ш		Reference	FT MTH ingles
	TECHNICAL DATA SHEET	Date	02/08/10
SISTEMAS DE FIJACIÓN		Revision	2
		Page	1 of 6
Designation: MTH ancho	Code	AH, MIA4	



## **1.- CHARACTERISTICS**

- Metallic anchor, with functioning principle by expansion and installation by controlled torque.
- Male thread
- Use in non-cracked concrete
- Easy assembly
- Use for medium-high loads
- Previous installation, or through the fixture hole itself.
- Variety of lengths: assembly flexibility.
- Two different installation depths for measures M8, M10 & M12, which allow a higher flexibility for both thin and thick materials at installation.
- Available in zinc plated steel or stainless steel A4 (equivalent to AISI 316) for installations outdoors.
- Certified by the Instituto Eduardo Torroja de Ciencias de la Construcción (EOTA member) with European Technical Approval ETA 05/0242, option 7, as per European Organization of Technical Approvals guide ETAG-001



ст.		Reference	FT MTH ingles
	TECHNICAL DATA SHEET	Date	02/08/10
SISTEMAS DE FIJACIÓN		Revision	2
		Page	2 of 6
Designation: MTH anchor	Code	AH, MIA4	

## 2.- MATERIALS

ITEM	COMPONENT	ZINC PLATED STEEL	STAINLESS STEEL GRADE A4
1	WEDGE BOLT	Cold forged steel, galvanized ≥ 5 µm ISO 4042 A2J	Stainless steel, grade A4
2	WASHER	DIN 125 or DIN 9021 galvanized ≥ 5µm ISO 4042 A2J	DIN 125 or DIN 9021 stainless steel, grade A4
3	NUT	DIN 934 galvanized $\ge$ 5 µm ISO 4042 A2J	DIN934 stainless steel, grade A4
4	CLIP	Steel DC03 EN101239 or SPCD JIS G3141 galvanized ≥ 5 µm ISO 4042 A2J	Stainless steel, grade A4

# **3.- DIMENSIONS**

	METRICA		M6	M8	M10	M12	M14	M16	M20
ode	ु Zinc plated steel		AM06XXX	AM08XXX	AM10XXX	AM12XXX	AM14XXX	AM16XXX	AM20XXX
Co	Stainless steel grade A4		MIA406XXX	MIA408XXX	MIA410XXX	MIA412XXX		MI1A46XXX	MIA420XXX
d <sub>p</sub> : axis	diameter	[mm]	6	8	10	12	14	16	20
Izinc_plate	d: zinc plated lenght	[mm]	60-180	60-155	70-230	90-250	120-250	125-280	170-270
I <sub>stainless.</sub>	_steel: stainless steel lenght	[mm]	60-180	75-115	70-150	90-140		125-170	170-220
d <sub>3</sub> : han	nmering diamete	[mm]	4	6	7.5	9	10.5	12	16
d <sub>2</sub> : was	sher diameter	[mm]	12	16	20	24	28	30	37
s <sub>2</sub> : was	her thickness	[mm]	1.6	1.6	2	2.5	2.5	3	3
s <sub>w</sub> : spa	anner	[mm]	10	13	17	19	22	24	30



ст.		Reference	FT MTH ingles
	TECHNICAL DATA SHEET	Date	02/08/10
SISTEMAS DE FIJACIÓN		Revision	2
		Page	3 of 6
Designation: MTH anchor		Code	AH, MIA4

