certifix

CFCS

CONCRETE SCREWS

High loads.
Short embedment.
3-4 Times faster installation.

PRODUCT DESCRIPTION

Certifix CFCS is a high performance, highly versatile concrete screw, ideally suited for use on Rainscreen Cladding but also for use helping fasten hand brackets, fire barrier brackets, high racking, safety rails, metal profiles, base plates and consoles. Available in both A4 Stainless and Zinc-Plated steel, **Certifix CFCS Concrete Screws** feature a saw tooth geometry, making them perfect for a quick and easy installation and eliminating the need to clean the drill hole for installation in ceilings and walls.

PRODUCT FEATURES

- Ideal for use in reinforced and unreinforced normal concrete and in cracked and non-cracked concrete
- Quick, safe and easy installation thanks to saw tooth geometry
- Available in stainless steel A4 and HCR
- Available in zinc-coated steel, tested to DIN EN ISO 9227 – for corrosion category C5 – 4800hrs
- Can be loaded immediately with adjustment possible
- Fire rated and ETA approved

OVERVIEW

Certifix CFCS is suitable for high load applications, has approval in multiple embedment depths, is suitable for multiple challenging substrates, making it ideal for Façade and Cladding applications such as helping hand brackets and fire brackets back to concrete / masonry. It's also suitable for fastening racking, safety rails, metal profiles, base plates and consoles. Available and stocked primarily in A4 Stainless for external and coastal applications, however Zinc-Flake steel is also available from stock in some sizes and can be made to order within reasonable time scales. **Certifix CFCS Concrete Screws** feature a unique saw tooth geometry (this varies for A4 & Zinc), making them perfect for a quick and easy installation and eliminating the need to clean the drill hole for installation in ceilings and walls when you're not using the hybrid resin system.

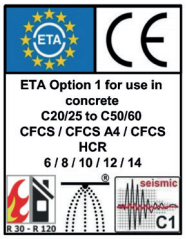
Certifix CFCS Concrete Screws are also available for use with CF-T resin, which can improve real life performance in challenging substrates – such as no-fines concrete & some types of blockwork. Unlike conventional resin fixings, the CFCS Hybrid Resin system can have load applied right away.

Compared to other options such as through bolts, **CFCS Concrete Screws** can offer an decrease of 3.5 – 4x in installation labour time, saving huge amounts in labour & equipment hire costs across the site.

Our A4 concrete screws are superior to the cheaper options on the market as they are stainless from head to tip, the carbon teeth are welded and hand checked, alternatives on the market have a 25mm carbon end welded on which results in increases embedment depths and reduced load capacity. Our ETA approval also covers multiple embedment depths and gives loading data in fire up to 2 hours.
Our supply chain is secure and we have large range of A4 stainless available from stock.

MATERIALS

- Zinc Flake Steel
- Zinc Plated Steel
- Zinc Coating for category C5 - 4800hrs (Corrosivity Tested on CFCS 8+)
- A4 Stainless Steel
- HCR Stainless Steel



SUBSTRATES

- Reinforced and unreinforced normal concrete
- Approval for concrete from C20/25 to C50/60
- Cracked and non-cracked concrete
- No fines concrete*
- Concrete blockwork*
- Brickwork & masonry*

** Must have a pull test*

HEX WASHER HEAD

Suitable for helping hand bracket fixings – the washer head gives increase surface area, this is improved with a CFCS A4 washer which stops the brackets spinning on installation, and also gives more surface area for the concrete screw to press against on installation.

Suitable for fire barrier fixings – no washer recommended for this application.

Suitable for some type of U Channel.

EXTERNAL THREAD WITH HEX DRIVE

Suitable for helping hand bracket fixings – used with a full nut and washer.

Must be used in scenarios where post install BS8539:2012 proof load tests (aka pull tests) are required (for example in an LABC or NHBC Premier Guarantee warranty). The external thread option allows for unlimited adjustments to the bracket packing/spacing as the nut & washer can be adjusted/removed for testing as many times as necessary after installation, for other fixing head types it is impossible to know how many times it has been adjusted by the installer, therefore for ETA approval on post install checks this option must be used.

PAN HEAD WITH TORX DRIVE

Suitable for U Channel.

Suitable for helping hand brackets.

Suitable for fire barrier brackets – no washer recommended in this application.

Suitable for façade panels back to concrete reveals (this product can be powder coated).

APPLICATIONS

- Fastening of helping hand brackets into substrate
- Fastening where post install checks are required
- Fastening of fire barrier brackets into substrate
- Railing systems for bridge construction
- Fastening of high racking
- Fastening of safety rails into substrate
- Fastening of metal profiles into substrate
- Fastening of U Channel into substrate*
- Fastening of base plates/consoles into substrate
- Fastening of facade panels back to concrete reveals*

