

INSTYTUT TECHNIKI BUDOWLANEJ



Member of



www.eota.eu

European Technical Assessment

**ETA-23/0124
of 12/07/2023**



General Part

Technical Assessment Body issuing the European Technical Assessment

Instytut Techniki Budowlanej

Trade name of the construction product

Goujons d'ancrage XHANDER

Product family to which the construction product belongs

Torque controlled expansion fastener of sizes M6, M8, M10, M12, M16 and M20 for use in uncracked concrete

Manufacturer

SOGEDESCA
10 rue Général Plessier
69002 Lyon
France

Manufacturing plant

Plant n°1

This European Technical Assessment contains

13 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

European Assessment Document (EAD)
330232-01-0601 "Mechanical fasteners for use in concrete"

This European Technical Assessment is issued by the Technical Assessment Body in its official language. Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and shall be identified as such.

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

Specific Part

1 Technical description of the product

The Goujons d'ancrage XHANDER torque controlled expansion anchor of sizes M6, M8, M10, M12, M16 and M20 is an anchor made of galvanized steel which is placed into a drill hole and anchored by torque-controlled expansion.

An illustration and the description of the anchor are given in Annex A.

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

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

3.1 Performance of the product

3.1.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Characteristic resistance to tension load (static and quasi-static loading)	Annex C1
Characteristic resistance to shear load (static and quasi-static loading)	Annex C2
Displacements	Annex C1, C2

3.1.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	Annex C3, C4

3.1.3 Aspects of durability

Essential characteristic	Performance
Durability	Annex B1

3.2 Methods used for the assessment

The assessment has been made in accordance with EAD 330232-01-0601.

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

According to Decision 96/582/EC of the European Commission the system 1 of assessment and verification of constancy of performance applies (see Annex V to regulation (EU) No 305/2011).

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

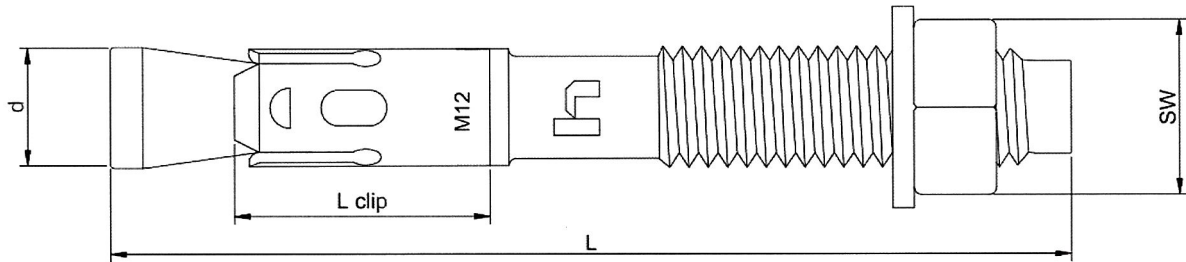
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited in Instytut Techniki Budowlanej.

For type testing the results of the tests performed as part of the assessment for the European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases the necessary type testing has to be agreed between Instytut Techniki Budowlanej and the notified body.

Issued in Warsaw on 12/07/2023 by Instytut Techniki Budowlanej



Anna Panek, MSc
Deputy Director of ITB


Table A1: Goujons d'ancrage XHANDER anchor dimensions

Size	Marking	d [mm]	L [mm]	L _{clip} ⁽¹⁾ [mm]	SW [mm]	t _{fix} ⁽²⁾ [mm]
M6	h M6	6	45 – 130	12,8	10	1 – 75
M8	h M8	8	55 – 200	15,3	13	1 – 130
M10	h M10	10	60 – 260	17,9	17	1 – 180
M12	h M12	12	80 – 300	21,25	19	1 – 200
M16	h M16	16	100 – 320	24,4	24	1 – 200
M20	h M20	20	115 – 360	28,62	30	1 – 220

