Deutsches Institut für Bautechnik

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Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

European Technical Assessment ETA-12/0188 of 9 February 2018

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	C4 & C5 TRAK-IT® XH, HD Nails and DCN890 XH Nails
Product family to which the construction product belongs	Power-actuated fastener for multiple use in concrete for non-structural applications
Manufacturer	Stanley Black & Decker Deutschland GmbH Richard-Klinger-Straße 11 65510 Idstein DEUTSCHLAND
Manufacturing plant	Manufacturing Plant 4 and Plant 9
This European Technical Assessment contains	11 pages including 3 annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	EAD 330083-02-0601
This version replaces	ETA-12/0188 issued on 7 October 2016

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Specific Part

1 Technical description of the product

The C4 & C5 TRAK-IT® XH, HD Nails and DCN890 XH Nails are power-actuated fasteners which are placed into the concrete without previous drill by use of a gas actuated tool TRAK-IT® C4 or C5 or an cordless concrete nailer DCN 890. They are anchored in the concrete by sintering and mechanical interlock.

The fastener (nail) is made of galvanised steel. The nails are arranged and connected with each other by special plastic strips that guides the nails in the gas actuated tool magazine.

The product description is given in Annex A.

The characteristic material values, dimensions and tolerances of the fastener not given in Annex A correspond to the respective values laid down in the technical documentation[1] of this European Technical Assessment.

2 Specification of the intended use in accordance with the applicable European Assessment Document

The performances given in Section 3 are only valid if the fastener is used in compliance with the specifications and conditions given in Annex B.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the fastener of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Characteristic values of resistance and displacements	See Annex C1
Durability	Durability is ensured if the specifications of intended use according to Annex B are taken into account.

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	See Annex C1

[1] The technical documentation of this ETA is deposited at the Deutsches Institut für Bautechnik and, as far as relevant for the tasks of the notifies bodies involved in the attestation of conformity procedure, is handed over to the notified bodies.

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with EAD No. 330083-02-0601, the applicable European legal act is: 1997/463/EC (EU).

The system to be applied is: 2+

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 9 February 2018 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow
Head of Department

beglaubigt:
Baderschneider

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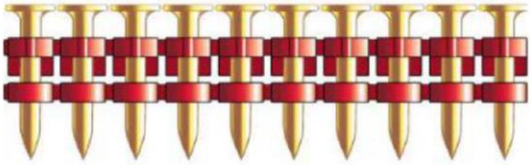
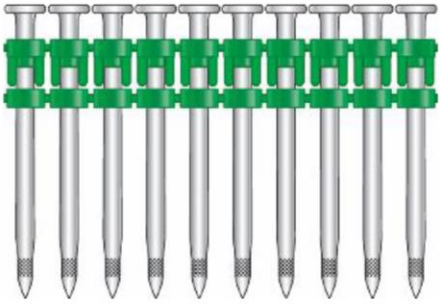
Nail Types



