

### 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-19/0786

### RELATED PRODUCTS



SDS+ Drill Bits

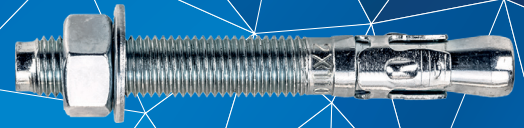


Hole Cleaning Pump

### RANGE AND LOAD DATA

RANGE DATA													
Part Number	Size of Thread	Min. Structure Thickness	Drill Hole Diameter	Min Hole Depth	Fixture Clearance Hole	Effective Embedment Depth	Max Fixture Thickness	Washer and Nut Thickness	Total Length	Thread Length	Width Across Flats	Washer Outer diameter	Tightening Torque
	-	(h <sub>c</sub> )	(d <sub>0</sub> )	(h <sub>r</sub> )	(d <sub>f</sub> )	(h <sub>ef</sub> )	(t <sub>fix</sub> )	(t <sub>w+n</sub> )	(L)	(L <sub>th</sub> )	(A/F)	(d <sub>2</sub> )	(T <sub>inst</sub> )
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Nm
STANDARD EMBEDMENT DEPTH													
AWA06060	M6	100	6	55	7	40	3	8	60	25	10	12	7
AWA06080							23		80	45			
AWA08050*	M8	110	8	-	9	50	-	10	50	17	13	16	20
AWA08065				-			65		22				
AWA08075				3			75		32				
AWA08090				18			90		46				
AWA08100				28			100		50				
AWA08115				43			115		65				
AWA08130	58	130	80										
AWA10065*	M10	100	10	-	12	55	-	13	65	22	17	20	35
AWA10075				-			75		27				
AWA10090				8			90		43				
AWA10100				18			100		53				
AWA10120				38			120		71				
AWA10150				68			150		95				



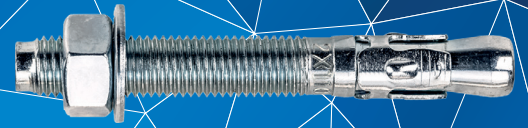


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Part Number	Size of Thread	Min. Structure Thickness	Drill Hole Diameter	Min Hole Depth	Fixture Clearance Hole	Effective Embedment Depth	Max Fixture Thickness	Washer and Nut Thickness	Total Length	Thread Length	Width Across Flats	Washer Outer diameter	Tightening Torque	
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		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Nm	
STANDARD EMBEDMENT DEPTH														
AWA12080*	M12	130	12	-	14	-	16	16	80	32	19	24	55	
AWA12090				-		-			90	35				
AWA12100				5		100			44					
AWA12110				15		110			53					
AWA12120				25		120			63					
AWA12140				45		140			83					
AWA12160				65		160			95					
AWA12180				85		180			95					
AWA12200				105		200			95					
AWA16105*	M16	170	16	-	18	-	19	19	105	40	24	30	100	
AWA16125				-		-			125	60				
AWA16145				16		145			80					
AWA16170				115		170			105					
AWA16220				91		220			115					
AWA20130*	M20	210	20	-	22	-	22	22	130	60	30	37	150	
AWA20170				135		105			20	170				100
AWA20215				65		215			115					
AWA24180	M24	240	24	155	26	120	27	27	5	180	36	44	280	
AWA24260									85	260				150
REDUCED EMBEDMENT DEPTH														
Part Number	Size of Thread	Red. Min. Structure Thickness	Drill Hole Diameter	Red. Min. Hole Depth	Fixture Clearance Hole	Red. Effective Embedment Depth	Red. Max. Fixture Thickness	Washer and Nut Thickness	Total Length	Thread Length	Width Across Flats	Washer Outer diameter	Tightening Torque	
	-	(h <sub>c,red</sub> )	(d <sub>0</sub> )	(h <sub>r,red</sub> )	(d <sub>f</sub> )	(h <sub>ef,red</sub> )	(t <sub>fix,red</sub> )	(t <sub>w+n</sub> )	(L)	(L <sub>th</sub> )	(A/F)	(d <sub>2</sub> )	(T <sub>inst</sub> )	
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Nm	
AWA06060	M6	100	6	50*	7	35	8	8	60	25	10	12	7	
AWA06080							28		80	45				

\* Not included in the product's ETA.

