

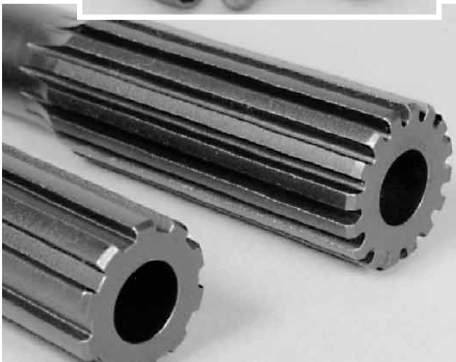


SPRINT & MIDGET TITANIUM *CATALOG*



WORTH OUR WEIGHT
IN *SPEED*

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MISSION STATEMENT

Mettec's mission is to produce light weight components and parts from metallurgically complex alloys. We bring sophisticated processes and treatments into ordinary use. Our primary focus has been TITANIUM ALLOYS however we also manufacture parts from aluminum, chrome moly and more exotic steels like 300M.

PROTOTYPE DEVELOPMENT

People often ask, "Do you manufacture parts other than fasteners?" The answer is YES. Our engineering background and interest in motorsports have led to the development of light weight and durable components for engines, drive train and suspension. A large portion of our business is manufacturing customer specific parts (OEM) rather than off the shelf "Standard Parts". Many of these engineering and manufacturing services are performed under proprietary agreements with our customers. Quality begins with design and carries through final inspection and field testing. Mettec engineers are members of ASME and have served on numerous code committees. Our products will keep you on the leading edge of material science and process applications.

TITANIUM BOLT INFORMATION

All of our bolts are made with aircraft grade Titanium Alloy. One of the outstanding benefits of Mettec bolts is that we forge the heads for superior strength. The threads are then rolled to produce greater fatigue strength and reduce galling.

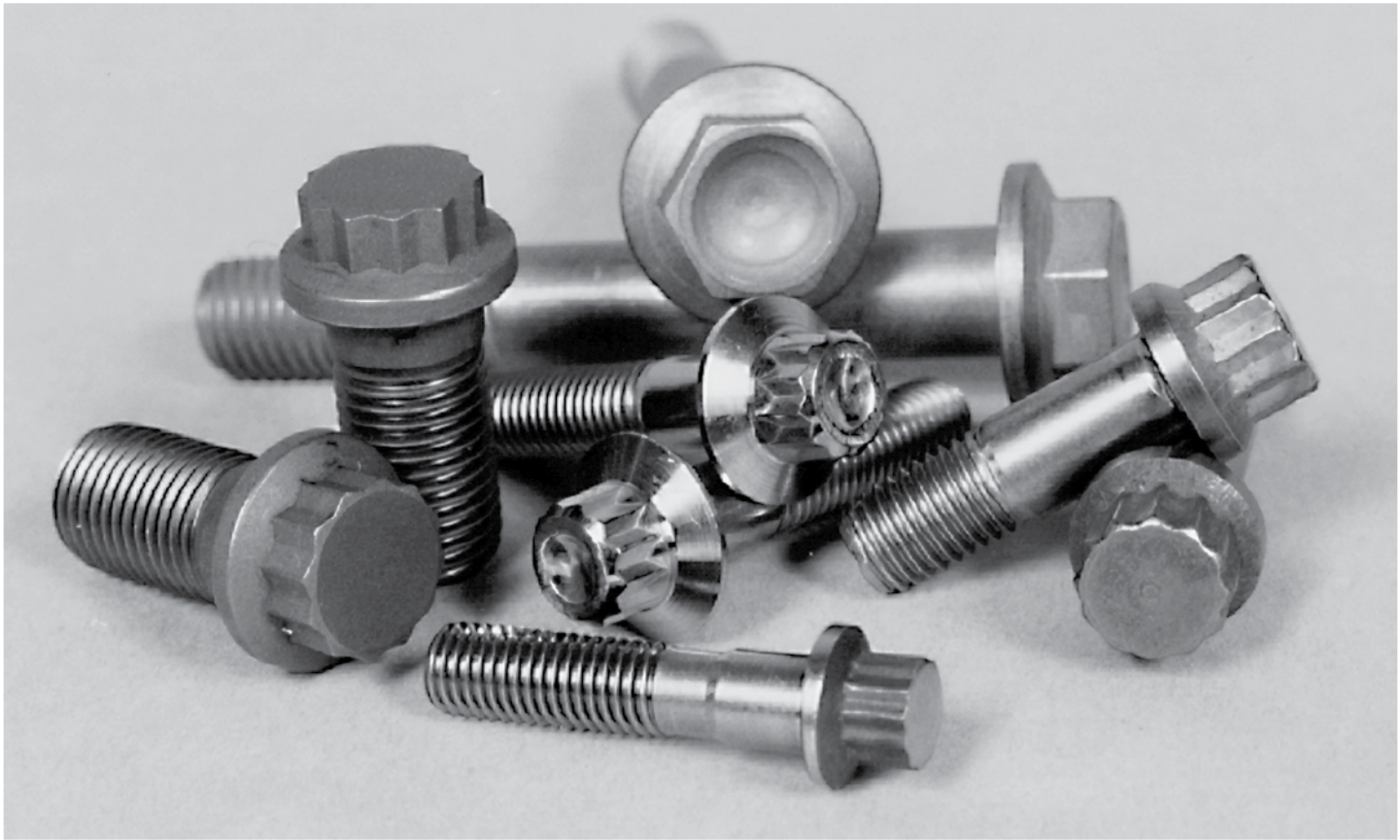
Our bolts exceed minimum Ultimate Tensile Strength (UTS) of 120,000 psi. Mettec can also make titanium bolts that exceed 160,000 psi in Ultimate Tensile Strength (UTS). Mettec bolts conform to both DIN and ASTM specifications. Titanium bolts can replace both grade 5 and grade 8 steel bolts which have minimum UTS requirements of 120,000 psi and 150,000 psi respectively. Metric bolts with an 8.8 rating can always be replaced with titanium while bolts with a 10.9 rating can sometimes be replaced with titanium depending on intended use.

