HOBSON XCHEM™ V401
VINYLESTER
XCHEM™ PRO

ETA 24/0504 (07/06/2024)

Masonry

Pending 100-year design life approval

DOC Link 0504

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Authorised and notified according to Article 29 of the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011

European Technical Assessment ETA-24/0504 of 2024/06/07

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S	
Trade name of the construction product:	Hobson Engineering Vinylester V401
Product family to which the above construction product belongs:	Bonded injection type anchor for use in masonry: sizes M6 to M12
Manufacturer:	Hobson Engineering Company Pty Ltd 10 Clay Place Eastern Creek NSW 2766 Australia Tel. +61 2 8818 0288 Internet www.hobson.com.au
Manufacturing plant:	Plant 5
This European Technical Assessment contains:	21 pages including 16 annexes which form an integral part of the document
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:	EAD 330076-01-0604, Metal injection anchors for use in masonry
This version replaces:	

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full (except the confidential Annexes referred to above). However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product and intended use

Technical description of the product
The Hobson Engineering Vinylester V401 is a bonded anchor (injection type) for use in masonry consisting of a cartridge with Hobson Engineering injection mortar, a perforated nylon sleeve, and an anchor rod with hexagon nut and washer in the range of M6, M8, M10 and M12.

The product specification is given in annex A.

The steel element is placed into a drilled hole filled with injection mortar and is anchored via the bond between metal part, injection mortar and masonry.

The characteristic material values, dimensions and tolerances of the anchors not indicated in Annexes shall 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 EAD

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 provisions made in this European Technical Assessment are based on an assumed intended working life of the anchor of 50 years.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or Assessment Body 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.

1 The technical documentation of this European Technical Assessment is deposited at ETA-Danmark and, as far as relevant for the tasks of the Notified bodies involved in the attestation of conformity procedure, is handed over to the notified bodies.

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

3.1 Characteristics of product

Mechanical resistance and stability (BWR 1):
The essential characteristics are detailed in Annex C.

Safety in case of fire (BWR 2):
The essential characteristics are detailed in Annex C.

Hygiene, health, and the environment (BWR3):
No performance assessed.

Safety in use (BWR4):
For basic requirement Safety in use the same criteria are valid for Basic Requirement Mechanical resistance and stability (BWR1).

Sustainable use of natural resources (BWR7)
No performance determined

Other Basic Requirements are not relevant.

3.2 Methods of assessment

The assessment of fitness of the anchor for the intended use in relation to the requirements for mechanical resistance and stability and safety in use in the sense of the Basic Requirements 1 and 4 has been made in accordance with EAD 330076-00-0604, Metal injection anchors for use in masonry.

4 Assessment and verification of constancy of performance (AVCP)

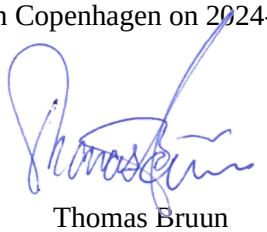
4.1 AVCP system

According to decision 1997/177/EC of the European Commission, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) is 1.

5 Technical details necessary for the implementation of the AVCP system, as foreseen in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking.

Issued in Copenhagen on 2024-06-07 by



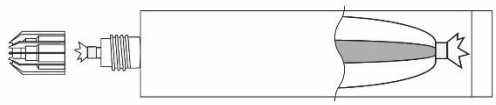
Thomas Bruun
Managing Director, ETA-Danmark

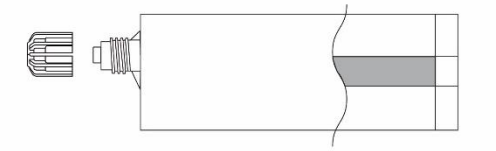
Cartridge: Hobson Engineering Vinylester V401

A) Foil Bag Cartridge 165ml, 300ml.
B) Coaxial Cartridge 380ml / 400 ml / 410 ml / 420ml
C) Side by Side Cartridge 345ml, 825ml

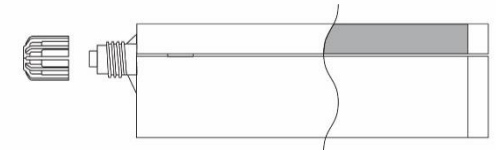
Cartridge Print : Hobson Engineering Vinylester V401
Including - Installation procedure, Production Batch code, Expiry Date, Storage conditions, Health & Safety warning, Gel & Cure time according to temperatures.

