

Approvals

SOCOTEC (France): X-HS/X-CC with X-DKH

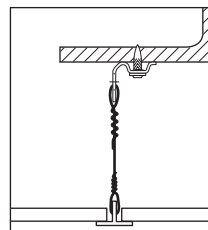
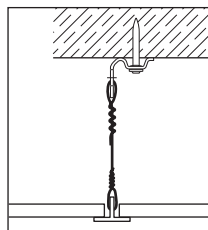
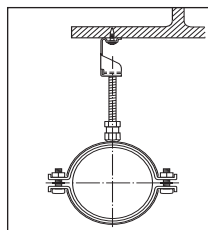
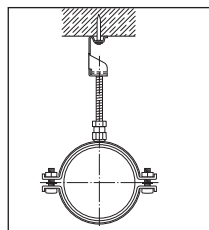
Lloyds Register: X-HS

ICC, UL, FM: X-HS W6/10

Note: technical data presented in these approvals and design guidelines reflect specific local conditions and may differ from those published in this handbook.

Applications

Examples



Threaded rod attachments to concrete and steel

Wire attachments to concrete and steel

Load data

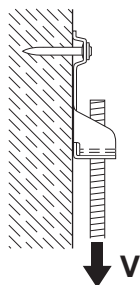
Recommended loads

Concrete (DX-Kwik with pre-drilling) or steel

X-HS



N



V

Fastener designation	$N_{rec} = V_{rec}$ [kN]	Base material
X-HS _ DKH 48	0.9	Concrete
X-HS _ U19	0.9	Steel
X-CC DKH 48	0.9	Concrete
X-CC U16	0.9	Steel

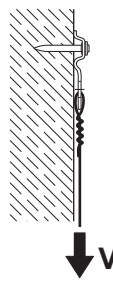
Conditions:

- Predominantly static loading.
- Concrete C20/25–C50/60
- Strength of fastened material is not limiting.
- Observance of all application limitations and recommendations (especially pre-drilling requirements).

X-CC



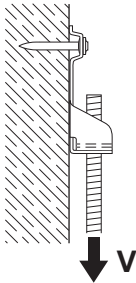
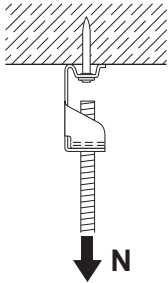
N



V

Concrete (DX Standard without pre-drilling)

X-HS



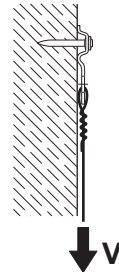
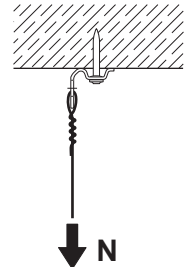
Fastener designation	N _{rec} [kN]	V _{rec} [kN]	h _{ET} [mm]
X-HS_U32	0.4	0.4	27
X-HS_U27	0.3	0.3	22
X-HS_U22	0.2	0.2	18
X-CC_U27	0.2*	0.3	22
X-CC_U22	0.15*	0.2	18
X-CC_CS27	0.2	0.3	22
X-CC_CS22	0.15	0.2	18

*) eccentric loading considered

Conditions:

- Minimum 5 fastenings per fastened unit (normal weight concrete).
- All visible failures must be replaced.
- With lightweight concrete base material and appropriate washers, greater loading may be possible, please contact Hilti.
- Predominantly static loading.
- Observance of all application limitations and recommendations.

X-CC



Application requirements

Thickness of base material

Concrete

DX-Kwik

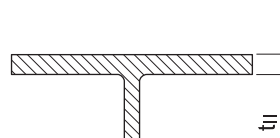
(with pre-drilling) h_{min} = 100 mm

DX Standard

(w/o pre-drilling) h_{min} = 80 mm

Steel

t_{fl} ≥ 4 mm



Spacing and edge distances

Minimum spacing and edge distances: See corresponding nail data sheet of X-U and X-DKH.

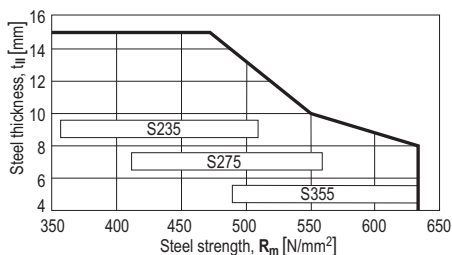
Corrosion information

These zinc-coated fasteners are not suitable for long-term service outdoors or in otherwise corrosive environments.

