

MTL

Denomination: **MTL ANCHOR**

Codes: **MTL**

Reference: **FT MTL-en**

Date: **20/12/2019**

Revision: **2**

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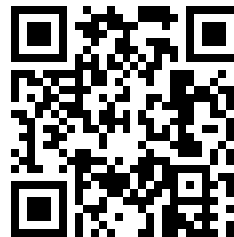
CHARACTERISTICS

- Works using friction; installation by controlled torque
- Use for medium-heavy duty loads.
- Easy installation.
- For use in non-cracked concrete.
- Use for static or quasi-static loads.
- Available in zinc-plated steel.

APPLICATIONS

- Indoor structural fixings in non-cracked concrete.
- Safety barriers.
- For fixing billboards, machinery, boilers, signals, advertising hoardings, etc.
- For fixing wood structures to concrete.

See Web profile:



BASE MATERIAL

RECOMMENDED TENSION RESISTANCES IN NON-CRACKED CONCRETE [kg]

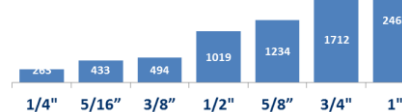
Size

1/4" – 1"



CONCRETE

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DRILLHOLE CONDITION



APPLICATION EXAMPLES



TECHNICAL DATA SHEET

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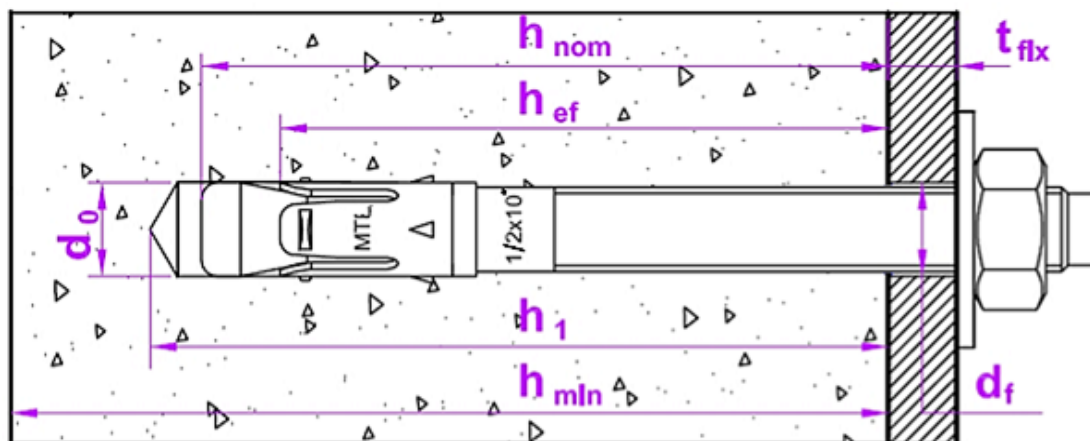
1. RANGE

ITEM	CODE	MEAS.	PHOTO	COMPONENT	MATERIAL
1	MTL	¼ - 1"		Shaft Clip Nut Washer	Carbon Steel Carbon Steel ASME B18.2.2 class 2B ASME B18.21.1 Coating: zinc-plated $\geq 5 \mu\text{m}$

2. ACCESSORIES

ITEM	CODE	PHOTO	DESCRIPTION
1	DOMTA		Useful for anchor installation using a hammer drill

