



Designated according to The Construction Products (Amendment etc.) (EU Exit) Regulations 2020

UK Technical Assessment	UKTA-0836-23/6938 of 29/06/2023
Technical Assessment Body issuing the UK Technical Assessment:	British Board of Agrément
Trade name of the construction product:	PEIKKO HPM ⁽¹⁾ L Anchor Bolts (1) Registered trademark
Product family to which the construction product belongs:	Fixings
Manufacturer:	PEIKKO GROUP CORPORATION Voimakatu 3 15101 Lahti FINLAND
Manufacturing plant(s):	Peikko Manufacturing Plants
This UK Technical Assessment contains:	13 pages including 3 Annexes which form an integral part of this assessment
This UK Technical Assessment is issued in accordance with The Construction Products (Amendment etc.) (EU Exit) Regulations 2020 on the basis of:	UKAD 330924-00-0601 <i>Cast-in anchor bolt of ribbed reinforcing steel</i>

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1. Technical description of the product

The PEIKKO HPM L Anchor Bolts consist of ribbed reinforcing steel B500B with diameters of 16, 20, 25, 32 and 40 mm, two hexagon nuts and two washers. One of the ends of the bolt is provided with an anchor head and the other end with a thread of the sizes M16, M20, M24, M30, and M39. The anchor bolt is embedded in concrete up to the threaded length. The product description is given in Annex A.

2. Specification of the intended use(s) in accordance with the applicable UK Assessment Document (hereinafter UKAD)

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B. The verifications and assessment methods on which this UK Technical Assessment is based lead to the assumption of a working life of the anchor 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 resistance under static and quasi-static tension load	See Annexes B2 and C1
Characteristic resistance under static and quasi-static shear load	See Annex C2
Combined tension and shear under static and quasi-static load	See Annex C2
Displacement under static and quasi-static tension or shear load	See Annex C2

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. Health, hygiene and the environment (BWR 3)

Not relevant.

3.4. Safety and accessibility in use (BWR 4)

Not relevant.

3.5. Protection against noise (BWR 5)

Not relevant.

3.6. Energy economy and heat retention (BWR 6)

Not relevant.

3.7. Sustainable use of natural resources (BWR 7)

No performance assessed.

4. Assessment and verification of constancy of performance (hereinafter AVCP) system applied

4.1. System of assessment and verification of constancy of performance

According to UKAD No. 330924-00-0601 and Annex V of the Construction Products Regulation (Regulation (EU) 305/2011) as brought into UK law and amended, the system of assessment and verification of constancy of performance (AVCP) 1 applies.

5. Technical details necessary for the implementation of the AVCP system, as provided for in the applicable UKAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with the British Board of Agrément and made available to the UK Approved Bodies involved in the conformity attestation process.

5.1. UKCA marking for the product/ system must contain the following information:

- Identification number of the Approved Body
- Name/ registered address of the manufacturer of the product / system
- Marking including date of Marking and the intended use as stated in the Designated technical specification
- Unique identification code of the product type
- The reference number of the Declaration of Performance
- The level or class of the performance declared
- The reference to the Designated technical specification applied
- UKTA number.

On behalf of the British Board of Agrément



Date of Issue: 29 June 2023

Hardy Giesler
Chief Executive Officer



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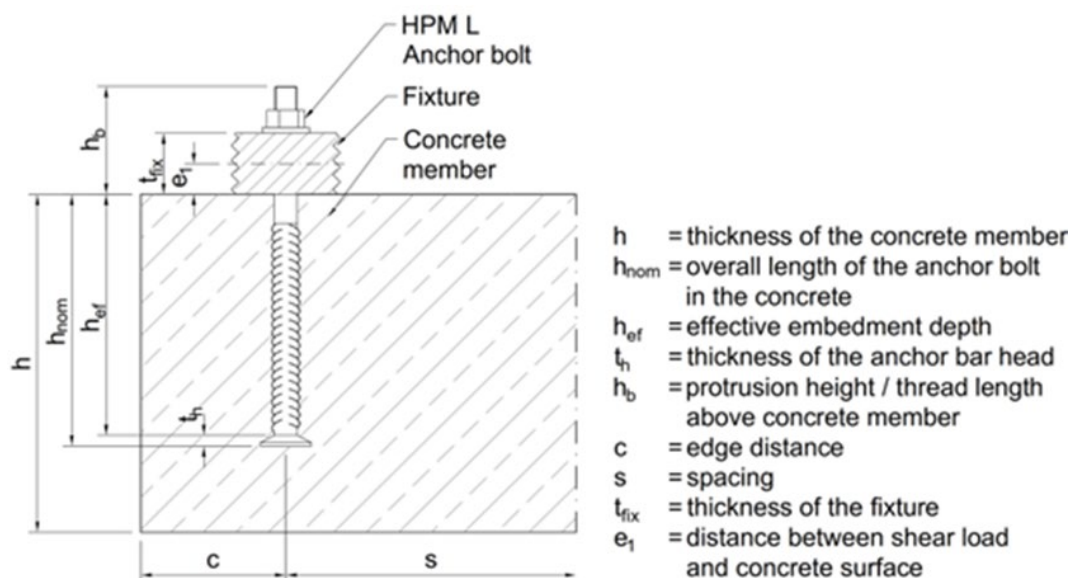