⁽¹⁾ – expansion clip length

⁽²⁾ – thickness of the fixture

Goujons d'ancrage XHANDER

Product description
Dimensions and marking

Annex A1
of European
Technical Assessment
ETA-23/0124

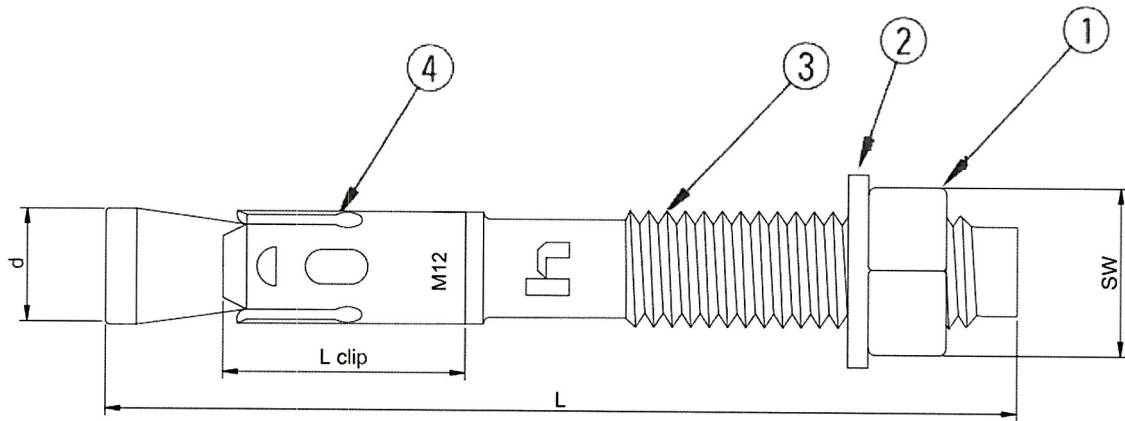


Table A2: Materials

Part	Designation	Material	Protection
1	Hexagonal nut	Carbon steel class 8 according to EN ISO 898-2 or DIN 934	Zinc plated $\geq 5 \mu\text{m}$ according to EN ISO 4042
2	Washer	Cold-formed steel	
3	Expansion clip	Cold-formed steel	
4	Threaded bolt	Cold-formed steel	

Goujons d'ancrage XHANDER

Product description
Materials

Annex A2
of European
Technical Assessment
ETA-23/0124

Specification of intended use

Anchorage subject to:

- Static and quasi-static loads.
- Anchorages with requirements related to resistance to fire.

Base material:

- Uncracked concrete.
- Reinforced or unreinforced normal weight concrete (without fibres) of strength classes C20/25 to C50/60 according to EN 206.

Use conditions (environmental conditions):

- Structures subject to dry internal conditions.

Design:

- Anchorages 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 transmitted. The position of the anchor is indicated on the design drawings (e.g. position of the anchor relative to reinforcement or to supports, etc.).
- Anchorages under static and quasi-static loads and under fire exposure are designed in accordance with EN 1992-4:2018.

Installation of anchors:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Use of the anchor only as supplied by the manufacturer without exchanging any component of the anchor.
- Anchor installation in accordance with the manufacturer's specifications and drawings and using the appropriate tools.
- Checks before placing the anchor to ensure that the strength class of the concrete in which the anchor is to be placed is in the range given and is not lower than that of the concrete to which the characteristic loads apply.
- Check of concrete being well compacted, e.g. without significant voids.
- Effective anchorage depth, edge distances and spacings not less than the specified values without minus tolerances.
- Positioning of the drill holes without damaging the reinforcement.
- Hole drilling by hammer drill.
- Cleaning of the hole of drilling dust.
- Application of the torque moment using a calibrated torque wrench.
- In case of aborted hole: new drilling at a minimum distance away of twice the depth of the aborted hole or smaller distance if the aborted drill hole is filled with high strength mortar and if under shear or oblique tension load it is not in the direction of load application.

