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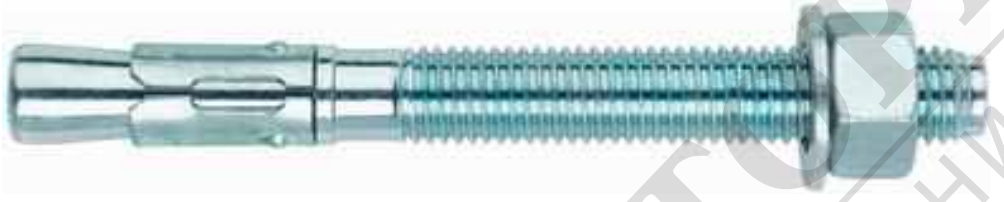
Product name: MTA Anchor		Code	AM, MI, AMHD

AM
Zinc plated



MI-A2
Stainless steel A2

AM-HD
Hot-dip galvanized

1.- CHARACTERISTICS

- Metal anchor with functioning principle of expansion and installation by controlled torque.
- Male thread.
- For non-cracked concrete.
- Easy to install.
- 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.
- Possible to install by pre-drilling or by using the holes on the material to be fixed as template.
- Different lenghts and diameters available for different types of installations.
- Two different installation depths at diameters M8, M10 & M12 to facilitate the installation of both thicker and thinner materials.

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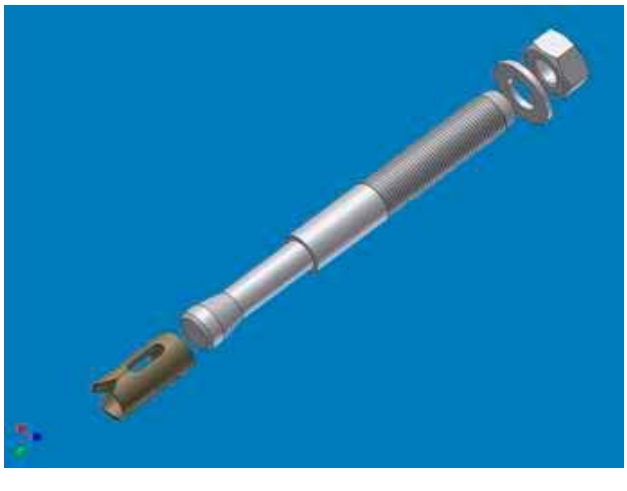
2.- MATERIALS

ITEM	COMPONENT	ZINC PLATED	STAINLESS STEEL A2	HOT-DIP GALVANIZED WITH SS A4 CLIP
1	WEDGE BOLT	Cold-stamped carbon steel, zinc plated ≥ 5 µm ISO 4042 A2J	Stainless steel, grade A2	Cold-stamped carbon stee, hot-dip galvanized ≥ 20 µm EN ISO 1461
2	WASHER	DIN 125 or DIN 9021 zinc plated ≥ 5µm ISO 4042 A2J	DIN 125 or DIN 9021 stainless steel, grade A2	DIN 125 hot-dip galvanized ≥ 20 µm EN ISO 1461
3	NUT	DIN 934 class 8 ISO 898-1, zinc plated ≥ 5 µm ISO 4042 A2J	DIN 934 stainless steel, grade A2	DIN 934 class 8 ISO 898-1 hot-dip galvanized ≥ 20 µm EN ISO 1461
4	CLIP	Steel DC03 EN101239 o SPCD JIS G3141, zinc plated ≥ 5 µm 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



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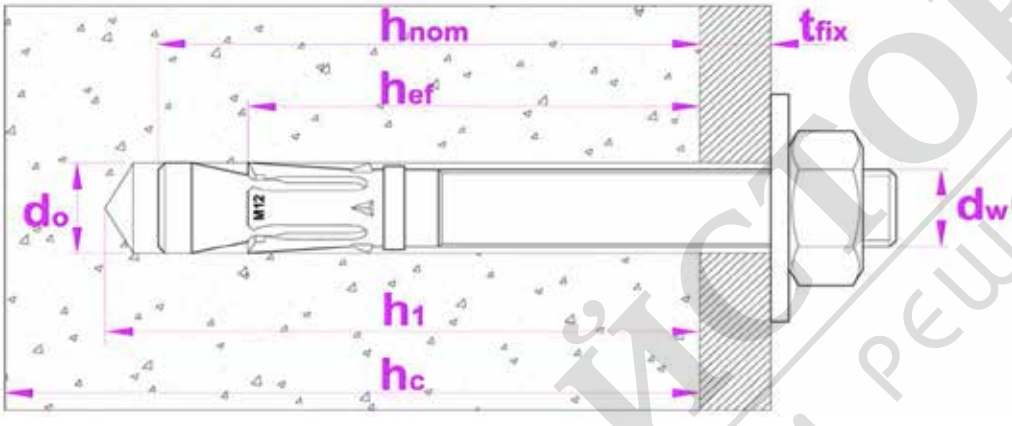
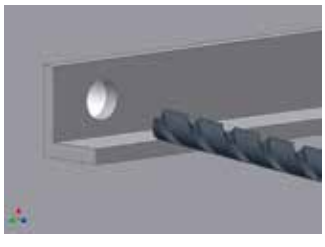
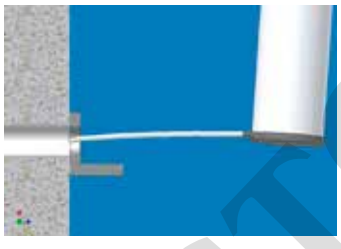
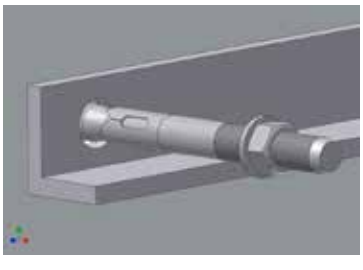
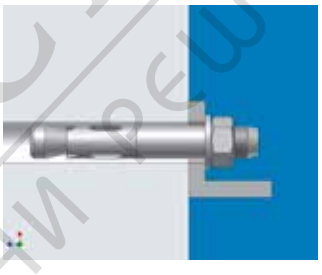
4.- INSTALLATION DATA