Figure 1. (a) General installation

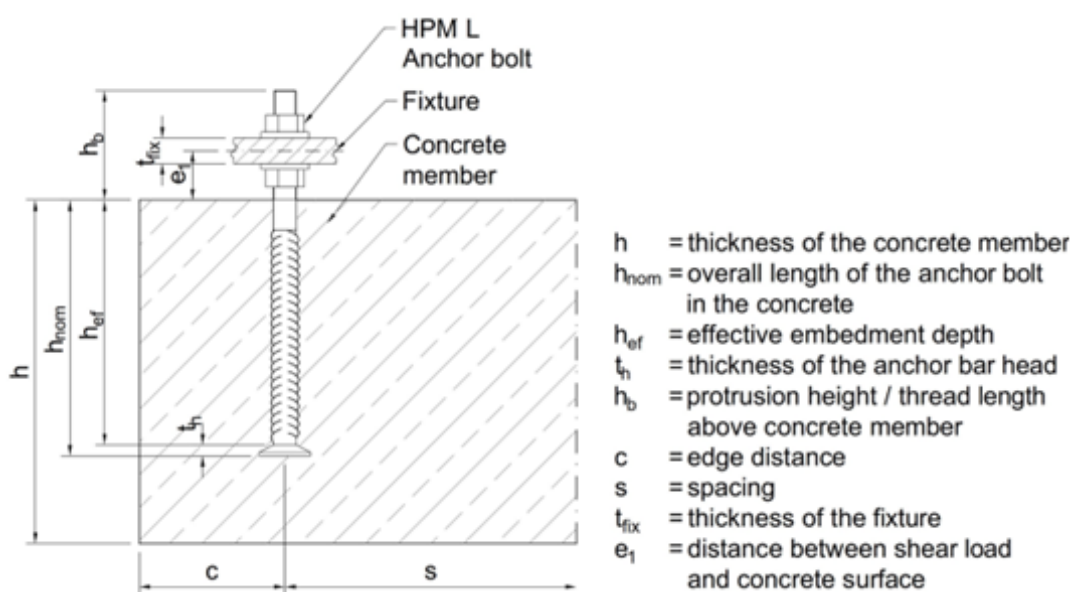
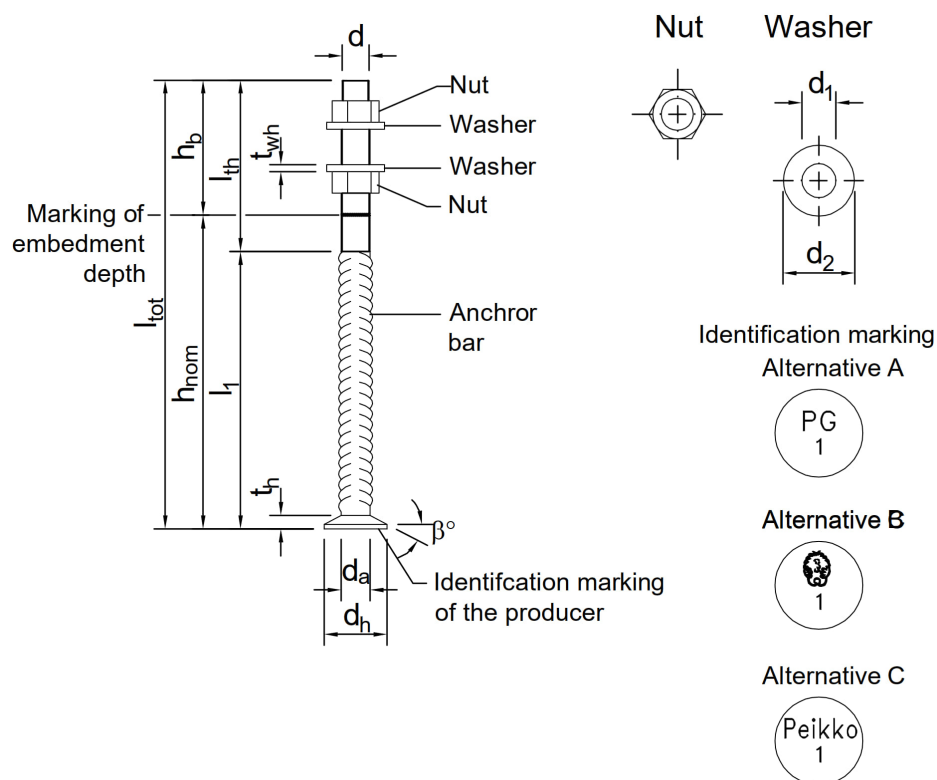


