

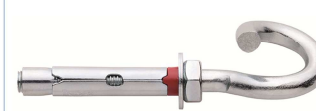
# CH

Denominación: **ANCLAJE CH**

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

Referencia: **FT CH-es**Fecha: **09/05/16**

Revisión: 11

Página: **1 de 9****CH-TO****CH-8.8****CH-8.8 E****CH-A2****CH-INB****CH-INN****CH-ES****CH-PL****CH-PI****CH-AR****CH-GA****CH-AF****CH-GF****CH-AF A2****CH-GF A2****CH-GE**

## CARACTERÍSTICAS

- Anclaje metálico con principio de funcionamiento por expansión e instalación por par controlado.
- Rosca macho.
- Uso en hormigón no fisurado.
- Fácil montaje.
- Conjunto solidario que hace que el anclaje no gire facilitando la instalación gracias a los antiguos incorporados en casquillo, camisa y cono.
- Empleo para cargas medias.
- Instalación a través del propio taladro del elemento a fijar.
- Versiones:
  - Tornillo cincado
  - Tornillo calidad 8.8
  - Tornillo calidad 8.8 cortos.
  - Tornillo inoxidable A2
  - Tornillo inviolable
  - Tornillo inviolable cincado negro
  - Espárrago
  - Tornillo cabeza plana
  - Tornillo cabeza plana inoxidable A2
  - Argolla
  - Gancho
  - Argolla forjada
  - Gancho forjado
  - Argolla forjada inoxidable A2
  - Gancho forjado inoxidable A2
  - Gancho espiral cincado

## MATERIALES BASE



## APLICACIONES



Fijación de señales, Estanterías, Paneles, Pórticos, Barandillas, Mobiliario urbano, Toldos, Postes de vallas, Asientos de cines o estadios.

## FICHA WEB



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Página: 2 de 9

## 1. GAMA Y COMPONENTES

| CÓDIGO   | FOTO                                                                                | COMPONENTE                                                                   | MATERIAL                                                                                                                                                                |
|----------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CH-TO    |    | Tornillo<br>Arandela<br>Camisa<br>Antigiرو<br>Cono<br>Recubrimiento          | DIN 931, clase 6.8<br>DIN 9021 (M6, M20) especial (M8 a M16)<br>Acero al carbono<br>PVC<br>Acero al carbono<br>Cincado ISO 4042 $\geq 5 \mu\text{m}$                    |
| CH-8.8   |    | Tornillo<br>Arandela<br>Camisa<br>Antigiرو<br>Cono<br>Recubrimiento          | DIN 931, clase 8.8<br>DIN 9021 (M6), especial (M8 a M16)<br>Acero al carbono<br>PVC<br>Acero al carbono<br>Cincado ISO 4042 $\geq 5 \mu\text{m}$                        |
| CH-8.8 E |    | Tornillo<br>Arandela<br>Camisa<br>Cono<br>Recubrimiento                      | DIN 931, clase 8.8<br>DIN 9021 (M6), especial (M8)<br>ACERO AL CARBONO<br>ACERO AL CARBONO<br>Cincado ISO 4042 $\geq 5 \mu\text{m}$                                     |
| CH-A2    |  | Tornillo<br>Arandela<br>Camisa<br>Antigiرو<br>Cono                           | DIN 931, A2-70<br>DIN 9021 (M6, M20) especial (M8 a M16) AISI304<br>AISI304<br>PVC<br>AISI303                                                                           |
| CH-INB   |  | Tornillo<br>Camisa<br>Antigiرو<br>Cono<br>Recubrimiento                      | Inviolable Torx 40 clase 5.6<br>Acero al carbono<br>PVC<br>Acero al carbono<br>Cincado ISO 4042 $\geq 5 \mu\text{m}$                                                    |
| CH-INN   |  | Tornillo<br>Camisa<br>Antigiرو<br>Cono<br>Recubrimiento                      | Inviolable Torx 40 clase 5.6<br>Acero al carbono<br>PVC<br>Acero al carbono<br>Cincado ISO 4042 $\geq 5 \mu\text{m}$                                                    |
| CH-ES    |  | Eje<br>Arandela<br>Camisa<br>Antigiرو<br>Cono<br>Tuerca<br>Recubrimiento     | Clase 5.6<br>DIN 9021 (M6) especial (M8 a M10)<br>Acero al carbono<br>PVC<br>Acero al carbono<br>DIN934 Clase 6<br>Cincado ISO 4042 $\geq 5 \mu\text{m}$                |
| CH-PL    |  | Tornillo<br>Camisa<br>Cono<br>Recubrimiento                                  | DIN 7991 clase 10.9<br>ACERO AL CARBONO<br>ACERO AL CARBONO<br>Cincado ISO 4042 $\geq 5 \mu\text{m}$                                                                    |
| CH-PI    |  | Tornillo<br>Camisa<br>Cono                                                   | DIN 7991 A2-70<br>AISI304<br>AISI303                                                                                                                                    |
| CH-AR    |  | Argolla<br>Arandela<br>Camisa<br>Antigiرو<br>Cono<br>Tuerca<br>Recubrimiento | Clase 5.6 C4D EN 10016-2<br>DIN 9021 (M6) especial (M8 a M12)<br>ACERO AL CARBONO<br>PVC<br>ACERO AL CARBONO<br>DIN934 Clase 6<br>Cincado ISO 4042 $\geq 5 \mu\text{m}$ |

