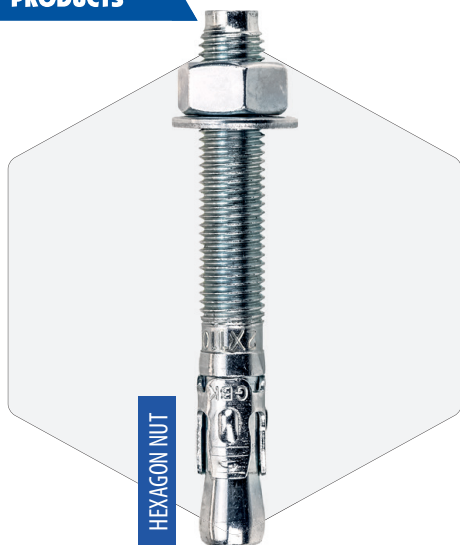
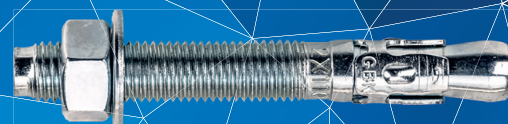


Option 7 AWA Throughbolt

Clear Zinc Plated



INFORMATION

The torque controlled AWA Throughbolt is a zinc plated high performance anchor for use in non-cracked concrete and structural applications such as:

- Columns
- Guard rails
- Façades
- Staircases
- Silo installation
- Machines
- Cantilever beams

BASE MATERIAL

- Concrete C20/25 to C50/60
- Non-Cracked Concrete

FEATURES

- Medium to High Performance
- Wide Range Of Sizes
- Fast And Secure Installation
- Through Fixing
- Three way Expansion Sleeve
- Zinc Plated Min. 5µm
- Reaction To Fire Class A1

APPROVALS

European Technical Assessment
Option 7 Non-Cracked Concrete



ETA-19/0432

RELATED PRODUCTS



SDS+ Drill Bits

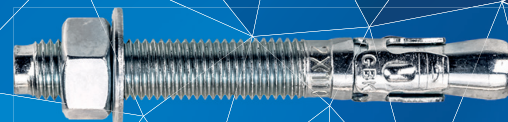


Hole Cleaning Pump

RANGE AND LOAD DATA

Range Data														
Part Number	Size of Thread	Min. Structure Thickness	Drill Hole Diameter	Min Hole Depth	Min Embedment Depth	Fixture Clearance Hole	Effective Embedment Depth	Max Fixture Thickness	Washer and Nut Thickness	Total Length	Thread Length	Width Across Flats	Washer Outer diameter	Tight-ening Torque
	-	(h _c)	(d ₀)	(h ₁)	(h _{nom})	(d _f)	(h _{ef})	(t _{fix})	(t _{w+n})	(L)	(L _{th})	(A/F)	(d ₂)	(T _{inst})
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
AWA06060*	M6	100	6	55	48	7	40	3	8	60		10	12	7
AWA06080*				23	80									
AWA08050*	M8	100	8	47	37	9	32	5	10	50		13	16	20
AWA08065				60	50		45	7		65				
AWA08075								17		75				
AWA08090								37		95				
AWA08100								42		100				
AWA08115								57		115				
AWA08130								72		130				
AWA10065*	M10	100	10	55	45	12	40	10	13	65		17	20	35
AWA10075				65	55		50	10		75				
AWA10090								25		90				
AWA10100								35		100				
AWA10120								55		120				
AWA10150								85		150				