WARRANTY DISCLAIMER

All Mettec products are warranted to be free from defects in material and workmanship. It is the responsibility of the purchaser to inspect all goods carefully before use. Use and application of the goods rests solely with the user. Any returns are to be made before the product is used. Credit, repair, or replacement of goods is predicated upon factory inspection of the goods in question.

Due to the nature of high performance applications, the goods in this catalog are sold without any express or implied warranty of merchantability or fitness for a particular purpose. Mettec shall not, under any circumstances, be liable for any special, consequential or incidental damages, including, but not limited to, loss of profit or revenue, loss of life, property, or equipment, cost of purchased or replacement goods, or claims of customers of the purchaser, which may arise and/or result from the sale, use or installation of these goods.

Recommended Torque Spec's for Titanium Fasteners



TORQUE ACCURACY ON FASTENERS

Screw threads appear to be a simple concept yet much confusion and inconsistency exist regarding torque values. The mechanics of the screw thread are actually very complex and have numerous interacting variables. Sliding friction is affected by materials (like steel or aluminum on titanium), surface roughness, bearing area, material hardness, lubrication and so on.

ACCURACY: TIGHTENING IS NOT AN ACCURATE SCIENCE.

Look at the preloading accuracy published in the "Machinery's Handbook, 25th Edition, page 1404."

METHOD	ACCURACY
By Feel	+/- 35%"
Torque Wrench	+/- 25%
Turn-of-nut	+/- 15%
Preload Washers	+/- 10%
Bolt Elongation	+/- 3%
Strain Gages	+/- 1%



TORQUE LIMITS FOR BOLTS IN TENSION

Use torque values specified by your equipment manufacturer when available. For titanium fasteners the torque values are listed below. We recommend anti-seize or moly paste be applied to the threads. If you have a specified torque value outside the Mettec range give us a call so that we may be able to understand more clearly your application and provide specific solutions, if they exists, for the use of titanium in your assembly.

The importance of correct application cannot be overemphasized. Undertorque can result in unnecessary wear of nuts and bolts, or the parts they hold together. When insufficient pressures are applied, uneven loads will be transmitted throughout the assembly which may result in excessive wear or premature failure due to fatigue. Overtorque can be equally damaging because of failure of the bolt or nut from overstressing the thread areas.

(For bolts in shear reduce the values shown below by 30-40%. To convert Inch Pounds to Foot Pounds divide inch pounds by 12)

Torque for Clean Dry Threads

Bolt Size	Torque Min.	Torque Max.
10-32	25 in lbs	30 in lbs
1/4-20	40 in lbs	50 in lbs
1/4-28	80 in lbs	100 in lbs
5/16-18	80 in lbs	90 in lbs
5/16-24	120 in lbs	145 in lbs
3/8-16	160 in lbs	185 in lbs
3/8-24	200inlbs	250 in lbs
7/16-14	235 in lbs	255 in lbs
7/16-20	520 in lbs	630 in lbs
1/2-13	400 in lbs	480 in lbs
1/2-20	770 in lbs	950 in lbs

Torque for Lubricated Threads

Torque Bolt Size	Torque Min.	Torque Max.
10-32	22 in lbs	27 in lbs
1/4-20	36 in lbs	45 in lbs
1/4-28	72 in lbs	90 in lbs
5/16-18	72 in lbs	81 in lbs
5/16-24	108 in lbs	130 in lbs
3/8-16	144 in lbs	148 in lbs
3/8-24	180inlbs	225 in lbs
7/16-14	211 in lbs	229 in lbs
7/16-20	468 in lbs	567 in lbs
1/2-13	360 in lbs	432 in lbs
1/2-20	693 in lbs	855 in lbs

Torque for Clean Dry Threads

Bolt Size	Torque Min.	Torque Max.
M6-1.00	80 in-lbs	100 in-lbs
M8-1.25	120 in-lbs	145 in-lbs
M10-1.25	200 in-lbs	255 in-lbs
M12-1.75	520 in lbs	630 in lbs

Torque for Lubricated Threads

Torque Bolt Size	Torque Min.	Torque Max.
M6-1.00	72 in-lbs	90 in-lbs
M8-1.25	108 in-lbs	130 in-lbs
M10-1.25	180 in-lbs	230 in-lbs
M12-1.75	468 in lbs	567 in lbs

THREAD LOCKER & CONDITIONER

Technical Note for Liquid Thread Locker for Titanium Fastener's

Mettec recommends using Permabond thread locker and anaerobic surface conditioner when installing your titanium fasteners. The surface conditioner is needed on titanium so that the thread locker will bond to titanium surfaces.