Goujons d’ancrage XHANDER	Annex B1 of European Technical Assessment ETA-23/0124
Intended use Specifications	

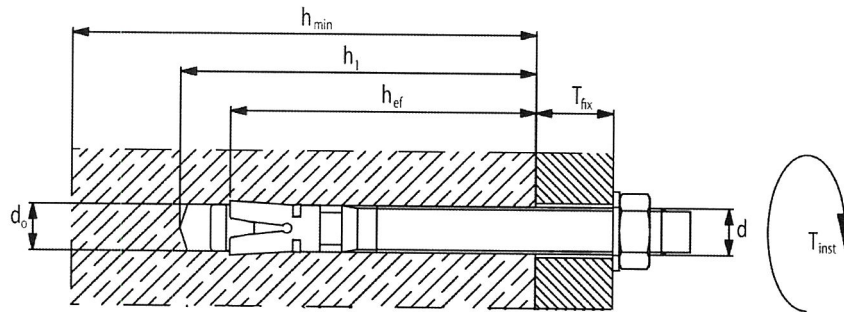


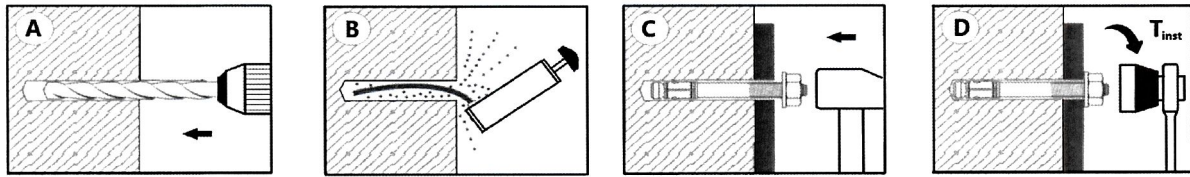
Table B1: Installation parameters

Anchor size		M6	M8	M10	M12	M16	M20
Nominal drill hole diameter	d_o [mm]	6	8	10	12	16	20
Depth of drill hole to deepest point	$h_1 \geq$ [mm]	50	60	65	90	110	120
Effective embedment depth	h_{ef} [mm]	35	45	50	70	85	100
Diameter of clearance hole in the fixture	$d_r \leq$ [mm]	7	9	12	14	18	22
Installation torque moment	T_{inst} [Nm]	10	20	30	50	120	160
Thickness of the fixture	t_{fix} [mm]	1 – 75	1 – 130	1 – 180	1 – 200	1 – 200	1 – 220
Minimum thickness of base material	h_{min} [mm]	70	90	100	140	170	200
Minimum spacing	s_{min} [mm]	30	35	40	50	65	80
Minimum edge distance	c_{min} [mm]	30	35	40	50	65	80