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Referencia: FT CH-es

Fecha: 09/05/16

Revisión: 11

Página: 3 de 9

CH-GA



Gancho Clase 5.6 C4D EN 10016-2  
 Arandela DIN 9021 (M6) especial (M8 a M12)  
 Camisa ACERO AL CARBONO  
 Antigiro PVC  
 Cono ACERO AL CARBONO  
 Tuerca DIN934 Clase 6  
 Recubrimiento Cincado ISO 4042  $\geq 5 \mu\text{m}$

CH-AF



Argolla forjada Clase 5.6 C4C EN 10263-2  
 Arandela DIN 9021 (M6) especial (M8 a M10)  
 Camisa ACERO AL CARBONO  
 Antigiro PVC  
 Cono ACERO AL CARBONO  
 Tuerca DIN934 Clase 6  
 Recubrimiento Cincado ISO 4042  $\geq 5 \mu\text{m}$

CH-GF



Gancho forjado Clase 5.6 C4C EN 10263-2  
 Arandela DIN 9021 (M6) especial (M8 a M10)  
 Camisa ACERO AL CARBONO  
 Antigiro PVC  
 Cono ACERO AL CARBONO  
 Tuerca DIN934 Clase 6  
 Recubrimiento Cincado ISO 4042  $\geq 5 \mu\text{m}$

CH-AF A2



Argolla forjada AISI304  
 Arandela DIN 9021 (M6) especial (M8 a M10) AISI304  
 Camisa AISI304  
 Antigiro PVC  
 Cono AISI303  
 Tuerca DIN934 AISI304

CH-GF A2



Gancho forjado AISI304  
 Arandela DIN 9021 (M6) especial (M8 a M10) AISI304  
 Camisa AISI304  
 Antigiro PVC  
 Cono AISI303  
 Tuerca DIN934 AISI304

CH-GE



Gancho Clase 5.6 C4D EN 10016-2  
 Arandela Especial  
 Camisa ACERO AL CARBONO  
 Antigiro PVC  
 Cono ACERO AL CARBONO  
 Tuerca DIN934 Clase 6  
 Recubrimiento Cincado ISO 4042  $\geq 5 \mu\text{m}$

