

INFORMATION

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

- Façades
- Gates
- Guard rails
- Cable trays
- Staircases
- Ladders
- Cantilevers

BASE MATERIAL

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

FEATURES

- High Performance
- Corrosion Resistance
- Wide Range Of Sizes
- Fast And Secure Installation
- Through Fixing
- Three way Expansion Sleeve
- Stainless Steel A4/316
- Close Spacing And Edge Distance
- Reduced Embedment Depth
- Reaction To Fire Class A1

APPROVALS

European Technical Assessment
Option 7 Non-Cracked Concrete



ETA-07/0332

RELATED PRODUCTS

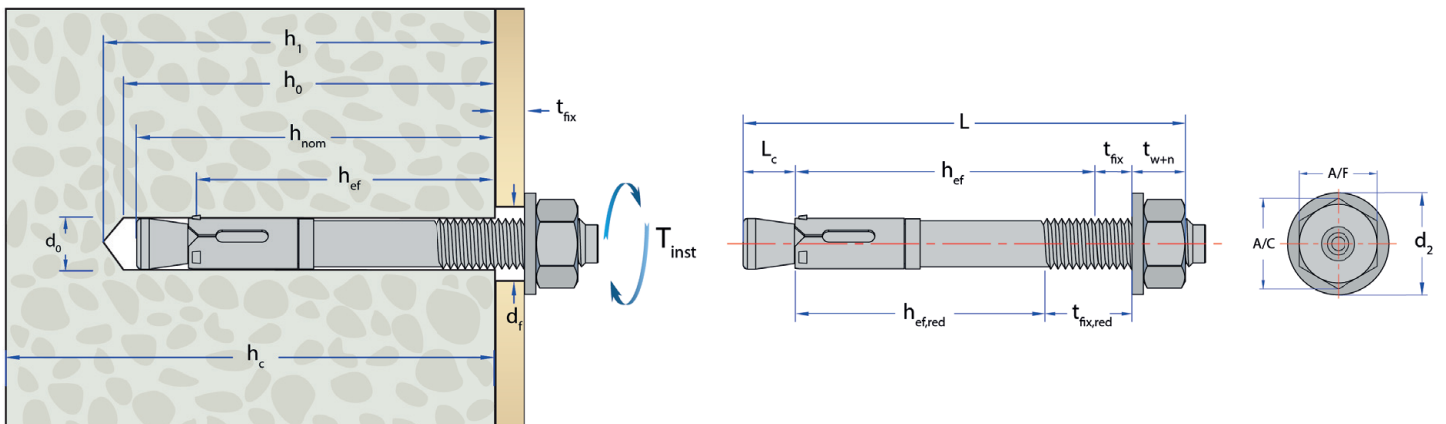


SDS+ Drill Bits

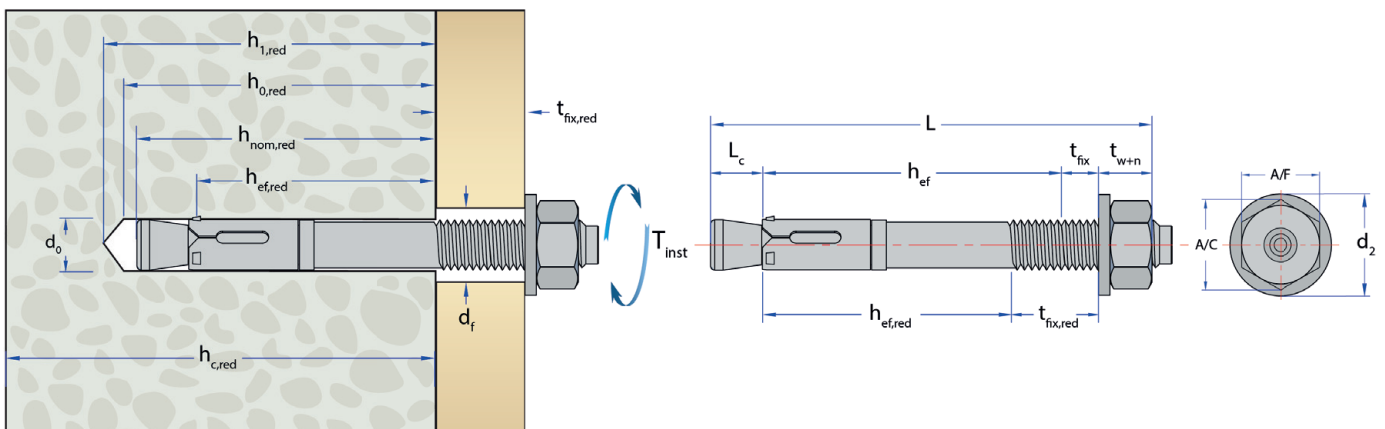


Hole Cleaning Pump

RANGE AND LOAD DATA

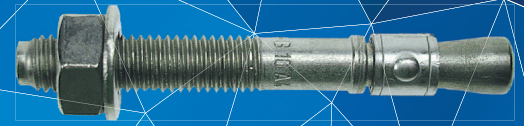


STANDARD EMBEDMENT



REDUCED EMBEDMENT

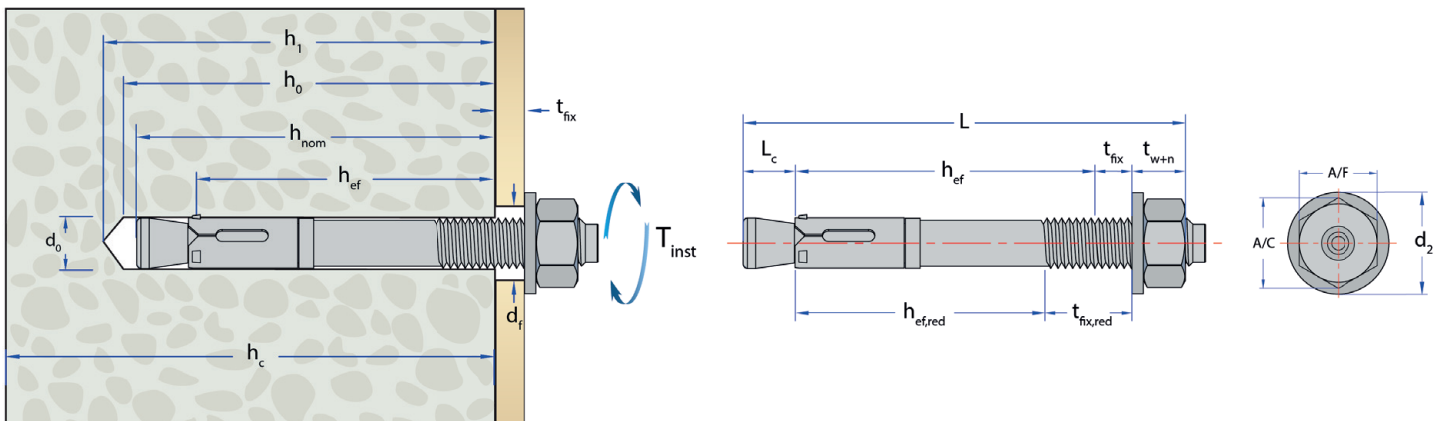




RANGE AND LOAD DATA

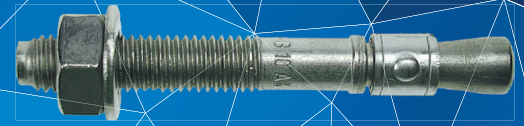
RANGE DATA														
