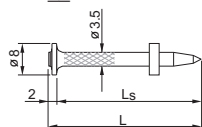


X-C Nails for Concrete and Sand lime-Masonry

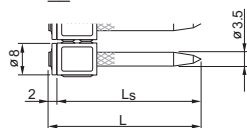
Product data

Dimensions

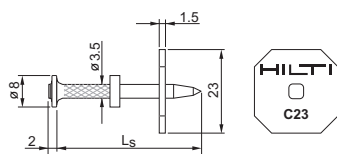
X-C __ P8



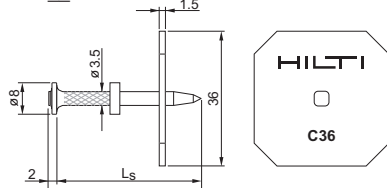
X-C __ MX



X-C __ P8S23



X-C __ P8S36



General information

Material specifications

Carbon steel shank: HRC 53
HRC 58 *)

Zinc coating: 5–13 µm

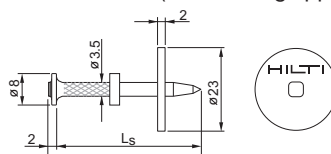
*) X-C 82, 97 and 117 P8 ($d_{nom} = 3.7$ mm)

Fastening tools

DX 460, DX 460 MX, DX 36, DX-E72, DX 35

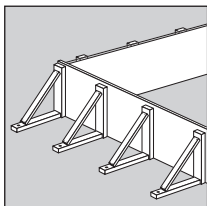
See fastener selection for more details.

X-C __ P8S23T (for tunneling applications)

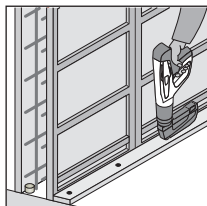


Applications

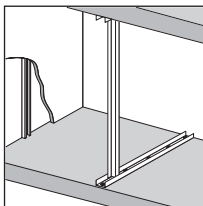
Examples



Conventional Formwork



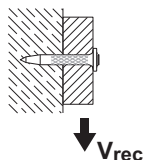
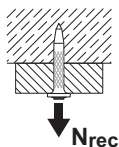
System Formwork



Drywall track to concrete

Load data

Recommended loads



Fastening wood to concrete:

$N_{rec} = V_{rec} =$	0.4 kN for $h_{ET} \geq 27$ mm
	0.3 kN for $h_{ET} \geq 22$ mm
	0.2 kN for $h_{ET} \geq 18$ mm
	0.1 kN for $h_{ET} \geq 14$ mm

Fastenings to sandlime masonry:

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

Design 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 $f_{cc} < 30$ N/mm².
- 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.

Test data)

Important note: test data are for information only and cannot be used for design. These data are examples and do not represent the whole range of applications and load cases.

Design data for Hilti standard nails in concrete are based on a specific statistical evaluation method taking into consideration high variation coefficients. The evaluation procedure is described in the **Direct fastening principles and technique** section of this manual.

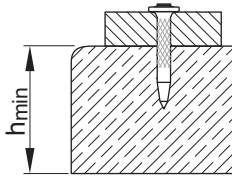
For more detailed information please contact Hilti.

Pull-out loads

Nail	Mean ultimate pull-out loads $N_{u,m}$ [kN]	Variation coefficient [%]	Embedment depth h_{ET} [mm]	Concrete strength f_{cc} [N/mm ²]
X-C 22	3.15	25	19.1	32.7
X-C 62	4.28	41	22.9	32.0

Application requirements

Thickness of base material



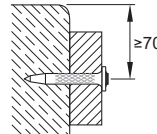
Concrete

$h_{min} = 80 \text{ mm}$

Thickness of fastened material

$t_1 \leq 50.0 \text{ mm}$

Edge distances [mm]



$c \geq 70 \text{ mm}$

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.

Fastener selection and system recommendation

Fastener selection

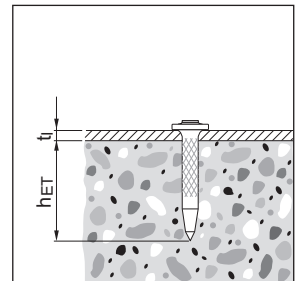
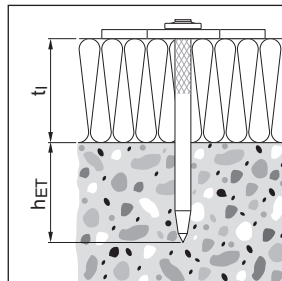
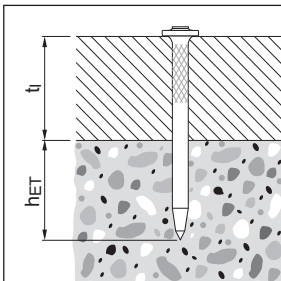
Required nail shank length:

$L_S = h_{ET} + t_1$ [mm]

Recommendation:

Concrete **$h_{ET} = 22 \text{ mm}$**

Sandlime masonry **$h_{ET} = 27 \text{ mm}$**



In case flush fastenings are required:
 $L_S = h_{ET} + t_1 - 5$ [mm]

System recommendation

Nails

Fastener	Item no. Packs of 1000 nails	Packs of 100 nails	L _s [mm]	d _{nom} [mm]	Tools						Key applications	
					DX 460 MX	DX 460 F8	DX 36	DX E72	DX 351 MX	DX 351 F8		DX 35
X-C 22 P8	388527	388534	22	3.5		■	■	■		■	■	Thin metal parts to concrete
X-C 27 P8	388528	388535	27	3.5		■	■	■		■	■	Thin metal parts to concrete
X-C 32 P8	388529	388536	32	3.5		■	■	■		■	■	Thin metal parts to concrete
X-C 37 P8	388530	388537	37	3.5		■	■	■		■	■	Thin metal parts to concrete
X-C 42 P8	388531	388538	42	3.5		■	■	■		■		Soft mat., wood on concrete
X-C 47 P8	388532	388539	47	3.5		■	■	■		■		Soft mat., wood on concrete
X-C 52 P8	388533	388540	52	3.5		■	■	■				Wood on concrete
X-C 62 P8	414468	388541	62	3.5		■	■	■				Wood on concrete
X-C 72 P8	414469	388542	72	3.5		■	■	■				Wood on concrete
X-C 82 P8		360930	82	3.7		■	■	■				Wood on concrete
X-C 97 P8		360931	97	3.7		■	■	■				Wood on concrete
X-C 117 P8		360933	117	3.7		■	■	■				Wood on concrete
X-C 20 THP	388504	388505	20	3.5		■	■	■		■	■	Thin metal parts to concrete
X-C 22 P8TH	388506	388507	22	3.5		■	■	■		■	■	Thin metal parts to concrete
X-C 27 P8TH		388508	27	3.5		■	■	■		■	■	Thin metal parts to concrete
X-C 27 P8S23	388543	388548	27	3.5		■	■	■		■	■	High pull-over strength on concrete
X-C 32 P8S23	388544	388549	32	3.5		■	■	■		■	■	High pull-over strength on concrete
X-C 37 P8S23	388545	388550	37	3.5		■	■	■		■	■	High pull-over strength on concrete
X-C 42 P8S23	388546	388551	42	3.5		■	■	■		■		High pull-over strength on concrete
X-C 47 P8S23	388547	388552	47	3.5		■	■	■		■		High pull-over strength on concrete
X-C 37 P8S36	388553		37	3.5		■	■	■		■	■	High pull-over strength on concrete
X-C 52 P8S36	388554		52	3.5		■	■	■		■		High pull-over strength on concrete
X-C 62 P8S36	388555		62	3.5		■	■	■				High pull-over strength on concrete
X-C 32 P8S23T	34456		32	3.5		■	■	■				Tunneling applications
X-C 37 P8S23T	34457		37	3.5		■	■	■				Tunneling applications

■ recommended

■ feasible

Nails

Fastener	Item no. Packs of 1000 nails	Packs of 100 nails	Ls [mm]	d _{nom} [mm]	Tools						Key applications
					DX 460 MX	DX 460 F8	DX 36	DX E72	DX 351 MX	DX 351 F8	
X-C 20 MX	388509	388518	20	3.5	■				■		Thin metall parts to concrete
X-C 27 MX	388510	388519	27	3.5	■				■		Thin metall parts to concrete
X-C 32 MX	388511	388520	32	3.5	■						Thin metall parts to concrete
X-C 37 MX	388512	388521	37	3.5	■						Thin metall parts to concrete
X-C 42 MX	388513	388522	42	3.5	■						Soft mat., wood on concrete
X-C 47 MX	388514	388523	47	3.5	■						Soft mat., wood on concrete
X-C 52 MX	388515	388524	52	3.5	■						Wood on concrete
X-C 62 MX	388516	388525	62	3.5	■						Wood on concrete
X-C 72 MX	388517	388526	72	3.5	■						Wood on concrete

MX: collated nails for magazine

■ recommended

■ feasible

Cartridge recommendation:

Green concrete:	6.8/11M green
Normal concrete:	6.8/11M yellow
Sandlime masonry:	6.8/11M green

Tool energy adjustment by setting tests on site.