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Página: 4 de 9

## GAMA DE PRODUCTO SEGÚN DIÁMETROS:

\* Medidas cortas especiales, sin casquillo de plástico

| MODELO       |                                                                                     | DIAMETRO |  | 8                                                | 9                      | 10                                               | 11                     | 12                                               | 14                     | 16                     | 20        | 25      |
|--------------|-------------------------------------------------------------------------------------|----------|--|--------------------------------------------------|------------------------|--------------------------------------------------|------------------------|--------------------------------------------------|------------------------|------------------------|-----------|---------|
| CH-TO        |    |          |  | ACHT08C<br>ACHT08L                               | ACHT09C<br>ACHT09L     | ACH10C<br>ACHT10L                                | ACHT11C<br>ACHT11L     | ACHT12C<br>ACHT12L                               | ACHT14C<br>ACHT14L     | ACHT16C<br>ACHT16L     | ACHT20C   | ACHT25C |
| CH-8.8/8.8 E |    |          |  | ACHT8808E*<br>ACHT8808C<br>ACHT8808L             | ---                    | ACHT8810E*<br>ACHT8810C<br>ACHT8810L             | ---                    | ACHT8812C<br>ACHT8812L                           | ---                    | ACHT8816C<br>ACHT8816L | ACHT8820C | ---     |
| CH-A2        |    |          |  | ACHTA208C<br>ACHTA208L                           | ACHTA209C<br>ACHTA209L | ACHTA210C<br>ACHTA210L                           | ACHTA211C<br>ACHTA211L | ACHTA212C<br>ACHTA212L                           | ACHTA214C<br>ACHTA214L | ACHTA216C<br>ACHTA216L | ACHTA220C | ---     |
| CH-INB/INN   |   |          |  | ACHINB08C<br>ACHINN08C<br>ACHINB08L<br>ACHINN08L | ---                    | ACHINB10C<br>ACHINN10C<br>ACHINB10L<br>ACHINN10L | ---                    | ---                                              | ---                    | ---                    | ---       | ---     |
| CH-ES        |  |          |  | ACHE08C<br>---                                   | ACHE09C<br>---         | ACHE10C<br>ACHE10L                               | ACHE11C<br>ACHE11L     | ACHE12C<br>ACHE12L                               | ACHE14C<br>ACHE14L     | ---                    | ---       | ---     |
| CH-PL/PI     |  |          |  | ACHTPL08C<br>ACHTPI08C<br>ACHTPL08L<br>ACHTPI08L | ---                    | ACHTPL10C<br>ACHTPI10C<br>ACHTPL10L<br>ACHTPI10L | ---                    | ACHTPL12C<br>ACHTPI12C<br>ACHTPL12L<br>ACHTPI12L | ---                    | ---                    | ---       | ---     |
| CH-AR        |  |          |  | ACHA08C<br>---                                   | ACHA09C<br>---         | ACHA10C<br>---                                   | ACHA11C<br>---         | ACHA12C<br>---                                   | ACHA14C<br>---         | ACHAH16C               | ---       | ---     |
| CH-GA        |  |          |  | ACHG08C<br>---                                   | ACHG09C<br>---         | ACHG10C<br>---                                   | ACHG11C<br>---         | ACHG12C<br>---                                   | ACHG14C<br>---         | ACHGH16C               | ---       | ---     |
| CH-AF/AF A2  |  |          |  | ACHAFO08C<br>ACHAA208C<br>---                    | ---                    | ACHAFO10C<br>ACHAA210C<br>---                    | ---                    | ACHAFO12C<br>ACHAA212C<br>---                    | ---                    | ---                    | ---       | ---     |
| CH-GF/GF A2  |  |          |  | ACHGFO08C<br>ACHGA208C<br>---                    | ---                    | ACHGFO10C<br>ACHGA210C<br>---                    | ---                    | ACHGFO12C<br>ACHGA212C<br>---                    | ---                    | ---                    | ---       | ---     |
| CH-GE        |  |          |  | ---                                              | ---                    | ACHGE10<br>---                                   | ---                    | ---                                              | ---                    | ---                    | ---       | ---     |

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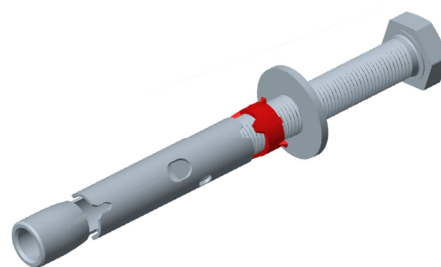
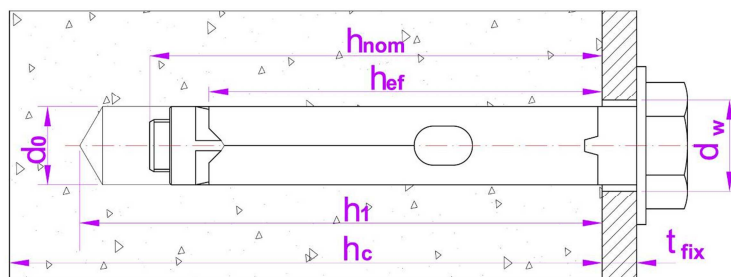
Referencia: FT CH-es