Part Number	Size of Thread	Min. Structure Thickness	Drill Hole Diameter	Min Hole Depth	Fixture Clearance Hole	Cone Length	Effective Embedment Depth	Max Fixture Thickness	Washer and Nut Thickness	Total Length	Thread Length	Width Across Flats	Washer Outer diameter	Tightening Torque
		(h_c)	(d_o)	(h_1)	(d_f)	(L_c)	(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	Nm
STANDARD EMBEDMENT DEPTH														
TSS06040*	M6	100	6	55	7	10	40	-	7	40	16	10	12	6
TSS06065								10		67	30			
TSS08050*	M8	100	8	65	9	13	44	-	8	50	22	13	16	15
TSS08075								10		75	40			
TSS08095								30		95	60			
TSS08120								55		120	85			
TSS10060*	M10	100	10	70	12	17	48	-	10	60	25	17	20	25
TSS10080								10		85	40			
TSS10100								30		105	60			
TSS10125								50		125	80			
TSS10175								100		175	80			
TSS12085	M12	130	12	90	14	18	65	-	13	95	50	19	24	50
TSS12100								10		105	60			
TSS12115								20		115	70			
TSS12145								50		145	100			
TSS12200	105	200	100											
TSS16110	M16	160	16	110	18	21	80	-	17	115	60	24	30	100
TSS16125								10		130	70			
TSS16150								30		150	90			
TSS16175								60		180	110			
TSS20170	M20	200	20	130	22	24	100	35	21	180	70	30	35	160
TSS20220								95		240	70			