A)





B)

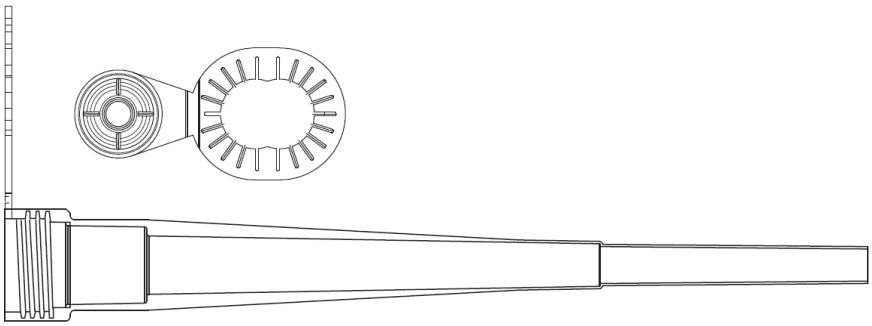


C)

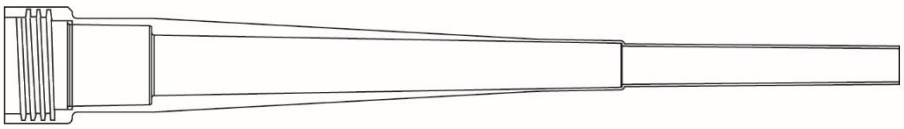
Marking:

Vinylester V401
Batch code, either expiry date or manufacturing date with shelf life

Mixer with hanger

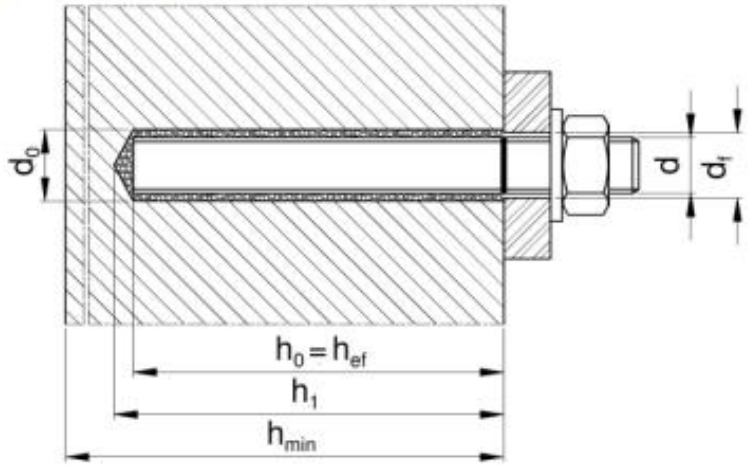


Mixer

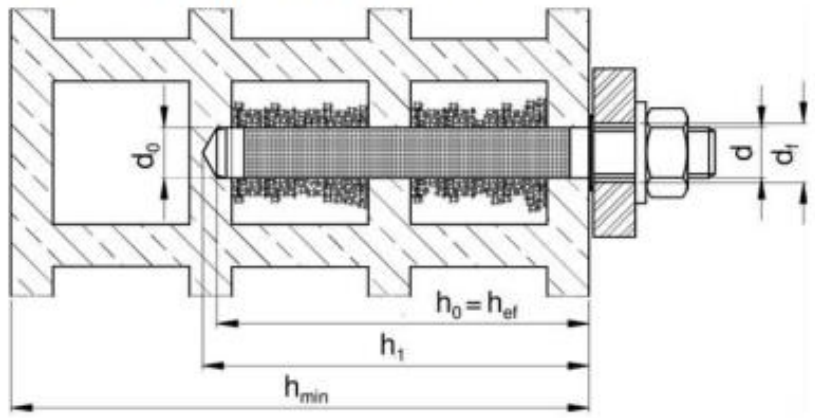


Anchor application in solid masonry (brick n°1) and autoclaved aerated concrete (brick n°3) according to Annex B9) and in hollow/perforated masonry with nylon sleeve (brick n°2 according to Annex B9)

Anchor application in solid masonry



Anchor application in hollow/perforated masonry with nylon sleeve



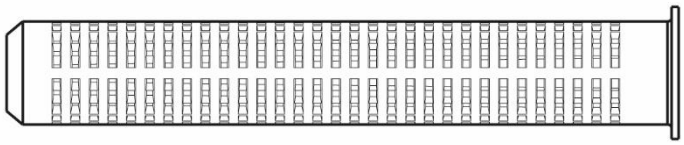
d = diameter of the threaded rod
d_0 = diameter of drill bit
d_f = diameter of clearance hole in the fixture

h_{ef} = effective anchorage depth
h_{min} = minimum thickness of the base material
h_1 = depth of drilled hole to deepest point

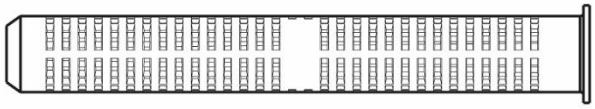
Injection Mortar : Hobson Engineering Vinylester V401 – Resin System

Plastic sleeve for hollow/perforated masonry: nominal dimensions and material

Resin sleeves are the effective way to create a fixing where there is a hollow void, such as for perforated bricks and blocks, or a more porous material for example blockwork. Resin is injected to fill the volume of the sleeve, and then forced through the fine perforations once the metal fixing rod is inserted. This distributes the resin material into the fixing cavity, forming a solid joint between the resin, the sleeve and the fixing.



