

TBS-A4 Option 7 Through Bolt

MASONMATE
EXTRA[®]
ETA APPROVED FIXINGS

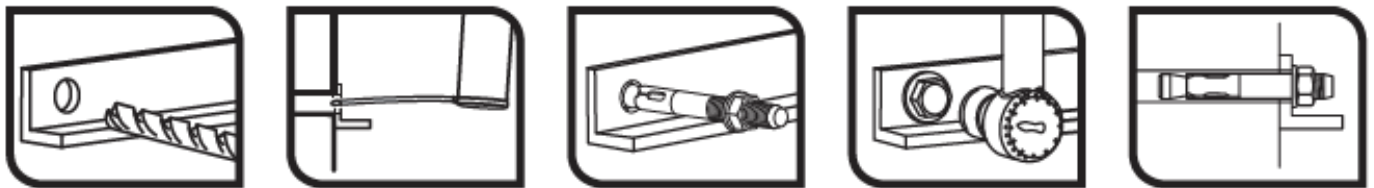
TECHNICAL DATA SHEET



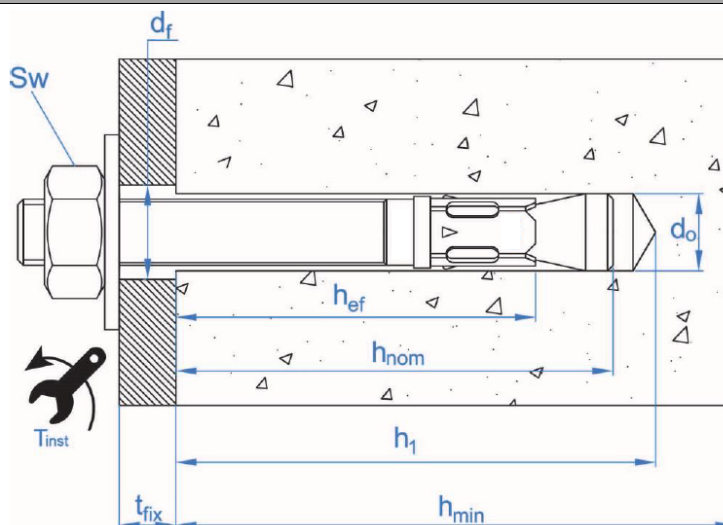
A4 Stainless Steel Shaft / A4 Stainless Steel Clip

Characteristics	Suitable Materials
• Installation by controlled torque • Use for high loads • Assessed for two installation depths • Easy installation • Use in non-cracked concrete • Previous installation, or through the fixture • Use for static or quasi-static loads • DIN 440 for fixing wood structures to concrete	• Reinforced Concrete • Concrete • Stone 

Installation



Installation Data



UK: Harrison & Clough Ltd.,
Galleon Blvd, Crossways Bus. Park,
Dartford, Kent, DA2 6QE

EU: QFF Distribution Ltd.,
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Installation Parameters

General Installation Parameters

Code	Size	Assessed	Drill Bit Diameter	Fixture Clearance Hole	Torque	Minimum Allowable Spacing	Minimum Allowable Edge Distance
		ETA	D _o mm	D _f mm	T _{inst} Nm	S _{min} mm	C _{min} mm
MAMTBS406045	M6 x 45						
MAMTBS406060	M6 x 60	✓					
MAMTBS408050	M8 x 50						
MAMTBS408075	M8 x 75	✓					
MAMTBS408090	M8 x 90	✓					
MAMTBS408115	M8 x 115	✓					
MAMTBS410070	M10 x 70	✓					
MAMTBS410090	M10 x 90	✓					
MAMTBS410120	M10 x 120	✓					
MAMTBS410150	M10 x 150	✓					
MAMTBS412090	M12 x 90	✓					
MAMTBS412110	M12 x 110	✓					
MAMTBS412140	M12 x 140	✓					
MAMTBS416145	M16 x 145	✓					
MAMTBS416170	M16 x 170	✓					
MAMTBS420170	M20 x 170	✓					
MAMTBS420220	M20 x 220	✓					