3. INSTALLATION DETAILS



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Code	Size	Drill bit diam.	Installation torque		h ₁ : minimum drillhole depth		h _{nom} : embedment depth		h _{ef} : effective depth		t _{fix} : thickness to be fixed		h _c : minimum base material thickness		s _{cr} : critical spacing distance		C _{cr} : critical edge distance		S _{min} : minimum spacing distance		C _{min} : minimum edge distance	
			[ft lb]	[Nm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]
AL014134	1/4" x 1-3/4"	1/4"	4	5	1 1/2	38	1.19	30	1.00	25	0,20	5	4	100	4.50	115	2.25	55	2.00	50	2.00	50
AL014214	1/4" x 2-1/4"				2	51	1.69	42	1.50	38	0,20	5										
AL014300	1/4" x 3"				2	51	1.69	42	1.50	38	0,95	24										
AL014314	1/4" x 3-1/4"				2	51	1.69	42	1.50	38	1,20	30										
AL516200	5/16" x 2"	5/16"	10	14	1 13/16	46	1.31	33	1.06	27	0,23	6	4	100	5.25	135	2.62	65	2.60	65	2.60	65
AL516234	5/16" x 2-3/4"				2 1/2	63	2.00	51	1.75	45	0,29	7										
AL516312	5/16" x 3-1/2"				2 1/2	63	2.00	51	1.75	45	1,04	36										
AL516500	5/16" x 5"				2 1/2	63	2.00	51	1.75	45	2,54	64										
AL038214	3/8" x 2-1/4"	3/8"	20	27	2	51	1.53	39	1.25	32	0,71	18	4	100	6.00	155	3.00	75	2.75	70	2.75	70
AL038234	3/8" x 2-3/4"				2	51	1.53	39	1.25	32	1,21	31										
AL038300	3/8" x 3"				2 3/4	70	2,28	58	2,00	51	0,24	6										
AL038312	3/8" x 3-1/2"				2 3/4	70	2,28	58	2,00	51	0,74	19										
AL038334	3/8" x 3-3/4"				2 3/4	70	2,28	58	2,00	51	0,99	25										
AL038500	3/8" x 5"	2 3/4	70	2,28	58	2,00	51	2,24	57													
AL012234	1/2" x 2-3/4"	1/2"	40	54	2 1/4	57	1.84	47	1.50	38	0,23	6	4	100	7.50	190	3.75	95	3.35	85	3.35	85
AL012300	1/2" x 3"				2 1/4	57	1.84	47	1.50	38	0,48	12										
AL012312	1/2" x 3-1/2"				2 1/4	57	1.84	47	1.50	38	0,98	25										
AL012334	1/2" x 3-3/4"				2 1/4	57	1.84	47	1.50	38	0,27	7										
AL012414	1/2" x 4-1/4"				3 1/4	83	2.84	71	2.50	63	0,77	20										
AL012412	1/2" x 4-1/2"				3 1/4	83	2.84	71	2.50	63	1,02	26										
AL012500	1/2" x 5"				3 1/4	83	2.84	71	2.50	63	1,52	39										
AL012512	1/2" x 5-1/2"				3 1/4	83	2.84	71	2.50	63	2,02	52										
AL012700	1/2" x 7"				3 1/4	83	2.84	71	2.50	63	3,52	89										
AL012100	1/2" x 10"				3 1/4	83	2.84	71	2.50	63	6,52	166										
AL058312	5/8" x 3/12"	5/8"	80	108	2 7/8	73	2.25	57	1.75	44	0,45	11	4	100	9.00	230	4.50	115	4.35	110	4.35	110
AL058412	5/8" x 4-1/2"				4 1/8	105	3.50	89	3.00	76	0,21	5										
AL058500	5/8" x 5"				4 1/8	105	3.50	89	3.00	76	0,71	18										
AL058600	5/8" x 6"				4 1/8	105	3.50	89	3.00	76	1,71	43										
AL058700	5/8" x 7"				4 1/8	105	3.50	89	3.00	76	2,71	69										
AL058812	5/8" x 8-1/2"				4 1/8	105	3.50	89	3.00	76	4,21	107										
AL058100	5/8" x 10"				4 1/8	105	3.50	89	3.00	76	5,71	145										

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			[ft lb]	[Nm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]
AL034414	3/4" x 4-1/4"	3/4"	110	149	3 1/2	89	2.75	69	2.25	57	0,54	14	7	178	10.50	268	5.25	133	5.31	135	5.31	135
AL034434	3/4" x 4-3/4"				3 1/2	89	2.75	69	2.25	57	1,04	26										
AL034512	3/4" x 5-1/2"				0,54	14																
AL034612	3/4" x 6-1/2"				1,54	26																
AL034700	3/4" x 7"				2,04	52																
AL034812	3/4" x 8-1/2"				3,54	90																
AL034100	3/4" x 10"				5,04	128																
AL100060	1" x 6"	1"	185	250	5 1/4	139	4.18	106	3.25	82.5	0,51	23	9	230	13,50	345	6,75	171	5.63	143	5.63	143
AL100090	1" x 9"				2,23	57																
AL101200	1" x 12"				5,23	133																

Critical distances are those in which anchors in a group of anchors are not influenced by each other for traction loads. For shorter distances, up to the minimum distances, the corresponding reduction coefficients must be applied.