Nylon Perforated Sleeve – 16 x 85
Nominal Diameter 16mm
Nominal Length 85mm



Nylon Perforated Sleeve – 12 x 80
Nominal Diameter 12mm
Nominal Length 80mm

Table A1:Minimum curing time

Minimum base material temperature C°	Gel time (working time) In dry/wet concrete	Curing time in dry concrete	Curing time in wet concrete
0°C ≤ $T_{base\ material}$ < 10°C	20 min	90 (300[1]) min	180 (600[1])min
10°C ≤ $T_{base\ material}$ < 20°C	9 min	60 min	120 min
20°C ≤ $T_{base\ material}$ < 30°C	5 min	30 min	60 min
30°C ≤ $T_{base\ material}$ ≤ 40°C	3 min	20 min	40 min

The temperature of the cartridge must be ≥ 20°C
(1) Value in the brackets applies for autoclaved aerated concrete

HOBSON ENGINEERING VINYLESTER V401	**Annex A3** of European Technical Assessment ETA-24/0504
Plastic sleeve and curing times	

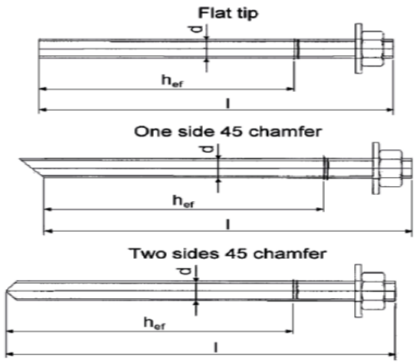


Table A2: Threaded rod dimensions

Anchor size			**M6**	**M8**	**M10**	**M12**
Diameter of anchor rod	d	[mm] =	6	8	10	12
Size of sleeve	d_{nom} x l_s	[mm] =	12 x 80		16 x 85	
Nominal anchorage depth	h_{ef}	[mm] =	80		85	
Maximum diameter hole in fixture	d_{fix}	[mm] ≤	7	9	12	14
Depth of drilled hole to deepest point	h_1	[mm] =	h_{ef} + 5 mm			

Table A3: Threaded rods materials

Designation	**Material**
Threaded rods made of zinc coated steel	
Threaded rod M6 – M12	Strength class 4.6, 4.8, 5.6, 5.8, 8.8, 10.9 and 12.9 EN ISO 898-1 Steel galvanized ≥ 5µm EN ISO 4042 Hot dipped galvanized ≥ 45µm EN ISO 10684
Washer ISO 7089	Steel galvanized EN ISO 4042; hot dipped galvanized EN ISO 10684
Nut EN ISO 4032	Strength class 8 EN ISO 898-2 Steel galvanized ≥ 5µm EN ISO 4042 Hot dipped galvanized ≥ 45µm EN ISO 10684
Threaded rods made of stainless steel	
Threaded rod M6 – M12	Strength class A2 or A4 – 50, A2 or A4-70 and A4-80 EN ISO 3506-1;
Washer ISO 7089	Strength class A4-70 and A4-80 EN ISO 3506-1;
Nut EN ISO 4032	Strength class A4-70 and A4-80 EN ISO 3506-1;
Threaded rods made of high corrosion resistant steel	
Threaded rod M6 – M12	Strength class 70 or 80. High corrosion resistant steel 1.4529, 1.4565 EN 10088
Washer ISO 7089	High corrosion resistant steel 1.4529, 1.4565 EN 10088
Nut EN ISO 4032	Strength class 70 or 80 EN ISO 3506-2; High corrosion resistant steel 1.4529, 1.4565 EN 10088

Commercial standard threaded rods with:
- material and mechanical properties according to Table A3;
- confirmation of material and mechanical properties by inspection certificate 3.1 according to EN-10204:2004;
- marking of the threaded rod with the embedment depth.

Use:
The anchors are intended to be used for anchorages for which requirements for mechanical resistance and stability and safety in use in the sense of the Basic Requirements 1 and 4 of Regulation 305/2011 (EU) shall be fulfilled and failure of anchorages made with these products would compromise the stability of the works, cause risk to human life and/or lead to considerable economic consequences.