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_0: 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

5.- HOW TO INSTALL



- Before installation, check the concrete's strength in order to make sure its class is not lower than required and to which the characteristic loads apply.
- The concrete base must be compact and porosity insignificant.
- Installation temperature range for base material: -5 / + 40 ºC (80 ºC for a short period of time).
- Minimum installation depth values must always be respected: for anchors' depth, for anchor-to-anchor distances and for anchor-to-edge distances.
- Drilling must be performed by respecting the specified minimum depth and diameter, perpendicular to the base material's surface. The holes on the material to be fixed may be used as templates.
- When drilling near any reinforcement areas, special care must be taken to avoid damaging them. If drilling is aborted because a reinforcement area has been encountered, it is advisable to drill a new hole at a minimum distance of at least twice the aborted drill hole. This advisable distance may be reduced, as long as the aborted hole is previously filled up with high-resistant mortar. In any case, if the aborted hole is not filled up with mortar, no shear or oblique tension load in the direction of load application will be tolerated at a shorter distance than the installation depth value h_{nom}.
- It is necessary to clean the holes thoroughly free of dust and debris.
- When temperature is below 0ºC, make sure water does not seep into the hole, as this fact could cause subsequent cracks on the concrete, due to ice pressure.
- Introduce the anchor through the material to be fixed into the hole up to the embedment depth, according to the values on the table. It is possible to use a hammer to ensure the required depth. Do not apply any intermediate layer between the meterial to be fixed and the washer, such as sealing products. Apply the specified torque with a torque wrench.
- In the case the holes on the material to be fixed have a bigger diameter than required, it is necessary to insert a thicker washer and of a bigger diameter. But please, note that this procedure does not ensure a correct distribution of shear

loads amongst all the anchors of a same group, and this shear load is applied only to the anchors with a correct diameter on the material to be fixed.

6.- RECOMMENDED RESISTANCES

6.1.- Recommended 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]	*7.7*	12.0	16.0	25.0	30.0	35.0	50.0	65.3
		$V_{R,K}$ shear	[KN]	*5.1*	*9.3*	*14.7*	*20.6*	*28.1*	*38.4*	*56.3*	*81.2*
	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]	*10.1*	12.0	16.0	25.0	---	35.0	50.0	---
		$V_{R,K}$ shear	[KN]	*6.0*	*10.9*	*17.4*	*25.2*	---	*47.1*	*73.5*	---
	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 recommended resistance stands for values with a 95% probability to be reached at a test. It depends on the number of tests performed, average value and value alterations. It includes a safety coefficient of 3.

(**) Concrete C20/25 as per ENV206: characteristic resistance for an age ≥ 28 days:

- Cylindrical simple test ø 150 mm. x 300 height ≥ 200 N/mm2
- Cubic sample test 150 mm. side ≥ 250 N/mm2

Underlined and cursive values correspond to steel failure.

The recommended 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	*STEEL FAILURE*	
Zinc platted & Hot-dip galvanized steel	Tension	1.80	*1.40*	1.4
	Shear	1.50	*1.25*	

Stainless steel A2	Tension	1.80	*1.68*	
	Shear	1.50	*1.52*	

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 MTA M14 anchors, standard embedment depth
Pull load recommended resistance for MTA M14 anchor: 30.0 KN
Concrete failure
Concrete reduction for resistances coefficient: 1.8

Check: the increased load must be lower than reduced resistance
20 KN x 1.4 ≤ 2 x 30.0 KN / 1.8

The anchors' studs must be at a minimum distance of 225 mm, and must also keep a minimum distance of 113 mm to any edges.

7.- **EXAMPLES OF USE**