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European Technical Assessment Body
for construction products



European Technical Assessment

ETA-22/0338 of 7 August 2024

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

Fasteners (Concrete Nails) NB-19, NB-25, NB-32, NB-38,
NB-40

Product family
to which the construction product belongs

Power-actuated fastener in concrete
for redundant non-structural applications

Manufacturer

Robert Bosch Power Tools GmbH
Max-Lang-Straße 40-46
70771 Leinfelden
DEUTSCHLAND

Manufacturing plant

Werke Taiwan

This European Technical Assessment
contains

10 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 330083-03-0601, Edition 06/2022

This version replaces

ETA-22/0338 issued on 10 August 2022

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Specific Part

1 Technical description of the product

The Fasteners (Concrete Nails) NB-19, NB-25, NB-32, NB-38 and NB-40 are power-actuated fasteners which are placed into the concrete without previous drill by use of a power actuated tool GNB 18V-38 and GNB 18V-40. 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.

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	See Annex B2 and C1
Displacements	See Annex C1

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	No performance assessed

3.3 Aspects of durability

Essential characteristic	Performance
Durability	See Annex B1

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

In accordance with EAD No. 330083-03-0601, 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 7 August 2024 by Deutsches Institut für Bautechnik

Beatrix Wittstock
Head of Section

beglaubigt:
Baderschneider

Description of product: Collated concrete nails

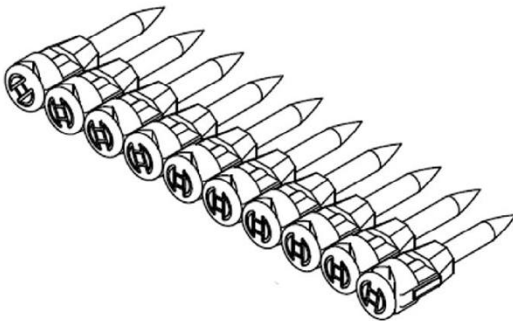
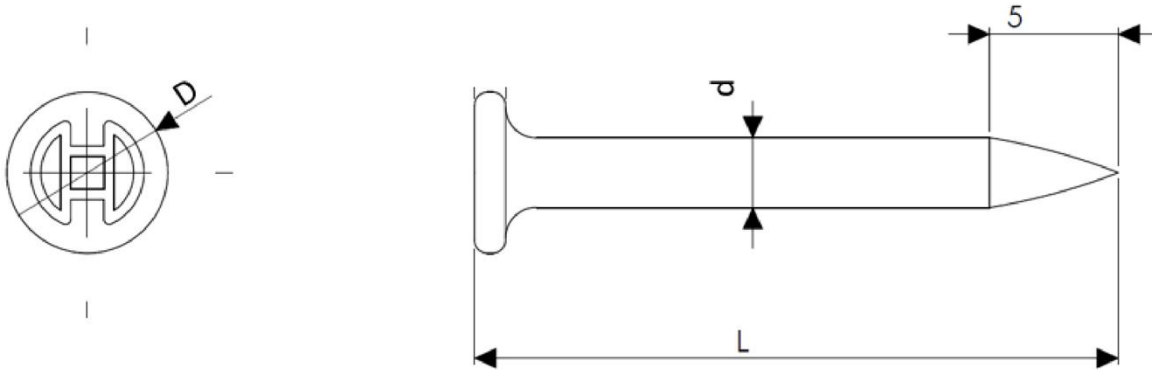
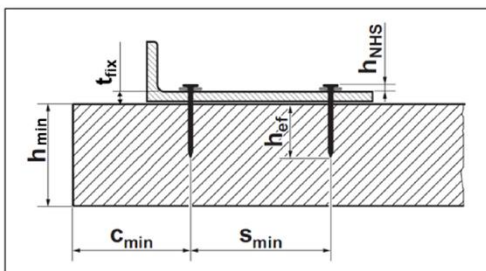


Table A.1:

Collated concrete nails					
name	length L [mm]	shank diameter d [mm]	head diameter D [mm]	nail material	collation colour
NB-19	19	2,7 smooth	6,25	galvanized carbon steel	blue
NB-25	25				
NB-32	32				
NB-38	38				
NB-40	40				

