

	<h1>TECHNICAL DATA SHEET</h1>	Reference	FT MTA ingles
		Date	02/08/10
		Revision	8
		Page	1 of 6
Designation: MTA anchor		Codes	AM, MI, AMHD

AM
Zinc plated



MI-A2
Stainless steel A2



AM-HD
Hot-dip galvanized



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.
- Manufactured in zinc plated steel, stainless steel A2 (equivalent to AISI 303 / 304) and hot-dip galvanized (EN ISO 1461) with stainless steel A4 clip.
- 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.

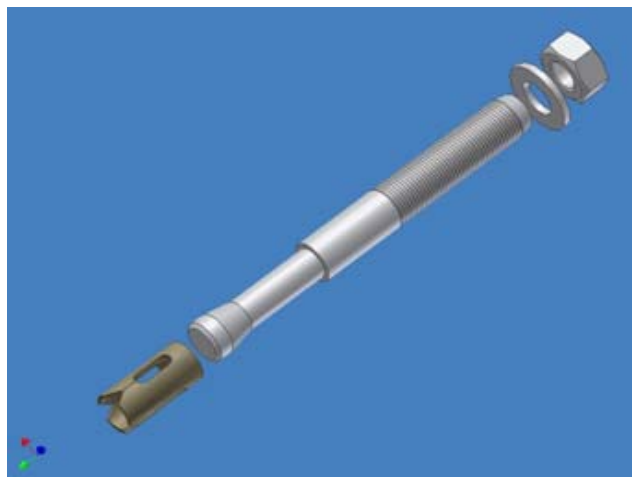
	<h1>TECHNICAL DATA SHEET</h1>	Reference	FT MTA ingles
		Date	02/08/10
		Revision	8
		Page	2 of 6
Designation: MTA anchor		Codes	AM, MI, AMHD

2.- MATERIALS

ITEM	COMPONENT	ZINC PLATED	STAINLESS STEEL A2	HOT-DIP GALVANIZED WITH SS A4 CLIP
1	WEDGE BOLT	Cold-stamped carbon steel, zinc plated $\geq 5 \mu\text{m}$ ISO 4042 A2J	Stainless steel, grade A2	Cold-stamped carbon steel, hot-dip galvanized $\geq 45 \mu\text{m}$ EN ISO 1461
2	WASHER	DIN 125 or DIN 9021 zinc plated $\geq 5 \mu\text{m}$ ISO 4042 A2J	DIN 125 or DIN 9021 stainless steel, grade A2	DIN 125 hot-dip galvanized $\geq 45 \mu\text{m}$ EN ISO 1461
3	NUT	DIN 934 class 8 ISO 898-1, zinc plated $\geq 5 \mu\text{m}$ ISO 4042 A2J	DIN 934 stainless steel, grade A2	DIN 934 class 8 ISO 898-1 hot-dip galvanized $\geq 45 \mu\text{m}$ EN ISO 1461
4	CLIP	Steel DC03 EN101239 o SPCD JIS G3141, zinc plated $\geq 5 \mu\text{m}$ ISO 4042 A2J	Stainless steel, grade A2	Stainless steel, grade A4