* Not included in the ETA



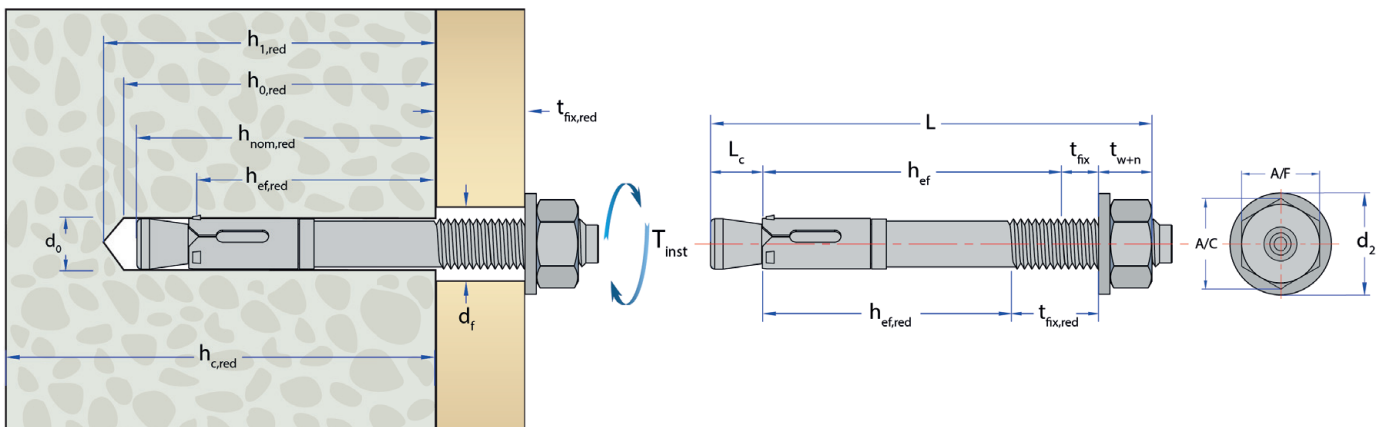
STANDARD EMBEDMENT





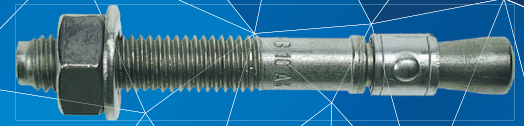
RANGE DATA														
Part Number	Size of Thread	Red. Min. Structure Thickness	Drill Hole Diameter	Red. Min. Hole Depth	Fixture Clearance Hole	Cone Length	Red. Effective Embedment Depth	Red. Max. Fixture Thickness	Washer and Nut Thickness	Total Length	Thread Length	Width Across Flats	Washer Outer diameter	Tightening Torque
		($h_{c,red}$) mm	(d_o) mm	($h_{1,red}$) mm	(d_f) mm	(L_c) mm	($h_{ef,red}$) mm	($t_{fix,red}$) mm	(t_{w+n}) mm	(L) mm	(L_{th}) mm	(A/F) mm	(d_2) mm	(T_{inst}) Nm
REDUCED EMBEDMENT DEPTH														
TSS06040*	M6	80	6	35	7	10	18	5	7	40	16	10	12	6
TSS06065				45			30	20		67	30			
TSS08050*	M8	80	8	45	9	13	24	5	8	50	22	13	16	15
TSS08075				55			19	75		40				
TSS08095				35			39	95		60				
TSS08120				64			120	85						
TSS10060*	M10	100	10	50	12	17	25	10	10	60	25	17	20	25
TSS10080				65			16	85		40				
TSS10100				42			36	105		60				
TSS10125				56			125	80						
TSS10175				106			175	80						
TSS12085	M12	100	12	75	14	18	50	14	13	95	50	19	24	50
TSS12100							25	105		60				
TSS12115							35	115		70				
TSS12145							65	145		100				
TSS12200	120	200	100											
TSS16110	M16	130	16	95	18	21	64	14	17	115	60	24	30	100
TSS16125							26	130		70				
TSS16150							46	150		90				
TSS16175							76	180		110				
TSS20170	M20	160	20	110	22	24	78	57	21	180	70	30	35	160
TSS20220							117	240		70				

* Not included in the ETA



REDUCED EMBEDMENT





NON-CRACKED CONCRETE

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
M6	40	100	7.5	7.0	5.0	5.6	3.5	4.0	40	40	40	70
M8	44	100	12.0	12.0	8.0	9.6	5.7	6.8	90	130	90	100
M10	48	100	16.0	16.8	10.6	11.1	7.5	7.9	130	150	120	120
M12	65	130	25.0	27.0	16.6	21.6	11.8	15.4	300	60	160	200
M16	80	160	36.1	50.0	24.0	40.0	17.1	28.5	410	160	210	340
M20	100	200	50.5	86.0	33.6	61.4	24.0	43.8	560	250	280	460