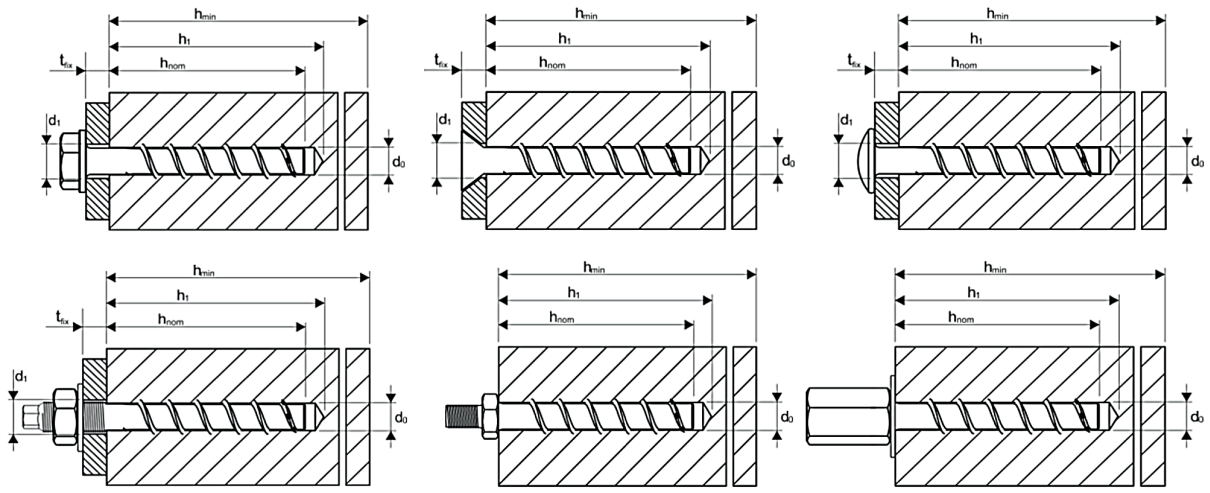
** Please check our head types description for specific applications.*

SINGLE FASTENING WITHOUT FIRE EXPOSURE

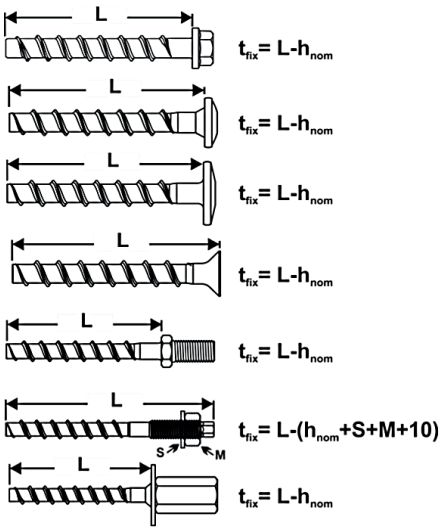
Technical characteristic without fire exposure for single fastening CFCS / CFCS A4 / CFCS HCR

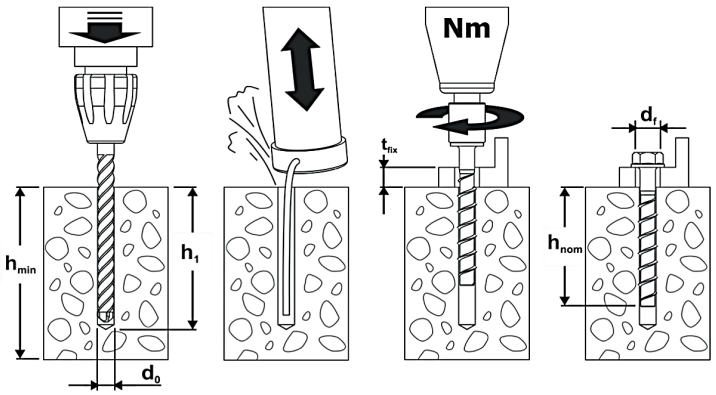
Screw size CFCS high performance			CFCS 6		CFCS 8			CFCS 10			CFCS 12			CFCS 14		
			$h_{nom,1}$	$h_{nom,2}$	$h_{nom,1}$	$h_{nom,2}$	$h_{nom,3}$	$h_{nom,1}$	$h_{nom,2}$	$h_{nom,3}$	$h_{nom,1}$	$h_{nom,2}$	$h_{nom,3}$	$h_{nom,1}$	$h_{nom,2}$	$h_{nom,3}$
Nominal embedment depth	h_{nom}	[mm]	40	55	45	55	65	55	75	85	65	85	100	75	100	115
Nominal diameter of drill bit	d_0	[mm]	6		8			10			12			14		
Depth of drill hole	h_1	min [mm]	45	60	55	65	75	65	85	95	75	95	110	85	110	125
Effective anchorage depth	h_{ef}	[mm]	31	44	35	43	52	43	60	68	50	67	80	58	79	92
Diameter of clearance hole in the fixture	d_f	max [mm]	8		12			14			16			18		
Permissible tension load in cracked concrete [1);2)]	N_{zul}	[kN]	1.0	1.9	2.4	4.3	5.7	4.3	7.6	9.2	5.7	9	11.7	7.2	11.5	14.5
Permissible shear load in cracked concrete [1);2)]	V_{zul}	[kN]	2.8	4.0	3.4	4.6	6.2	4.6	15.2	18.4	5.8	18	23.5	7.2	23.0	28.9
Perm. tension load in non-cracked concrete [1);2)]	N_{zul}	[kN]	1.9	4.3	3.6	5.7	7.6	5.7	9.5	12.4	7.6	13.2	17.2	10.6	16.9	21.2
Perm. shear load in non-cracked concrete [1);2)]	V_{zul}	[kN]	4.0	4.0	5.0	6.8	9.0	6.8	19.4	19.4	8.5	24.0	24.0	10.6	32.0	32.0
Permissible bending resistance	M_{zul}	[kN]	6.2		14.9			32.0			64.6			105.7		
Minimum edge distance	c_{min}	[mm]	40		40	50		50			50		70	50	70	
Minimum spacing	s_{min}	[mm]	40		40	50		50			50		70	50	70	
Minimum base material thickness	h_{min}	[mm]	100		100		120	100	130		120	130	150	130	150	170
Installation torque (with metric connection thread)	T_{inst}	[Nm]	10		20			40			60			80		
Maximum torque (with Impact screw driver)		[Nm]	160		300			400			650			650		
ETA seismic C1			ok		-		ok	ok	-	ok	-		ok	-		ok
ETA seismic C2 [3)]			-		-		ok	-		ok	-		ok	-		ok