Permabond Gasketmaker is a strong and oil resistant sealant and liquid gasket material. It can be used on metal to metal surfaces or as a gasket dressing. Permabond Gasketmaker is superior to silicone type sealants.

Description	Part Number
Anaerobic Surface Conditioner	METASC10-118
Blue Thread Locker Medium Strength	METMM115-10
Gasketmaker Anaerobic Sealant	METMH196

Permabond®
Engineering Adhesives



ANTI-SEIZE FOR TITANIUM BOLTS

Moly Paste

Mettec recommends the use of Molybdenum Disulphide Paste. Mettec has found that Moly Paste reduces galling and seizing of titanium threads. Mettec has established that Moly Paste is far superior to aluminum and copper based antiseizes. Most Moly based greases only have around 2% molybdenum content. Mettec's Moly Paste has a whopping 40% molybdenum content.

Description	Part Number
Moly Paste	MOLY.50Z





American Inch Thread Fine Thread (UNF) Bolts

All of our bolts are made with aircraft grade Titanium Alloy. One of the outstanding benefits of Mettec bolts is that we forge the heads for superior strength. The threads are then rolled to produce greater fatigue strength and reduce galling. Use good quality nuts on titanium bolts. Mettec recommends AN or MS nuts on titanium bolts. Look at page 8 for a listing of AN and MS nuts. Mettec also has Moly-Paste in 1/2 oz containers to apply to threads.

<i>Dia.</i>		<i>Lng.</i>	<i>Head Style</i>	<i>Grip</i>	<i>Thread Length</i>
10-32	X	1 1/2	Hex	1 1/8	3/8
<i>Dia.</i>		<i>Lng.</i>	<i>Head Style</i>	<i>Grip</i>	<i>Thread Length</i>
1/4-28	X	1/2"	Hex	0	1/2"
1/4-28	X	5/8"	Hex	0	5/8"
1/4-28	X	3/4"	Hex	1/8"	5/8"
1/4-28	X	7/8"	Hex	1/4"	5/8"
1/4-28	X	1"	Hex	3/8"	5/8"
1/4-28	X	1 1/8"	Hex	1/2"	5/8"
1/4-28	X	1 1/4"	Hex	5/8"	5/8"
1/4-28	X	1 3/8"	Hex	3/4"	5/8"
1/4-28	X	1 1/2"	Hex	7/8"	5/8"
1/4-28	X	1 5/8"	Hex	1"	5/8"
1/4-28	X	1 3/4"	Hex	1 1/8"	5/8"
1/4-28	X	1 7/8"	Hex	1 1/4"	5/8"
1/4-28	X	2"	Hex	1 3/8"	5/8"
1/4-28	X	2 1/4"	Hex	1 5/8"	5/8"
1/4-28	X	2 1/2"	Hex	1 7/8"	5/8"
1/4-28	X	3"	Hex	2 3/8"	5/8"
1/4-28	X	3 1/2"	Hex	2 7/8"	5/8"
<i>Dia.</i>		<i>Lng.</i>	<i>Head Style</i>	<i>Grip</i>	<i>Thread Length</i>
1/4-28	X	3/4"	TSHCS	1/8"	5/8"
1/4-28	X	1"	TSHCS	1/8"	7/8"
1/4-28	X	1 1/2"	TSHCS	1/2"	1"
1/4-28	X	2"	TSHCS	1"	1"
1/4-28	X	2 1/2"	TSHCS	1 1/2"	1"
1/4-28	X	3"	TSHCS	2"	1"
1/4-28	X	3 1/2"	TSHCS	2 1/2"	1"
<i>Dia.</i>		<i>Lng.</i>	<i>Head Style</i>	<i>Grip</i>	<i>Thread Length</i>
5/16-24	X	1/2"	Hex	0	1/2"
5/16-24	X	3/4"	Hex	1/8"	5/8"
5/16-24	X	7/8"	Hex	1/4"	5/8"
5/16-24	X	15/16"	Hex	3/16"	3/4"
5/16-24	X	1"	Hex	1/4"	3/4"
5/16-24	X	1 1/8"	Hex	3/8"	3/4"
5/16-24	X	1 1/4"	Hex	1/2"	3/4"
5/16-24	X	1 3/8"	Hex	5/8"	3/4"
5/16-24	X	1 1/2"	Hex	3/4"	3/4"
5/16-24	X	1 3/4"	Hex	1"	3/4"
5/16-24	X	2"	Hex	1 1/4"	3/4"
5/16-24	X	2 1/4"	Hex	1 1/2"	3/4"
5/16-24	X	2 1/2"	Hex	1 3/4"	3/4"
5/16-24	X	2 3/4"	Hex	2"	3/4"
5/16-24	X	3"	Hex	2 1/4"	3/4"

