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REMINC/CONTI MAGTITE® 2000™ SCREWS END-USER SPECIFICATIONS

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REMINC/CONTI MAGTITE® 2000™ SCREWS

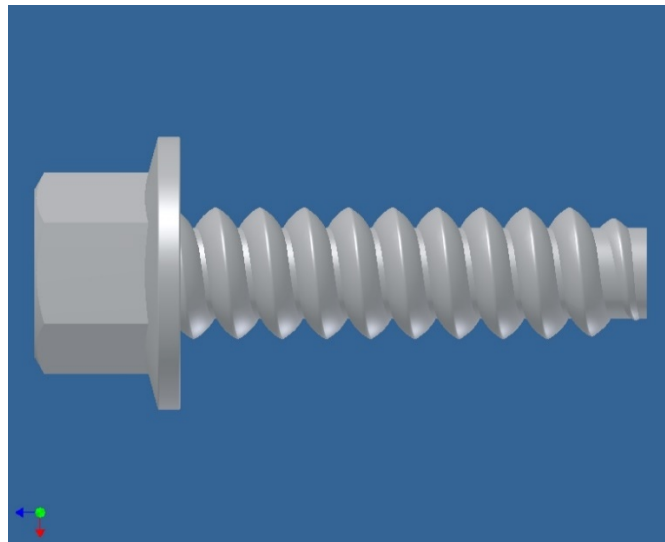
END-USER SPECIFICATIONS

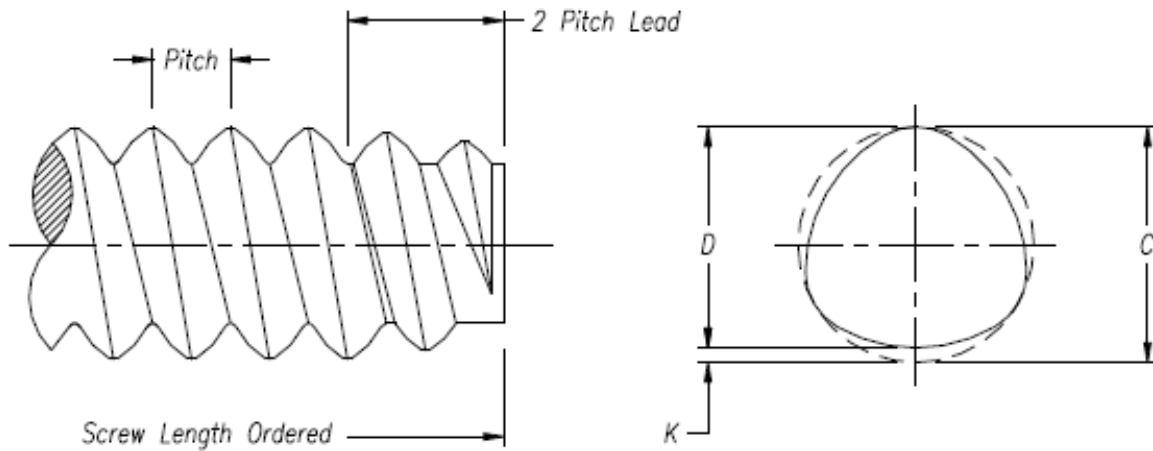
INTRODUCTION

This document provides end-users of MAGTITE® 2000™ screws dimensional and material information to be used as a uniform standard for MAGTITE® 2000™ screws. End-users may use this copyrighted material to create their own in-house MAGTITE® 2000™ standards. This information is intended for use only with MAGTITE® 2000™ and prior notification to and permission from REMINC/CONTI is required before incorporating this copyrighted material into any company documents.

SCOPE

- ✧ MAGTITE® 2000™ screws are high performance thread rolling (forming) screws which form internal threads in magnesium components, eliminating the need for pre-tapping the component, thus lowering the in-place cost of assembly. MAGTITE® 2000™ screws are characterized by having a TRILOBULAR™ configuration and a unique Radius Profile thread form.
- ✧ MAGTITE® 2000™ screws were specifically designed to address debris generation while thread-forming in magnesium material, especially with larger sand castings with are prone to greater porosity and lower density than smaller high-pressure die-cast magnesium components.
- ✧ Standard MAGTITE® 2000™ screws are neutral hardened screw to any specified property class tensile stress level.
- ✧ All MAGTITE® 2000™ screws can be supplied with standard coatings and lubricants, but these need to be selected carefully in regard to avoiding galling with the magnesium material and galvanic corrosion protection.