# 4.- INSTALLATION DATA



	METRIC		M6	M8	M10	M12	M14	M16	M20
de	Zinc plated steel		AM06XXX	AM08XXX	AM10XXX	AM12XXX	AM14XXX	AM16XXX	AM20XXX
ပိ	Stainless steel, grade A4		MIA406XXX	MIA408XXX	MIA410XXX	MIA412XXX		MIA416XX	MIA420XXX
d <sub>0</sub>	: drill diameter	[mm]	6	8	10	12	14	16	20
T	ns: torque	[Nm]	7	20	35	60	90	120	240
d	: fixture diameter	[mm]	7	9	12	14	16	18	22
	h1: minimum drill depth	[mm]	55	65	75	85	100	110	135
ţ	h <sub>nom</sub> : embedment depth	[mm]	49.5	59.5	66.5	77	91	103.5	125
deb	h <sub>ef</sub> : min. effective depth.	[mm]	40	48	55	65	75	84	103
lard	h <sub>c</sub> : base material min. thck.	[mm]	100	100	110	130	150	168	206
tanc	$t_{\text{fix}}$ : max. fixture thickness	[mm]	L - 58	L - 70	L - 80	L - 92	L - 108	L - 122	L - 147
Ś	s <sub>cr</sub> : critical spacing	[mm]	120	144	165	195	225	252	309
	C <sub>cr</sub> : critical edge distance	[mm]	60	72	83	98	113	126	155
	h1: minimum drill depth	[mm]		50	60	70			
ţ	h <sub>nom</sub> : embedment depth	[mm]		46.5	53.5	62			
deb	h <sub>ef</sub> : min. effective depth	[mm]		35	42	50			
Sed	h <sub>c</sub> : base material min. thck.	[mm]		100	100	100			
pube	t <sub>fix</sub> : max. fixture thickness	[mm]		L-57	L-67	L-77			
Å	s <sub>cr</sub> : critical spacing	[mm]		105	126	150			
	C <sub>cr</sub> : critical edge distance	[mm]		53	63	75			
Srr	in: minimum spacing	[mm]	50	65	70	85	100	110	135
cm	<sub>in</sub> : min. edge distance	[mm]	50	65	70	85	100	110	135

Ē		Reference	FT MTH ingles
	TECHNICAL DATA SHEET	Date	02/08/10
SISTEMAS DE FIJACIÓN		Revision	2
		Page	4 of 6
Designation: MTH anchor	Code	AH, MIA4	

## **5.- INSTALLATION PROCEDURE**





- The concrete to be well compacted, e.g. without significant voids
- Base material temperatures during installation: -5 / + 50 °C (80 °C in a short period of time)
- Anchors to be installed ensuring not less than the specified embedment depth, The edge distance and spacing to be kept to the specified values, no minus tolerances to be allowed
- Drill to the minimum depth and diameter specified, maintaining perpendicular to the surface of the base material. Fixture holes themselves can be used as template.
- When drilling holes, care to be taken not to damage reinforcement in close proximity to the hole's position. Action to be taken in the event that drilling is aborted, e.g. due to encountering reinforcement. It is recommended to either install the anchors immediately beside the aborted drill hole, provide that anchoring depth is increased by the depth of the aborted drill hole, or make a new drilling at a minimum distance away of two the depth of the aborted hole. Alternatively, a smaller distance may be chosen, provided the aborted drill hole is filled with high strength mortar. However, unless the aborted drill hole is filled with mortar, it is not permissible under a shear or oblique tension load for it to be closer than installation depth h<sub>nom</sub> in the direction of load application.
- Thoroughly clean hole from dust and drilling fragments.
- For holes to be subjected to temperatures below 0 °C, measures to be taken to avoid the ingress of water into the hole and subsequent risk of local cracking of the concrete due to ice expansion.
- To introduce the anchor into the hole up to the embedment depth through the fixture. A hammer can be use to assure this depth. Do not apply any intermediate lay between the fixture and the washer (sealant, etc.). Apply the specified torque with a torque wrench.
- In case of fixture holes with diameters higher than specified use washers of bigger diameter and thickness, but in this case it is not assured a correct

LTD.		Reference	FT MTH ingles
	TECHNICAL DATA SHEET	Date	02/08/10
SISTEMAS DE FIJACIÓN		Revision	2
		Page	5 of 6
Designation: MTH anchor		Code	AH, MIA4

distribution of shear loads amongst all the anchors of a same group. The shear load will be applied on those anchors with the correct diameter on the fixture.