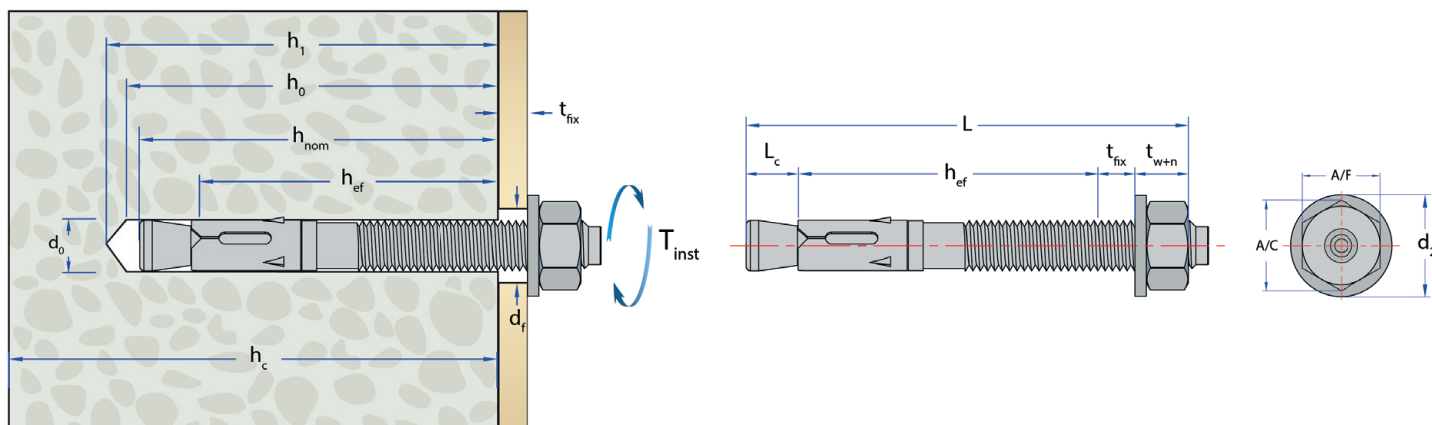


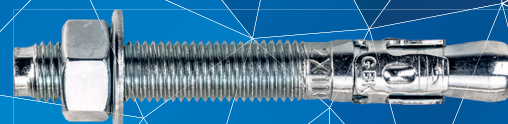


RANGE AND LOAD DATA

RANGE DATA														
Part Number	Size of Thread	Min. Structure Thickness	Drill Hole Diameter	Min Hole Depth	Min Embedment Depth	Fixture Clearance Hole	Effective Embedment Depth	Max Fixture Thickness	Washer and Nut Thickness	Total Length	Thread Length	Width Across Flats	Washer Outer diameter	Tight-ening Torque
	-	(h _c)	(d ₀)	(h ₁)	(h _{nom})	(d _f)	(h _{ef})	(t _{fix})	(t _{w+n})	(L)	(L _{th})	(A/F)	(d ₂)	(T _{inst})
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Nm
AWA12080*	M12	120	12	70	60	14	50	8	16	80		19	24	55
AWA12090				80	70		60	8		90				
AWA12100								18		100				
AWA12110								28		110				
AWA12120								38		120				
AWA12140								58		140				
AWA12160								78		160				
AWA12180								98		180				
AWA12200								118		200				
AWA16105*	M16	170	16	95	85	18	70	5	19	105		24	30	100
AWA16125				110	100		85	10		125				
AWA16145								30		145				
AWA16170								55		170				
AWA16220								105		220				
AWA20130*	M20	200	20	105	95	22	80	15	22	130		30	37	150
AWA20170				125	115		100	35		170				
AWA20215								80		215				
AWA24180*	M24	240	24	155	143	26	120	5	27	180		36	44	280
AWA24260*								85		260				

* Not included in the product's ETA.





NON-CRACKED CONCRETE

Performance Data (C20/25 non-cracked concrete)												
Size Of Thread	Effective Embedment Depth (h_{ef})	Minimum Concrete Thickness (h_{min})	Characteristic Resistance		Design Resistance		Approved Resistance		Design Spacing (s)		Design Edge Distance (c)	
			Tensile (N_{Rk})	Shear (V_{Rk})	Tensile (N_{Rd})	Shear (V_{Rd})	Tensile (N_{Ra})	Shear (V_{Ra})	Tensile	Shear	Tensile	Shear
-	mm	mm	kN	kN	kN	kN	kN	kN	mm	mm	mm	mm
M6*	40	100	7.7	5.1	5.5	4.0	3.9	2.8	50	50	50	50
M8	45	100	9.0	9.2	5.0	7.3	3.5	5.2	70	70	70	80
M10	50	100	12.0	14.5	6.6	11.6	4.7	8.2	90	150	80	130
M12	60	120	16.0	21.1	8.8	16.8	6.2	12.0	110	90	90	160
M16	85	170	16.0	39.3	8.8	31.4	6.2	22.4	120	120	120	250
M20	100	200	30.0	58.8	16.6	47.0	11.8	33.5	140	150	140	340
M24*	120	240	65.3	81.2	36.2	64.9	25.8	46.3	330	160	220	390

* Not included in the product's ETA.