1) The partial safety factor for material resistance from the approval γM=1,5 as well a partial safety factor for load actions γF=1,4 were considered for determining the load.
2) These values apply without influence of the spacing and edge distances
3) C2 only for version zinc plated



INSTALLATION





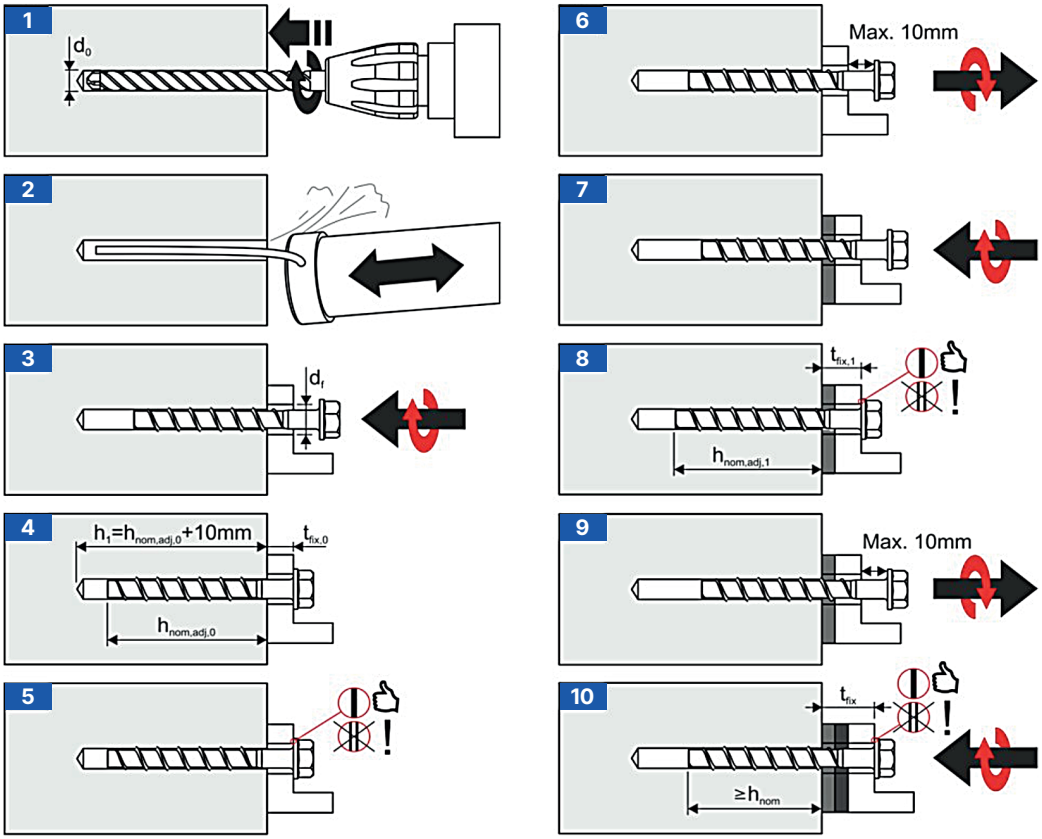
IMPORTANT

The anchor may be adjusted maximum two times while the anchor may turn back at most 10 mm.*

The total allowed thickness of shims added during the adjustment process is 10 mm.*

The final embedment depth after adjustment process must be equal or longer than hnom.

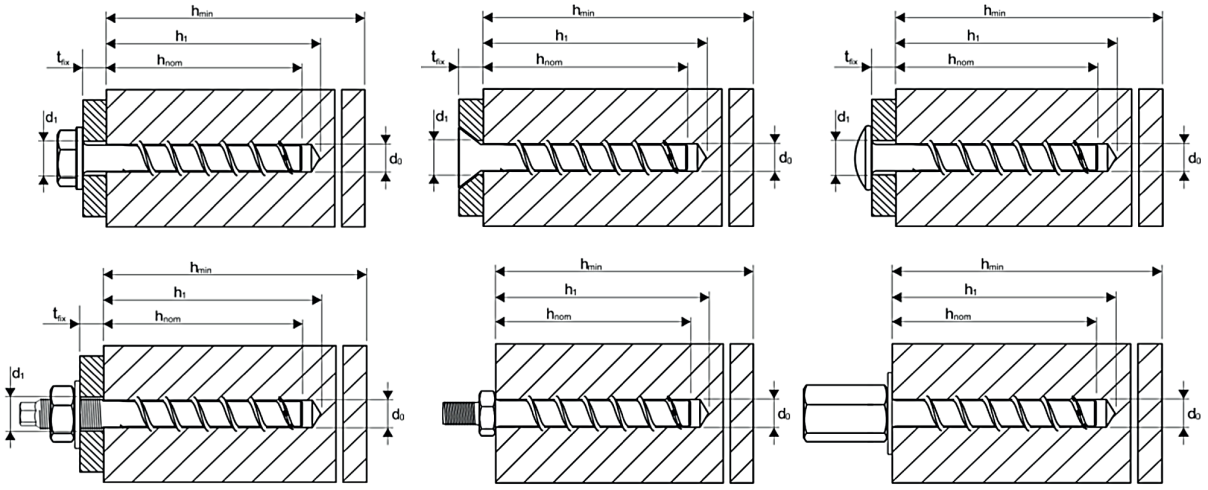
** Please note as a solution to this limitation (especially in the scenario where you need to perform post install checks), the external thread version may be used with nuts and washers to allow unlimited adjustments (adjusting the nuts and washers used with packers).*