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Installation Distances											
Standard Installation Depth											
Code	Size	Assessed	Minimum Concrete Thickness	Depth of Drill Hole $\geq$	Installation Depth	Effective Anchorage Depth	Thickness of Fixture $\leq$	Critical Spacing (concrete cone)	Critical Edge Distance (concrete cone)	Critical Spacing (splitting)	Critical Edge Distance (splitting)
		ETA	h_{min} mm	H_1 mm	h_{nom} mm	h_{ef} mm	t_{fix} mm	$S_{cr,N}$ mm	$C_{cr,N}$ mm	$S_{cr,sp}$ mm	$C_{cr,sp}$ mm
MAMTBS406045	M6 x 45		-	-	-	-	-	-	-	-	-
MAMTBS406060	M6 x 60	✓	100	55	49,5	40	2	120	60	160	80
MAMTBS408050	M8 x 50		-	-	-	-	-	-	-	-	-
MAMTBS408075	M8 x 75	✓	100	65	59,5	48	5	144	72	192	96
MAMTBS408090	M8 x 90	✓					20				
MAMTBS408115	M8 x 115	✓					45				
MAMTBS410070	M10 x 70	✓	-	-	-	-	-	-	-	-	-
MAMTBS410090	M10 x 90	✓	110	75	66,5	55	10	165	83	220	110
MAMTBS410120	M10 x 120	✓					40				
MAMTBS410150	M10 x 150	✓					70				
MAMTBS412090	M12 x 90	✓	-	-	-	-	-	-	-	-	-
MAMTBS412110	M12 x 110	✓	130	85	77	65	18	195	98	260	130
MAMTBS412140	M12 x 140	✓					48				
MAMTBS416145	M16 x 145	✓	168	110	103,5	84	23	252	126	336	168
MAMTBS416170	M16 x 170	✓					48				
MAMTBS420170	M20 x 170	✓	206	135	125	103	23	309	155	412	206
MAMTBS420220	M20 x 220	✓					73				

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Installation Distances

Reduced Installation Depth

Code	Size	Assessed	Minimum Concrete Thickness	Depth of Drill Hole $\geq$	Installation Depth	Effective Anchorage Depth	Thickness of Fixture $\leq$	Critical Spacing (concrete cone)	Critical Edge Distance (concrete cone)	Critical Spacing (splitting)	Critical Edge Distance (splitting)
		ETA	h_{min} mm	H_1 mm	h_{nom} mm	h_{ef} mm	t_{fix} mm	$S_{cr,N}$ mm	$C_{cr,N}$ mm	$S_{cr,sp}$ mm	$C_{cr,sp}$ mm
MAMTBS406045	M6 x 45		100	40	35	25	1	75	38	160	80
MAMTBS406060	M6 x 60	✓	-	-	-	-	-	-	-	-	-
MAMTBS408050	M8 x 50		100	40	35	23	4	69	35	140	70
MAMTBS408075	M8 x 75	✓	100	50	46,5	35	8	105	53	140	70
MAMTBS408090	M8 x 90	✓					23				
MAMTBS408115	M8 x 115	✓					58				
MAMTBS410070	M10 x 70	✓	100	60	53,5	42	3	126	63	168	84
MAMTBS410090	M10 x 90	✓					23				
MAMTBS410120	M10 x 120	✓					53				
MAMTBS410150	M10 x 150	✓					83				
MAMTBS412090	M12 x 90	✓	100	70	62	50	13	150	75	200	100
MAMTBS412110	M12 x 110	✓					33				
MAMTBS412140	M12 x 140	✓					63				
MAMTBS416145	M16 x 145	✓	-	-	-	-	-	-	-	-	-
MAMTBS416170	M16 x 170	✓	-	-	-	-	-	-	-	-	-
MAMTBS420170	M20 x 170	✓	-	-	-	-	-	-	-	-	-
MAMTBS420220	M20 x 220	✓	-	-	-	-	-	-	-	-	-

Installation Procedure

			
1. Drilling Check the concrete base is compacted and porosity is insignificant. Suitable for dry, wet and flooded drill holes. Use drill in hammer mode. Drill to the specified diameter and depth values.	2. Blow and Clean Clean the drill holes completely of dust and fragments. Use air pump and brush.	3. Install Insert the anchor in the hole until the red depth mark is the same level with the surface of the base material. Use hammer if needed. The installation could be done through the fixture baseplate.	4. Apply the Torque Apply nominal installation torque wrench. Once installed it can be verified the total length of the anchor through the letter on bolt tip.