SIZE	LIMITS	BODY		O-O-R
		C	D	K ref
MT1.4 x 0.45	MAX	1.45	1.43	0.02
	MIN	1.40	1.38	
MT2.0 x 0.65	MAX	2.06	2.03	0.03
	MIN	2.00	1.97	
MT2.5 x 0.85	MAX	2.57	2.53	0.04
	MIN	2.50	2.46	
MT3.0 x 1.00	MAX	3.07	3.02	0.05
	MIN	3.00	2.95	
MT3.5 x 1.15	MAX	3.58	3.52	0.06
	MIN	3.50	3.44	
MT4.0 x 1.35	MAX	4.08	4.01	0.07
	MIN	4.00	3.93	
MT4.5 x 1.50	MAX	4.59	4.51	0.08
	MIN	4.50	4.42	
MT5.0 x 1.65	MAX	5.09	5.01	0.08
	MIN	5.00	4.92	
MT6.0 x 2.00	MAX	6.10	6.00	0.10
	MIN	6.00	5.90	
MT8.0 x 2.40	MAX	8.13	8.01	0.12
	MIN	8.00	7.88	

Notes: Ls = Screw length ordered. Tolerance per customer requirements.
Dimensions shown are before plate.

Section 1: SCOPE

This section specifies the requirements for CORFLEX®-‘N’ “neutral” hardened MAGTITE® 2000™ screws to suit use in soft non-ferrous materials, mainly magnesium. The requirements stated are intended to qualify MAGTITE® 2000™ screws as meeting their intended requirements and are not associated with any specific applications.

1.01 REFERENCES:

ISO-898/1 Material and hardness requirements, but not the mechanical properties of ISO 898/1 property classes 8.8, 9.8 and 10.9

Section 2: MATERIAL

Cold heading quality fully killed carbon steel. Steel to conform to ISO-898/1

2.01 Heat Treatment

Screws are to be neutral (through) hardened in a continuous non-carburizing furnace using fine grain practices. Furnace atmosphere must be controlled to maintain decarburization restrictions as specified in Section 3.2 and surface hardness conditions as specified in Section 3.3.

Quenching medium to suit selected material, suitable to create a martensitic microstructure.

Minimum tempering temperatures relative to grade strength (8.8, 9.8, 10.9) should follow that specified in ISO 898/1.

Section 3: MECHANICAL PROPERTIES

3.01 Decarburization

During the hardening process the carbon potential of the atmosphere is aimed at a level between “zero” (0) decarburization to slightly in excess of the carbon content of the screws being processed.

Carbon enrichment up to 0.1mm maximum from the surface of the screw is permitted as a result of the carbon restoration process.

3.02 Surface Hardness

The surface hardness shall not be more than 30 Vickers points above the measured core hardness on the product when readings of both surface and core are carried out.

Section 4: TEST METHODS

4.01 Surface Hardness Test

The surface hardness shall be measured using the Vickers Hardness Testing Procedure in accordance with ISO 6507.

The surface hardness shall be performed on the head after removal of any finish and suitable preparation (1200 grit grinding or better). Care should be taken to remove as little material as possible.

For referee purposes, a micro-hardness instrument with a Vickers indenter and a 300g load shall be used. In such cases, measurements shall be made on the thread profile of a suitably prepared longitudinal metallographic specimen.

Section 5: MARKING

5.01 Symbols

There are no established industry standard head markings for MAGTITE® 2000™ screws, at the present time. It is suggested that a head marking be utilized in order to identify the tensile stress level and corresponding hardness of the fasteners.

It is acceptable to use the same markings that are typically employed on CORFLEX®-'N' TAPTITE 2000® 'SP'™ screws, of 8N, 9N or 10N, as shown below.

Equivalent Property Class Hardness	8.8	9.8	10.9
CORFLEX®-'N' MAGTITE® 2000™ Head Marking	8N	9N	10N

If an end-user wishes to use a different head marking, so as to distinguish installed MAGTITE® 2000™ screws from that of CORFLEX®-'N' TAPTITE 2000® 'SP'™ screws, it is possible for them to develop their own internal head marking guidelines. Any chosen head markings should not duplicate standard head markings, especially that 8.8, 9.8 and 10.9 listed in ISO 898, as those markings indicate not only the heat treatment, but the mechanical properties for a standard metric machine screw.