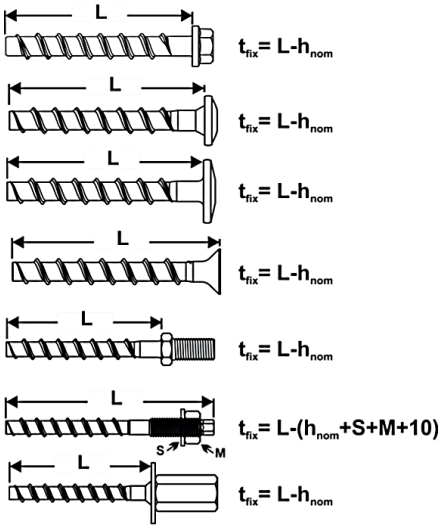
SINGLE FASTENING WITH FIRE EXPOSURE

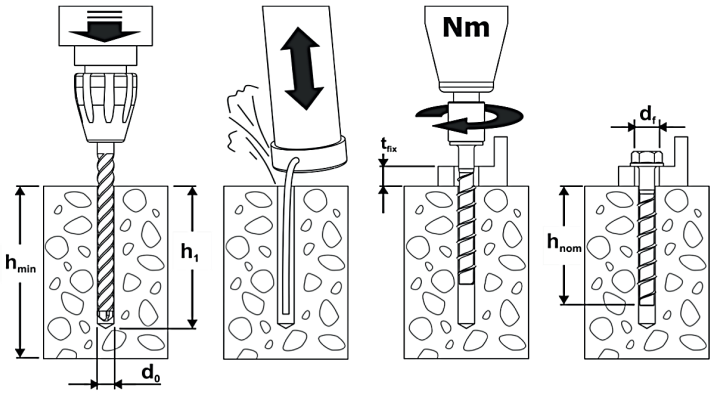
Technical characteristic under fire exposure for single fastening CFCS / CFCS A4 / CFCS HCR																				
Screw size CFCS high performance			CFCS 6		CFCS 8			CFCS 10			CFCS 12			CFCS 14						
			$h_{nom,1}$	$h_{nom,2}$	$h_{nom,1}$	$h_{nom,2}$	$h_{nom,3}$	$h_{nom,1}$	$h_{nom,2}$	$h_{nom,3}$	$h_{nom,1}$	$h_{nom,2}$	$h_{nom,3}$	$h_{nom,1}$	$h_{nom,2}$	$h_{nom,3}$				
Nominal embedment depth		h_{nom} [mm]	40	55	45	55	65	55	75	85	65	85	100	75	100	115				
Permissible load under tensile and shear use ($F_{zul,fi} = N_{zul,fi} = V_{zul,fi}$)																				
Fire resistance class																				
R 30	Permissible Load	$F_{zul,fi\ 30}$ [kN]	0.5	0.9	1.3	2.3	2.3	2.3	4.1	4.3	3.0	5.0	6.7	3.9	8.8	9.1				
R 60		$F_{zul,fi\ 60}$ [kN]	0.5	0.8	1.3	1.7	1.7	2.3	3.3	3.3	3.0	5.0	5.8	3.9	8.2	8.2				
R 90		$F_{zul,fi\ 90}$ [kN]	0.5	0.6	1.3	1.1	1.1	2.3	2.2	2.2	3.0	4.2	4.2	3.9	5.9	5.9				
R 120		$F_{zul,fi\ 120}$ [kN]	0.4	0.4	0.7	0.7	0.7	1.7	1.7	1.7	2.4	3.4	3.4	3.1	4.8	4.8				
R 30		$M_{zul,\ 30}$ [Nm]	0.7		2.4			5.9			12.3			20.4						
R 60		$M_{zul,\ 60}$ [Nm]	0.6		1.8			4.5			9.7			15.9						
R 90		$M_{zul,\ 90}$ [Nm]	0.5		1.2			3.0			7.0			11.6						
R 120		$M_{zul,120}$ [Nm]	0.3		0.9			2.3			5.7			9.4						
Edge Distance																				
R 30 to R 120		$C_{cr,fi}$ [mm]	2 x hef																	
The edge distance must be at least 300mm if the fire stress of more than one side attacks																				
Spacing																				
R 30 to R 120		$S_{cr,fi}$ [mm]	2 x $C_{cr,fi}$																	
Concrete pry-out failure																				
R 30 to R 120		k [-]	1.0																	
For wet concrete, the anchoring depth must be increased by at least 30mm																				

1) The partial safety factor for material resistance fromthe approval γM=1,0 as well a partial safety factor for load actions γF=1,0 were considered for determining the load.