Fecha: 09/05/16

Revisión: 11

Página: 5 de 9

## 2. DATOS INSTALACIÓN



|                                                |                                                       | DIAMETRO   |           |           |           |           |            |           |           |           |           |           |           |           |           |           |           |           |           |     |
|------------------------------------------------|-------------------------------------------------------|------------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----|
|                                                |                                                       | 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 |     |
| d <sub>0</sub> : diámetro broca                |                                                       | [mm]       | 8         |           |           | 9         |            | 10        |           |           | 11        |           | 12        |           | 14        |           | 16        |           | 20        | 25  |
| d <sub>w</sub> : diámetro en chapa ≤           |                                                       | [mm]       | 9         |           |           | 10        |            | 12        |           |           | 13        |           | 14        |           | 16        |           | 18        |           | 22        | 27  |
| h <sub>1</sub> : profundidad taladro ≥         |                                                       | [mm]       | 40        | 45        | 60        | 45        | 60         | 45        | 60        | 80        | 60        | 80        | 75        | 100       | 75        | 100       | 85        | 110       | 110       | 130 |
| h <sub>c</sub> : espesor material base ≥       |                                                       | [mm]       | 70        | 100       |           | 100       | 100        | 70        | 100       | 105       | 100       | 105       | 100       | 110       | 100       | 110       | 110       | 135       | 145       | 160 |
| T <sub>ins</sub> : par de apriete              |                                                       | [Nm]       | 10        |           |           | 10        |            | 20        |           |           | 20        |           | 35        |           | 35        |           | 50        |           | 80        | 120 |
| h <sub>ef</sub> : profundidad efectiva ≥       |                                                       | [mm]       | 25        | 30        | 35        | 30        | 35         | 25        | 40        | 52        | 40        | 52        | 48        | 55        | 48        | 55        | 55        | 67        | 72        | 80  |
| t <sub>fix</sub> : espesor a fijar ≤           | 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 <sub>cr</sub> : distancia crítica entre ejes |                                                       | [mm]       | 75        | 90        | 105       | 90        | 105        | 75        | 120       | 155       | 120       | 155       | 145       | 165       | 145       | 165       | 165       | 205       | 215       | 240 |
| c <sub>cr</sub> : distancia crítica al borde   |                                                       | [mm]       | 40        | 45        | 55        | 45        | 55         | 40        | 60        | 80        | 60        | 80        | 75        | 85        | 75        | 85        | 85        | 105       | 110       | 120 |

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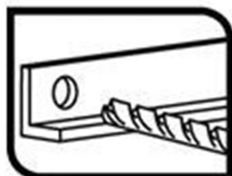
Códigos: ACHT, ACHT88, ACHT88E, ACHTA2, ACHINB, ACHINN, ACHE, ACHTPL, ACHTPI, ACHA, ACHG, ACHAFO, ACHGFO, ACHAA2, ACHGA2, ACHGE

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Revisión: 11

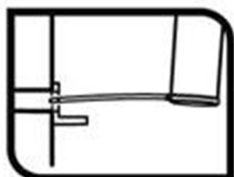
Página: **6 de 9**

## 3. INSTALACIÓN DEL PRODUCTO



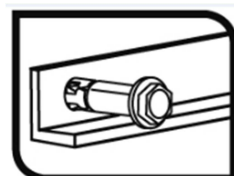
### 1. TALADRAR

Comprobar que el hormigón esté bien compactado y sin poros significativos.  
 Admisible en taladros secos, húmedos o inundados.  
 Taladro en posición percusión o martillo.  
 Taladrar a diámetro y profundidad especificados.



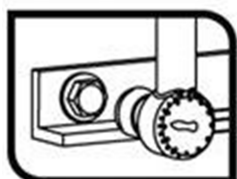
### 2. SOPLAR Y LIMPIAR

Limpiar el agujero de restos de polvo y fragmentos del taladrado.  
 Utilizar bomba de aire y cepillo



### 3. INSTALAR

Insertar el anclaje hasta que la marca de profundidad quede enrasada con la superficie del material base  
 Utilizar un martillo en caso necesario.  
 La instalación se puede hacer a través del material a fijar o previamente a la colocación del mismo.



### 4. APLICAR PAR DE APRIETE

Aplicar el par de apriete nominal usando llave dinamométrica.