5/16-24	X	3 1/4	Hex	2 1/2	3/4"
5/16-24	X	3 1/2"	Hex	2 3/4"	3/4"
5/16-24	X	3 3/4	Hex	3"	3/4"
5/16-24	X	5"	Hex	4 1/4"	3/4"
5/16-24	X	10"	Hex	9 1/8"	7/8"
<i>Dia.</i>		<i>Lng.</i>	<i>Head Style</i>	<i>Grip</i>	<i>Thread Length</i>
3/8-24	X	5/8"	Hex	0	5/8"
3/8-24	X	3/4"	Hex	1/8"	5/8"
3/8-24	X	7/8"	Hex	1/4"	5/8"
3/8-24	X	1"	Hex	1/4"	3/4"
3/8-24	X	1 1/8"	Hex	3/8"	3/4"
3/8-24	X	1 1/4"	Hex	1/2"	3/4"
3/8-24	X	1 3/8"	Hex	5/8"	3/4"
3/8-24	X	1 1/2"	Hex	1/2"	1"
3/8-24	X	1 5/8"	Hex	5/8"	1"
3/8-24	X	1 3/4"	Hex	3/4"	1"
3/8-24	X	1 7/8"	Hex	7/8"	1"
3/8-24	X	2"	Hex	1"	1"
3/8-24	X	2 1/4"	Hex	1 1/4"	1"
3/8-24	X	2 1/2"	Hex	1 1/2"	1"
3/8-24	X	2 3/4"	Hex	1 3/4"	1"
3/8-24	X	3"	Hex	2 "	1"
3/8-24	X	3 1/4"	Hex	2 1/4"	1"
3/8-24	X	3 1/2"	Hex	2 1/2"	1"
3/8-24	X	3 3/4"	Hex	2 3/4"	1"
3/8-24	X	4"	Hex	3"	1"
3/8-24	X	5"	Hex	4"	1"
3/8-24	X	10"	Hex	9"	1"
<i>Dia.</i>		<i>Lng.</i>	<i>Head Style</i>	<i>Grip</i>	<i>Thread Length</i>
7/16-20	X	3/4"	Hex	1/8"	5/8"
7/16-20	X	7/8"	Hex	1/4"	5/8"
7/16-20	X	1"	Hex	1/8"	7/8"
7/16-20	X	1 1/8"	Hex	1/4"	7/8"
7/16-20	X	1 1/4"	Hex	3/8"	7/8"
7/16-20	X	1 3/8"	Hex	1/2"	7/8"
7/16-20	X	1 1/2"	Hex	5/8"	7/8"
7/16-20	X	1 5/8"	Hex	3/4"	7/8"
7/16-20	X	1 3/4"	Hex	5/8"	1 1/8"
7/16-20	X	1 7/8"	Hex	3/4"	1 1/8"
7/16-20	X	2"	Hex	7/8"	1 1/8"



Tapered Socket
Head Cap Screw
(TSHCS)



12pt. Star Head
(12pt Star)



12pt Flanged Head
(12pt Flanged)



Hex Flanged Head
(HF)



Hex Head

7/16-20	X	2 1/4"	Hex	1 1/8"	1 1/8"
7/16-20	X	2 1/2"	Hex	1 3/8"	1 1/8"
7/16-20	X	2 3/4"	Hex	1 5/8"	1 1/8"
7/16-20	X	3"	Hex	1 7/8"	1 1/8"
7/16-20	X	3 1/2"	Hex	2 3/8"	1 1/8"
7/16-20	X	4"	Hex	2 7/8"	1 1/8"
7/16-20	X	4 1/2"	Hex	3 3/8"	1 1/8"
7/16-20	X	5"	Hex	3 7/8"	1 1/8"
7/16-20	X	5 1/2"	Hex	4 3/8"	1 1/8"
7/16-20	X	6 1/2"	Hex	5 3/8"	1 1/8"
7/16-20	X	12"	Hex	11"	1"
Dia.		Lng.	Head Style	Grip	Thread Length
1/2-20	X	1"	Hex	1/8"	7/8"
1/2-20	X	1 1/8"	Hex	1/4"	7/8"
1/2-20	X	1 1/4"	Hex	1/4"	1"
1/2-20	X	1 3/8"	Hex	3/8"	1"
1/2-20	X	1 1/2"	Hex	1/2"	1"
1/2-20	X	1 5/8"	Hex	3/8"	1 1/4"
1/2-20	X	1 3/4"	Hex	1/2"	1 1/4"
1/2-20	X	1 7/8"	Hex	5/8"	1 1/4"
1/2-20	X	2"	Hex	3/4"	1 1/4"
1/2-20	X	2 1/4"	Hex	1"	1 1/4"
1/2-20	X	2 1/2"	Hex	1 1/4"	1 1/4"
1/2-20	X	2 3/4"	Hex	1 1/2"	1 1/4"
1/2-20	X	3"	Hex	1 3/4"	1 1/4"
1/2-20	X	3 1/4"	Hex	2"	1 1/4"
1/2-20	X	3 1/2"	Hex	2 1/4"	1 1/4"
1/2-20	X	3 3/4"	Hex	2 1/2"	1 1/4"
1/2-20	X	4"	Hex	2 3/4"	1 1/4"
1/2-20	X	4 1/2"	Hex	3 1/4"	1 1/4"
1/2-20	X	5"	Hex	3 3/4"	1 1/4"
1/2-20	X	5 1/2"	Hex	4 1/4"	1 1/4"
1/2-20	X	6"	Hex	4 3/4"	1 1/4"
Dia.		Lng.	Head Style	Grip	Thread Length
5/8-18	X	4"	Hex	2 5/8"	1 3/8"
5/8-18	X	4 1/2"	Hex	3 1/8"	1 3/8"
5/8-18	X	5"	Hex	3 5/8"	1 3/8"
Dia.		Lng.	Head Style	Grip	Thread Length
3/4-16	X	2 3/8"	Hex	1 1/2"	7/8"
3/4-16	X	3 1/2"	Hex	2"	1 1/2"
3/4-16	X	4"	Hex	2 1/2"	1 1/2"
3/4-16	X	4 1/2"	Hex	3"	1 1/2"
3/4-16	X	5"	Hex	3 1/2"	1 1/2"
3/4-16	X	5 1/2"	Hex	4"	1 1/2"