No matter what head markings are chosen, it may be necessary to make such optional for certain head styles and/or sizes of screws where the shape or space does not permit such.

5.02 Trade (Identification) marks

The trade (identification) marks of the manufacturer is mandatory on all products, which can be marked with manufacturers' symbol.

Section 6: SURFACE DISCONTINUITIES

6.01 The application of surface discontinuity specifications is per agreement between manufacturer and end user customer. Regardless of the agreed upon specification, spec parameters should not be applicable to the point threads and thread forming threads.

Section 7: EMBRITTLEMENT

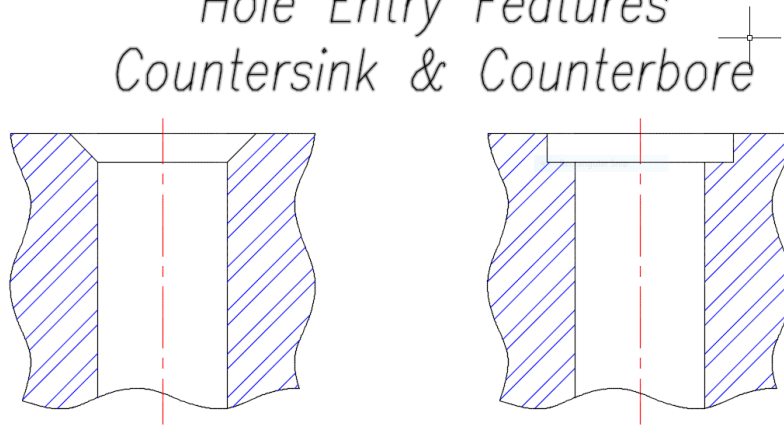
7.01 The issue of embrittlement is relative to the property class and finish/coating ordered and is to be determined by agreement between manufacturer and end user customer.

Section 8: APPLICATION & USE GUIDANCE

8.01 Hole Size Guidelines: Since magnesium castings can vary considerably in strength and porosity, hole size is best determined by an in-house development program. The hole geometry in this section functions as starting point for such a program.

8.02 Hole Entry Feature: A countersink, counterbore or similar, is highly recommended for all thread-rolling fastening sites, whether the material being thread-formed is plastic, steel, aluminum or magnesium. The hole entry feature reduces stress at the top of the fastening site and accommodates any material raised at the hole diameter edge from the thread-rolling process.

*Hole Entry Features
Countersink & Counterbore*



8.03 Hole Size Recommendations:

MAGTITE® 2000™ SCREWS
Hole Size Recommendations

Size	Hole Diameter, as Cast				F Drilled Hole Dia.	Y Fastener Engage. Depth
	A -Hole Top		B -Hole Bottom			
	Max.	Min.	Max.	Min.		
MT1.2 x 0.40	1.125	1.100	1.075	1.050	1.10	3.0
MT1.4 x 0.45	1.315	1.285	1.255	1.225	1.29	3.5
MT1.6 x 0.55	1.500	1.465	1.430	1.395	1.47	4.0
MT2.0 x 0.65	1.87	1.83	1.79	1.75	1.83	5.0
MT2.5 x 0.85	2.33	2.29	2.23	2.19	2.28	6.3
MT3.0 x 1.00	2.80	2.75	2.66	2.61	2.73	7.5
MT3.5 x 1.15	3.27	3.21	3.11	3.05	3.19	8.8
MT4.0 x 1.35	3.73	3.66	3.55	3.48	3.64	10.0
MT4.5 x 1.50	4.19	4.12	3.99	3.92	4.09	11.3
MT5.0 x 1.65	4.65	4.57	4.43	4.35	4.54	12.5
MT6.0 x 2.00	5.58	5.50	5.32	5.24	5.45	15.0
MT8.0 x 2.40	7.43	7.35	7.09	7.01	7.26	20.0
MT10.0 x 3.00	9.29	9.21	8.85	8.77	9.07	25.0
MT12.0 x 3.60	11.14	11.06	10.62	10.54	10.88	30.0

Total blind hole depth, includes hole entry feature and bottom hole clearance

Bottom hole clearance allows for the tolerances of the screw length, laminate thickness and any gasket allowance & compression