Figure 2. (b) Steel to steel contact

Peikko HPM L Anchor Bolts

Product description
Installed conditions

Annex A1



l_{tot}	=	length of the anchor bolt	d	=	thread diameter
h_{nom}	=	overall length of the anchor bolt in the concrete	d_h	=	diameter of the anchor bar head
h_b	=	protrusion height / thread length above concrete member	d_a	=	diameter of the anchor bar
l_1	=	length without thread	t_{wh}	=	thickness of the washer
l_{th}	=	length of the thread	d_1	=	hole diameter of the washer
t_h	=	thickness of the anchor bar head	d_2	=	outside diameter of the washer
			β	=	inclination angle of the anchor bar head

Figure 3. Dimensions of HPM L Anchor bolts

Table 1: Dimensions

Anchor bolt	Anchor bar										Washer			Nut ⁽¹⁾
	d_a	d_h	d	l_{tot}	h_{nom}	h_b	l_1	l_{th}	t_h	A_h	d_1	d_2	t_{wh}	
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm ²]	[mm]	[mm]	[mm]	[-]
HPM 16 L	16	38	16	280	175	105	140	140	10	933	17	40	6	M16
HPM 20 L	20	46	20	350	235	115	210	140	12	1348	21	44	6	M20
HPM 24 L	25	55	24	430	300	130	260	170	13	1885	26	56	6	M24
HPM 30 L	32	70	30	500	350	150	310	190	15	3044	32	65	8	M30
HPM 39 L	40	90	39	700	520	180	500	200	18	5105	41	90	10	M39

(1) Dimensions according to EN ISO 4032 : 2012

Peikko HPM L Anchor Bolts	Annex A2
Product description Dimensions, components and product marking	

Table 2: Materials of HPM L Anchor bolts

Part	Type		Material
Anchor bolt	1a	HPM ** L	Reinforcing steel B500B or B500C according to EN 1992-1-1 : 2004 + A1 : 2014, Annex C
Hexagonal nut	1a	HPM ** L	According to EN ISO 4032 : 2012 and strength class 8 according to EN ISO 898-2 : 2022
Washer	1a	HPM ** L	Steel S355J2 according to EN 10025 : 2004

Peikko HPM L Anchor Bolts**Product description
Materials****Annex A3**

Specifications of intended use

Anchorage subject to:

- Static and quasi-static tension, shear or combination of tension and shear.

Base materials:

- Reinforced normal weight concrete according to EN 206 : 2013 + A2 : 2021
- Strength classes C20/25 to C90/105 according to EN 206 : 2013 + A2 : 2021
- Cracked or uncracked concrete.

Intended use and environmental conditions:

- Structures subject to dry internal conditions
=>Anchor bolts according to Annex A3, Table 2
- Structures subject to external atmospheric exposure or damp internal conditions if no particular aggressive conditions (such as permanent or alternate immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. desulphurisation in plants or road tunnels, where de-icing materials are used)) exist
=>Anchor bolts according to Annex A3, Table 2 with appropriate concrete cover according to EN 1992-1-1 : 2004 + A1 : 2014

Design:

- Anchor bolts are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor bars are indicated on the design drawings (e.g. position of the anchor bars relative to the reinforcement or to supports).
- For static and quasi-static loading the anchor bolts are designed in accordance with EN 1992-4 : 2018.
- The occurring splitting forces are resisted by the reinforcement. The required cross section of the minimum reinforcement is determined according to EN 1992-4 : 2018, section 7.2.1.7.