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

Application limits

Fastening to steel – X-HS U19 with DX351



Fastener selection

Program, technical information

Base material	Fastener Designation	Shank Ø d_s [mm]	Shank length L_s [mm]	L [mm]	Tools
① Concrete pre-drilled	X-HS _ DKH 48 P8S15	4.0	48	50.0	DX 460-F8
② Concrete	X-HS _ U 32 P8S15	4.0	32	34.4	DX 460-F8, DX 351-F8, DX 36
	X-HS _ U 27 P8S15	4.0	27	29.4	
	X-HS _ U 22 P8S15	4.0	22	24.4	
Steel	X-HS _ U 19 P8S15	4.0	19	21.4	
③ Concrete pre-drilled	X-CC DKH 48 P8S15	4.0	48	50.0	DX 460-F8
③ Concrete	X-CC U 27 P8	4.0	27	29.4	DX 460-F8, DX 351-F8, DX 36
	X-CC U 22 P8	4.0	22	24.4	
	X-CC U 16 P8	4.0	16	18.4	
Steel					

Type of threading: M = metric; W6, W10 = Whitworth 1/4", 3/8"

X-HS order information

Item no.	Designation	Item no.	Designation
361788	X-HS M6 U32 P8 S15	386214	X-HS M8 U19 P8 S15
386223	X-HS M6 U27 P8 S15	386215	X-HS M10 U19 P8 S15
361789	X-HS M8 U32 P8 S15	386217	X-HS W10 U19 P8 S15
386224	X-HS M8 U27 P8 S15	386218	X-HS M6 U22 P8 S15
361790	X-HS M10 U32 P8 S15	386219	X-HS M8 U22 P8 S15
386225	X-HS M10 U27 P8 S15	386222	X-HS W10 U22 P8 S15
386226	X-HS W6 U27 P8 S15	386216	X-HS W6 U19 P8 S15
386227	X-HS W10 U27 P8 S15	386220	X-HS M10 U22 P8 S15
386213	X-HS M6 U19 P8 S15	386221	X-HS W6 U22 P8 S15

Type of threading: M = metric; W6, W10 = Whitworth 1/4"; 3/8"

X-CC order information

Item no.	Designation
386229	X-CC U22 P8
386230	X-CC U27 P8
299937	X-CC DKH P8 S15
386228	X-CC U16 P8
2006454	X-CC CS22 P8
2005065	X-CC CS27 P8

Cartridge selection

Cartridge recommendation:

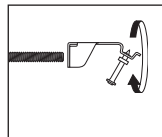
Steel:	6.8/11M red cartridge	$t_{II} \geq 6 \text{ mm}$
	6.8/11M green cartridge	$t_{II} < 6 \text{ mm}$
Concrete:	6.8/11M yellow cartridge	on green/fresh and standard concrete
	6.8/11M red cartridge	on precast, old and hard concrete

Tool energy adjustment by setting tests on site.

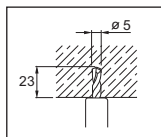
Fastening quality assurance

Installation

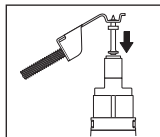
X-HS



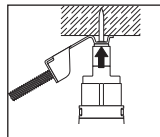
1. Attach the threaded rod to the X-HS before fastening



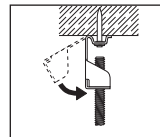
2. For DKH 48 pre-drill ($\varnothing 5 \times 23$)



3. Load the assembly into the tool

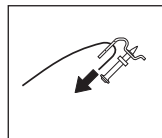


4. Locate the nail, compress the tool, pull the trigger and the fastening is complete

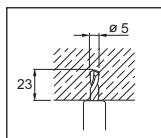


5. Bend the X-HS assembly down to the vertical position

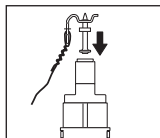
X-CC



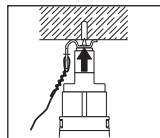
1. Assemble the wire with the X-CC



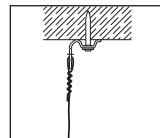
2. For DKH 48 pre-drill ($\varnothing 5 \times 23$)



3. Load the assembly into the tool



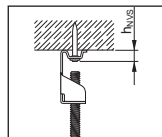
4. Locate the nail, compress the tool, pull the trigger and the fastening is complete



5. Adjust the wire as required

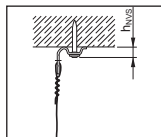
Quality assurance

X-HS



$h_{NVS} = 6-10 \text{ mm}$

X-CC



$h_{NVS} = 4-7 \text{ mm}$

These are abbreviated instructions which may vary by application.
ALWAYS review/follow the instructions accompanying the product.