SUPPLEMENTARY DATA

Influence Of Concrete Strength (Cracked/Non-cracked Concrete)					
Concrete strength		C20/25	C30/37	C40/50	C50/60
Cylinder	N/mm ²	20	30	40	50
Cube	N/mm ²	25	37	50	60
Factor	-	1.0	1.22	1.41	1.55

Important Note:

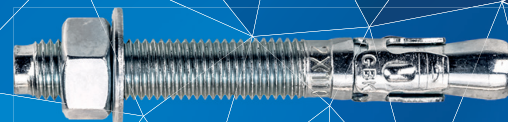
When using concrete factors ensure that loads do not exceed Steel Design Resistance.

Steel Failure						
Size Of Thread	Tensile Resistance			Shear Resistance		
	Characteristic Resistance ($N_{Rk,s}$)	Design Resistance ($N_{Rd,s}$)*	Approved Resistance ($N_{Ra,s}$)	Characteristic Resistance ($V_{Rk,s}$)	Design Resistance ($V_{Rd,s}$)**	Approved Resistance ($V_{Ra,s}$)
-	kN	kN	kN	kN	kN	kN
M6	7.7	5.5	3.9	5.1	4.0	2.8
M8	18.3	12.2	8.7	9.2	7.3	5.2
M10	29.0	19.3	13.7	14.5	11.6	8.2
M12	42.2	28.1	20.0	21.1	16.8	12.0
M16	78.5	52.3	37.3	39.3	31.4	22.4
M20	117.6	78.4	56.0	58.8	47.0	33.5
M24	176.3	117.5	83.9	88.1	70.5	50.3

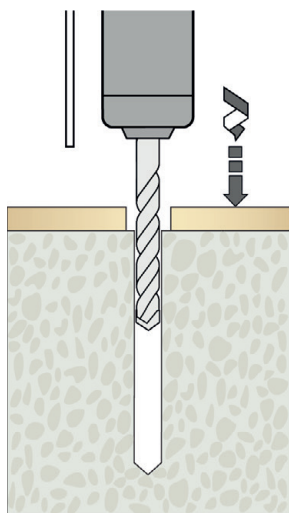
* A partial safety factor (γ_{MS}) equal to 1.4 for M6 and 1.50 for the rest is included.

** A partial safety factor (γ_{MS}) equal to 1.25 is included.

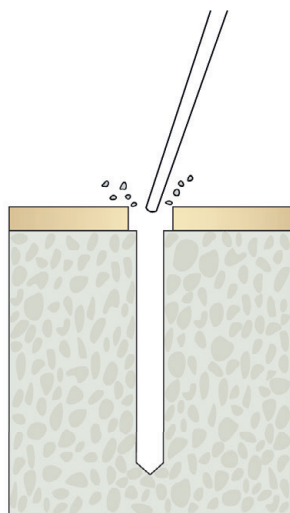




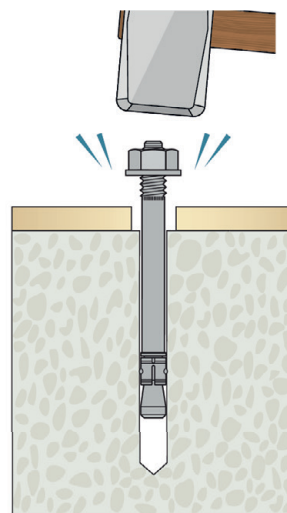
INSTALLATION INSTRUCTIONS



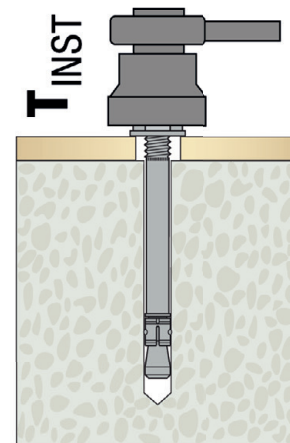
-Position fixture and drill correct diameter hole to corresponding depth



-Clean hole by blowing to remove drilling debris and dust



-Insert anchor through fixture into concrete and lightly hammer into concrete



-Tighten with torque wrench to recommended torque