American Inch Thread Course Thread (UNC) Bolts

Unified Coarse threads are used extensively in lower strength materials like cast iron and cast aluminum. The male root or minor diameter is smaller on UNC threads than on UNF threads; therefore, load capacity is less on UNC threaded bolt.

Dia.		Lng.	Head Style	Grip	Thread Length
1/4-20	x	1/2"	Hex	0	1/2"
1/4-20	X	5/8"	Hex	0	5/8"
1/4-20	X	3/4"	Hex	1/8"	5/8"
1/4-20	X	7/8"	Hex	1/4"	5/8"
1/4-20	X	1"	Hex	1/8	7/8
1/4-20	X	1 1/4"	Hex	5/16	15/16

Dia.		Lng.	Head Style	Grip	Thread Length
1/4-20	X	5/8"	TSHCS	-	5/8"
1/4-20	X	3/4"	TSHCS	1/8"	5/8"
1/4-20	X	7/8"	TSHCS	3/16"	11/16"
1/4-20	X	1 1/4"	TSHCS	1/8"	1 1/8"
1/4-20	X	1 1/2"	TSHCS	3/8"	1 1/8"
1/4-20	X	1 3/4"	TSHCS	5/8"	1 1/8"
1/4-20	X	2"	TSHCS	7/8"	1 1/8"
1/4-20	X	2 1/4"	TSHCS	1 1/8"	1 1/8"
1/4-20	X	2 1/2"	TSHCS	1 1/2"	1"
1/4-20	X	3"	TSHCS	2"	1"
1/4-20	X	3 1/4"	TSHCS	2"	1 1/4"
1/4-20	X	3 1/2"	TSHCS	2 1/2"	1"

Dia.		Lng.	Head Style	Grip	Thread Length
5/16-18	X	1/2"	Hex	0	1/2"
5/16-18	X	3/4"	Hex	1/8"	5/8"
5/16-18	X	7/8"	Hex	1/8"	3/4"
5/16-18	X	1"	Hex	1/4"	3/4"
5/16-18	X	1 1/8"	Hex	1/4"	7/8"
5/16-18	X	1 1/4"	Hex	1/2	3/4
5/16-18	X	1 1/2"	Hex	3/4"	3/4"
5/16-18	X	3"	Hex	2 1/4"	3/4"

Dia.		Lng.	Head Style	Grip	Thread Length
5/16-18	X	5/8"	TSHCS	1/8"	1/2"
5/16-18	X	3/4"	TSHCS	1/8"	5/8"
5/16-18	X	7/8"	TSHCS	1/8"	1/2"
5/16-18	X	1"	TSHCS	1/8"	7/8"
5/16-18	X	1 1/4"	TSHCS	1/4"	1"
5/16-18	X	1 1/2"	TSHCS	3/8"	1 1/8"
5/16-18	X	1 3/4"	TSHCS	5/8"	1 1/8"
5/16-18	X	2"	TSHCS	7/8"	1 1/8"
5/16-18	X	2 1/4"	TSHCS	1 1/8"	1 1/8"
5/16-18	X	2 3/4"	TSHCS	1 3/4"	1"
5/16-18	X	3"	TSHCS	2"	1"
5/16-18	X	3 1/2"	TSHCS	2 1/4"	1 1/4"



Tapered Socket Head Cap Screw (TSHCS)



12pt. Star Head (12pt Star)



12pt Flanged Head (12pt Flanged)



Hex Flanged Head (HF)



Hex Head (HF)

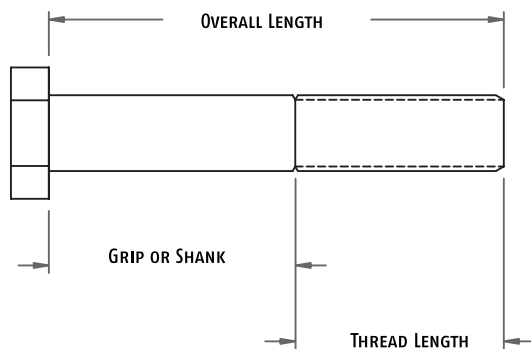
AMERICAN INCH THREAD COURSE THREAD (UNC) BOLTS CONTINUED