#### **6.- CHARACTERISTIC RESISTANCES**

6.1.- Characteristic resistances\* in concrete C20/25\*\* for an isolated anchor (without spacing and edge distances effects) are as per this table:

		METRIC		M6	M8	M10	M12	M14	M16	M20
lot el	Со	de		AH06XXX	AH08XXX	AH10XXX	AH12XXX	AH14XXX	AH16XXX	AH20XXX
el / H ed stee	dard	N <sub>R,k</sub> tension	[KN]	<u>7.7</u>	12.0	16.0	25.0	30.0	35.0	50.0
ed ste /anize	Stan	$V_{R,K\ shear}$	[KN]	<u>5.1</u>	<u>9.3</u>	<u>14.7</u>	<u>20.6</u>	<u>28.1</u>	<u>38.4</u>	<u>56.3</u>
ic plat	lced	N <sub>R,k tension</sub>	[KN]		9.0	12.0	16.0			
Zir d	Redu	$V_{R,Kshear}$	[KN]		10.4	13.7	17.8			
A4	Code			MIA406XXX	MIA408XXX	MIA410XXX	MIA412XXX		MIA416XXX	MIA420XXX
grade	dard	N <sub>R,k</sub> tension	[KN]	<u>10.1</u>	12.0	16.0	25.0		35.0	50.0
steel,	Stan	$V_{R,Kshear}$	[KN]	<u>6.0</u>	<u>10.9</u>	<u>17.4</u>	<u>25.2</u>		<u>47.1</u>	<u>73.5</u>
nless	lced	N <sub>R,k</sub> tension	[KN]		9.0	12.0	16.0			
Stai	Redu	V <sub>R,K shear</sub>	[KN]		10.4	13.7	17.8			

1 KN ≈ 100 Kg

 $^{\ast}$  The characteristic resistance of an anchor is that with a 95% probability to be achieved in a tension test. It depends on the mean ultimate resistance, the number of tests and the scatter of the results.

\*\* Concrete C20/25 per ENV206: characteristic resistance for a specimen ≥ 28 days old:

- Cylindrical sample ø 150 mm. x 300 height ≥ 200 N/mm<sup>2</sup>
  - Cubic sample 150 mm. side  $\geq$  250 N/mm<sup>2</sup>

Underline and cursive values correspond to steel failure.

Characteristic resistance for tension and shear must be considered separately

#### 6.2.- Recommended safety factors

		RESISTANCE SAFE		
SAFETY COEFF	ICIENT	CONCRETE FAILURE	STEEL FAILURE	SAFETY COEFFICIENT
Zine plated steel	Tension	1.80	<u>1.40</u>	1.4
Zinc plated steel	Shear	1.50	<u>1.25</u>	
Stainless steel, grade A4	Tension	1.80	<u>1.68</u>	

<u>ш</u>		Reference	FT MTH ingles
ENDEY	TECHNICAL DATA SHEET	Date	02/08/10
SISTEMAS DE FIJACIÓN		Revision	2
		Page	6 of 6
Designation: MTH ancho	Code	AH, MIA4	

	Shear	1.50	<u>1.52</u>				

6.3.- Calculation example

Fixing a load tension of 2.000 kg

2.000 kg ≈ 20 KN	
Increasing coefficient for loads:	1.4
Using two MTH M14 anchors	
Pull load characteristic resistance for standard depth MTH M14 anchor:	30.0 KN
Concrete failure	
Concrete reduction for resistances coefficient:	1.8

Checking: increased load must be lower than reduced resistance 20 KN x 1.4  $\leq$  2 x 30.0 KN / 1.8

Wedges distance must be longer than 225 mm and distance to any edge must be longer than 113 mm as well.

## 7. OFFICIAL DOCUMENTATION

The official European Technical Approval Document ETA 05/0242 is available through our export department



#### 8.- EXAMPLES OF USE