Anchors subject to:
- Static and quasi-static loads: M6 to M12

Base materials:
- Solid masonry (Masonry Group b), hollow or perforated masonry (Masonry Group c) or autoclaved aerated concrete masonry (Masonry Group d) according to Annex B9. The mortar strength class of the masonry has to be M 2,5 according to EN 998-2:2010 at minimum

Temperature range:
The anchors may be used in the following temperature range:
(a) -40°C to +40°C (max. short term temperature +40°C and max. long term temperature +24°C)

Use conditions (Environmental conditions):
Threaded rods:
a) Carbon galvanized steel class 4.6, 4.8, 5.6, 5.8, 8.8, 10.9 or 12.9 according to EN ISO 898-1 for dry internal conditions.
b) Stainless steel A2 or A4-50, A2 or A4-70, A4-80 and HCR class 70 and 80 for structures subject to external atmospheric exposure (including industrial and marine environment) and to permanently damp internal condition.

Nuts and washers:
Corresponding to anchor rod material mentioned above for the different environmental exposures.

Installation:
Use conditions
- Condition d/d: Installation and use in structures subject to dry, internal conditions.
- Condition w/w: Installation and use in structures subject to dry or wet environmental conditions

Perforation with drilling machine

Proposed design methods:
- Static and quasi-static load: EOTA TR 054, Design Method A.

Table B1 Installation data for solid masonry (brick n°1)

Size		**M6**	**M8**	**M10**	**M12**
Nominal drilling diameter	d_0 [mm]	8	10	12	14
Maximum diameter hole in the fixture	d_{fix} [mm]	7	9	12	14
Embedment depth	h_{ef} [mm]	80	80	85	85
Depth of the drilling hole	h_1 [mm]	h_{ef} + 5 mm			
Maximum installation torque moment allowed	T_{inst} [Nm]	1	1	1	1
Thickness to be fixed	$t_{fix,min}$ [mm]	> 0			
	$t_{fix,max}$ [mm]	< 1500			
Minimum spacing	S_{min} [mm]	240	240	255	255
Minimum edge distance	C_{min} [mm]	120	120	127.5	127.5

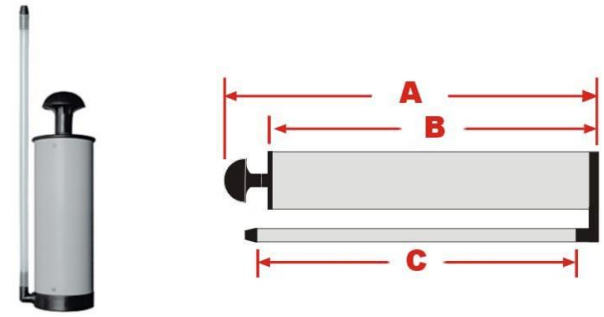
Table B2: Installation data for hollow/perforated masonry (brick n° 2)

Size		**M6**	**M8**	**M10**	**M12**
Plastic sleeve		**12 x 80**		**16 x 85**	
Nominal drilling diameter	d_0 [mm]	12	12	16	16
Maximum diameter hole in the fixture	d_{fix} [mm]	7	9	12	14
Embedment depth	h_{ef} [mm]	80	80	85	85
Depth of the drilling hole	h_1 [mm]	h_{ef} + 5 mm			
Maximum installation torque moment allowed	T_{inst} [Nm]	2	2	2	2
Thickness to be fixed	$t_{fix,min}$ [mm]	> 0			
	$t_{fix,max}$ [mm]	< 1500			
Minimum spacing	$S_{min,\parallel}$ [mm]	250	250	250	250
	$S_{min,\perp}$ [mm]	120	120	120	120
Minimum edge distance	C_{min} [mm]	100	100	100	100

Table B1 Installation data for autoclaved aerated concrete bricks (brick n°3)

Size		**M6**	**M8**	**M10**	**M12**
Nominal drilling diameter	d_0 [mm]	8	10	12	14
Maximum diameter hole in the fixture	d_{fix} [mm]	7	9	12	14
Embedment depth	h_{ef} [mm]	80	80	90	100
Depth of the drilling hole	h_1 [mm]	h_{ef} + 5 mm			
Maximum installation torque moment allowed	T_{inst} [Nm]	1	1	2	2
Thickness to be fixed	$t_{fix,min}$ [mm]	> 0			
	$t_{fix,max}$ [mm]	< 1500			
Minimum spacing	S_{min} [mm]	240	240	270	300
Minimum edge distance	C_{min} [mm]	120	120	135	150

Manual blower pump: nominal dimensions



190mm (240x190x300mm)	280mm (330x280x300mm)	400mm (420x370x350mm)
-(A) : 240mm (overall)	-(A) : 330mm (overall)	-(A) : 420mm (overall)
-(B) : 190mm (Body)	-(B) : 280mm (Body)	-(B) : 370mm (Body)
-(C) : 300mm (Tube)	-(C) : 300mm (Tube)	-(C) : 350mm (Tube)

