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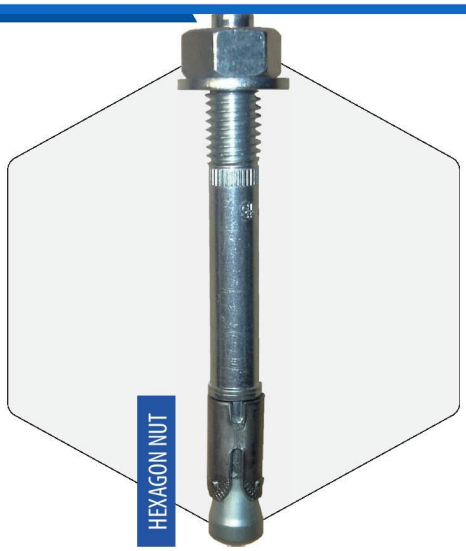


INFORMATION

The torque controlled Throughbolt is a zinc plated high performance anchor for use in cracked/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
- Cracked Concrete
- Non-Cracked Concrete

FEATURES

- High Performance
- Wide Range Of Sizes
- Fast And Secure Installation
- Through Fixing
- Three way Expansion Sleeve
- Zinc Plated Min. 5µm
- Close Spacing And Edge Distance
- Reaction To Fire Class A1
- Fire Resistant Loading

APPROVALS

European Technical Assessment
Option 1 Cracked Concrete

ETA 13/0364

Fire Resistance

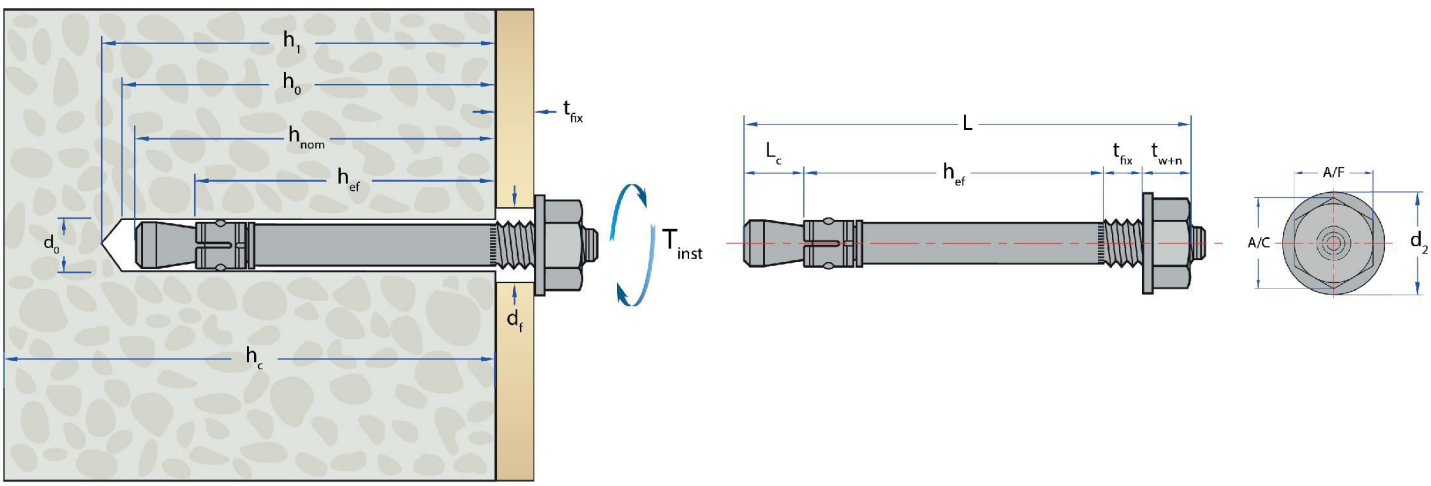
ETA 13/0364

RELATED PRODUCTS

SDS+ Drill Bits

Hole Cleaning Pump

RANGE AND LOAD DATA



For combined loads, variations in structure thickness, reduced spacing and edge calculations download the free **A**nchor **C**alculation **P**rogram from **www.jcpfixings.co.uk**

