

# Mag-Form® Thread Forming Fasteners

## Minimize debris generation in critical applications

Standard thread forming fasteners with a 60° angle create excess debris when driven into low-ductile materials. They can easily exceed the ductility limits of the material, causing damage to the formed threads.

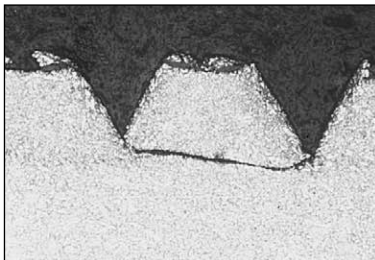
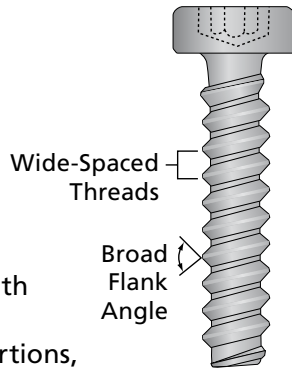
Mag-Form fasteners are specifically designed with a broader flank angle to eliminate tapping operations while forming strong threads in conventional magnesium die-castings and similar materials. The design also minimizes debris, making Mag-Form fasteners the optimal solution for critical applications such as electronics and air bag modules.

### Features

- Lobular configuration
- Wide-spaced thread design
- Broad flank angle that compresses, rather than roll-forms, threads into the mating material

### Benefits

- Minimizes debris generation
- Forms strong threads in materials with low ductility
- Allows multiple removals and reinsertions, unlike standard fasteners
- Easily removed and reinserted for field service



**Standard 60° Flank Angle Thread Forming Fasteners**  
May exceed ductility limit of the material, damaging formed threads



**Mag-Form® Thread Forming Fasteners**  
Compressive action forms strong threads in low-ductile materials

### Standard Design Guidelines

Fastener Sizes	MG1.0 to MG16
Thread Design	Wide-spaced thread with broad flank angle
Head Design	Can be used with any external or internal head designs
Drive System	Can be used with all systems, including the TORX PLUS® Drive System
Finish	Zinc and chromate to minimize galvanic corrosion



### Breakthrough Solution

A Tier supplier devoted exclusively to the production of magnesium castings needed a unique fastening solution to install the first ever magnesium shift tower in a production vehicle.

The supplier faced several design, engineering and assembly decisions for the four fastening points where the shift tower would be installed in the steel floor of the vehicle's body-in-white frame. These would be the only holes in the part, and the holes and the fastening system all had to be perfect. Rather than drilling the holes after the casting process – a costly and time-consuming procedure – the holes in the shift tower were molded during casting.

We were chosen to develop the perfect fastener solution – a thread forming Mag-Form stud developed specifically for the shift tower application. The fasteners meet their design specs and allows easy removal and reinstallation as may be required over the life of the vehicle.



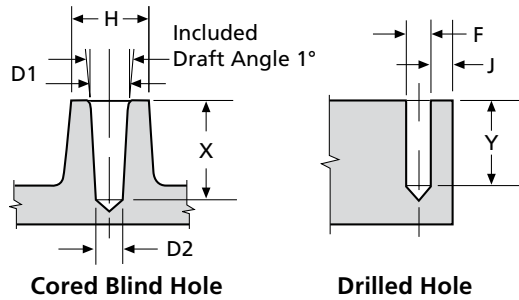
**STANLEY**  
Engineered Fastening

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# Mag-Form® Thread Forming Fasteners

## Minimize debris generation in critical applications

### Suggested Hole Sizes for Die-Cast Magnesium\*



In order to utilize as much available screw strength as possible, the minimum length of thread engagement, excluding the two lead threads, should be equal to 2-1/2 times the basic screw size. Blind holes should be deep enough to allow a two-thread lead, with clearance, at the bottom of the hole. The included draft angle is 1.0°.

\* NOTE: Fastener sizes MG1.0 to MG2.5 and those used in squeeze-cast magnesium materials require different hole sizes than those shown here. Please contact a STANLEY Engineered Fastening engineer for assistance.

	Fastener Size (metric)	Hole Dia. as Cast Std. Taper				F Hole Dia. as drilled Depth nom.	Y Through Hole Depth nom.	X Blind Hole Core min.	H Boss Dia. min.	J Distance to Edge w/o measurable Distortion min.
		Top D1 max.	min.	Bottom D2 max.	min.					
dimensions in mm	MG3 x 1.0	2.85	2.77	2.72	2.64	2.75	7.50	10.50	6.75	2.00
	MG3.5 x 1.2	3.28	3.20	3.13	3.05	3.17	8.75	12.35	7.83	2.33
	MG4 x 1.4	3.70	3.62	3.52	3.44	3.57	10.00	14.20	8.90	2.67
	MG4.5 x 1.5	4.13	4.05	3.94	3.86	4.00	11.25	15.75	10.00	3.00
	MG5 x 1.6	4.58	4.50	4.36	4.28	4.43	12.50	17.30	11.10	3.33
	MG6 x 2.0	5.46	5.38	5.20	5.12	5.29	15.00	21.00	13.29	4.00
	MG7 x 2.0	6.49	6.41	6.18	6.10	6.29	17.50	23.50	15.63	4.67
	MG8 x 2.5	7.33	7.25	6.98	6.90	7.12	20.00	27.50	17.78	5.33
	MG10 x 3.0	9.20	9.12	8.76	8.68	8.94	25.00	34.00	22.27	6.67
	MG12 x 3.5	11.06	10.98	10.54	10.46	10.76	30.00	40.50	26.76	8.00
	MG14 x 4.0	12.93	12.85	12.32	12.24	12.59	35.00	47.00	31.25	9.33
	MG16 x 4.0	14.97	14.89	14.28	14.20	14.59	40.00	52.00	35.92	10.67
dimensions in inch	MG3 x 1.0	.112	.109	.107	.104	.108	.295	.413	.266	.079
	MG3.5 x 1.2	.129	.126	.123	.120	.125	.344	.486	.308	.092
	MG4 x 1.4	.146	.142	.139	.136	.141	.394	.559	.351	.105
	MG4.5 x 1.5	.163	.160	.155	.152	.157	.443	.620	.394	.118
	MG5 x 1.6	.180	.177	.172	.169	.175	.492	.681	.437	.131
	MG6 x 2.0	.215	.212	.205	.202	.208	.591	.827	.523	.157
	MG7 x 2.0	.255	.252	.243	.240	.248	.689	.925	.615	.184
	MG8 x 2.5	.289	.285	.275	.272	.280	.787	1.083	.700	.210
	MG10 x 3.0	.362	.359	.345	.342	.352	.984	1.339	.877	.262
	MG12 x 3.5	.436	.432	.415	.412	.424	1.181	1.594	1.054	.315
	MG14 x 4.0	.509	.506	.485	.482	.495	1.378	1.850	1.230	.367
	MG16 x 4.0	.590	.586	.562	.559	.574	1.575	2.047	1.414	.420

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Decorah Operations  
1304 Kerr Drive  
Decorah, IA 52101-2494  
Tel. +1 800 544 6117  
info-USA@sbdinc.com