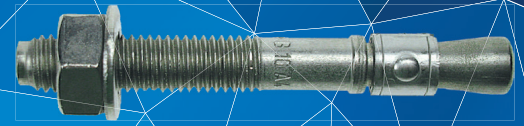
REDUCED EMBEDMENT

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*	30	80	6.0	8.3	4.0	5.5	2.8	3.9	40	90	60	70
M8*	35	80	9.0	10.5	6.0	6.9	4.2	4.9	80	110	90	90
M10	42	100	12.0	13.7	8.0	9.1	5.7	6.5	100	130	100	100
M12	50	100	17.9	17.9	11.9	11.9	8.5	8.5	300	150	150	130
M16	64	130	25.9	51.7	17.2	34.4	12.2	24.5	200	200	160	330
M20	78	160	34.8	69.6	23.1	46.3	16.5	33.0	240	240	200	390

* Use is restricted to anchorage of indeterminate structural components.

For variations in structure thickness, reduced spacing and edge calculations download the free **Anchor Calculation Program** from www.jcpfixings.co.uk





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.

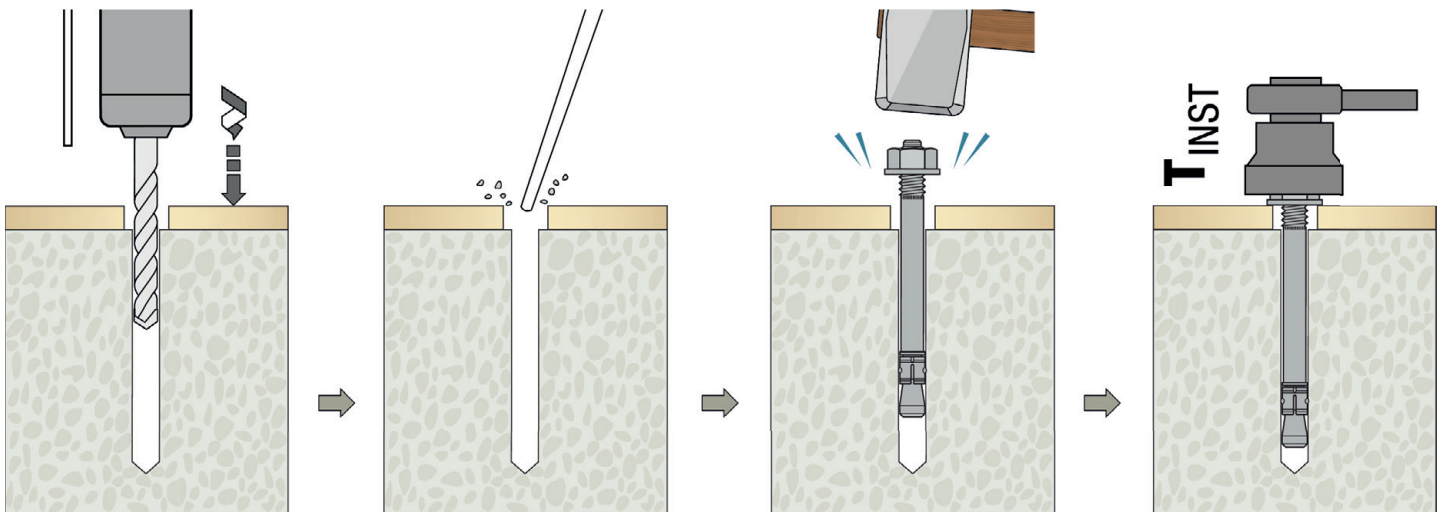
Steel Failure

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	10.0	6.6	4.7	7.0	5.6	4.0
M8	18.0	12.0	8.5	12.0	9.6	6.8
M10	30.0	20.0	14.2	19.0	15.2	10.8
M12	44.0	29.3	20.9	27.0	21.6	15.4
M16	88.0	58.6	41.8	50.0	40.0	28.5
M20	134.0	79.7	56.9	86.0	61.4	43.8

* A partial safety factor (γ_{MS}) equal to 1.50 for M6 to M16 (1.68 for M20) is included.

** A partial safety factor (γ_{MS}) equal to 1.25 for M6 to M16 (1.40 for M20) 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