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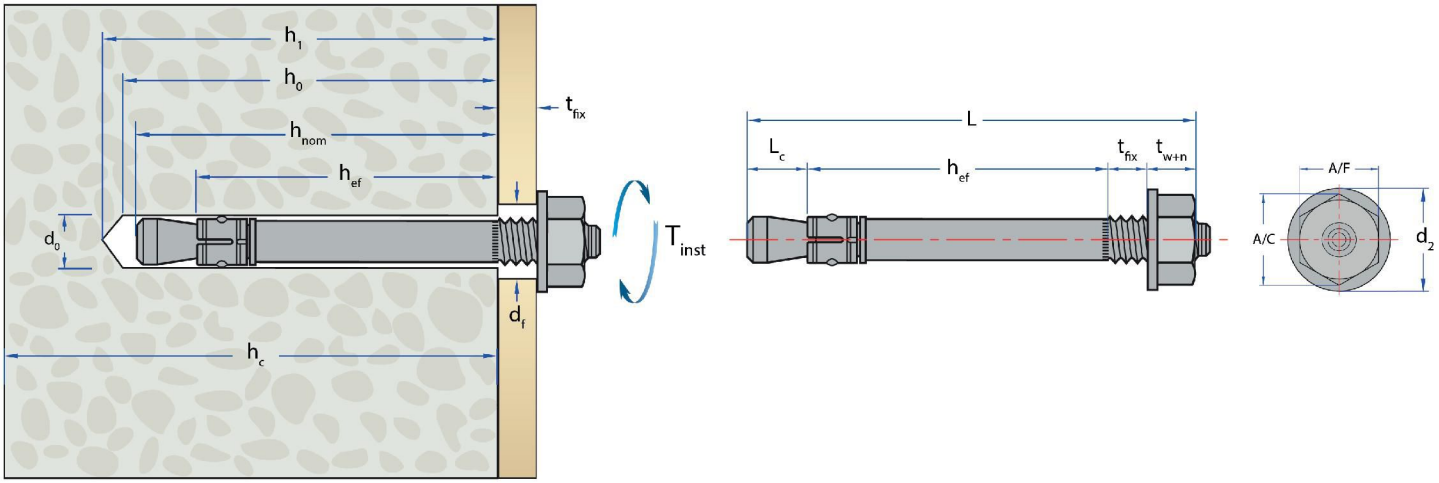
Technical Data Sheet

Option 1 Throughbolt
Clear Zinc Plated

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_0)	(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
ETA08075	M8	100	8	60	9	11	46	10	8	75	32	13	16	20
ETA08095								30		95	52			
ETA08115								50		115	72			
ETA10090	M10	120	10	75	12	10	60	10	10	90	42	17	20	25
ETA10110								30		110	62			
ETA10130								50		130	82			
ETA12110	M12	140	12	90	14	14	70	15	13	112	51	19	24	45
ETA12125								30		127	66			
ETA12160								65		162	101			
ETA12180								85		182	121			
ETA16135	M16	170	16	110	18	17	85	15	16	133	56	24	30	90
ETA16170								50		168	91			
ETA16200								80		198	121			



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Option 1 Throughbolt
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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
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

CRACKED CONCRETE

Performance Data (C20/25 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
M8	46	100	5.0	12.2	3.3	9.7	2.3	6.9	40	40	40	160
M10	60	120	9.0	20.1	6.0	16.0	4.2	11.4	50	50	50	230
M12	70	140	16.0	30.0	10.6	24.0	7.5	17.1	110	90	80	320
M16	85	170	25.0	55.0	16.6	44.0	11.8	31.4	200	250	110	530

