

CH

Designation: **CH ANCHOR**

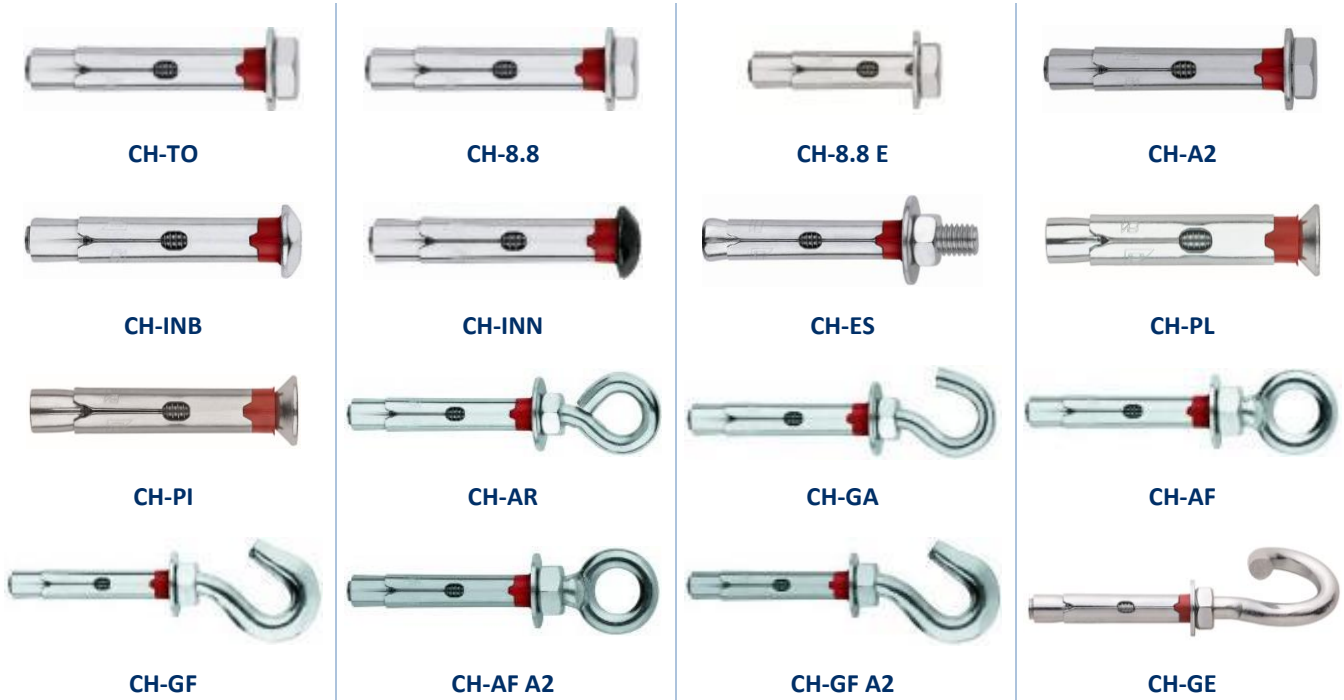
Codes: ACHT, ACHT88, ACHT88E, ACHTA2, ACHINB, ACHINN, ACE, ACHTPL, ACHTPI, ACHA, ACHG, ACHAFO, ACHGFO, ACHAA2, ACHGA2, ACHGE

Reference: **FT CH-en**

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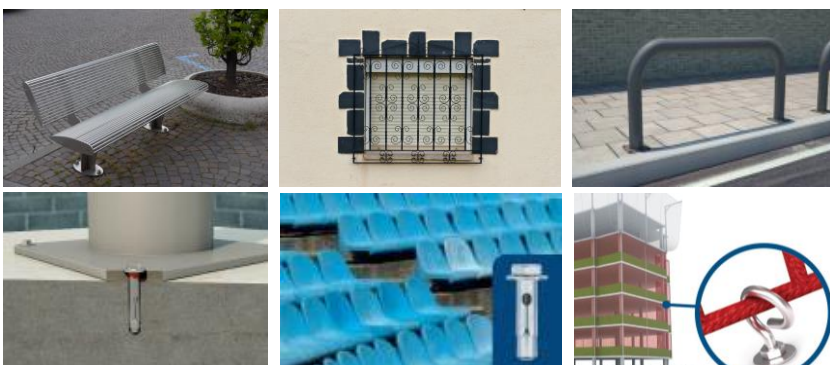
CHARACTERISTICS