INSTALLATION





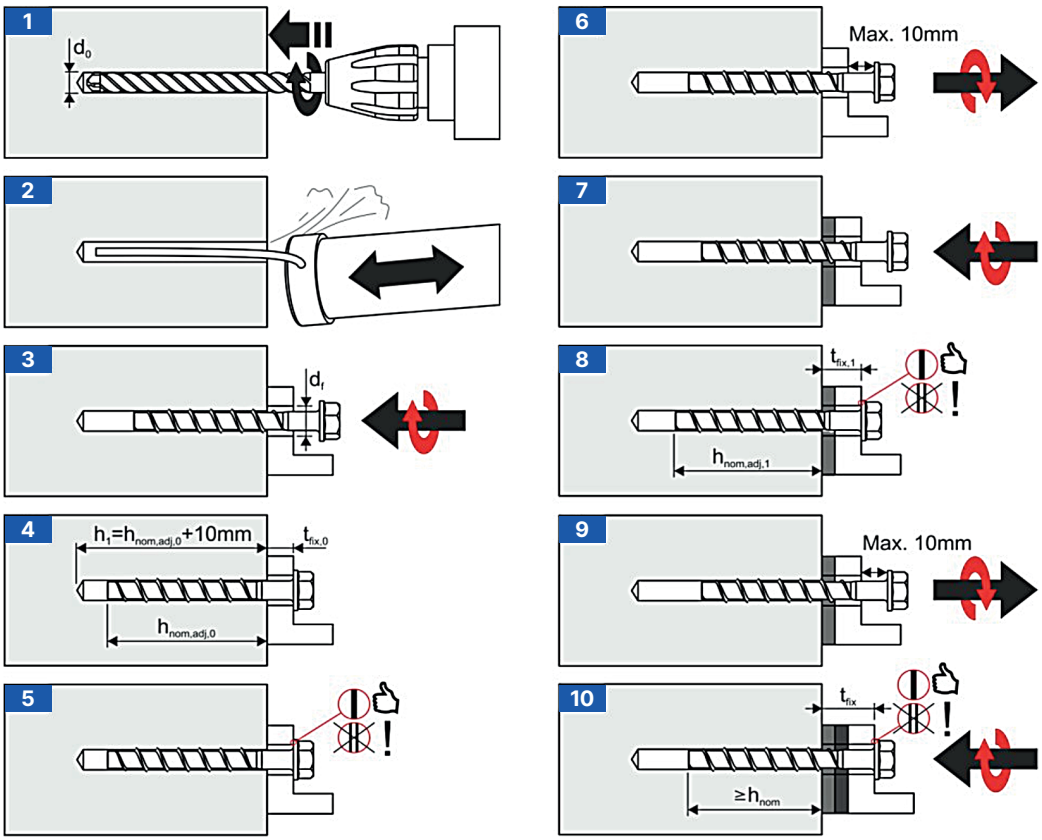
IMPORTANT

The anchor may be adjusted maximum two times while the anchor may turn back at most 10 mm.*

The total allowed thickness of shims added during the adjustment process is 10 mm.*

The final embedment depth after adjustment process must be equal or longer than hnom.

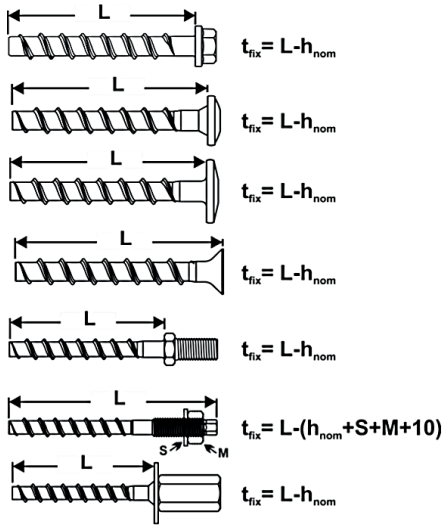
**Please note as a solution to this limitation (especially in the scenario where you need to perform post install checks), the external thread version may be used with nuts and washers to allow unlimited adjustments (adjusting the nuts and washers used with packers).*



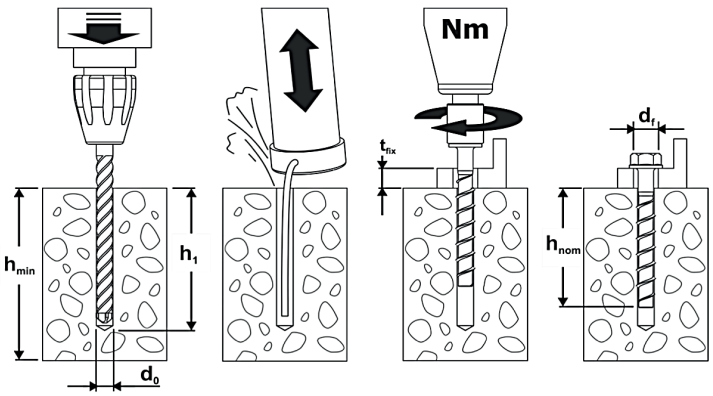
MULTIPLE FASTENING WITHOUT FIRE EXPOSURE