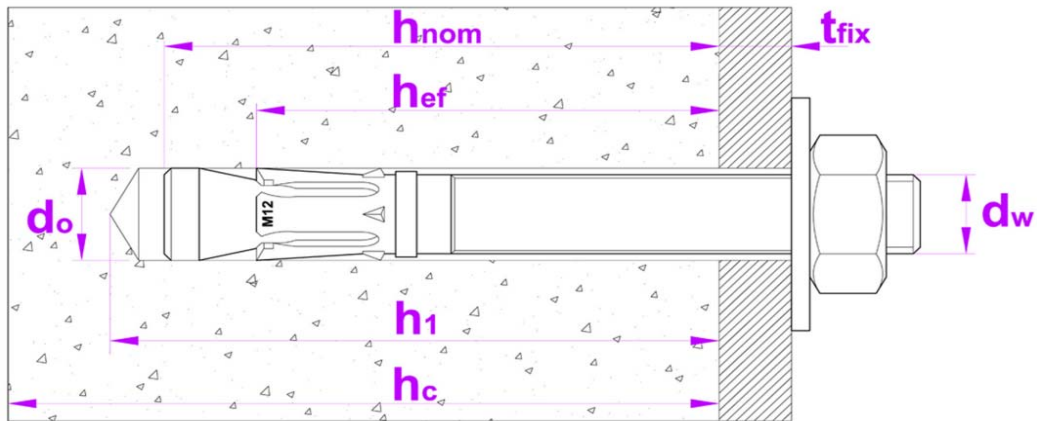
3.- DIMENSIONS

METRIC		M6	M8	M10	M12	M14	M16	M20	M24
Code	Zinc plated	AM06XXX	AM08XXX	AM10XXX	AM12XXX	AM14XXX	AM16XXX	AM20XXX	AM24XXX
	Stainless steel A2	MI06XXX	MI08XXX	MI10XXX	MI12XXX	----	MI16XX	MI20XXX	----
	Hot-dip galvanized	----	AMHD08XXX	AMHD10XXX	AMHD12XXX	----	AMHD16XXX	AMHD20XXX	----
d_p : axis diameter	[mm]	6	8	10	12	14	16	20	24
l_{min} : zinc plated axis length	[mm]	60-180	60-155	70-230	90-250	120-250	125-280	170-270	180-260
l_{max} : stainless steel axis length	[mm]	60-180	75-115	70-150	90-140	---	125-170	170-220	---
l_{min} : hot-dip galvanized axis length	[mm]	---	60-155	70-210	90-250	---	125-220	170-270	---
d_3 : hammering diameter	[mm]	4	6	7.5	9	10.5	12	16	20
d_2 : washer diameter	[mm]	12	16	20	24	28	30	37	44
s_2 : washer thickness	[mm]	1.6	1.6	2	2.5	2.5	3	3	4
s_w : nut key	[mm]	10	13	17	19	22	24	30	36



	<h1>TECHNICAL DATA SHEET</h1>	Reference	FT MTA ingles
		Date	02/08/10
		Revision	8
		Page	3 of 6
Designation: MTA anchor		Codes	AM, MI, AMHD

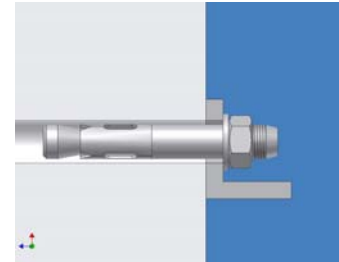
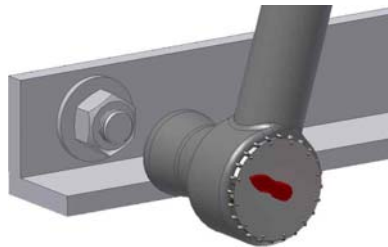
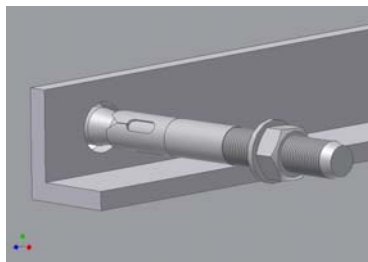
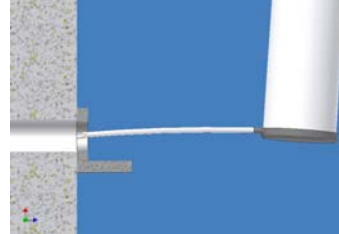
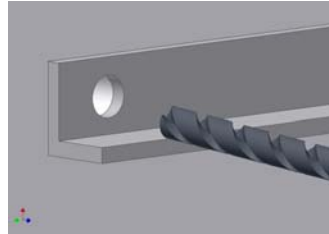
4.- INSTALLATION DATA