Steel Wire Brushes

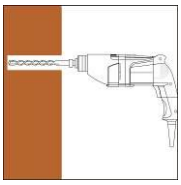
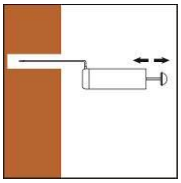
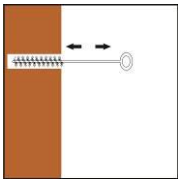
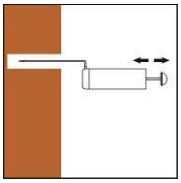
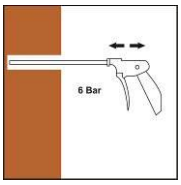
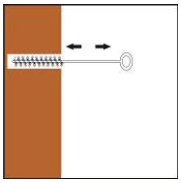
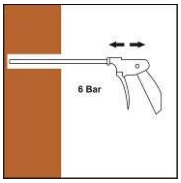
Specification

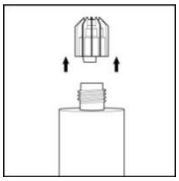
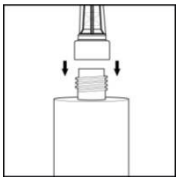
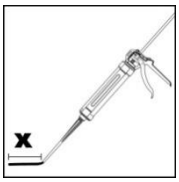
Table B3: Brush diameter

			Use in solid masonry and AAC				Use in hollow/perforated masonry			
Type of threaded rod			**M6**	**M8**	**M10**	**M12**	**M6**	**M8**	**M10**	**M12**
d_0	Nominal drill hole	[mm]	8	10	12	14	16	16	16	16
d_b	Brush diameter	[mm	10	10	13	13	18	18	18	18

Resin injection pump details		
Image	**Size Cartridge / Code**	**Type**
	**165 / 300ml** **165 / 300 ml 10:1**	**Manual**
	**345 / 380 / 400 / 410 / 420ml** **420 ml 10:1** **345 ml 10:1**	**Manual**
	**165 / 300 / 345 / 380 / 400 / 410 / 420ml** **165 / 300 ml** **345ml** **380 / 400 / 410 / 420 ml** **7.4v Tool**	**Battery**
	**380 / 400 / 410 / 420 / 825ml** **380 / 400 / 410 / 420 ml** **825ml**	**Pneumatic**

Table B4 - parameters: drilling, hole cleaning and installation in solid brick work (solid clay and AAC)

Instructions for use		
Bore hole drilling		
		Drill hole to the required embedment depth with a hammer drill set in rotation-hammer mode using an appropriately sized carbide drill bit.
Bore hole cleaning Just before setting an anchor, the bore hole must be free of dust and debris.		
a) Manual air cleaning (MAC)		
	**X 4**	The manual pump may be used for blowing out bore holes. Blow out at least 4 times from the back of the bore hole until return air stream is free of noticeable dust.
	**X 4**	Brush 4 times with the specified brush size (brush Ø ≥ bore hole Ø, see Table B3) by inserting the steel brush to the back of the hole (if needed with an extension) in a twisting motion and removing it. The brush must produce natural resistance as it enters the bore hole. If not, the brush is too small and must be replaced with the proper brush diameter.
	**X 4**	Blow out again with manual pump at least 4 times until return air stream is free from noticeable dust.
b) Compressed air cleaning (CAC)		
	**X 2**	Blow 2 times from the back of the hole (if needed with a nozzle extension) over the hole length with oil-free compressed air (min. 6 bar at 6m³/h) until return air stream is free from noticeable dust.
	**X 2**	Brush 2 times with the specified brush size (brush Ø ≥ bore hole Ø, see Table B3) by inserting the steel brush to the back of the hole (if needed with an extension) in a twisting motion and removing it. The brush must produce natural resistance as it enters the bore hole. If not, the brush is too small and must be replaced with the proper brush diameter.
	**X 2**	Blow out again with compressed air at least 2 times until return air stream is free from noticeable dust.