TECHNICAL DATA SHEET

Resistances

Resistances in concrete class C20/C25 for an isolated anchor, without spacing or edge distance effects, for static or quasi-static loads are indicated in the following table:

Code	Size	Assessed	Letter on the head tip	Characteristic Resistance (kN)				Design Resistance (kN)					
				Standard Installation Depth		Reduced Installation Depth		Standard Installation Depth		Reduced Installation Depth			
				Tension	Shear	Tension	Shear	Tension	Shear	Tension	Shear		
		ETA		N _{Rk}	V _{Rk}	N _{Rk}	V _{Rk}	N _{Rd}	V _{Rd}	N _{Rd}	V _{Rd}		
MAMTBS406045	M6 x 45		A	-	-	6,15	<u>6,00</u>	-	-	4,10	<u>3,95</u>		
MAMTBS406060	M6 x 60	✓	B	<u>10,10</u>	<u>6,00</u>	-	-	<u>6,01</u>	<u>3,95</u>	-	-		
MAMTBS408050	M8 x 50		A	-	-	5,43	5,43	-	-	3,01	3,62		
MAMTBS408075	M8 x 75	✓	C	12,00	<u>10,90</u>	9,00	10,19	8,00	<u>7,17</u>	5,00	6,79		
MAMTBS408090	M8 x 90	✓	E										
MAMTBS408115	M8 x 115	✓	G										
MAMTBS410070	M10 x 70	✓	C	-	-	12,00	13,39	-	-	6,67	8,93		
MAMTBS410090	M10 x 90	✓	E	16,00	<u>17,40</u>			8,89	<u>11,45</u>				
MAMTBS410120	M10 x 120	✓	G										
MAMTBS410150	M10 x 150	✓	I										
MAMTBS412090	M12 x 90	✓	D	-	-	16,00	17,39	-	-	8,89	11,60		
MAMTBS412110	M12 x 110	✓	F	25,00	<u>25,20</u>			13,89	<u>16,58</u>				
MAMTBS412140	M12 x 140	✓	I										
MAMTBS416145	M16 x 145	✓	I	35,00	<u>47,10</u>	-	-	19,44	<u>30,99</u>	-	-		
MAMTBS416170	M16 x 170	✓	K										
MAMTBS420170	M20 x 170	✓	K	50,00	<u>73,50</u>	-	-	27,78	<u>48,36</u>	-	-		
MAMTBS420220	M20 x 220	✓	O										

1 kN = 100 kg

Values underlined and in italics show Steel failure, **bold** values concrete failure and other indicate pull out failure.

TECHNICAL DATA SHEET

Resistances

Resistances in concrete class C20/C25 for an isolated anchor, without spacing or edge distance effects, for static or quasi-static loads are indicated in the following table:

Code	Size	Assessed	Letter on the head tip	Maximum Recommended Loads (kN) (con $\gamma_F=1.4$)							
				Standard Installation Depth		Reduced Installation Depth					
				Tension	Shear	Tension	Shear				
		ETA		N _{rec}	V _{rec}	N _{rec}	V _{rec}				
MAMTBS406045	M6 x 45		A	-	-	2,93	<u>2,82</u>				
MAMTBS406060	M6 x 60	✓	B	<u>4,29</u>	<u>2,82</u>	-	-				
MAMTBS408050	M8 x 50		A	-	-	2,15	2,58				
MAMTBS408075	M8 x 75	✓	C	5,71	<u>5,12</u>	3,57	4,85				
MAMTBS408090	M8 x 90	✓	E								
MAMTBS408115	M8 x 115	✓	G								
MAMTBS410070	M10 x 70	✓	C	-	-	4,76	6,38				
MAMTBS410090	M10 x 90	✓	E	6,35	<u>8,18</u>						
MAMTBS410120	M10 x 120	✓	G								
MAMTBS410150	M10 x 150	✓	I								
MAMTBS412090	M12 x 90	✓	D	-	-	6,35	8,28				
MAMTBS412110	M12 x 110	✓	F	9,92	<u>11,84</u>						
MAMTBS412140	M12 x 140	✓	I								
MAMTBS416145	M16 x 145	✓	I	13,39	<u>22,13</u>	-	-				
MAMTBS416170	M16 x 170	✓	K								
MAMTBS420170	M20 x 170	✓	K	19,84	<u>34,54</u>	-	-				
MAMTBS420220	M20 x 220	✓	O								

1 Kn = 100 kg

Values underlined and in italics show Steel failure, **bold** values concrete failure and other indicate pull out failure.

Increasing Factors for Tension Loads In High Resistance Concrete

CONCRETE FACTOR	C30/37	C40/50	C50/60
Ψ_c (Non-cracked)	1,22	1,41	1,55