FIRE RESISTANCE DATA

Fire Resistance Data (C20/25 to C50/60 cracked or non-cracked concrete)*																		
Size Of Thread	Effective Embedment Depth	Minimum Concrete Thickness	Design Resistance**								Approved Resistance							
			30min (R30)		60min (R60)		90min (R90)		120min (R120)		30min (R30)		60min (R60)		90min (R90)		120min (R120)	
	(h_{ef})	(h_{min})	Tensile ($N_{Rd,fi}$)	Shear ($V_{Rd,fi}$)	Tensile ($N_{Rd,fi}$)	Shear ($V_{Rd,fi}$)	Tensile ($N_{Rd,fi}$)	Shear ($V_{Rd,fi}$)	Tensile ($N_{Rd,fi}$)	Shear ($V_{Rd,fi}$)	Tensile ($N_{Rd,fi}$)	Shear ($V_{Rd,fi}$)	Tensile ($N_{Rd,fi}$)	Shear ($V_{Rd,fi}$)	Tensile ($N_{Rd,fi}$)	Shear ($V_{Rd,fi}$)	Tensile ($N_{Rd,fi}$)	Shear ($V_{Rd,fi}$)
-	mm	mm	kN		kN		kN		kN		kN		kN		kN		kN	
M8	46	100	1.4	1.6	1.1	1.5	0.8	1.2	0.7	1.0	1.0	1.1	0.8	1.1	0.6	0.9	0.5	0.7
M10	60	120	2.2	2.6	1.8	2.5	1.4	2.1	1.2	2.0	1.6	1.9	1.3	1.8	1.0	1.5	0.9	1.4
M12	70	140	3.2	3.8	2.8	3.6	2.4	3.5	2.2	3.4	2.3	2.7	2.0	2.6	1.7	2.5	1.6	2.4
M16	85	170	6.0	7.0	5.2	6.8	4.4	6.5	4.0	6.4	4.3	5.0	3.7	4.9	3.1	4.6	2.9	4.6

* The determination covers anchors with a fire attack from one side only. If the fire attack is from more than one side, the design method may be taken only, if the edge distance of the anchor is $c \geq 300$ mm and $\geq 2\ h_{ef}$.

**For combined loads and shear with lever arm use Anchor Calculation Program.

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Option 1 Throughbolt
Clear Zinc Plated

SUPPLEMENTARY DATA

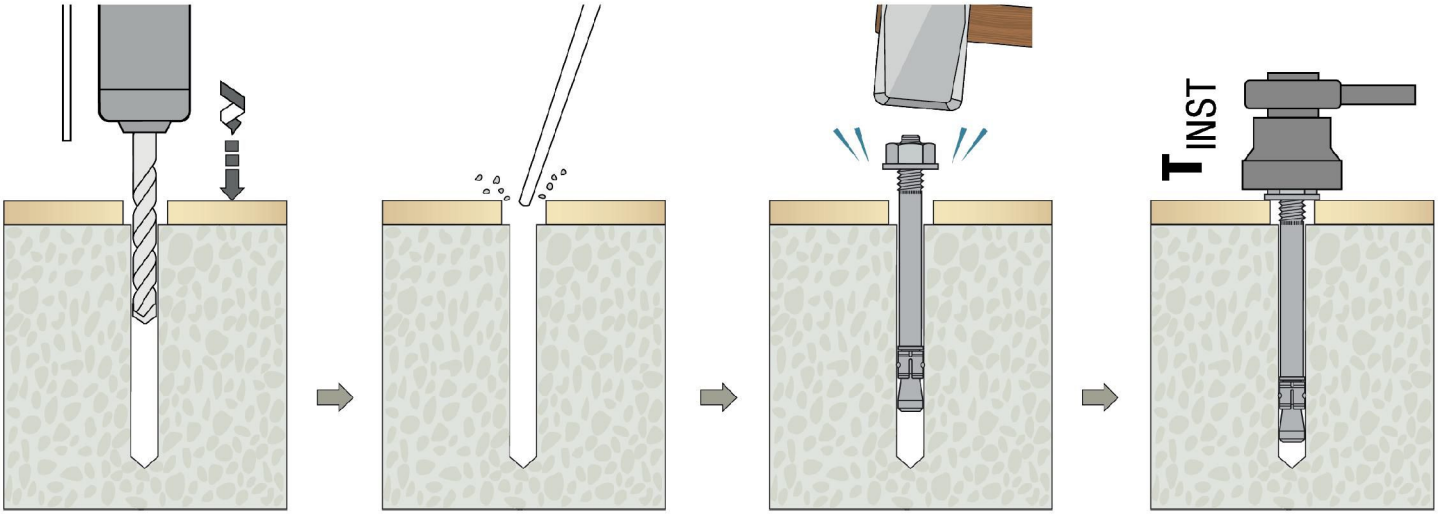
Influence Of Concrete Strength (Cracked/Non-cracked Concrete)					
Concrete strength		C20/25	C30/37	C40/50	C50/60
Cylinder	N/mm²	20	30	40	50
Cube	N/mm²	25	37	50	60
Factor	-	1.0	1.22	1.41	1.55