Instructions for use	
	Remove the threaded cap from the cartridge. Cut open the foil bag below the clip if necessary.
	Tightly attach the mixing nozzle. Do not modify the mixer in any way. Made sure the mixing element is inside the mixer. Use only the supplied mixer.
	Insert the cartridge into the Hobson Engineering dispenser gun.
	Discard the initial trigger pulls of adhesive. Depending on the size of the cartridge, an initial amount of adhesive mix must be discarded. Discard quantities are – 10cm for all cartridges

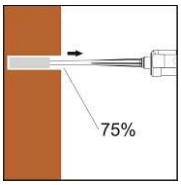
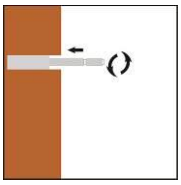
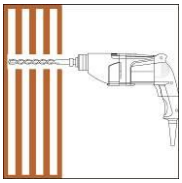
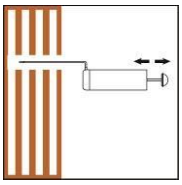
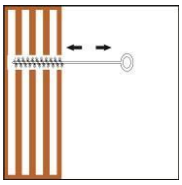
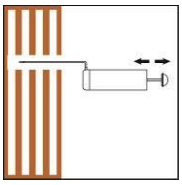
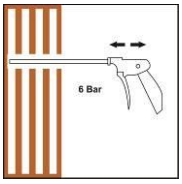
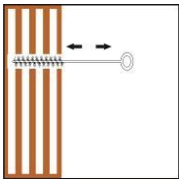
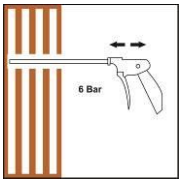
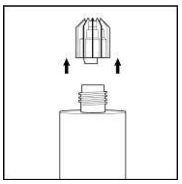
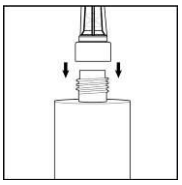
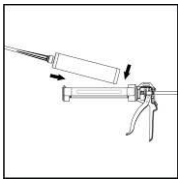
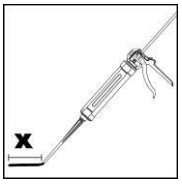
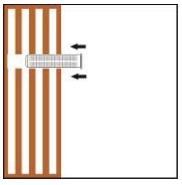
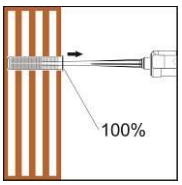
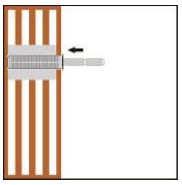
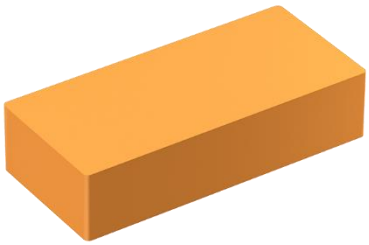
Instructions for use	
	Insert the nozzle to the bottom of the hole and inject the resin until the hole is filled 75%
	Insert the anchor, slowly with a slight twisting motion into the hole. Remove excess resin and leave the fixing until minimum curing (loading) times has elapsed

Table B5 - parameters: drilling, hole cleaning and installation in hollow brick work

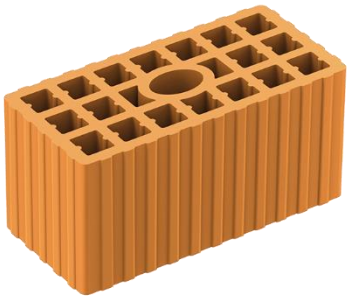
Instructions for use		
Bore hole drilling		
		Drill hole to the required embedment depth with a hammer drill set in rotation-hammer mode using an appropriately sized carbide drill bit.
Bore hole cleaning Just before setting an anchor, the bore hole must be free of dust and debris.		
a) Manual air cleaning (MAC)		
	**X 4**	The manual pump may be used for blowing out bore holes. Blow out at least 4 times from the back of the bore hole until return air stream is free of noticeable dust.
	**X 4**	Brush 4 times with the specified brush size (brush Ø ≥ bore hole Ø, see Table) by inserting the steel brush to the back of the hole (if needed with an extension) in a twisting motion and removing it. The brush must produce natural resistance as it enters the bore hole. If not, the brush is too small and must be replaced with the proper brush diameter.
	**X 4**	Blow out again with manual pump at least 4 times until return air stream is free from noticeable dust.
b) Compressed air cleaning (CAC)		
	**X 2**	Blow 2 times from the back of the hole (if needed with a nozzle extension) over the hole length with oil-free compressed air (min. 6 bar at 6m³/h) until return air stream is free from noticeable dust.
	**X 2**	Brush 2 times with the specified brush size (brush Ø ≥ bore hole Ø, see Table B3) by inserting the steel brush to the back of the hole (if needed with an extension) in a twisting motion and removing it. The brush must produce natural resistance as it enters the bore hole. If not, the brush is too small and must be replaced with the proper brush diameter.
	**X 2**	Blow out again with compressed air at least 2 times until return air stream is free from noticeable dust.