Goujons d'ancrage XHANDER

Intended use
Installation parameters

Annex B2
of European
Technical Assessment
ETA-23/0124



Goujons d'ancrage XHANDER

Intended use
Installation instruction

Annex B3
of European
Technical Assessment
ETA-23/0124

**Table C1: Characteristic resistance to tension load (static and quasi-static loading)
Method A**

Anchor size		M6	M8	M10	M12	M16	M20	
Steel failure								
Characteristic resistance	$N_{Rk,s}$ [kN]	8,0	14,0	23,0	33,0	62,0	98,0	
Partial safety factor	$\gamma_{Ms}^{1)}$	1,5						
Pull-out failure								
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,p}$ [kN]	7,0	14	18	30	40	50	
Installation safety factor	γ_{inst}	1,0		1,2		1,0		
Increasing factor	concrete C30/37	1,00				1,04		
	concrete C40/50	1,00				1,07		
	concrete C50/60	1,00				1,10		
Concrete cone failure and splitting failure								
Effective embedment depth	h_{ef} [mm]	35	45	50	70	85	100	
Factor for uncracked concrete	$k_{ucr,N}$	11,0	11,0	11,0	11,0	11,0	11,0	
Installation safety factor	γ_{inst}	1,0		1,2		1,0		
Characteristic resistance for splitting	$N_{Rk,sp}^0$ [kN]	7	14	18	30	40	50	
Characteristic spacing	concrete cone failure	$s_{cr,N}$ [mm]	105	135	150	210	255	300
	splitting failure	$s_{cr,sp}$ [mm]	105	135	150	210	255	300
Characteristic edge distance	concrete cone failure	$c_{cr,N}$ [mm]	52,5	67,5	75	105	127,5	150
	splitting failure	$c_{cr,sp}$ [mm]	52,5	67,5	75	105	127,5	150

¹⁾ in the absence of other national regulations

Table C2: Displacements under tension loading

Anchor size		M6	M8	M10	M12	M16	M20
Tension load	N [kN]	3,2	6,8	8,5	12,26	21,62	26,7
Displacement	δ_{No} [mm]	1,56	1,62	1,38	2,22	1,81	1,93
	$\delta_{N_{ec}}$ [mm]	0,74	0,74	0,74	0,74	0,74	0,74

Goujons d'ancrage XHANDER

Performances
Characteristic resistance to tension load, displacements

Annex C1
of European
Technical Assessment
ETA-23/0124

Table C3: Characteristic resistance to shear load (static and quasi-static loading)

Anchor size		M6	M8	M10	M12	M16	M20
Steel failure without lever arm							
Characteristic resistance	$V_{Rk,s}^0$ [kN]	4,0	7,3	11,6	16,9	31,4	49,0
Ductility factor	k_7	0,8					
Partial safety factor	$\gamma_{Ms}^{(1)}$	1,25					
Steel failure with lever arm							
Characteristic bending resistance	$M_{Rk,s}^0$ [Nm]	5,2	15,0	29,9	52,4	133,2	259,6
Partial safety factor	$\gamma_{Ms}^{(1)}$	1,2					
Concrete pry-out failure							
Factor	k_8	1,0			2,0		
Installation safety factor	$\gamma_{inst}^{(1)}$	1,5	1,5	1,5	1,8	1,5	1,5
Concrete edge failure							
Effective length of fastener under shear loading	l_f [mm]	35	45	50	70	85	100
Outside diameter of fastener	d_{nom} [mm]	6	8	10	12	16	20
Installation safety factor	$\gamma_{inst}^{(1)}$	1,5	1,5	1,5	1,8	1,5	1,5
¹⁾ in the absence of other national regulations							

Table C4: Displacements under shear loading

Anchor size		M6	M8	M10	M12	M16	M20
Shear load	V [kN]	4,0	7,3	11,6	16,9	31,4	49,0
Displacement	δ_{v0} [mm]	1,57	2,23	1,90	2,11	2,51	2,21
	δ_{vsc} [mm]	2,36	3,35	2,85	3,16	3,76	3,32

Goujons d'ancrage XHANDER
Performances
 Characteristic resistance to shear load, displacements