Installed condition:



Fasteners (Concrete Nails) NB-19, NB-25, NB-32, NB-38, NB-40

Description of Product

Annex A 1

Specification of Intended use

Anchorage are subject to:

- Static and quasi-static loads

Base materials:

- Reinforced or unreinforced normal weight concrete according to EN 206-1:2000
- Strength classes C20/25 to C50/60 according to EN 206-1:2000
- For cracked and non-cracked concrete

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 EN 1992-4:2018, Design Method C
- The fasteners may only be used for multiple fastening of non-structural systems with the following definition:
 - Number of fixing points $n_1 \geq 6$,
 - Number of fasteners per fixing point $n_2 = 1$,
 - Design value of actions F_{Ed} per fixing point $n_3 \leq 0,3$ kN.
- The design of the fixture is such that in 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 serviceability and ultimate limit state.

Fasteners (Concrete Nails) NB-19, NB-25, NB-32, NB-38, NB-40

Intended use

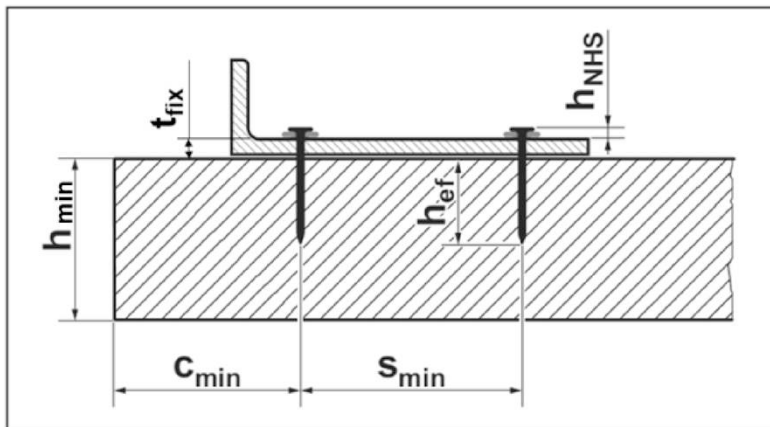
Annex B1

Installation Parameters

To ensure the required embedment depth $h_{ef} > 15$ mm the maximum nail head stand-off h_{NHS} listed in Table B2.1 must be checked during installation. The nail head stand-off h_{NHS} is defined as distance between the nail head and the surface of the fixture. If the value h_{NHS} is exceeded the nail must be considered as setting defect.

Table B2.1:

		Minimum and maximum thickness of the fixtures for NB nails.				
		NB-19 nails	NB-25 nails	NB-32 nails	NB-38 nails	NB-40 nails
Length of nails L	[mm]	19	25	32	38	40
Effective anchorage depth h_{ef}		≥ 15	≥ 15	≥ 15	≥ 15	≥ 15
Thickness fixture min. $t_{fix,min}$		0,5	2	5	11	15
Thickness fixture max. $t_{fix,max}$		1,5	4	11	17	19
Head stand-off h_{NHS}		$\leq 4 - t_{fix}$	$\leq 10 - t_{fix}$	$\leq 17 - t_{fix}$	$\leq 23 - t_{fix}$	$\leq 25 - t_{fix}$
		Member thickness, spacing and edge distances				
Minimum member thickness h_{min}	[mm]	80				
Minimum spacing s_{min}		200				
Minimum edge distance c_{min}		150				



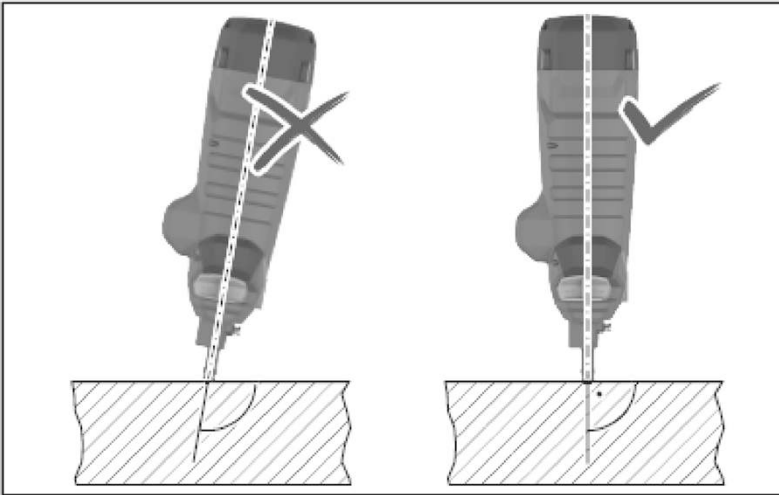
Fasteners (Concrete Nails) NB-19, NB-25, NB-32, NB-38, NB-40