- Metal anchor that works by expansion once installed with controlled torque.
- Male thread.
- Use in non-cracked concrete.
- Easy assembly.
- Assembled with built-in antispins in the collar ensuring a spin-free installation.
- To be used for medium loads.
- Installation through the material to be fixed.
- Versions:
 - Zinc plated bolt.
 - A2 stainless steel flat bolt.
 - 8.8 bolt.
 - Hook bolt.
 - 8.8 bolt short sizes.
 - Eye bolt.
 - A2 stainless steel.
 - Forged hook bolt.
 - Tamperproof head bolt.
 - Forged eye bolt.
 - Black zinc-plated tamperproof head bolt.
 - Forged stainless steel A2 hook bolt.
 - Projecting bolt.
 - Forged stainless steel A2 eye bolt.
 - Flat bolt.
 - Spiral hook bolt.

BASE MATERIALS



APPLICATIONS



For fixing signposts, shelves, panels, gates, railings, street furniture, fence posts, cinema and stadium seats.

WEB DATA SHEET



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1. RANGE AND COMPONENTS

CODE	PICTURE	COMPONENT	MATERIAL
CH-TO		Bolt Washer Sleeve Antispin Conical nut Surface treatment	DIN 931, class 6.8 DIN 9021 (M6, M20) special (M8 to M16) Carbon steel PVC Carbon steel Zinc plated ISO 4042 ≥ 5 µm
CH-8.8		Bolt Washer Sleeve Antispin Conical nut Surface treatment	DIN 931, class 8.8 DIN 9021 (M6), special (M8 to M16) Carbon steel PVC Carbon steel Zinc plated ISO 4042 ≥ 5 µm
CH-8.8 E		Bolt Washer Sleeve Conical nut Surface treatment	DIN 931, class 8.8 DIN 9021 (M6), special (M8) Carbon steel Carbon steel Zinc plated ISO 4042 ≥ 5 µm
CH-A2		Bolt Washer Sleeve Antispin Conical nut	DIN 931, A2-70 DIN 9021 (M6, M20) special (M8 to M16) AISI304 AISI304 PVC AISI303
CH-INB		Bolt Sleeve Antispin Conical nut Surface treatment	Tamperproof hexalobular Tx recess 40 class 5.6 Carbon steel PVC Carbon steel Zinc plated ISO 4042 ≥ 5 µm
CH-INN		Bolt Sleeve Antispin Conical nut Surface treatment	Tamperproof hexalobular Tx recess 40 class 5.6 Carbon steel PVC Carbon steel Zinc plated ISO 4042 ≥ 5 µm
CH-ES		Projecting bolt Washer Sleeve Antispin Conical nut Nut Surface treatment	Class 4.8 DIN 9021 (M6) special (M8 a M10) Carbon steel PVC Carbon steel DIN934 Class 6 Zinc plated ISO 4042 ≥ 5 µm
CH-PL		Bolt Sleeve Conical nut Surface treatment	DIN 7991 class 10.9 Carbon steel Carbon steel Zinc plated ISO 4042 ≥ 5 µm
CH-PI		Bolt Sleeve Conical nut	DIN 7991 A2-70 AISI304 AISI303
CH-AR		Hook bolt Washer Sleeve Antispin Conical nut Nut Surface treatment	Class 5.6 C4D EN 10016-2 DIN 9021 (M6) special (M8 to M12) Carbon steel PVC Carbon steel DIN934 Class 6 Zinc plated ISO 4042 ≥ 5 µm

