- For more details, please refer to the chapter **Accessories and consumables compatibility** in the Direct Fastening Technology Manual (DFTM).

Cartridge recommendation for fastening wood to masonry and concrete

Base material	Cartridge color (tool power level)	
	Tool type: DX 6 MX DX 6 F8	Tool type: DX 5 MX, DX 460 MX DX 5 F8, DX 460 F8, DX 2
	Cartridge type: 6.8/11 M	Cartridge type: 6.8/11 M
Sand lime masonry	titanium ■ (1-3)	green ■
Soft/medium concrete	titanium ■ (1-5)	green ■, yellow ■
Tough concrete	titanium ■ (4-8)	yellow ■, red ■

Cartridge recommendation for fastening steel to masonry and concrete

Base material	Cartridge color (tool power level)	
	Tool type: DX 6 MX DX 6 F8	Tool type: DX 5 MX, DX 460 MX, DX 351 MX DX 5 F8, DX 460 F8, DX 351 F8, DX 2
	Cartridge type: 6.8/11 M	Cartridge type: 6.8/11 M
Sand lime masonry	titanium ■ (1-3)	green ■
Soft/medium concrete	titanium ■ (1-5)	green ■, yellow ■
Tough concrete	titanium ■ (4-8)	yellow ■, red ■

- Tool power level adjustment by setting tests on site.
- Start tool energy selection with lowest recommended tool power level.

Fastener program

Nails					Tools							Description
Designation	Item no.		Specification		DX 6 MX, DX 5 MX, DX 460 MX	DX 6 F8, DX 5 F8, DX 460 F8	DX 2, DX 36	DX E72	DX 351 MX	DX 351 F8	DX 35	
	Packs of 1000 pcs	Packs of 100 pcs	L _s (mm)	d _{nom} (mm)								
X-C 22 P8	2091378	2091377	22	3.5	■	■	■		■	■	Thin metal part to concrete	
X-C 27 P8	2091380	2091379	27	3.5	■	■	■		■	■	Thin metal part to concrete	
X-C 32 P8	2091382	2091381	32	3.5	■	■	■		■	■	Thin metal part to concrete	
X-C 37 P8	2091384	2091383	37	3.5	■	■	■		■	■	Thin metal part to concrete	
X-C 42 P8	2091386	2091385	42	3.5	■	■	■		■		Soft mat / Wood on concrete	
X-C 47 P8	2091388	2091387	47	3.5	■	■	■		■	■	Soft mat / Wood on concrete	
X-C 52 P8	2091390	2091389	52	3.5	■	■	■				Wood on concrete	
X-C 62 P8	2091392	2091391	62	3.5	■	■	■				Wood on concrete	
X-C 72 P8		2091393	72	3.5	■	■	■				Wood on concrete	
X-C 82 P8		360930	82	3.7	■	■	■				Wood on concrete (with pre-hammering)	
X-C 97 P8		360931	97	3.7	■	■	■				Wood on concrete (with pre-hammering)	
X-C 117 P8		360933	117	3.7	■	■	■				Wood on concrete (with pre-hammering)	
X-C 20 THP	2091373	2091372	20	3.5	■	■	■		■	■	Thin metal part to concrete	
X-C 22 P8 S15TH		2091410	22	3.5	■	■	■				Thin metal part to concrete	
X-C 22 P8TH	2091374	2091375	22	3.5	■	■	■		■	■	Thin metal part to concrete	
X-C 27 P8TH		2091376	27	3.5	■	■	■		■	■	Thin metal part to concrete	
X-C 27 P8S23	2091396	2091395	27	3.5	■	■	■		■	■	High pull-over strength on concrete	
X-C 32 P8S23	2091399	2091397	32	3.5	■	■	■		■	■	High pull-over strength on concrete	
X-C 37 P8S23	2091401	2091400	37	3.5	■	■	■		■	■	High pull-over strength on concrete	
X-C 42 P8S23	2091404	2091403	42	3.5	■	■	■		■	■	High pull-over strength on concrete	
X-C 47 P8S23	2091406	2091405	47	3.5	■	■	■		■	■	High pull-over strength on concrete	
X-C 37 P8S36	2091407		37	3.5	■	■	■		■	■	High pull-over strength on concrete	
X-C 52 P8S36	2091408		52	3.5	■	■	■		■		High pull-over strength on concrete	
X-C 62 P8S36	2091409		62	3.5	■	■	■				High pull-over strength on concrete	
X-C 32 P8S23T	2091398		32	3.5	■	■	■				Tunneling applications	
X-C 37 P8S23T	2091402		37	3.5	■	■	■				Tunneling applications	
X-C 20 MX	2091264	2091265	20	3.5	■				■		Thin metal part to concrete	
X-C 27 MX	2091266	2091267	27	3.5	■				■		Thin metal part to concrete	
X-C 32 MX	2091268	2091269	32	3.5	■						Thin metal part to concrete	
X-C 37 MX	2091360	2091361	37	3.5	■						Thin metal part to concrete	
X-C 42 MX	2091362	2091363	42	3.5	■						Soft material / Wood on concrete	
X-C 47 MX	2091364	2091365	47	3.5	■						Soft material / Wood on concrete	
X-C 52 MX	2091366	2091367	52	3.5	■						Wood on Concrete	
X-C 62 MX	2091368	2091369	62	3.5	■						Wood on Concrete	
X-C 72 MX	2091370	2091371	72	3.5	■						Wood on Concrete	

■ recommended, ■ feasible