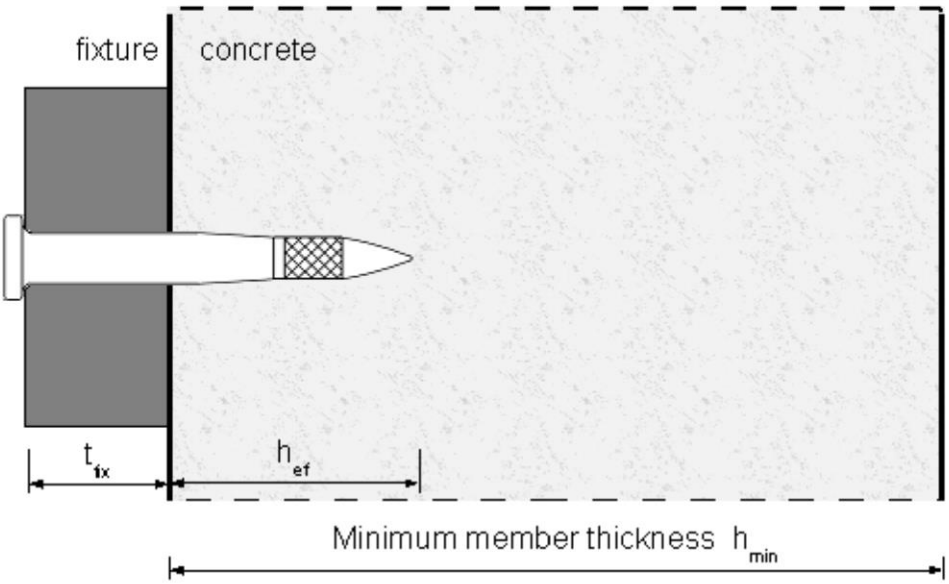
TRAK-IT® XH Extra Hard Nails



TRAK-IT® HD Nails

DCN890 XH Extra Hard Nails

Installed condition



C4 & C5 TRAK-IT® XH and HD Nails and DCN890 XH Nails	Annex A1
Product	

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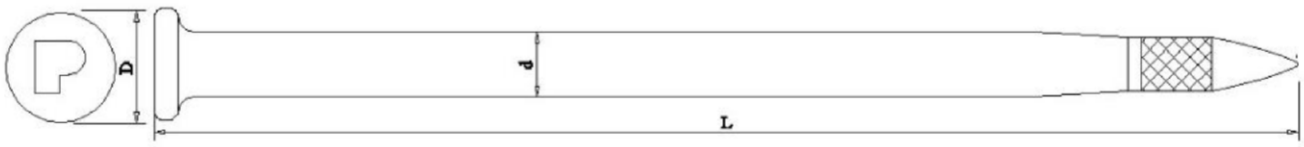
TRAK-IT® HD Nails



TRAK-IT® XH Extra Hard Nails and DCN890 XH Extra Hard Nails

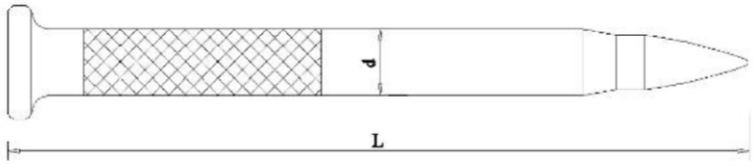


Table 1: Dimensions and materials

		HD nails	XH nails	XH nails	XH nails
For use with tool	[-]	C4	C4	C5	DCN890
Length of nails L	[mm]	22-65	22-38	22-38	19-57
Shaft diameter d	[mm]	3,7	3,0	3,0	3,0
Head diameter D	[mm]	6,3	6,3	6,3	6,3
Material nail	[-]	Hardened C-steel			
Material plastic collation	[-]	Polyethylene			
Zinc plating	[-]	Mech. galvanized min. 8 µm	Mech. or El. galvanized min. 5 µm	Mech. or El. galvanized min. 5 µm	Mech. or El. galvanized min. 5 µm

C4 & C5 TRAK-IT® XH and HD Nails and DCN890 XH Nails	Annex A2
Material and Dimensions	

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Specification of intended use

Anchorages subject to:

- Static and quasi-static loads.

Base materials:

- Reinforced or unreinforced normal weight concrete according to EN 206-1:2000.
- For cracked and non-cracked concrete.
- Anchorges in two-dimensional load-bearing structures (slabs & walls).
- Strength classes C20/25 to C50/60 according to EN 206-1:2000 for use of setting tool C4.
- Strength classes C20/25 to C40/50 according to EN 206-1:2000 for use of setting tool C5.
- Strength classes C20/25 to C50/60 according to EN 206-1:2000 for use of setting tool DCN890.

Use conditions (Environmental conditions):

- Structures subject to dry conditions.

Design:

- Verifiable calculation notes and drawings shall be prepared taking account of the loads to be anchored. The position of the anchor is indicated on the drawings (e.g. position of the fastener relative to reinforcement or to supports etc.).
- The anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- The anchorages are designed in accordance with ETAG 001, Annex C, Design Method C, August 2010 or in accordance with CEN/TS 1992-4-4:2009, Design Method C.
- The anchorages under fire exposure are designed in accordance with EOTA TR 020, May 2004 or in accordance with CEN/TS 1992-4:2009, Annex D. It must be ensured that local spalling of the concrete cover does not occur.
- The fastener with setting tool C4 and C5 is to be used only for multiple use for non-structural applications with following definition:

  Number of fixing points $n_1 \geq 4$,

  Number of fasteners per fixing point $n_2 = 1$,

  Design value of actions F_{sd} per fixing point $n_3 \leq 0{,}6$ kN.
- The fastener with setting tool DCN890 is to be used only for multiple use for non-structural applications with following definition:

  Number of fixing points $n_1 \geq 6$,

  Number of fasteners per fixing point $n_2 = 1$,

  Design value of actions F_{sd} per fixing point $n_3 \leq 0{,}3$ kN.
- The design of the fixture is such that in the case of excessive slip or failure of one fastener the load can be transmitted to neighboring fasteners without significantly violating the requirements on the fixture in the serviceability and ultimate limit state.