Peikko HPM L Anchor Bolts	Annex B1
Intended use Specifications	

Installation:

Placing anchor bolts into concrete

- The installation of anchor bolts is carried out by appropriately qualified personnel under the supervision of the person responsible for the technical matters on site.
- Use of the product only as supplied by the manufacturer.
- Installation in accordance with the manufacturers product installation instructions given in Annex B3.
- The anchor bolts are fixed to the formwork, reinforcement or auxiliary construction such that no movement of the product will occur during the time of laying the reinforcement and of placing and compacting the concrete.
- The anchor bolts are embedded in concrete up to the marking of installation depth.
- The concrete under the anchor bar head is properly compacted.
- The maximum installation torque according to Table 3 may not be exceeded.

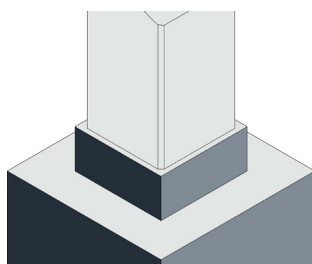
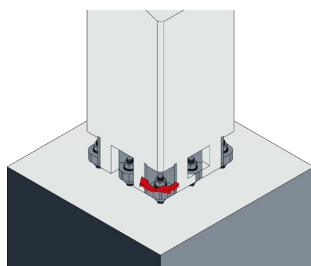
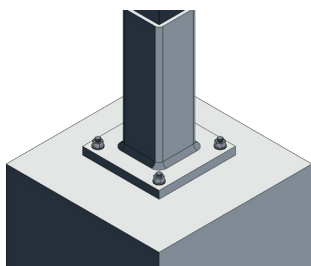
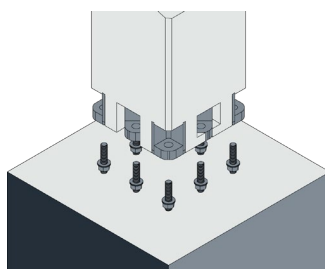
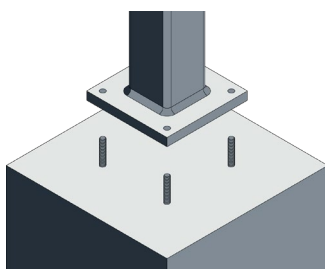
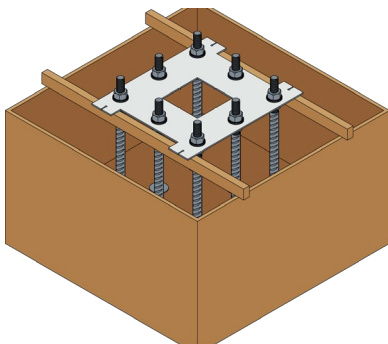
Table 3: Installation parameters of HPM L Anchor bolts

HPM ...			16 L	20 L	24 L	30 L	39 L
Effective embedment depth	h_{ef}	[mm]	165	223	287	335	502
Minimum spacing	s_{min}	[mm]	80	100	100	130	150
Minimum edge distance	c_{min}	[mm]	50	70	70	100	130
Protrusion height / thread length above concrete member	h_b	[mm]	105	115	130	150	180
Minimum thickness of concrete member	h_{min}	[mm]	$h_{ef} + t_h + c_{nom}^{(1)}$				
Maximum installation torque General installation, case (a)	T_{inst}	[Nm]	20	45	75	125	290
Maximum installation torque Steel to steel contact, case (b)	T_{inst}	[Nm]	80	150	270	540	1200

(1) Required concrete cover according to EN 1992-1-1 : 2004 + A1 : 2014

Peikko HPM L Anchor Bolts	Annex B2
Intended use Installation parameters	

Installation instruction:



- Install the anchor bolts to the formwork by using a Peikko installation template according to the design drawings to ensure the correct position, size and protrusion height (h_b) of the anchor bolts.
- Pay attention to a strong fixing of the anchor bolts to avoid moving during pouring.
- Compact concrete properly around and under the anchor bar head.
- After the hardening of the concrete, the installation template can be removed.
- For the installation of a steel column according to figure 1 (general installation) all nuts are removed.
- For the installation of a precast concrete column or steel column according to figure 2 (steel to steel contact) the lower levelling nuts are adjusted to the correct level.
- The connection is fixed by tightening the upper nuts.
The installation torque T_{inst} according to Annex B2 may not be exceeded.
- The joint between the base structure and the column must be filled properly with non-shrinking mortar.