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Página: **7 de 9**

## 4.- RESISTENCIAS CARACTERÍSTICAS

4.1.- La resistencia característica\* en hormigón no fisurado C20/25\*\* para un anclaje aislado (sin efectos de distancia al borde ni de distancias entre anclajes) es la indicada en la siguiente tabla:

| DIÁMETRO   |                                                                                     |      | 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 |
|            | Tracción                                                                            | [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    |
|            | Cortadura                                                                           | [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   | ---     |
|            | Tracción                                                                            | [KN] | 5.3        | 7.5                    | 9.1                    | ---        | ---        | 7.5        | 9.5                    | 13.1                   | ---       | ---         | 12.7      | 20.6        | ---       | ---         | 17.5      | 27.6        | 26.0        | ---     |
|            | Cortadura                                                                           | [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   | ----    |
|            | Tracción                                                                            | [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        | --      |
|            | Cortadura                                                                           | [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     | ---       | ---         | ---         | ---     |
|            | Tracción                                                                            | [KN] | --         | 7.5                    | --                     | 7.5        | --         | ---        | 9.5                    | 13.1                   | 9.5       | 13.1        | 12.7      | 20.6        | 12.7      | 20.6        | --        | --          | --          | --      |
|            | Cortadura                                                                           | [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<br>ACHINN08C | ACHINB08L<br>ACHINN08L | ---        | ---        | ---        | ACHINB10C<br>ACHINN10C | ACHINB10L<br>ACHINN10L | ---       | ---         | ---       | ---         | ---       | ---         | ---       | ---         | ---         | ---     |
|            | Tracción                                                                            | [KN] | --         | 7.5                    | <u>10.1</u>            | --         | --         | --         | 9.5                    | 13.1                   | --        | --          | --        | --          | --        | --          | --        | --          | --          | --      |
|            | Cortadura                                                                           | [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   | ---       | ---         | ---       | ---         | ---         | ---     |
|            | Tracción                                                                            | [KN] | --         | 7.5                    | 9.1                    | --         | --         | --         | 9.5                    | 13.1                   | --        | --          | 12.7      | 20.6        | --        | --          | --        | --          | --          | --      |
|            | Cortadura                                                                           | [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   | ---       | ---         | ---       | ---         | ---         | ---     |
|            | Tracción                                                                            | [KN] | --         | 7.5                    | 9.1                    | --         | --         | --         | 9.5                    | 13.1                   | --        | --          | 12.7      | 20.6        | --        | --          | --        | --          | --          | --      |
|            | Cortadura                                                                           | [KN] | --         | <u>7.0</u>             | <u>7.0</u>             | --         | --         | --         | <u>12.8</u>            | <u>12.8</u>            | --        | --          | 16.7      | <u>20.3</u> | --        | --          | --        | --          | --          | --      |

## CH

Denominación: ANCLAJE CH

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

Referencia: FT CH-es

Fecha: 09/05/16

Revisión: 11

Página: 8 de 9

| DIÁMETRO |                                                                                     | 8   |            | 9   |            | 10  |            | 11  |            | 12  |            | 14  |            | 16  |            | 20  | 25  |
|----------|-------------------------------------------------------------------------------------|-----|------------|-----|------------|-----|------------|-----|------------|-----|------------|-----|------------|-----|------------|-----|-----|
| CH-AR    |    | --- | ACHA08C    | --- | ACHA09C    | --- | ACHA10C    | --- | ACHA11C    | --- | ACHA12C    | --- | ACHA14C    | --- | ACHA16C    | --- | --- |
|          | Tracción [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> | --- | --- |
|          | Cortadura [kN]                                                                      | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | --- |
| CH-GA    |    | --- | ACHG08C    | --- | ACHG09C    | --- | ACHG10C    | --- | ACHG11C    | --- | ACHG12C    | --- | ACHG14C    | --- | ACHG16C    | --- | --- |
|          | Tracción [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> | --- | --- |
|          | Cortadura [kN]                                                                      | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | --- |
| CH-AF    |   | --- | ACHAFO08C  | --- | ---        | --- | ACHAFO10C  | --- | ---        | --- | ACHAFO12C  | --- | ---        | --- | ---        | --- | --- |
|          | Tracción [kN]                                                                       | --- | <u>4.2</u> | --- | ---        | --- | 9.5        | --- | ---        | --- | 12.7       | --- | ---        | --- | ---        | --- | --- |
|          | Cortadura [kN]                                                                      | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | --- |
| CH-GF    |  | --- | ACHGFO08C  | --- | ---        | --- | ACHGFO10C  | --- | ---        | --- | ACHGFO12C  | --- | ---        | --- | ---        | --- | --- |
|          | Tracción [kN]                                                                       | --- | <u>1.7</u> | --- | ---        | --- | <u>3.2</u> | --- | ---        | --- | <u>5.9</u> | --- | ---        | --- | ---        | --- | --- |
|          | Cortadura [kN]                                                                      | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | --- |
| CH-AF A2 |  | --- | ACHAA208C  | --- | ---        | --- | ACHAA210C  | --- | ---        | --- | ACHAA212C  | --- | ---        | --- | ---        | --- | --- |
|          | Tracción [kN]                                                                       | --- | <u>4.2</u> | --- | ---        | --- | 9.5        | --- | ---        | --- | 12.7       | --- | ---        | --- | ---        | --- | --- |
|          | Cortadura [kN]                                                                      | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | --- |
| CH-GF A2 |  | --- | ACHGA208C  | --- | ---        | --- | ACHGA210C  | --- | ---        | --- | ACHGA212C  | --- | ---        | --- | ---        | --- | --- |
|          | Tracción [kN]                                                                       | --- | <u>1.7</u> | --- | ---        | --- | <u>3.2</u> | --- | ---        | --- | <u>5.9</u> | --- | ---        | --- | ---        | --- | --- |
|          | Cortadura [kN]                                                                      | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | --- |
| CH-GE    |  | --- | ---        | --- | ---        | --- | ACHGE10    | --- | ---        | --- | ACHGE12    | --- | ---        | --- | ---        | --- | --- |
|          | Tracción [kN]                                                                       | --- | ---        | --- | ---        | --- | <u>3.0</u> | --- | ---        | --- | <u>5.0</u> | --- | ---        | --- | ---        | --- | --- |
|          | Cortadura [kN]                                                                      | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | ---        | --- | --- |