Installation:

- Fastener installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.

C4 & C5 TRAK-IT® XH and HD Nails and DCN890 XH Nails	Annex B1
Intended use	

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Table 2: Installation parameters (no previous drilling needed)

			HD nails	XH nails	XH nails	XH nails
For use with tool		[-]	C4	C4	C5	DCN890
Maximum concrete strength class		[-]	C50/60	C50/60	C40/50	C50/60
Effective anchorage depth	h_{ef}	[mm]	≥ 18	≥ 18	≥ 18	≥ 15
Average anchorage depth when used in maximum concrete strength class	$h_{ef,m}$	[mm]	22	25	22	19
Diameter of clearance hole in the fixture	d_f	[mm]	4,0	3,5	3,5	3,5
Max. Thickness of fixture	t_{fix}	[mm]	L - 21 mm	L - 21 mm	L - 21 mm	L - 23 mm
Member thickness, edge distances and spacing						
Minimum member thickness	h_{min}	[mm]	80	80	80	80
Minimum spacing	s_{min}	[mm]	200	200	200	200
Minimum edge distance	c_{min}	[mm]	100	100	100	100

Installation instructions

- Fastener installation in accordance with the manufacturer's specifications and drawings and using the specified installation device.
- Fasteners to be installed perpendicular to the surface of the base material.
- When setting, pay attention to setting defects. A setting defect is present if the nail can be pull out of the concrete by hand.
- Fasteners to be installed ensuring not less than the minimum effective anchorage depth according to Table 2. If the embedment depth is smaller than the minimum effective anchorage depth the nail must be assumed as a setting defect and it must not be loaded.
- Damages on the concrete surface, caused by setting defects, have to be repaired according to EN 1504. A new fastener is set at a minimum distance away of 100 mm of the edge of the damaged surface.
- Use of setting tools according to Annex B3 and B4. The setting tool shall be complied with EN 792-13:2009.

C4 & C5 TRAK-IT® XH and HD Nails and DCN890 XH Nails	Annex B2
Installation parameters, installation instructions	

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Gas actuated tool and gas can

TRAK-IT® C4
150 Joule gas actuated tool

TRAK-IT® C5 Gas Concrete Nailer (long track version) and TRAK-IT® C5-ST Gas Concrete Nailer (short track version) 105 Joule gas actuated tool

C4 & C5 TRAK-IT® XH and HD Nails and DCN890 XH Nails	Annex B3
Gas tools C4 and C5 TRAK-IT® and corresponding gas can	

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DCN 890 Cordless Concrete Nailer 18V XR

C4 & C5 TRAK-IT® XH and HD Nails and DCN890 XH Nails	Annex B4
DEWALT DCN 890 Cordless Concrete Nailer	

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Table 3: Characteristic values, Design method C

			HD and XH nails	XH nails
For use with tool			**C4 and C5**	**DCN 890**
Characteristic resistance for all load directions	F_{Rk}	[N]	44	40
Partial safety factor	γ_M [1)]	[-]	1,5	
Characteristic spacing	s_{cr}	[mm]	200	
Characteristic edge distance	c_{cr}	[mm]	150	
Displacements for all load directions	δ_0, δ_∞	[mm]	≤ 0,1	

1) In absence of other national regulations

Table 4: Characteristic values under fire exposure

Fire resistance class				HD and XH nails	XH nails
R 30	For use with tool			**C4 and C5**	**DCN 890**
	Characteristic resistance for all load directions	$F_{Rk,fi}$	[N]	11	10
	Partial safety factor	$\gamma_{M,fi}$ [1)]	[-]	1,0	
	Characteristic spacing	s_{cr}	[mm]	200	
	Characteristic edge distance	c_{cr}	[mm]	150 [2)]	

1) In absence of other national regulations

2) If the fire attack is from more than one side, the edge distance shall be $c \geq 300$ mm.