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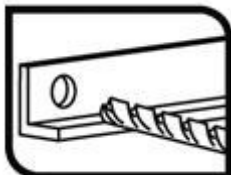
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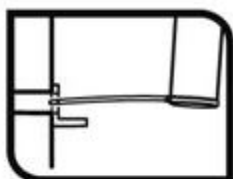
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4. PRODUCT INSTALLATION



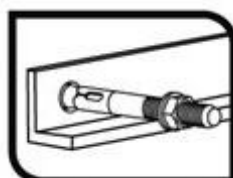
1. DRILL

Check the concrete base is compact and porosity is insignificant.
Suitable for wet, dry or flooded drill holes.
Use drill in percussive or hammer setting.
Drill to the specified diameter and depth values.



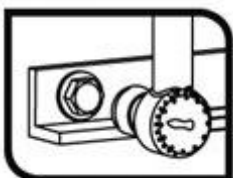
2. BLOW AND CLEAR

Clear the drill holes completely of dust and fragments from drilling.
Use air pump and brush.



3. INSTALL

Insert the anchor until the depth mark is level with base material surface.
Use a hammer if necessary. Alternatively, use the DOMTA placement tool.
Installation may be carried out through the material to be fixed or prior to its placement.



4. APPLY TORQUE

Apply nominal torque using a torque wrench.

Once installed, the total length of the anchor may be checked using the letter on the shaft, according to ETE values.

5. RESISTANCES

5.1.- The characteristic resistance of concrete of 3.250 psi (225 MPa) compression resistance for an isolated anchor (without considering anchor-to-anchor or anchor-to-edge distance effects) is according to the following table:

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		[lb]	[kN]	Safety coef.	[lb]	[kN]	Safety coef.		
AL014134	1/4" x 1-3/4"	786	3.5	1.8	1169	5.2	1.25		
AL014214	1/4" x 2-1/4"	1461	6.5						
AL014300	1/4" x 3"								
AL014314	1/4" x 3-1/4"	1148	5.1	1.8	1596	7.1	1.50		
AL516200	5/16" x 2"								
AL516234	5/16" x 2-3/4"							2472	11.0
AL516312	5/16" x 3-1/2"								
AL516500	5/16" x 5"	1348	6.0	1.8	2023	9.0	1.50		
AL038214	3/8" x 2-1/4"								
AL038234	3/8" x 2-3/4"								
AL038300	3/8" x 3"							2742	12.2
AL038312	3/8" x 3-1/2"								
AL038334	3/8" x 3-3/4"								
AL038500	3/8" x 5"	2652	11.8	1.8	5328	23.7	1.50		
AL012234	1/2" x 2-3/4"								
AL012300	1/2" x 3"								
AL012334	1/2" x 3-3/4"							5665	25.2
AL012414	1/2" x 4-1/4"								
AL012412	1/2" x 4-1/2"								
AL012500	1/2" x 5"								
AL012512	1/2" x 5-1/2"								
AL012700	1/2" x 7"								
AL012100	1/2" x 10"								
AL058312	5/8" x 3/12"	3057	13.6	1.8	6722	29.9	1.50		
AL058412	5/8" x 4-1/2"	6856	30.5						
AL058500	5/8" x 5"								
AL058600	5/8" x 6"								
AL058700	5/8" x 7"								
AL058812	5/8" x 8-1/2"								
AL058100	5/8" x 10"								
AL034414	3/4" x 4-1/4"							4878	21.7
AL034434	3/4" x 4-3/4"	9509	42.3						
AL034512	3/4" x 5-1/2"								
AL034612	3/4" x 6-1/2"								
AL034700	3/4" x 7"								
AL034812	3/4" x 8-1/2"								
AL034100	3/4" x 10"								
AL100060	1" x 6"	8318	37.0	1.8	16973	75.5	1.5		
AL100090	1" x 9"	13691	60.9						
AL101200	1" x 12"								

1 kN ≈ 100 kg

A load safety coefficient of $\gamma_F = 1,4$ is recommended.

5.2.- Calculation example

Fixing a tension load of 2.000 lb

Load safety coefficient: 1.4

Use of two 3/8" x 2-3/4" MTL anchors

Characteristic Tension resistance of a 3/8" x 2-3/4" MTL anchor: 2.742 lb

Resistance safety coefficient: 1.8

Verification: the factored load must be inferior to the factored resistance

Factored load: 2.000 lb x 1.4 = 2.800 lb

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Factored resistance: $2 \times 2.741 \text{ lb} / 1.8 = 3.047 \text{ lb}$

Verification: $2.800 \text{ lb} < 3.047 \text{ lb}$. The fixing is correct.

The shafts of both anchors must be separated by a minimum distance of 6" and likewise maintain a minimum distance of 3" from any edge.