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
M8	16.0	10.4	7.4	12.2	9.7	6.9
M10	27.0	17.6	12.5	20.1	16.0	11.4
M12	40.0	26.6	19.0	30.0	24.0	17.1
M16	60.0	40.0	28.5	55.0	44.0	31.4

* A partial safety factor (γ_{MS}) equal to 1.53 for M8 and M10 (1.50 for M12 and M16) 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

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Declaration of Performance No. 0756-CPR-0564

Throughbolt Option 1 (Torque controlled expansion anchor made of zinc coated steel)
JCP Construction Products,
Unit 14 Teddington Business Park, Station Rd, Teddington, Middlesex TW11 9BQ
Telephone +44 (0)208 943 1800

Intended use or uses of the products according to EAD 330232-00-0601	
Generic type	Torque controlled expansion anchor
Base material	Cracked and Non-cracked concrete C20/25 to C50/60 acc. EN 206-2:2003
Batch Number	Marked on individual boxes
Material	Zinc plated carbon steel
Durability	Dry internal conditions
Loading	Static, quasi-static
Fire Resistance	120mins
Fire Reaction	ETAG 001 Annex C Option 1
ETA 13/0364 issued by	DIBt
On the basis of	EAD 330232-00-0601
Certificate of Conformity 1343-CPR-M 556-2/07.15 issued by	MPA Darmstadt
Under system	1

Declared performances according to EAD 330232-00-0601									
Essential Characteristics			Performance						
			M08	M10	70M12	M16	M20	M24	M27
Installation parameters									
d_o	Nominal diameter of drill bit	[mm]	8	10	12	16	20	24	28
d_f	Fixture clearance hole	[mm]	9	12	14	18	22	26	30
h_{ef}	Effective anchorage depth	[mm]	46	60	70	85	100	115	125
h_1	Depth of drill hole to deepest point	[mm]	60	75	90	110	125	145	160
h_{min}	Minimum thickness of concrete member	[mm]	100	120	140	170	200	230	250
T_{inst}	Nominal torque moment	[mm]	20	25	45	90	160	200	300
Cracked concrete									
S_{min}	Minimum spacing	[mm]	40	45	60	60	95	100	125
for C≥	Edge distance	[mm]	70	70	100	100	150	180	300
C_{min}	Minimum edged distance	[mm]	40	45	60	60	95	100	180
for S≥	Anchor spacing	[mm]	80	90	140	180	200	220	540
Non-Cracked concrete									
S_{min}	Minimum spacing	[mm]	40	45	60	65	90	100	125
for C≥	Edge distance	[mm]	80	70	120	120	180	180	300
C_{min}	Minimum edged distance	[mm]	50	50	75	80	130	100	180
for S≥	Anchor spacing	[mm]	100	100	150	150	240	220	540
Tensile Steel failure									
$N_{Rk,s}$	Characteristic tensile steel failure	[kN]	16	27	40	60	86	126	196
$\gamma M,s$	Partial safety factor	[-]	1.53		1.5		1.6	1.5	
Pull-out failure									
NRk,p,cr	Characteristic tensile load in cracked concrete C20/25	[kN]	5	9	16	25	(1)	(1)	(1)
NRk,p,ucr	Characteristic tensile load in non-cracked concrete C20/25	[kN]	12	16	25	35	(1)	(1)	(1)
$\gamma M,p$	Partial safety factor (Includes $\gamma 2$)	[-]	1.5						
$S_{cr,N}$	Critical spacing	[mm]	138	180	210	255	300	345	375
$C_{,cr,N}$	Critical edge distance	[mm]	69	90	105	128	150	173	188
ΨcC30/37	Increasing factor for concrete C30/37	[-]	1.22						
ΨcC40/50	Increasing factor for concrete C40/50	[-]	1.41						
ΨcC50/60	Increasing factor for concrete C50/60	[-]	1.55						