Technical characteristic without fire exposure for single fastening CFCS / CFCS A4 / CFCS HCR					
Screw size CFCS high performance			CFCS 5	CFCS 6	
Nominal embedment depth	h_{nom}	[mm]	35	35	55
Nominal diametrer of drill bit	d0	[mm]	5	6	
Depth of drill hole	h1 min	[mm]	40	40	60
Effective anchorage depth	hef	[mm]	27	27	44
Diameter of clearance hole in the fixture	df max	[mm]	7	8	
Permissible tension load in cracked concrete [1);2)]	Nzul	[kN]	0.6	1.4	3.6
Permissible shear load in cracked concrete [1);2)]	Vzul	[kN]	2.4	2.4	4
Perm. tension load in non-cracked concrete [1);2)]	Nzul	[kN]	0.6	1.4	3.6
Perm. shear load in non-cracked concrete [1);2)]	Vzul	[kN]	2.5	3.4	4
Minimum edge distance	Mzul	[mm]	35	35	40
Minimum spacing	Cmin	[mm]	35	35	40
Minimum base material thickness	Smin	[mm]	80	80	100
Installation torque (with metric connection thread)	hmin	[Nm]	8	10	
Maximum torque (with Impact screw driver)	Tinst	[Nm]	140	160	

1) The partial safety factor for material resistance from the approval γM=1,5 as well a partial safety factor for load actions γF=1,4 were considered for determining the load.
2) These values apply without influence of the spacing and edge distances.



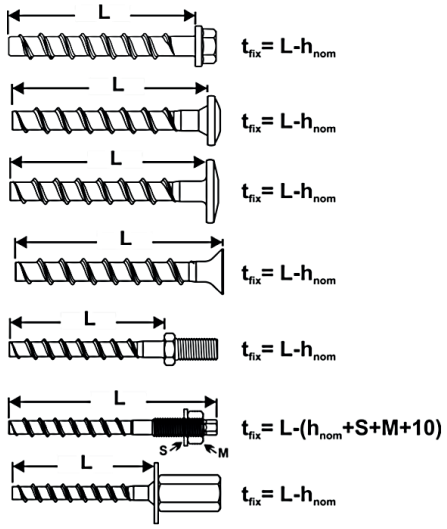
ASSEMBLY INSTRUCTIONS



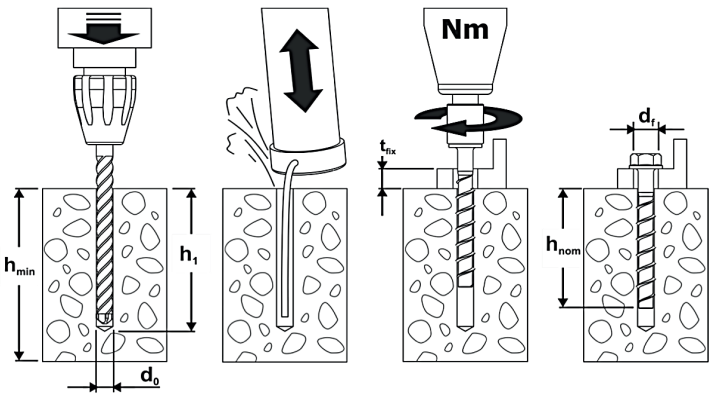
MULTIPLE FASTENING WITH FIRE EXPOSURE

Technical characteristics under fire exposure for multiple fastening CFCS / CFCS A4 / CFCS HCR								
Screw size CFCS high performance				CFCS 8		CFCS 6 A4 / HCR	
Nominal embedment depth		h_{nom}	[mm]	35	55	35	55
Permissible load under tensile and shear use ($F_{zul,fi} = N_{zul,fi} = V_{zul,fi}$)							
Fire resistance class							
R 30	Permissible Load	$F_{zul,fi\ 30}$	[kN]	0.4	0.9	0.4	1.2
R 60		$F_{zul,fi\ 60}$	[kN]	0.4	0.8	0.4	1.2
R 90		$F_{zul,fi\ 90}$	[kN]	0.4	0.6	0.4	1.2
R 120		$F_{zul,fi\ 120}$	[kN]	0.3	0.4	0.3	0.8
R 30		$M_{zul,fi\ 30}$	[Nm]	0.7		0.9	
R 60		$M_{zul,fi\ 60}$	[Nm]	0.6		0.9	
R 90		$M_{zul,fi\ 90}$	[Nm]	0.5		0.9	
R 120		$M_{zul,fi\ 120}$	[Nm]	0.3		0.6	
Edge Distance							
R 30 to R 120		$C_{cr,fi}$	[mm]	2 x hef			
The edge distance must be at least 300mmif the fire stress of more than one side attacks							
Spacing							
R 30 to R 120		$S_{cr,fi}$	[mm]	2 x Ccr,fi			
Concrete pry-out failure							
R 30 to R 120		k	[-]	1.0			
For wet concrete, the anchoring depth must be increased by at least 30mm							

1) The partial safety factor for material resistance from the approval γM=1,0 as well a partial safety factor for load actions γF=1,0 were considered for determining the load.