Annex C2
 of European
 Technical Assessment
 ETA-23/0124

Table C5: Characteristic resistance to tension load under fire exposure

Anchor size				M6	M8	M10	M12	M16	M20	
Steel failure										
Characteristic resistance	R30	$N_{Rk,s,fi}$	[kN]	0,2	0,4	0,9	1,7	3,1	4,9	
	R60	$N_{Rk,s,fi}$	[kN]	0,2	0,3	0,8	1,3	2,4	3,7	
	R90	$N_{Rk,s,fi}$	[kN]	0,1	0,3	0,6	1,1	2,0	3,2	
	R120	$N_{Rk,s,fi}$	[kN]	0,1	0,2	0,5	0,8	1,6	2,5	
Pull-out failure										
Characteristic resistance	R30	$N_{Rk,p,fi}$	[kN]	1,8	3,5	4,5	7,5	10,0	12,5	
	R60	$N_{Rk,p,fi}$	[kN]	1,8	3,5	4,5	7,5	10,0	12,5	
	R90	$N_{Rk,p,fi}$	[kN]	1,8	3,5	4,5	7,5	10,0	12,5	
	R120	$N_{Rk,p,fi}$	[kN]	1,4	2,8	3,6	6,0	8,0	10,0	
Concrete cone failure										
Characteristic resistance	R30	$N_{Rk,c,fi}$	[kN]	1,8	3,4	4,5	10,4	16,8	25,3	
	R60	$N_{Rk,c,fi}$	[kN]	1,8	3,4	4,5	10,4	16,8	25,3	
	R90	$N_{Rk,c,fi}$	[kN]	1,8	3,4	4,5	10,4	16,8	25,3	
	R120	$N_{Rk,c,fi}$	[kN]	1,5	2,7	3,6	8,3	13,5	20,2	
Edge distance										
	R30	$C_{cr,N,fi}$	[mm]	$2 \cdot h_{ef}$						
	R60	$C_{cr,N,fi}$	[mm]							
	R90	$C_{cr,N,fi}$	[mm]							
	R120	$C_{cr,N,fi}$	[mm]							
In case of fire attack from more than one side minimum edge distance shall be ≥ 300 mm										
Spacing										
	R30	$S_{cr,N,fi}$	[mm]	$4 \cdot h_{ef}$						
	R60	$S_{cr,N,fi}$	[mm]							
	R90	$S_{cr,N,fi}$	[mm]							
	R120	$S_{cr,N,fi}$	[mm]							

Goujons d'ancrage XHANDER

Performances
Characteristic resistance to tension load under fire exposure

Annex C3
of European
Technical Assessment
ETA-23/0124

Table C6: Characteristic resistance to shear load under fire exposure

Anchor size		M6	M8	M10	M12	M16	M20		
Steel failure without lever arm									
Characteristic resistance	R30	$V_{Rk,s,fi}$	[kN]	0,2	0,4	0,9	1,7	3,1	4,9
	R60	$V_{Rk,s,fi}$	[kN]	0,2	0,3	0,8	1,3	2,4	3,7
	R90	$V_{Rk,s,fi}$	[kN]	0,1	0,3	0,6	1,1	2,0	3,2
	R120	$V_{Rk,s,fi}$	[kN]	0,1	0,2	0,5	0,8	1,6	2,5
Steel failure with lever arm									
Characteristic resistance	R30	$M_{Rk,s,fi}^0$	[Nm]	0,1	0,4	1,1	2,7	6,6	13,1
	R60	$M_{Rk,s,fi}^0$	[Nm]	0,1	0,3	1,0	2,0	5,0	9,8
	R90	$M_{Rk,s,fi}^0$	[Nm]	0,1	0,3	0,7	1,7	4,3	8,5
	R120	$M_{Rk,s,fi}^0$	[Nm]	0,1	0,2	0,6	1,3	3,3	6,5
Concrete edge failure									
Characteristic resistance	R30	$V_{Rk,c,fi}^0$	[kN]	0,25 · $V_{Rk,c}^0$ ¹⁾					
	R60	$V_{Rk,c,fi}^0$	[kN]						
	R90	$V_{Rk,c,fi}^0$	[kN]						
	R120	$V_{Rk,c,fi}^0$	[kN]	0,20 · $V_{Rk,c}^0$ ¹⁾					
¹⁾ $V_{Rk,c}^0$ - initial value of the characteristic resistance in cracked concrete C20/25 under normal temperature									

Goujons d'ancrage XHANDER
Performances
 Characteristic resistance to shear load under fire exposure

Annex C4
 of European
 Technical Assessment
 ETA-23/0124