<i>Dia.</i>		<i>Lng.</i>	<i>Head Style</i>	<i>Grip</i>	<i>Thread Length</i>
3/8-16	X	5/8"	Hex	0	5/8"
3/8-16	X	3/4"	Hex	1/8"	5/8"
3/8-16	X	1"	Hex	1/8"	7/8"
3/8-16	X	1 1/8"	Hex	3/8"	3/4"
3/8-16	X	1 1/4"	Hex	1/4"	1"
3/8-16	X	1 1/2"	Hex	1/2"	1"
3/8-16	X	1 3/4"	Hex	3/4"	1"
3/8-16	X	2"	Hex	1"	1"
3/8-16	X	2 1/4"	Hex	1 1/4"	1"
3/8-16	X	2 1/2"	Hex	1	1 1/2"
3/8-16	X	2 3/4"	Hex	1 1/8"	1 5/8"
3/8-16	X	3"	Hex	2"	1"
3/8-16	X	3 1/4"	Hex	2 1/4"	1"
3/8-16	X	3 1/2"	Hex	2 1/2"	1"
3/8-16	X	4"	Hex	3"	1"
3/8-16	X	4 1/2"	Hex	3 1/2"	1"
<i>Dia.</i>		<i>Lng.</i>	<i>Head Style</i>	<i>Grip</i>	<i>Thread Length</i>
7/16-14	X	1 1/4"	Hex	1/8"	1 1/8"
7/16-14	X	1 3/8"	Hex	1/4"	1 1/8"
7/16-14	X	1 1/2"	Hex	3/8"	1 1/8"
7/16-14	X	1 3/4"	Hex	1/2"	1 1/4"
7/16-14	X	2"	Hex	3/4"	1 1/4"
7/16-14	X	2 1/2"	Hex	1 3/8"	1 1/8"
7/16-14	X	3"	Hex	1 7/8"	1 3/8"

<i>Dia.</i>		<i>Lng.</i>	<i>Head Style</i>	<i>Grip</i>	<i>Length</i>
3/8-16	X	3/4"	Hex Flange	0	3/4"
3/8-16	X	7/8"	Hex Flange	1/8"	3/4"
3/8-16	X	1"	Hex Flange	1/8"	7/8"
3/8-16	X	1 1/8"	Hex Flange	1/8"	1"
3/8-16	X	1 1/4"	Hex Flange	1/4"	1"
3/8-16	X	1 3/8"	Hex Flange	3/8"	1"
3/8-16	X	1 1/2"	Hex Flange	1/2"	1"
3/8-16	X	1 5/8"	Hex Flange	5/8"	1"
<i>Dia.</i>		<i>Lng.</i>	<i>Head Style</i>	<i>Grip</i>	<i>Length</i>
1/2-13	X	1"	Hex Flange	1/8"	7/8"
1/2-13	X	1 1/4"	Hex Flange	3/8"	7/8"
1/2-13	X	1 5/8"	Hex Flange	1/2"	1 1/8"
1/2-13	X	2"	Hex Flange	7/8"	1 1/8"

Custom sizes available by Special Order

Due to the manufacturing steps to produce a high quality fastener (forging the head, heat treating, grinding and rolling threads), low volume runs of less than 500pcs will be charged additional fees for set up costs. For this reason Mettec prefers to quote only prices for minimum production run sizes of 500pcs or larger.



Tapered Socket Head Cap Screw (TSHCS)



12pt. Star Head (12pt Star)



12pt Flanged Head (12pt Flanged)



Hex Flanged Head (HF)



Hex Head

Studs

These studs have rolled threads and have a UTS of 160Ksi.

Part Number	Description
STUD312X1750	Stud 5/16 X 1 3/4" NC = .625" / NC = .750"
STUD312X2000	Stud 5/16 X 2" NC = .625" / NC = .750"
STUD375X1125	Stud 3/8 x 1 1/8" NC = .450" / NF = .450"
STUD375X1500	Stud 3/8 x 1 1/2" NC = 5/8" / NF = 5/8"
STUD375X1750	Stud 3/8 x 1 3/4" NC = 3/4" / NF = 3/4"
STUD375X2000	Stud 3/8 x 2" NC = 1" / NF = 3/4"
STUD375-16x2	Stud 3/8-16 x 2" Full Thread NC
STUD375X10	Stud 3/8 x 10" NF = 5/8" / NF = 5.8"
STUD437X1625	Stud 7/16x 1 5/8" NC = 7/16" / NF = 7/8"
STUD437X1930	Stud 7/16 x 1 15/16" NC = 7/8" / NF = 5/8"
STUD437X12.5	Stud 7/16 x 12 1/2" NF = 5/8" / NF = 5/8"
WH500X2250	Stud 1/2 x 2 1/4" NF = 3/4" / NF = 1 1/4"
WH500X2500	Stud 1/2 x 2 1/2" NF = 3/4" / NF = 1 1/4"
WH500X2750	Stud 1/2" x 2 3/4" NF = 3/4" / NF = 1 1/4"



Washers

AN 960 Washers

Commonly referred to as "AN" washers they are available in 1/16" (regular) and 1/32" (light) thickness in a given diameter. Gold cad-plated steel.