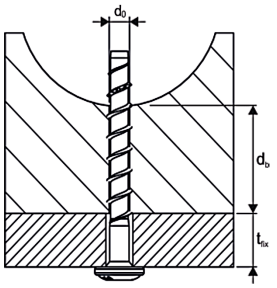


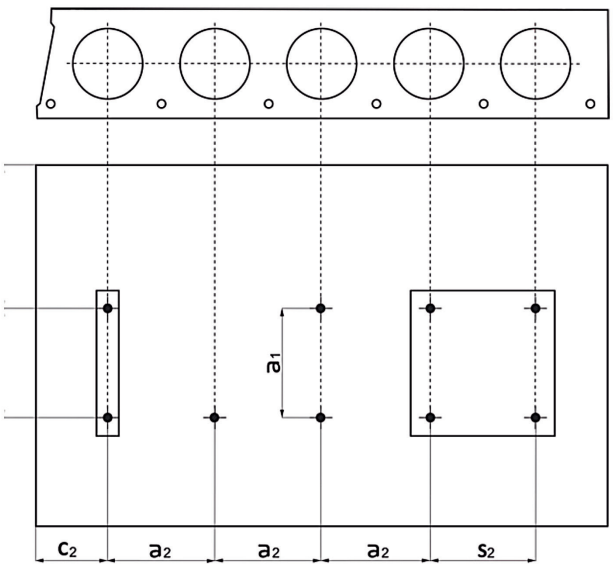
ASSEMBLY INSTRUCTIONS



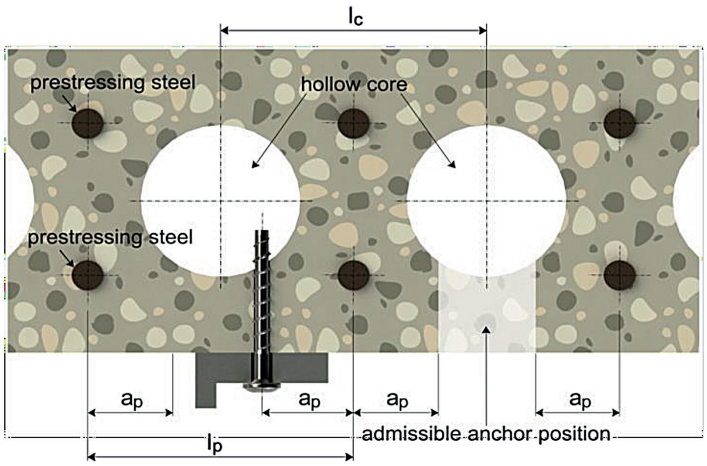
MULTIPLE FASTENING HOLLOW CORE

Technical characteristics without fire exposure in prestressed hollow core slabs CFCS / CFCS A4 / C						
Screw size CFCS high performance				CFCS 6		
Bottom flange thickness	d_b		[mm]	25	30	35
Nominal diameter of drill bit	d_0		[mm]		6	
Depth of drill hole	h_1	min	[mm]	30	35	40
Clearance hole diameter	d_f	max	[mm]		8	
Permissible tension load	F_{zul}		[kN]	0.48	0.95	1.43
Minimum edge distance	c_{min}		[mm]		100	
Minimum spacing	s_{min}		[mm]		100	
Minimum distance between anchor groups	a_{min}		[mm]		100	
Core distance	l_c	min	[mm]		100	
Prestressing steel distance	l_P	min	[mm]		100	
Dist. between anchor position & prestressing steel	a_P	min	[mm]		50	
Hollow core width (w) Bridge width (e)	(w/e)	max	[mm]		4.2	
Installation torque	T_{inst}		[Nm]		10	
Max. torque (for impact screw driver)			[Nm]		160	