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<p>CH-GA</p>		<p>Eye bolt Washer Sleeve Antispin Conical nut Nut Surface treatment</p>	<p>Class 5.6 C4D EN 10016-2 DIN 9021 (M6) special (M8 to M12) Carbon steel PVC Carbon steel DIN934 Class 6 Zinc plated ISO 4042 ≥ 5 μm</p>
<p>CH-AF</p>		<p>Forged hook bolt Washer Sleeve Antispin Conical nut Nut Surface treatment</p>	<p>Class 5.6 C4C EN 10263-2 DIN 9021 (M6) special (M8 to M10) Carbon steel PVC Carbon steel DIN934 Class 6 Zinc plated ISO 4042 ≥ 5 μm</p>
<p>CH-GF</p>		<p>Forged eye bolt Washer Sleeve Antispin Conical nut Nut Surface treatment</p>	<p>Class 5.6 C4C EN 10263-2 DIN 9021 (M6) special (M8 to M10) Carbon steel PVC Carbon steel DIN934 Class 6 Zinc plated ISO 4042 ≥ 5 μm</p>
<p>CH-AF A2</p>		<p>Forged hook bolt Washer Sleeve Antispin Conical nut Nut</p>	<p>AISI304 DIN 9021 (M6) special (M8 to M10) AISI304 AISI304 PVC AISI303 DIN934 AISI304</p>
<p>CH-GF A2</p>		<p>Forged eye bolt Washer Sleeve Antispin Conical nut Nut</p>	<p>AISI304 DIN 9021 (M6) special (M8 to M10) AISI304 AISI304 PVC AISI303 DIN934 AISI304</p>
<p>CH-GE</p>		<p>Eye bolt Washer Sleeve Antispin Conical nut Nut Surface treatment</p>	<p>Class 5.6 C4D EN 10016-2 Special Carbon steel PVC Carbon steel DIN934 Class 6 Zinc plated ISO 4042 ≥ 5 μm</p>

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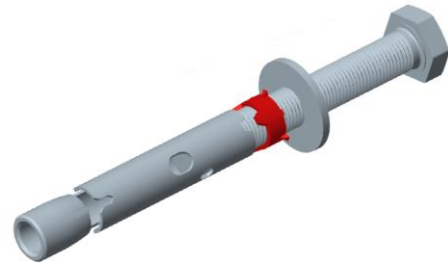
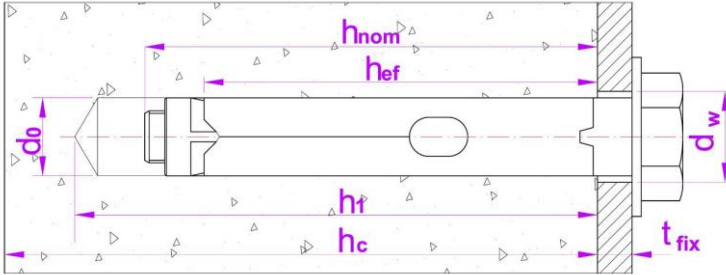
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2. INSTALLATION DATA