Part Number	Description
AN960-416L	1/4" Light (.032") AN Washer
AN960-516L	5/16" Light (.032") AN Washer
AN960-616L	3/8" Light (.032") AN Washer
AN960-716L	7/16" Light (.032") AN Washer
AN960-816L	1/2" Light (.032") AN Washer
AN960-416	1/4" Standard (.063") AN Washer
AN960-516	5/16" Standard (.063") AN Washer
AN960-616	3/8" Standard (.063") AN Washer
AN960-716	7/16" Standard (.063") AN Washer
AN960-816	1/2" Standard (.063") AN Washer



TITANIUM FLAT WASHERS

Part Number	Description	ID	OD
FWM6-13	1/4" Flat Washer	0.260	0.511
FWM6-22	1/4" Flat Washer (Fender Washer)	0.260	0.866
FWM8-17	5/16" Flat Washer	0.325	0.669
FWM10-21	3/8" Flat Washer	0.405	0.826
FW437-24	7/16" Flat Washer	0.447	0.945
FW500-27	1/2" Flat Washer	0.515	1.063

Aerospace MS & AN Lock Nuts

Mettec recommends aircraft quality lock nuts. The threads are high quality and have smooth action on the titanium threads. On the AN 364/365 nylon insert nuts, nylon creates positive locking through multiple use. The MS21042 steel flanged nuts have a higher heat resistance and strength rating. They have an ovalized top and are moly coated to reduce friction on titanium bolts. Visually inspect the locking area for wear, and replace the nut when you feel the resistance starting to relax. For areas with repeated disassembly the AN 364/365 lock nuts are good. For maximum performance we suggest the MS21042 lock nuts.



AN 364/365 NYLON INSERT LOCKNUTS

These are the most common and durable self-locking aircraft nuts. Almost infinitely reusable, tensile strength rated at 125,000 psi with a 250 F temperature rating. Thin (AN 364) nuts should only be used in shear load applications.

Part Number	Description
364-1032A	10-32 Half High-Shear Nylock Nut
364-428A	1/4-28 Half High-Shear Nylock Nut
364-524A	5/16-24 Half High-Shear Nylock Nut
364-624A	3/8-24 Half High-Shear Nylock Nut
364-720A	7/16-24 Half High-Shear Nylock Nut
364-820A	1/2-20 Half High-Shear Nylock Nut
365-1032A	10-31 Standard Nylock Nut
365-428A	1/4-28 Standard Nylock Nut
365-524A	5/16-24 Standard Nylock Nut
365-624A	3/8-24 Standard Nylock Nut
365-720A	7/16-20 Standard Nylock Nut
365-820A	1/2-20 Standard Nylock Nut



ALUMINUM "AN" NYLOCK NUTS

Part Number	Description
364D1032A	10-32 Half High-Shear Nylock Nut
364D428A	1/4-28 Half High-Shear Nylock Nut
364D524A	5/16-24 Half High-Shear Nylock Nut
364D624A	3/8-24 Half High-Shear Nylock Nut
364D720A	7/16-20 Half High-Shear Nylock Nut
364D820A	1/2-20 Half High-Shear Nylock Nut
365D1032A	10-32 Standard Nylock Nut
365D428A	1/4-28 Standard Nylock Nut
365D524A	5/16-24 Standard Nylock Nut
365D624A	3/8-24 Standard Nylock Nut
365D720A	7/16-20 Standard Nylock Nut
365D820A	1/2-20 Standard Aluminum Nylock Nut



JET NUT / MS LOCK NUT REDUCED HEXAGON

These nuts feature a good combination of light weight and high strength (160,000 psi tensile). Available in steel which is good up to a temperature of (450 F).

Part Number	Description
MS21042L3	3/16, 10-32 Moly Coated
MS21042L4	1/4-28, Moly Coated
MS21042L5	5/16-24, Moly Coated
MS21042L6	3/8-24, Moly Coated
MS21042L7	7/16-20, Moly Coated
MS21042L8	1/2-20, Moly Coated

Sprint & Midget Chassis Parts

CARBON FIBER DRIVESHAFT AND TORQUE TUBE ASSEMBLY

Mettec has been producing Carbon Fiber driveshafts since 1998. To handle the greater horsepower and torque of today's engines Mettec has increased the driveshaft diameter. The torque capacity for the larger carbon fiber shaft has been doubled. This drive shaft can handle the torque load for Silver Crown to 410 Winged Sprints.

Mettec's Carbon-Fiber Driveshaft has the following benefits over conventional steel or titanium driveshafts. Superior Vibration Damping, Reported RPM Increase, Greater Fatigue Life, Eliminates Centripetal Force and Harmonic Whipping, Reduced Rotating Weight and Lower Torsional Spring Rate with Higher Shock Load Absorption Qualities.

SOLD AS A PACKAGE ONLY (Due to the diameter of the Driveshaft)

PKG. INCLUDES:

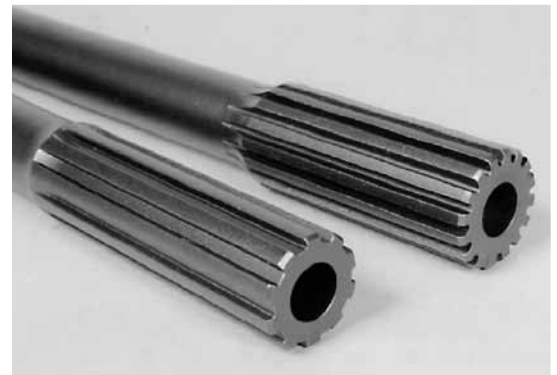
- 1 ea. Carbon-fiber driveshaft (splines available for Winters and DMI rear ends need to specify length)
- 1 ea. Torque Tube , with hard anodizing & lubricated coating for a longer life.
- 1 ea. Torque Ball , with hard anodizing & lubricated coating for a longer life.
- 1 ea. Bell Housing , magnesium casting
- 1 ea. Hard anodized split retaining ring.