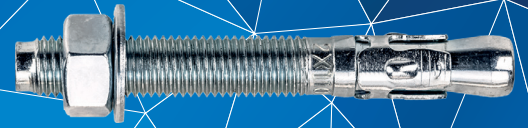




### RANGE AND LOAD DATA

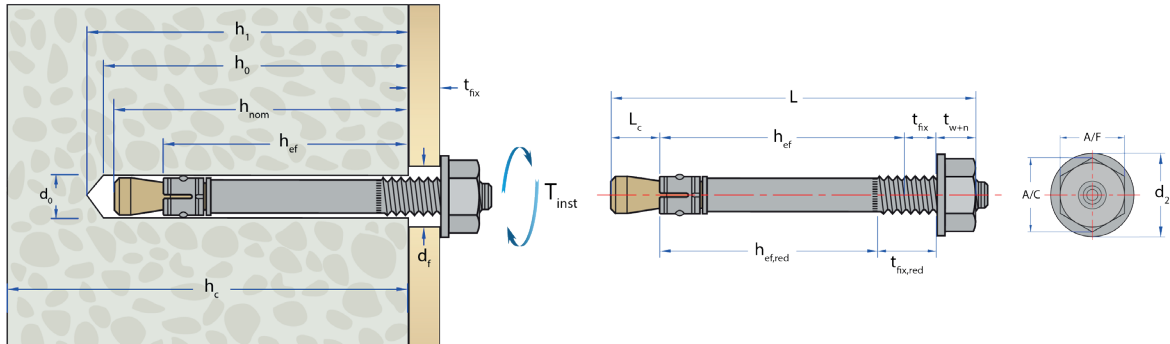
REDUCED EMBEDMENT DEPTH													
Part Number	Size of Thread	Red. Min. Structure Thickness	Drill Hole Diameter	Red. Min. Hole Depth	Fixture Clearance Hole	Red. Effective Embedment Depth	Red. Max. Fixture Thickness	Washer and Nut Thickness	Total Length	Thread Length	Width Across Flats	Washer Outer diameter	Tightening Torque
-	-	(h <sub>cred</sub> )	(d <sub>0</sub> )	(h <sub>l,red</sub> )	(d <sub>f</sub> )	(h <sub>ef,red</sub> )	(t <sub>fix,red</sub> )	(t <sub>w+n</sub> )	(L)	(L <sub>th</sub> )	(A/F)	(d <sub>2</sub> )	(T <sub>inst</sub> )
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Nm
AWA08050*	M8	100	8	45*	9	35	3	10	50	17	13	16	20
AWA08065				8			65		22				
AWA08075				18			75		32				
AWA08090				33			90		46				
AWA08100				43			100		50				
AWA08115				58			115		65				
AWA08130				73			130		80				
AWA10065*	M10	100	10	55*	12	40	3	13	65	22	17	20	35
AWA10075				8			75		27				
AWA10090				23			90		43				
AWA10100				33			100		53				
AWA10120				53			120		71				
AWA10150				83			150		95				
AWA12080*	M12	100	12	60*	14	50	10	16	80	32	19	24	55
AWA12090				10			90		35				
AWA12100				20			100		44				
AWA12110				30			110		53				
AWA12120				40			120		63				
AWA12140				60			140		83				
AWA12160				80			160		95				
AWA12180				100			180		95				
AWA12200				120			200		95				
AWA16105*	M16	140	16	85*	18	70	6	19	105	40	24	30	100
AWA16125				11			125		60				
AWA16145				31			145		80				
AWA16170				56			170		105				
AWA16220				106			220		115				
AWA20130*	M20	160	20	110	22	80	5	22	130	60	30	37	150
AWA20170							45		170	100			
AWA20215							90		215	115			
AWA24180	M24	185	24	125	26	92	33	27	180	100	36	44	280
AWA24260							113		260	150			



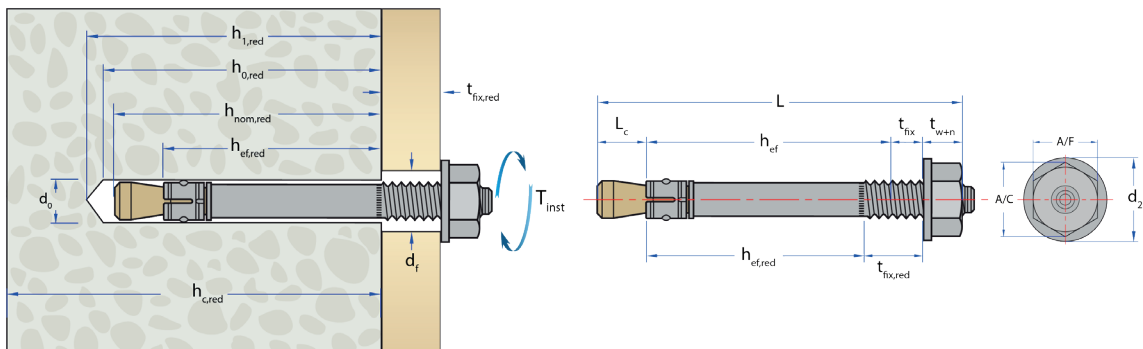


\* Not included in the product's ETA.