## Notas:

- 1kN ≈ 100 kg
- \* Medidas cortas especiales, sin casquillo de plástico. Valores ensayados en hormigón C35/40.
- Las cifras en cursiva y subrayadas indican fallo del acero.
- Los valores de resistencia característica a tracción y a cortadura deben de considerarse por separado

## CH

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Referencia: FT CH-es

Fecha: 09/05/16

Revisión: 11

Página: 9 de 9

## 4.2.- Coeficientes de seguridad recomendados

| COEFICIENTES DE SEGURIDAD |           | MINORACION RESISTENCIAS |             | MAYORACION CARGAS |
|---------------------------|-----------|-------------------------|-------------|-------------------|
|                           |           | FALLO HORMIGON          | FALLO ACERO |                   |
| ACHT                      | Tracción  | 1.80                    | ---         | 1.4               |
|                           | Cortadura | 1.50                    | 1.25        |                   |
| ACHT88                    | Tracción  | 1.80                    | ---         |                   |
|                           | Cortadura | 1.50                    | 1.25        |                   |
| ACHTA2                    | Tracción  | 1.80                    | ---         |                   |
|                           | Cortadura | 1.50                    | 1.56        |                   |
| ACHE                      | Tracción  | 1.80                    | --          |                   |
|                           | Cortadura | 1.50                    | 1.25        |                   |
| ACHINB, ACHINN            | Tracción  | 1.80                    | 2.00        |                   |
|                           | Cortadura | ---                     | 1.67        |                   |
| ACHTPL                    | Tracción  | 1.80                    | ---         |                   |
|                           | Cortadura | 1.50                    | 1.50        |                   |
| ACHTPI                    | Tracción  | 1.80                    | ---         |                   |
|                           | Cortadura | 1.50                    | 1.56        |                   |
| ACHA, ACHG, ACHGE         | Tracción  | ---                     | 1.50        |                   |
|                           | Cortadura | ---                     | ---         |                   |
| ACHAFO, ACHGFO            | Tracción  | 1.80                    | 1.50        |                   |
|                           | Cortadura | ---                     | ---         |                   |
| ACHAA2, ACHGA2            | Tracción  | 1.80                    | 1.87        |                   |
|                           | Cortadura | ---                     | ---         |                   |

## 4.3.- Ejemplo de cálculo

- Fijación de una carga a tracción de 500 kg (4.91KN) en hormigón no fisurado C20/25 con anclaje ACHT10L.
- Comprobación a realizar: *Carga de cálculo* < *Resistencia de cálculo*
- *Carga de cálculo* = *Carga de servicio* × *coeficiente de mayoración de cargas* = 4.91 \* 1.4 = 6.87 KN
- *Resistencia de cálculo* =  $\frac{\text{resistencia característica tracción}}{\text{coeficiente de minoración de resistencia}} = \frac{13.1}{1.8} = 7.28 \text{ KN}$
- Comprobación: 6.87 KN < 7.28 KN la fijación es segura
- Para cálculos más complejos puede utilizar nuestro programa de cálculo de anclajes INDEXcal