Peikko HPM L Anchor Bolts

Intended use
Manufacturers product installation instructions (MPII)

Annex B3

Table 4: Characteristic resistances of HPM L Anchor bolts under tension load

HPM ...			16 L	20 L	24 L	30 L	39 L
Steel failure							
Characteristic resistance	N _{Rk,s}	[kN]	86,2	134,6	193,9	308,3	536,7
Partial factor	γ _{Ms} ¹⁾	[-]	1,4				
Concrete pull-out failure							
Characteristic resistance In uncracked concrete C20/25	N _{Rk,p}	[kN]	195,9	283,0	395,8	639,3	1072,1
Characteristic resistance in cracked concrete C20/25	N _{Rk,p}	[kN]	140,0	202,2	282,7	456,6	765,8
Increase factor for higher concrete grades for N _{Rk,p} N _{Rk,p} = N _{Rk,p} (C20/25) · ψ _c	ψ _c	C25/30	1,25				
		C30/37	1,50				
		C35/45	1,75				
		C40/50	2,00				
		C45/55	2,25				
		C50/60	2,50				
Partial factor	γ _{Mp} ¹⁾	[-]	1,5				
Concrete cone failure							
Effective embedment depth	h _{ef}	[mm]	165	223	287	335	502
Factor for the influence of the load transfer mechanism	k _{ucr,N}	[-]	12,7				
	k _{cr,N}	[-]	8,9				
Characteristic spacing	s _{cr,N} = s _{cr,sp}	[mm]	3 h _{ef}				
Characteristic edge distance	c _{cr,N} = c _{cr,sp}	[mm]	1,5 h _{ef}				
Partial factor	γ _{Mc} ¹⁾	[-]	1,5				
Concrete splitting							
A reinforcement must be present to resist the splitting forces and limits the crack width to w _k ≤ 0,3 mm. See EN 1992-4 : 2018, section 7.2.1.7							

(1) In absence of other national regulations

Peikko HPM L Anchor Bolts	Annex C1
Performance Characteristic resistances under tension load	

Table 5: Characteristic resistances of HPM L Anchor bolts under shear load

HPM ...			16 L	20 L	24 L	30 L	39 L
Steel failure without lever arm							
Characteristic resistance	$V^0_{Rk,s}$	[kN]	43,1	67,3	96,9	154,2	268,3
Factor according to EN 1992-4 : 2018, section 7.2.2.3.1	k_7	[-]	1,0				
Partial factor	$\gamma_{Ms(2)}$	[-]	1,5				
Steel failure with lever arm							
Characteristic resistance	$M^0_{Rk,s}$	[Nm]	183	356	616	1236	2837
Partial factor	$\gamma_{Ms(2)}$	[-]	1,5				
Concrete pry-out failure							
Factor according to EN 1992-4 : 2018, section 7.2.2.4	$k_{8(1)}$	[-]	2,0				
Partial factor	$\gamma_{Mcp(2)}$	[-]	1,5				
Concrete edge failure							
Effective embedment depth under shear load	l_f	[mm]	128	160	192	240	312
Effective outer diameter	$d_{nom} = d$	[mm]	16	20	24	30	39
Partial factor	$\gamma_{Mc(2)}$	[-]	1,5				

(1) If supplementary reinforcement is present, the factor k_8 must be multiplied by 0,75

(2) In absence of national regulations

Combined tension and shear load

Factor according to EN 1992-4 : 2018, section 7.2.3	k_{11}	[-]	2/3				
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Table 6: Displacements of HPM L Anchor bolts under tension load

HPM ...			16 L	20 L	24 L	30 L	39 L
Tension load	N	[kN]	41	64	92	147	256
Short-term displacement	δ_{N0}	[mm]	0,3	0,3	0,4	0,4	0,6
Long-term displacement	$\delta_{N\infty}$	[mm]	0,6	0,6	0,8	0,8	1,2

Table 7: Displacements of HPM L Anchor bolts under shear load

HPM ...			16 L	20 L	24 L	30 L	39 L
Shear load	V	[kN]	18	25	41	66	115
Short-term displacement	δ_{V0}	[mm]	1,5	1,5	1,5	1,5	1,5
Long-term displacement	$\delta_{V\infty}$	[mm]	2,3	2,3	2,3	2,3	2,3

Peikko HPM L Anchor Bolts

Performance
Characteristic resistances under shear load, combined tension and shear load
Displacements under tension and/ or shear load

Annex C2



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