Installation parameters

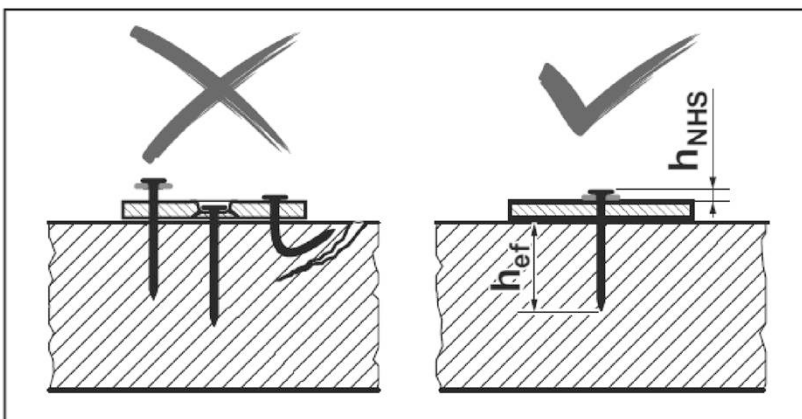
Annex B 2

Installation instructions

- Fastener installation in accordance with the manufacturer's specifications and drawings and using the specified installation device.
- Installation to be carried out by appropriately qualified personnel and under supervision of the responsible person for technical matters of the job-site.
- Fasteners to be installed perpendicular to base material.



- Control for failed fasteners (e.g. too high, too low, bend fastener through contact with hard aggregate).
- Fasteners to be installed ensuring not less than the minimum effective anchorage depth of 15 mm. 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.
- Damaged concrete surface by failed settings to be repaired according to EN 1504-3:2005.
- Failed fasteners to be replaced by new fastener >150mm distanced from damaged area.



- Make sure that required effective anchorage length, h_{ef} stated in Annex B 2 is met.
- Make sure that required nail head stand-off, h_{NHS} stated in Annex B 2 is met.
- Use appropriate fastening tool like stated in Annex B 4.

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Installation instructions

Annex B 3

Setting Tool

Bosch GNB18V-38, GNB 18V-40 (both technically identical).

Table B4.1:

Technical data setting tool		
name	GNB 18V-38	GNB 18V-40
voltage:	18V	
weight (acc. EPTA, with battery 4Ah)	4,6kg	
magazine capacity	22	
nail diameter	2,7-3 mm	
nail length	13-38 mm	13-40 mm



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Installation, Setting tool

Annex B4

Characteristic values, Design method C

Table C.1:

Characteristic values		NB Nails	
Power tool		[-]	GNB18V-38 and GNB18V-40
Characteristic resistance for all load directions in uncracked concrete	$F_{Rk,ucr}$	[kN]	0,18
Characteristic resistance for all load directions in cracked concrete	$F_{Rk,cr}$	[kN]	0,10
Characteristic resistance for steel failure with lever arm	$M^0_{Rk,s}$	[Nm]	2,27
Installation safety factor	γ_{inst}	[-]	1,4
Partial safety factor	$\gamma_M^{1)}$	[-]	1,5
Characteristic spacing	s_{cr}	[mm]	200
Characteristic edge distance	c_{cr}	[mm]	150
Displacement under tension loading	$\bar{\delta}_{N0}$	[mm]	0,1
	$\bar{\delta}_{N\infty}$	[mm]	0,2
Displacement under shear loading	$\bar{\delta}_{V0}$	[mm]	0,2
	$\bar{\delta}_{V\infty}$	[mm]	0,2

¹⁾ In absence of other national regulations.

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Characteristic values

Annex C 1