Splitting for standard thickness of concrete member (The highest resistance of Case 1 and Case 2 may be used)									
$h_{std} \geq$	Standard thickness of concrete	[mm]	100	120	140	170	200	230	250
Case 1									
$N^0_{Rk,sp}$	Characteristic Resistance in C20/25 concrete	[kN]	9	12	20	30	40	(1)	50
$S_{cr,sp}$	Critical spacing (Splitting)	[mm]	240	270	420	540	600	660	1620
$C_{cr,sp}$	Critical edge distance (Splitting)	[mm]	120	135	210	270	300	330	810
Case 2									
$N^0_{Rk,sp}$	Characteristic Resistance in C20/25 concrete	[kN]	12	16	25	35	(1)	(1)	(1)
$S_{cr,sp}$	Critical spacing (Splitting)	[mm]	184	240	280	340	440	345	375
$C_{cr,sp}$	Critical edge distance (Splitting)	[mm]	92	120	140	170	220	173	188
Splitting for minimum thickness of concrete member									
h_{min}	Minimum thickness of concrete	[mm]	80	100	120	140	-	-	-
$N^0_{Rk,sp}$	Characteristic Resistance in C20/25 concrete	[kN]	12	16	25	35	-	-	-
$S_{cr,sp}$	Critical spacing (Splitting)	[mm]	230	300	350	425	-	-	-
$C_{cr,sp}$	Critical edge distance (Splitting)	[mm]	115	150	175	212.5	-	-	-
Concrete cone failure									
h_{ef}	Effective anchorage depth	[mm]	46	60	70	85	100	115	125
$S_{cr,N}$	Critical spacing	[mm]	138	180	210	255	300	345	375
$C_{cr,N}$	Critical edge distance	[mm]	69	90	105	127.5	150	172.5	187.5
Displacement under tensile loading									
N_{cr}	Service tensile loads in cracked concrete	[kN]	2.4	4.3	7.6	11.9	17.1	21.1	24.0
$\delta N0_{,cr}$	Short term displacement under tensile loads	[mm]	0.6	1.0	0.4	1.0	0.9	0.7	0.9
$\delta N\infty_{,cr}$	Long term displacement under tensile loads	[mm]	1.4	1.2	1.4	1.3	1.0	1.2	1.4
Nu_{cr}	Service tensile loads in non-cracked concrete	[kN]	5.7	7.6	11.9	16.7	23.8	29.6	34.0
$\delta N0,u_{cr}$	Short term displacement under tensile loads	[mm]	0.4	0.5	0.7	0.3	0.4	0.5	0.3
$\delta N\infty_{,ucr}$	Long term displacement under tensile loads	[mm]	0.8	0.8	1.4	0.8	0.8	0.8	1.4
Shear steel failure									
$V_{,Rk,s}$	Characteristic shear steel failure	[kN]	15	22	30	60	69	114	169.4
$M^0_{Rk,s}$	Characteristic bending moment	[Nm]	23	47	82	209	363	898	1331.5
$\gamma m,sV$	Partial safety factor	[-]	1.25				1.33	1.25	
Concrete pryout failure									
k	Factor in equation 95.6) ETAG 001 Annex C §5.2.3.3	[-]	2.0						
$\gamma M,cp$	Partial safety factor	[-]	1.5						
Shear concrete edge failure									
l_{ef}	Effective anchorage length	[mm]	46	60	70	85	100	115	125
Displacement on shear load									
V	Service shear load in cracked and non-cracked concrete	[kN]	8.6	12.6	17.1	34.3	36.8	64.9	96.8
δ_{v0}	Short term displacement under shear load	[mm]	2.3	2.2	2.2	4.0	1.8	3.5	3.6
$\delta V\infty$	Long term displacement under shear load	[mm]	3.5	3.3	3.4	6.0	2.7	5.3	5.4
Characteristic tensile fire resistance									
$N_{Rk,fi30}$	Fire resistance duration = 30 minutes	[kN]	1.3	2.2	3.2	6.0	9.0	11.0	12.6
$N_{Rk,fi60}$	Fire resistance duration = 60 minutes	[kN]	1.1	1.8	2.8	5.2	8.2	11.0	12.6
$N_{Rk,fi90}$	Fire resistance duration = 90 minutes	[kN]	0.8	1.4	2.4	4.4	6.9	10.0	12.6
$N_{Rk,fi120}$	Fire resistance duration = 120 minutes	[kN]	0.7	1.2	2.2	4.0	6.3	9.1	11.8
Characteristic shear fire resistance without lever arm									
$V_{Rk,fi30}$	Fire resistance duration = 30 minutes	[kN]	1.6	2.6	3.8	7.0	11.0	16.0	20.6
$V_{Rk,fi60}$	Fire resistance duration = 60 minutes	[kN]	1.5	2.5	3.6	6.8	11.0	15.0	19.8
$V_{Rk,fi90}$	Fire resistance duration = 90 minutes	[kN]	1.2	2.1	3.5	6.5	10.0	15.0	19.0
$V_{Rk,fi120}$	Fire resistance duration = 120 minutes	[kN]	1.0	2.0	3.4	6.4	10.0	14.0	18.6
Characteristic shear fire resistance with lever arm									
$V_{Rk,fi30}$	Fire resistance duration = 30 minutes	[kN]	1.7	3.3	5.9	15.0	29.0	50.0	75.0
$V_{Rk,fi60}$	Fire resistance duration = 60 minutes	[kN]	1.6	3.2	5.6	14.0	28.0	48.0	72.0
$V_{Rk,fi90}$	Fire resistance duration = 90 minutes	[kN]	1.2	2.7	5.4	14.0	27.0	47.0	69.0
$V_{Rk,fi120}$	Fire resistance duration = 120 minutes	[kN]	1.1	2.5	5.3	13.0	26.0	46.0	68.0