METRIC		M6	M8	M10	M12	M14	M16	M20	M24	
Code	Steel zinc plated	AM06XXX	AM08XXX	AM10XXX	AM12XXX	AM14XXX	AM16XXX	AM20XXX	AM24XXX	
	Stainless steel A2	MI06XXX	MI08XXX	MI10XXX	MI12XXX	---	MI16XX	MI20XXX	---	
	Hot-dip galvanized	---	AMHD08XXX	AMHD10XXX	AMHD12XXX	---	AMHD16XXX	AMHD20XXX	---	
d _o : drill diameter	[mm]	6	8	10	12	14	16	20	24	
T _{ins} : torque	[Nm]	7	20	35	60	90	120	240	350	
d _w : fixture diameter	[mm]	7	9	12	14	16	18	22	26	
Standard emb. depth	h ₁ : minimum drill depth	[mm]	55	65	75	85	100	110	135	160
	h _{nom} : embedment depth	[mm]	49.5	59.5	66.5	77	91	103.5	125	150
	h _{ef} : min. effective depth	[mm]	40	48	55	65	75	84	103	123
	h _c : base material min. thck.	[mm]	100	100	110	130	150	168	206	250
	t _{fix} : max. fixture thickness	[mm]	L - 58	L - 70	L - 80	L - 92	L - 108	L - 122	L - 147	L - 176
	s _{cr} : critical spacing	[mm]	120	144	165	195	225	252	309	370
	c _{cr} : critical edge distance	[mm]	60	72	83	98	113	126	155	185
Reduced emb. depth	h ₁ : minimum drill depth	[mm]	---	50	60	70	---	---	---	
	h _{nom} : embedment depth	[mm]	---	46.5	53.5	62	---	---	---	
	h _{ef} : min. effective depth	[mm]	---	35	42	50	---	---	---	
	h _c : base material min. thck.	[mm]	---	100	100	100	---	---	---	
	t _{fix} : max. fixture thickness	[mm]	---	L-57	L-67	L-77	---	---	---	
	s _{cr} : critical spacing	[mm]	---	105	126	150	---	---	---	
	c _{cr} : critical edge distance	[mm]	---	53	63	75	---	---	---	
s _{min} : minimum spacing	[mm]	50	65	70	85	100	110	135	160	
c _{min} : min. edge distance	[mm]	50	65	70	85	100	110	135	160	

	<h1>TECHNICAL DATA SHEET</h1>	Reference	FT MTA ingles
		Date	02/08/10
		Revision	8
		Page	4 of 6
Designation: MTA anchor		Codes	AM, MI, AMHD

5.- INSTALLATION PROCEDURE



- Before placing the anchor checks to be made to ensure the strength class of the concrete is not lower than that to which the characteristic loads apply
- 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_{nom} 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, considering the standard or reduced embedment depth. 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

	<h1>TECHNICAL DATA SHEET</h1>	Reference	FT MTA ingles
		Date	02/08/10
		Revision	8
		Page	5 of 6
Designation: MTA anchor		Codes	AM, MI, AMHD

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	M24	
Zinc plated & hot-dip galvanized steel	Code	AM06XXX	AM08XXX	AM10XXX	AM12XXX	AM14XXX	AM16XXX	AM20XXX	AM24XXX	
	Standard	N _{R,k} tension [KN]	<u>7.7</u>	12.0	16.0	25.0	30.0	35.0	50.0	65.3
		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>	<u>81.2</u>
	Reduced	N _{R,k} tension [KN]	---	9.0	12.0	16.0	---	---	--	---
V _{R,k} shear [KN]		---	10.4	13.7	17.8	---	---	--	---	
Stainless steel, grade A2	Code	MI06XXX	MI08XXX	MI10XXX	MI12XXX	---	MI16XXX	MI20XXX	---	
	Standard	N _{R,k} tension [KN]	<u>10.1</u>	12.0	16.0	25.0	---	35.0	50.0	---
		V _{R,k} shear [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>	---
	Reduced	N _{R,k} tension [KN]	---	9.0	12.0	16.0	---	---	--	---
V _{R,k} shear [KN]		---	10.4	13.7	17.8	---	---	--	---	

1 KN ≈ 100 Kg

* 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/mm²
- Cubic sample 150 mm. side ≥ 250 N/mm²

Underline and cursive values correspond to steel failure.

Characteristic resistance for tension and shear must be considered separately.

6.2.- Recommended safety factors

SAFETY COEFFICIENT		RESISTANCE SAFETY COEFFICIENTS		LOAD INCREASING SAFETY COEFFICIENT
		CONCRETE FAILURE	<u>STEEL FAILURE</u>	
Zinc plated & Hot-dip galvanized steel	Tension	1.80	<u>1.40</u>	1.4
	Shear	1.50	<u>1.25</u>	
Stainless steel A2	Tension	1.80	<u>1.68</u>	
	Shear	1.50	<u>1.52</u>	

	<h1>TECHNICAL DATA SHEET</h1>	Reference	FT MTA ingles
		Date	02/08/10
		Revision	8
		Page	6 of 6
Designation: MTA anchor		Codes	AM, MI, AMHD

6.3.- Calculation example

Fixing a load tension of 2.000 kg

2.000 kg \approx 20 KN

Increasing coefficient for loads:

1.4

Using two MTA M14 anchors, standard embedment depth

Pull load characteristic resistance for MTA M14 anchor:

30.0 KN

Concrete failure

Concrete reduction for resistances coefficient:

1.8

Checking: increased load must be lower than reduced resistance

$$20 \text{ KN} \times 1.4 \leq 2 \times 30.0 \text{ KN} / 1.8$$

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

7.- EXAMPLES OF USE