		DIAMETER																		
		8			9		10			11		12		14		16		20		25
		ACH...08E*	ACH...08C	ACH...08L	ACH...09C	ACH...09L	ACH...10E*	ACH...10C	ACH...10L	ACH...11C	ACH...11L	ACH...12C	ACH...12L	ACH...14C	ACH...14L	ACH...16C	ACH...16L	ACH...20C	ACH...25C	
d₀: drillbit diameter	[mm]	8			9		10			11		12		14		16		20		25
d_w: plate diameter ≤	[mm]	9			10		12			13		14		16		18		22		27
h₁: hole depth ≥	[mm]	40	45	60	45	60	45	60	80	60	80	75	100	75	100	85	110	110	130	
h_c: base material thickness ≥	[mm]	70	100		100	100	70	100	105	100	105	100	110	100	110	110	135	145	160	
T_{ins}: torque	[Nm]	10			10		20			20		35		35		50		80		120
h_{ef}: effective depth ≥	[mm]	25	30	35	30	35	25	40	52	40	52	48	55	48	55	55	67	72	80	
t_{fix}: fixture thickness ≤	CH-TO, CH-8.8, CH-A2, CH-ES	[mm]	5		15	5	15	5		15	5	15	5	25	5	25	5	25	15	25
	CH-INB, CH-INN	[mm]	---	6.5	16.5	---	---	---	6.5	16.5	---	---	---	---	---	---	---	---	---	---
	CH-PL, CH-PI	[mm]	---	8	18	---	---	---	9	19	---	---	10	30	---	---	---	---	---	---
	CH-AR, CH-GA, CH-AF, CH-GF, CH-AF A2, CH-GF A2, CH-GE	[mm]	---																	
s_{cr}: critical anchors distance	[mm]	75	90	105	90	105	75	120	155	120	155	145	165	145	165	165	205	215	240	
c_{cr}: critical edge distance	[mm]	40	45	55	45	55	40	60	80	60	80	75	85	75	85	85	105	110	120	

* Special short sizes, no PVC ring.

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3. PRODUCT INSTALLATION



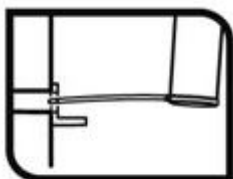
1. DRILL THE HOLE

Check that the concrete is compact and porosity insignificant.

To be used in dry, wet and flooded holes.

Both drilling and hammering modes must be turned on in the drilling machine.

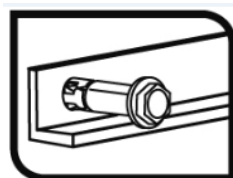
Hole diameter and length specified must be used.



2. BLOW AND CLEAN

It is necessary to clean the holes thoroughly free of dust and debris.

Air pump and brush must be used.

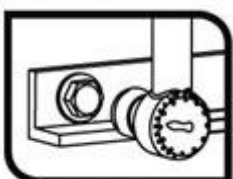


3. INSTALLATION

Anchor must be introduced into the hole until depth mark reaches the surface of the base material.

Hammer can be used if needed.

Anchor can be used both ways, through the hole of the material to be fixed or can be installed in advance.



4. TIGHTENING

Specified torque must be applied using a dynamometric wrench.

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4.- CHARACTERISTIC RESISTANCE

4.1.- Characteristic resistance* in C20/25 concrete** of an isolated anchor (no edge distance effect neither anchor distance effect) is indicated in the table below:

DIAMETER		8		9		10		11		12		14		16		20		25		
CH-TO		---	ACHT08C	ACHT08L	ACHT09C	ACHT09L	---	ACH10C	ACHT10L	ACHT11C	ACHT11L	ACHT12C	ACHT12L	ACHT14C	ACHT14L	ACHT16C	ACHT16L	ACHT20C	ACHT25C	
	Tension	[KN]	--	7.5	9.1	7.5	9.1	--	9.5	13.1	9.5	13.1	12.7	20.6	12.7	20.6	17.5	27.6	26.0	36.1
	Shear	[KN]	--	<u>6.0</u>	<u>6.0</u>	<u>6.0</u>	<u>6.0</u>	--	12.8	<u>11.0</u>	12.8	<u>11.0</u>	16.8	20.6	16.8	20.6	20.6	<u>25.3</u>	<u>47.1</u>	72.1
CH-8.8		ACHT8808E*	ACHT8808C	ACHT8808L	---	---	ACHT8810E*	ACHT8810C	ACHT8810L	---	---	ACHT8812C	ACHT8812L	---	---	ACHT8816C	ACHT8816L	ACHT8820C	---	
	Tension	[KN]	5.3	7.5	9.1	--	--	7.5	9.5	13.1	--	--	12.7	20.6	--	--	17.5	27.6	26.0	--
	Shear	[KN]	7.4	8.3	<u>8.0</u>	--	--	7.4	12.8	<u>14.6</u>	--	--	16.8	20.6	--	--	20.6	<u>33.7</u>	60.9	--
CH-A2		---	ACHTA208C	ACHTA208L	ACHTA209C	ACHTA209L	---	ACHTA210C	ACHTA210L	ACHTA211C	ACHTA211L	ACHTA212C	ACHTA212L	ACHTA214C	ACHTA214L	ACHTA216C	ACHTA216L	ACHTA220C	---	
	Tension	[KN]	--	7.5	9.1	--	9.1	--	9.5	13.1	--	13.1	12.7	20.6	--	20.6	17.5	27.6	26.0	--
	Shear	[KN]	--	<u>7.0</u>	<u>7.0</u>	--	<u>7.0</u>	--	<u>12.8</u>	<u>12.8</u>	--	<u>12.8</u>	16.8	<u>20.3</u>	--	<u>20.3</u>	20.6	<u>29.5</u>	<u>55.0</u>	--
CH-ES		---	ACHE08C	---	ACHE09C	---	---	ACHE10C	ACHE10L	ACHE11C	ACHE11L	ACHE12C	ACHE12L	ACHE14C	ACHE14L	---	---	---	---	
	Tension	[KN]	--	7.5	--	7.5	--	--	9.5	13.1	9.5	13.1	12.7	20.6	12.7	20.6	--	--	--	--
	Shear	[KN]	--	<u>6.0</u>	--	<u>6.0</u>	--	--	12.8	<u>11.0</u>	12.8	<u>11.0</u>	16.8	20.6	16.8	20.6	--	--	--	--
CH-INB/INN		---	ACHINB08C ACHINN08C	ACHINB08L ACHINN08L	---	---	---	ACHINB10C ACHINN10C	ACHINB10L ACHINN10L	---	---	---	---	---	---	---	---	---	---	
	Tension	[KN]	--	7.5	<u>10.1</u>	--	--	--	9.5	13.1	--	--	--	--	--	--	--	--	--	--
	Shear	[KN]	--	<u>5.0</u>	<u>5.0</u>	--	--	--	<u>9.2</u>	<u>9.2</u>	--	--	--	--	--	--	--	--	--	--
CH-PL		---	ACHTPL08C	ACHTPL08L	---	---	---	ACHTPL10C	ACHTPL10L	---	---	ACHTPL12C	ACHTPL12L	---	---	---	---	---	---	
	Tension	[KN]	--	7.5	9.1	--	--	--	9.5	13.1	--	--	12.7	20.6	--	--	--	--	--	--
	Shear	[KN]	--	7.3	<u>10.1</u>	--	--	--	12.3	<u>18.3</u>	--	--	16.7	20.5	--	--	--	--	--	--
CH-PI		---	ACHTPI08C	ACHTPI08L	---	---	---	ACHTPI10C	ACHTPI10L	---	---	ACHTPI12C	ACHTPI12L	---	---	---	---	---	---	
	Tension	[KN]	--	7.5	9.1	--	--	--	9.5	13.1	--	--	12.7	20.6	--	--	--	--	--	--
	Shear	[KN]	--	<u>7.0</u>	<u>7.0</u>	--	--	--	<u>12.8</u>	<u>12.8</u>	--	--	16.7	<u>20.3</u>	--	--	--	--	--	--