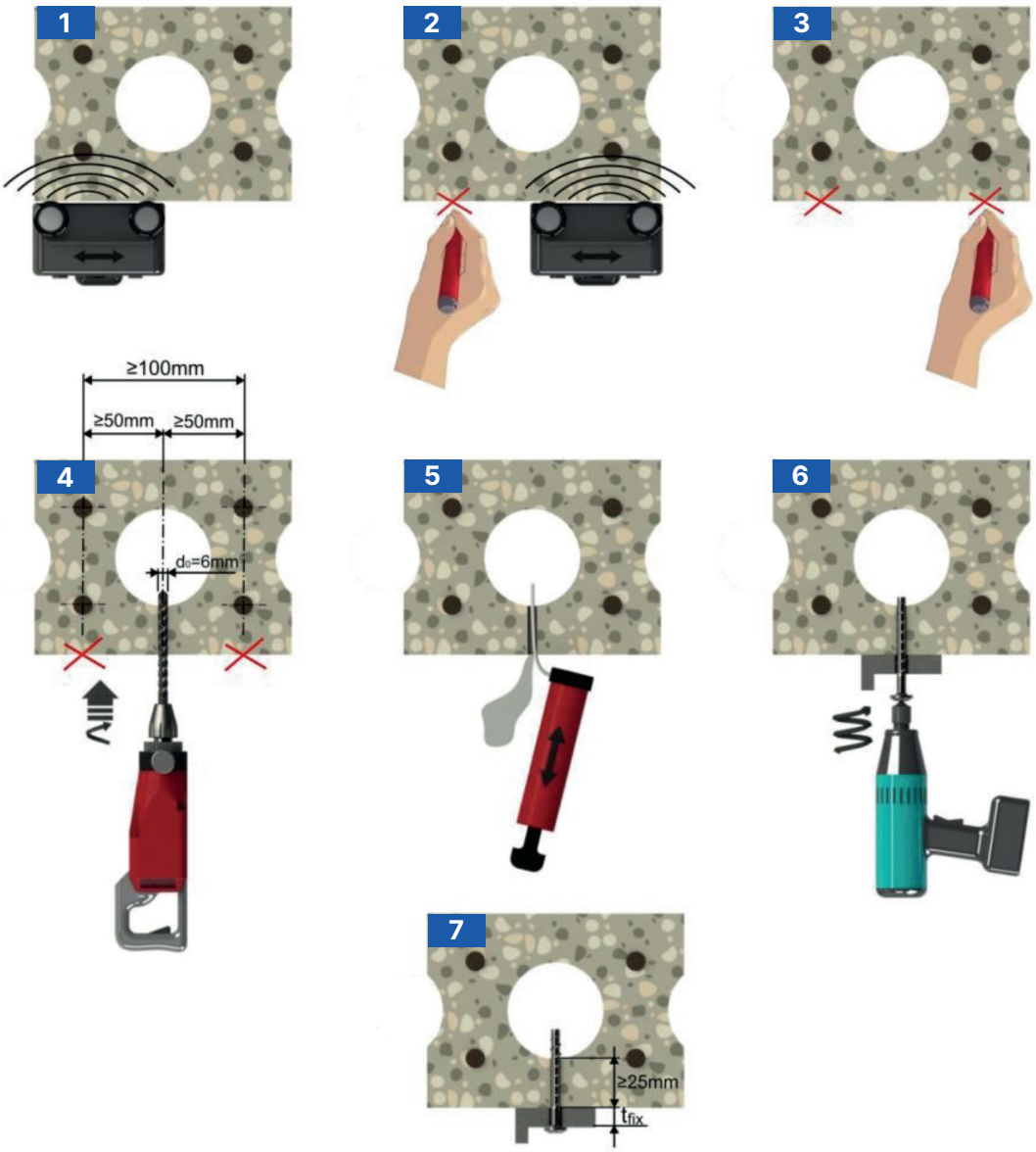


C1, C2 = Edge spacing
S1, S2 = Centre distance
a1, a2 = Distance between anchor groups



lc = Distance between cavities
lp = Distance between prestressed steel
ap = Distance between prestressed steel and drill hole

ASSEMBLY INSTRUCTIONS



1) Use a rebar scanner to find the rebar
2) Use a marker pen to mark out the rebar areas
3) Continue marking the areas
4) Create a drill hole in the rebar free area
5) Blow out drill hole
6) Drive in the concrete screw*
7) Ensure the screw head is completely resting on the fixture

**Ensure your driving tool does not exceed the maximum torque allowable for the selected concrete screw.*

INDUSTRY LEADING PROOF/ULTIMATE LOAD (PULL TEST) REPORTS

1) Type of test

2) a. Ultimate Load Test to BS8539:2012 - Where the tester takes the anchor to it's **Failure Load** in the substrate tested - used to determine an **Allowable Load** where the ETA approval does not have enough information in the substrate tested, or the client wants to test the fixing & substrate combination to it's limits. The **Allowable Load** cannot exceed the load allowed for in the ETA approval. The structural engineer can use this load to ensure the allowable load will exceed the **Applied Load**.
   b. Proof Load Test to BS8539:2012 - pre installed fixings on site are tested to an agreed **Factored Load** which is less than the **Recommended Load**.

3) Purpose of Fixing (to substrate) - e.g:

4) a. Helping hand bracket
   b. Fire barrier bracket
   c. Base plate

5) Test Standard Used

6) Substrates Tested

7) Site Attendee / Author

We then give you an idea of the conditions on site - with the follwing:

1) Site Condition Assessment - one for each substrate

2) Site Environment
   a. Corrosivity
   b. Building height compared to surrounding area - potential for high wind loads? We then move onto the actual tests. We start by giving an detailed overview of the fixings tested, then we give you an in depth report on each test, noting any anomalies encountered in each test area. We would usually note down the area for each test, the method varies by building.

3) Fixing Tested

4) Test Reports

5) a. Graph showing the performance of the fixing when
   b. tensile load is applied during the test over time
   c. Image showing the area tested and the fixing in situ
   d. Traceable test reference
   e. Highest tensile load achieved during test
   e. Notes of any anomalies during the test, location tested, etc

6) Observations

7) a. One per substrate
   b. Notes of any failures we encountered
   c. Solutions for each failure type if possible

8) Summary and Recommendations

9) a. Gives a brief overview of the overall opinion of the tester who attended site
   b. Suggested anchor for each substrate - chosen on the basis of
      - Performance during tests
      - Suitability for environment
      - Insurance requirements
   c. We also tell you the accessories required for each anchor type as well

10) Installation Methodology
   a. Step by step instructions for each anchor type, this might differ per substrate
   b. Required tools for each anchor type (and substrate)

On-site testing available on this product.
Book yours now at www.certifix.co.uk/bookings/pull-test