Instructions for use	
	Remove the threaded cap from the cartridge without cutting. Cut open the foil bag below the clip if necessary.
	Tightly attach the mixing nozzle. Do not modify the mixer in any way. Made sure the mixing element is inside the mixer. Use only the supplied mixer with the adhesive.
	Insert the cartridge into the dispenser. Press the release trigger to retract the plunger and insert the cartridge neatly into the cradle without any distortion.
	Discard the initial trigger pulls 10cm of adhesive. Resin will flow from the cartridge as soon as dispensing is initiated.

Instructions for use	
	Introduce the sleeve of suitable dimension (see table) to the back of the hole so that the collar is level with the hole face. The cap may be opened to allow full nozzle insertion.
	Insert the nozzle to the end of the sleeve and inject the resin until the sleeve is 100% filled. Close the cap.
	Insert the anchor, slowly with a slight twisting motion into the sleeve. Remove excess resin and leave the fixing until minimum curing (loading) times has elapsed



Brick n° 1
Category b: Solid clay masonry:
Mattone pieno UNI (120 mm x 60 mm x 250 mm)
Bulk density class ρ=1.6 kg/dm^3
Minimum compressive strength f_b=18 MPa



Brick n° 2
Category c: Hollow masonry:
Doppio UNI (120 mm x 120 mm x 250 mm)
Bulk density class ρ=0.9 kg/dm^3
Minimum compressive strength f_b=6.0 MPa

Brick n° 3
Category d: Autoclaved aerated concrete
Porenbeton AAC (624 mm x 249 mm x 400 mm)
Bulk density class ρ=0.35 kg/dm^3
Minimum compressive strength f_b=2.5 MPa

HOBSON ENGINEERING VINYLESTER V401	**Annex B9** of European Technical Assessment ETA-24/0504
Type and dimensions of brick	

Table C1: Design method A, characteristic tension and shear load values

ESSENTIAL CHARACTERISTICS			**PERFORMANCE**			
Installation parameters			**M6**	**M8**	**M10**	**M12**
d		[mm]	6	8	10	12
d_0 category b (solid masonry) and category d (AAC)		[mm]	8	10	12	14
d_0 category c (hollow or perforated masonry)		[mm]	12	12	16	16
Type of plastic sleeve for use in category c			12x80	12x80	16x85	16x85
d_{fix}		[mm]	7	9	12	14
h_1		[mm]	h_{ef} + 5 mm			
t_{fix}	Min	[mm]	> 0			
	Max	[mm]	≤ 1500 mm			
*** Resistance for tensile and shear load Temperature range -40°C/+40°C (T_{mlp} = 24°C)**			**M6**	**M8**	**M10**	**M12**
Brick n°1 (solid clay)	**N_{Rk}**	**[kN]**	**4**	**4**	**5**	**5**
	V_{Rk}	**[kN]**	**2**	**2**	**6**	**6**
Brick n°2 (hollow)	**N_{Rk}**	**[kN]**	**0,75**	**0,75**	**1,5**	**1,5**
	V_{Rk}	**[kN]**	**1,5**	**1,5**	**1,5**	**1,5**
Brick n°3 (solid AAC)	**N_{Rk} d/d**	**[kN]**	**0,6**	**1,2**	**2**	**1,5**
	N_{Rk} w/w	**[kN]**	**0,5**	**0,4**	**2**	**1,2**
	V_{Rk}	**[kN]**	**1,2**	**1,2**	**2,5**	**3,5**

Table C2: Characteristic bending moments

Size			**M6**	**M8**	**M10**	**M12**
Characteristic resistance with standard threaded rod grade 4.6	$M_{Rk,s}$	[Nm]	6	15	30	52
Partial safety factor	γ_{Ms}	[-]	1,67			
Characteristic resistance with standard threaded rod grade 5.8	$M_{Rk,s}$	[Nm]	8	19	37	66
Partial safety factor	γ_{Ms}	[-]	1,25			
Characteristic resistance with standard threaded rod grade 8.8	$M_{Rk,s}$	[Nm]	12	30	60	105
Characteristic resistance with standard threaded rod grade 10.9	$M_{Rk,s}$	[Nm]	15	37	75	131
Partial safety factor	γ_{Ms}	[-]	1,25			
Characteristic resistance with standard threaded rod stainless steel A2, A4-70 and HCR (class 70)	$M_{Rk,s}$	[Nm]	11	26	52	92
Partial safety factor	γ_{Ms}	[-]	1,56			
Characteristic resistance with standard threaded rod stainless steel A4-80 and HCR (class 80)	$M_{Rk,s}$	[Nm]	12	30	60	105
Partial safety factor	γ_{Ms}	[-]	1,33			

Table C3: Characteristic values for tension and shear load.