\*\* Use restricted to the anchoring of structural components which are statically indeterminate.



STANDARD EMBEDMENT



REDUCED EMBEDMENT

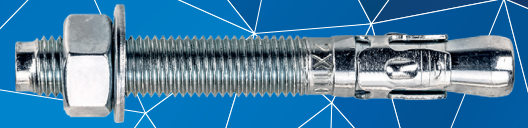
## NON-CRACKED CONCRETE

### REDUCED EMBEDMENT

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 ( $N_{Ap}$ )	Shear ( $V_{Ap}$ )	Tensile	Shear	Tensile	Shear
-	mm	mm	kN	kN	kN	kN	kN	kN	mm	mm	mm	mm
M6	35	80	7.5	12.2	5.0	9.7	3.5	6.9	50	40	70	120
M8	40	80	9.0	20.1	6.0	16.0	4.2	11.4	90	70	70	200
M10	50	100	17.9	30.0	11.9	24.0	8.5	17.1	250	110	130	270
M12	65	140	26.5	63.5	17.6	42.3	12.5	30.2	200	200	170	390
M16												
M20												
M24												





### STANDARD EMBEDMENT

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 ( $N_{Ap}$ )	Shear ( $V_{Ap}$ )	Tensile	Shear	Tensile	Shear
-	mm	mm	kN	kN	kN	kN	kN	kN	mm	mm	mm	mm
M8	46	100	12.0	12.2	8.0	9.7	5.7	6.9	80	40	80	110
M10	60	120	16.0	20.1	10.6	16.0	7.5	11.4	110	60	90	160
M12	70	140	25.0	30.0	16.6	24.0	11.8	17.1	240	60	140	220
M16	85	170	35.0	55.0	23.3	44.0	16.6	31.4	330	100	190	360
M20	100	200	50.5	69.0	33.6	51.8	24.0	37.0	400	100	200	380

\* 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 <sup>2</sup>	20	30	40	50
Cube	N/mm <sup>2</sup>	25	37	50	60
Factor	-	1.0	1.22	1.41	1.55

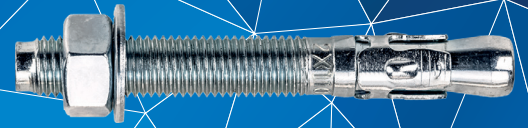
Important Note:  
When using concrete factors ensure that loads do not exceed Steel Design Resistance.

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

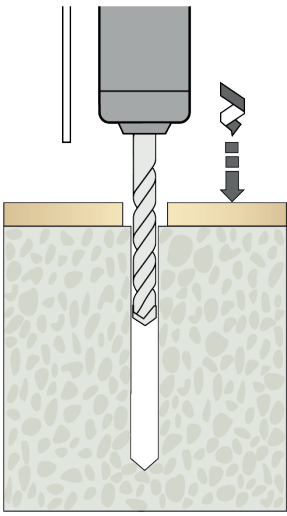
\* A partial safety factor ( $\gamma_{MS}$ ) equal to 1.4 for M6 and 1.50 for the rest is included.

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

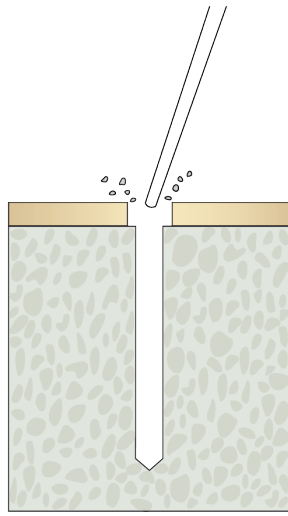




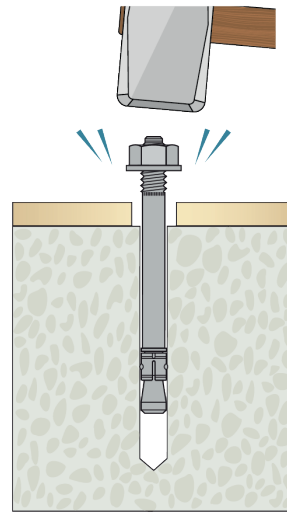
## INSTALLATION INSTRUCTIONS



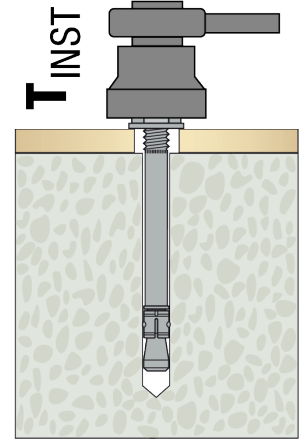
-Position fixture and drill correct diameter hole to corresponding depth



-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