TECHNICAL DATA SHEET

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DIÁMETRO		8		9		10		11		12		14		16		20		25	
CH-AR		---	ACHA08C	---	ACHA09C	---	ACHA10C	---	ACHA11C	---	ACHA12C	---	ACHA14C	---	ACHA16C	---	---	---	---
	Tension	[KN]	---	<u>1.5</u>	---	<u>1.5</u>	---	<u>3.0</u>	---	<u>3.0</u>	---	<u>5.0</u>	---	<u>5.0</u>	---	<u>6.5</u>	---	---	---
	Shear	[KN]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
CH-GA		---	ACHG08C	---	ACHG09C	---	ACHG10C	---	ACHG11C	---	ACHG12C	---	ACHG14C	---	ACHG16C	---	---	---	---
	Tension	[KN]	---	<u>1.5</u>	---	<u>1.5</u>	---	<u>3.0</u>	---	<u>3.0</u>	---	<u>5.0</u>	---	<u>5.0</u>	---	<u>6.5</u>	---	---	---
	Shear	[KN]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
CH-AF		---	ACHAFO08C	---	---	---	ACHAFO10C	---	---	---	ACHAFO12C	---	---	---	---	---	---	---	
	Tension	[KN]	---	<u>4.2</u>	---	---	9.5	---	---	---	12.7	---	---	---	---	---	---	---	
	Shear	[KN]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
CH-GF		---	ACHGFO08C	---	---	---	ACHGFO10C	---	---	---	ACHGFO12C	---	---	---	---	---	---	---	
	Tension	[KN]	---	<u>1.7</u>	---	---	<u>3.2</u>	---	---	---	<u>5.9</u>	---	---	---	---	---	---	---	
	Shear	[KN]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
CH-AFA2		---	ACHAA208C	---	---	---	ACHAA210C	---	---	---	ACHAA212C	---	---	---	---	---	---	---	
	Tension	[KN]	---	<u>4.2</u>	---	---	9.5	---	---	---	12.7	---	---	---	---	---	---	---	
	Shear	[KN]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
CH-GFA2		---	ACHGA208C	---	---	---	ACHGA210C	---	---	---	ACHGA212C	---	---	---	---	---	---	---	
	Tension	[KN]	---	<u>1.7</u>	---	---	<u>3.2</u>	---	---	---	<u>5.9</u>	---	---	---	---	---	---	---	
	Shear	[KN]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
CH-GE		---	---	---	---	---	ACHGE10	---	---	---	ACHGE12	---	---	---	---	---	---	---	
	Tension	[KN]	---	---	---	---	<u>3.0</u>	---	---	---	<u>5.0</u>	---	---	---	---	---	---	---	
	Shear	[KN]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	

Notes:

- 1KN ≈ 100 kg
- * Special short sizes, no PVC ring. Values tested in C35/40 concrete.
- Underlined and cursive letters indicate steel failure.
- Characteristic tension load and shear load must be considered separately.

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4.2.- Recommended safety factors

SAFETY FACTOR		RESISTANCE REDUCTION		LOAD INCREASE
		CONCRETE FAIL	STEEL FAIL	
ACHT	Tension	1.80	---	1.4
	Shear	1.50	1.25	
ACHT88	Tension	1.80	---	
	Shear	1.50	1.25	
ACHTA2	Tension	1.80	---	
	Shear	1.50	1.56	
ACHE	Tension	1.80	--	
	Shear	1.50	1.25	
ACHINB, ACHINN	Tension	1.80	2.00	
	Shear	---	1.67	
ACHTPL	Tension	1.80	---	
	Shear	1.50	1.50	
ACHTPI	Tension	1.80	---	
	Shear	1.50	1.56	
ACHA, ACHG, ACHGE	Tension	---	1.50	
	Shear	---	---	
ACHAFO, ACHGFO	Tension	1.80	1.50	
	Shear	---	---	
ACHAA2, ACHGA2	Tension	1.80	1.87	
	Shear	---	---	

4.3.- Calculation example

- Fixing a tension 500 kg (4,91KN) load in C20/25 concrete using ACHT10L anchor.
- Verification to be made: *Calculation load < Calculation resistance*
- *Calculation load = service load * load increase factor = 4.91 * 1.4 = 6.87 KN*
- *Calculation resistance = $\frac{\text{characteristic tension resistance}}{\text{resistance reduction factor}} = \frac{13.1}{1.8} = 7.28 \text{ KN}$*
- Verification : 6.87 KN < 7.28 KN fixture is safe
- For more complex calculations INDEXcal calculation software can be used (download at www.indexfix.com).