ESSENTIAL CHARACTERISTICS			**PERFORMANCE**			
*** Resistance for tensile and shear load Temperature range -40°C/+40°C (T_{mlp} = 24°C)**			**M6**	**M8**	**M10**	**M12**
γ_{Mm} for category b and c (solid and hollow bricks)		[-]	2,50			
γ_{MAAC} for category d (AAC bricks)		[-]	2			
Brick n°1	$S_{cr,N}$	[mm]	240	240	255	255
	$C_{cr,N}$	[mm]	120	120	127,5	127,5
Brick n°2	$S_{cr,N,\parallel}$	[mm]	250	250	250	250
	$S_{cr,N\perp}$	[mm]	120	120	120	120
	$C_{cr,N}$	[mm]	100	100	100	100
Brick n°3	$S_{cr,N}$	[mm]	240	240	270	300
	$C_{cr,N}$	[mm]	120	120	135	150
β coefficient for in situ test (ETAG 029 Annex B) Temperature range: -40°C/+40°C			**M6**	**M8**	**M10**	**M12**
Brick Nº 1 - Solid brick	β	[-]	0,64	0,64	0,66	0,66
Brick Nº 2 - Hollow/perforated brick	β	[-]	0,64	0,64	0,66	0,66
Brick Nº 3 - Solid AAC d/d conditions	β	[-]	0,38	0,83	0,81	0,735
Brick Nº 3 - Solid AAC w/w conditions	β	[-]	0,25	0,25	0,83	0,55
Displacement under service load Tensile load Temperature range -40°C/+40°C (T_{mlp} = 24°C)						
Brick n°1 – Solid clay brick			**M6**	**M8**	**M10**	**M12**
Admissible service load in tensile	F	[kN]	1,14		1,43	
Displacement	δ_{N0}	[mm]	0,14	0,14	0,07	0,05
	$\delta_{N\infty}$	[mm]	0,28	0,28	0,13	0,09
Brick n°2 – Hollow/perforated clay brick			**M6 With sleeve**	**M8 With sleeve**	**M10 With sleeve**	**M12 With sleeve**
Admissible service load in tensile	F	[kN]	0,21		0,43	
Displacement	δ_{N0}	[mm]	0,07	0,07	0,16	0,11
	$\delta_{N\infty}$	[mm]	0,13	0,13	0,31	0,22
Brick n°3 – AAC			**M6**	**M8**	**M10**	**M12**
Admissible service load in tensile	F d/d	[kN]	0,2	0,4	0,7	0,5
	F w/w	[kN]	0,2	0,1	0,7	0,4
Displacement	$\delta_{N0,d/d}$	[mm]	0,013	0,026	0,025	0,093
	$\delta_{N0,w/w}$	[mm]	0,011	0,009	0,025	0,074
	$\delta_{N\infty,d/d}$	[mm]	0,027	0,052	0,050	0,186
	$\delta_{N\infty,w/w}$	[mm]	0,022	0,017	0,050	0,149

Table C3 cont.: Characteristic values for tension and shear load.

ESSENTIAL CHARACTERISTICS		PERFORMANCE			
Displacement under service load Shear load Temperature range -40°C/+40°C (T_{mlp} = 24°C)					
Brick n°1 – Solid brick		**M6**	**M8**	**M10**	**M12**
Admissible service load in shear	F [kN]	0,57		1,71	
Displacement	δ_{V0} [mm]	0,15	0,15	0,26	0,27
	$\delta_{V\infty}$ [mm]	0,22	0,22	0,39	0,41
Brick n°2 – Hollow/perforated brick		**M6 With sleeve**	**M8 With sleeve**	**M10 With sleeve**	**M12 With sleeve**
Admissible service load in shear	F [kN]	0,43			
Displacement	δ_{V0} [mm]	1,01	1,01	0.5	0.36
	$\delta_{V\infty}$ [mm]	1,52	1,52	0.74	0.54
Brick n°3 – Solid AAC		**M6**	**M8**	**M10**	**M12**
Admissible service load in shear	F [kN]	0,4		0,9	1,3
Displacement	δ_{V0} [mm]	0,234		0,747	1,120
	$\delta_{V\infty}$ [mm]	0,351		0,759	1,139

Table C4: Reaction to fire.

ESSENTIAL CHARACTERISTICS	PERFORMANCE
Reaction to fire	In the final application the thickness of the mortar layer is about 1 to 2 mm and most of the mortar is material classified class A1 according to EC Decision 96/603/EC. Therefore, it may be assumed that the bonding material (synthetic mortar or a mixture of synthetic mortar and cementitious mortar) in connection with the metal anchor in the end use application do not make any contribution to fire growth or to the fully developed fire and they have no influence on the smoke hazard.

Table C5: Resistance to fire.

ESSENTIAL CHARACTERISTICS	PERFORMANCE
Resistance to fire	No performance assessed