The previous performance data relates to the following product codes

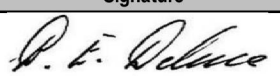
d	Marking d_o/L	L [mm]	t_{fix} [mm]	Product Code
M8	BZ08-10	75	10	ETA08075
	BZ08-30	95	30	ETA08095
	BZ08-50	115	50	ETA08115
M10	BZ10-10	90	10	ETA10090
	BZ10-30	110	30	ETA10110
	BZ10-50	130	50	ETA10130
M12	BZ12-15	110	15	ETA12110
	BZ12-30	125	30	ETA12125
	BZ12-65	160	65	ETA12160
	BZ12-85	180	85	ETA12180
M16	BZ16-15	135	15	ETA16135
	BZ16-50	170	50	ETA16170
	BZ16-80	200	80	ETA16200

Ammendments	
ETAG changed to EAD	03/11/2017
CPD changed to CPR	03/11/2017
ETA Changed	03/11/2017
Cert of Conformity changed	03/11/2017

The performances of the product identified by the above product codes are in conformity with the declared performance

This Declaration of performance is issued under the sole responsibility of JCP Construction products

Signed for and on behalf of the manufacturers

Name and function	Place and date of issue	Signature
Brian Deluce	Teddington	
Technical Manager	03/11/2017	

Notified body No. 1343
Staatliche Materialprüfungsanstalt Darmstadt,
Grafenstraße 2, 64283 Darmstadt

Certificate of constancy of performance

No. 1343-CPR–M 556-2/07.15

In compliance with Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011 (the Construction products Regulation or CPR) this certificate applies to the construction product

JCP Option 1 Throughbolt and Option 1 Throughbolt ITS

Torque controlled expansion anchor for use in concrete

placed on the market by

Hexstone Ltd. T/A JCP Construction Products
Opal Way
Stone Business Park, Stone
Staffordshire ST 15 0SW
GROSSBRITANNIEN

and produced in the manufacturing plant

Plant 2, Germany.

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in the European Technical Assessment

ETA-13/0364 of 7 May 2015

under system 1 are applied and that the construction product fulfils all the prescribed requirements for these performances.

This certificate was first issued on 01/09/2015 and will remain valid as long as the ETA-13/0364 remains valid and the manufacturing conditions in the plant or the factory production control itself are not modified significantly, unless suspended or withdrawn by the product certification body. This certificate is only valid in combination with the last inspection report.

Darmstadt, 01/09/2015

Dr.-Ing. J. Beyer
Head of the notified certification body

Dipl.-Ing. J. Adelmann
Technical responsible

DAkkS Deutsche Akkreditierungsstelle D-ZE-11048-01-00