TITANIUM TUBULAR DRIVE SHAFTS

Mettec titanium drive shafts are designed for long life. Everything from shape to final surface finishing is aimed at creating a strong and durable shaft. The 10 spline end is 4 inches long so it can be trimmed up to 2 inches. The remaining 2 inches can engage into either an external 10-10 coupler or the internal coupler of the rear end.

Part Number	Description
DRV62101627	27" Sprint Titanium Tubular Drive Shaft
DRV62101629	29" Sprint Titanium Tubular Drive Shaft
DRV62101631	31" Sprint Titanium Tubular Drive Shaft



TUBULAR KING PINS

Mettec's titanium king pins are 40 grams lighter than our nearest steel competitor. We designed the king pins to utilize heat treated titanium. Higher shear strength makes a longer lasting and safer king pin. Each king pin has a top flange and a screw in cap on the bottom. Race track proven performance speaks for itself.

Part Number	Description
Sprint Ti King Pin .859 & 1 Cap-Overall Pin Lng. = 5.805"	KING859LONG
Sprint Ti King Pin .859 & 1 Cap-Overall Pin Lng. = 5.555"	KING859SHORT
Midget Ti King Pin .812 & 1 Cap-Overall Pin Lng. = 4.560"	KING812

Replacement Cap	Part Number
Fits P/N KING859SHORT & P/N KING812	CAP625
Fits P/N KING859LONG	CAP625+250





TORSION BAR STOPS

Mettec stops are made in steel and titanium. The steel stop weighs .82 which is a 1/10 of a pound lighter than our nearest competitor. Mettec titanium stop weighs .40 which is over 1/2 pound lighter than any other steel stop on the market today. Mettec steel stops are gold-zinc plated for a professional look and rust protection. Manufacturing controls are the same for both steel and titanium. Any time Mettec offers alloys other than titanium, the part is equal in quality to our titanium part. Mettec assures you that if a part is made by Mettec from steel or titanium, the parts are equal in quality.

Part Number	Description
STOPST-7	Steel Stop 1 1/8 x 48 spline - 1 3/4" bar split Grade 8 steel bolts and nuts are included.
STOPTI-7	Titanium Stop 1 1/8 x 48 spline - 1 3/4" bar split Adjuster and pinch bolts are titanium. Jam nut is aluminum.
STOPST-8	Steel Stop 1 1/8 x 48 spline - 2" bar split Grade 8 steel bolts and nuts are included.



TITANIUM TORSION STOP ADJUSTER BOLTS (FULLY THREADED)

As with all our bolts these have rolled threads to provide a long lasting thread that won't gall as easily. Mettec recommends a moly grease be applied to the threads before each race. This will give maximum life to your titanium stop adjuster bolts.

Dia.	Lng.	Head Style	Grip	Thread Length
3/8-16	X 2"	9/16 Hex	0	2" Full Lng. Thread
3/8-24	X 2"	9/16 Hex	0	2" Full Lng. Thread
3/8-16	X 4"	9/16 Hex	0	4" Full Lng. Thread
7/16-20	X 2"	5/8 Hex	0	2" Full Lng. Thread
7/16-20	X 2"	11/16 Hex	0	2" Full Lng. Thread

Steel Torsion Stop Adjuster Bolt (Fully Threaded)

7/16-20	X 2"	Steel 5/8 Hex	0	2" Full Lng. Thread
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JAM NUTS FOR ADJUSTER BOLTS

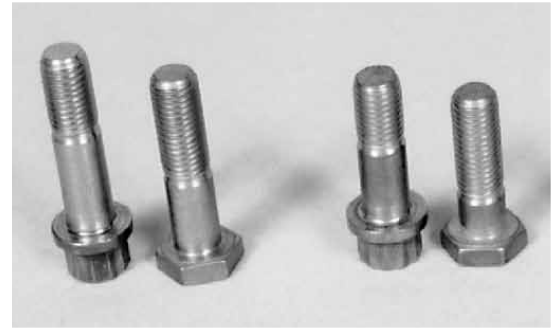
Part Number	Description
JAMNUT375-16	3/8-16 Alum. Jam Nut
JAMNUT375-24	3/8-24 Alum. Jam Nut
JAMNUT437-20	7/16-20 Alum. Jam Nut
JAM437-20ST	7/16-20 Steel Jam Nut

Sprint Car & Midget Titanium Bolts and Kits

WHEEL BOLTS FOR THREE PIECE WHEELS

Two head styles are used for bolting wheels together. Both bolts are equal in strength. Wheel bolts have forged heads, and rolled threads. All of these steps are performed to provide a bolt that has high fatigue resistance and a minimum UTS of 160,000 psi. This safely exceeds grade 8 steel bolt minimum strength requirements of UTS 150,000 psi. Average weight savings is around 1/4 to 1/3 pound per wheel. Grade 10 titanium bolts exceed grade 10 steel specifications.

Dia.	Lng.	Head Style	Grip	Grade	Thread Length
5/16-24	X 1"	Hex	9/16"	8	7/16"
5/16-24	x 1"	Hex	9/16"	10	7/16"
5/16-24	x 1"	12pt. flange	9/16"	10	7/16"
5/16-24	x 1 1/4"	Hex	3/4"	8	1/2"
5/16-24	X 1 1/4"	Hex	3/4"	10	1/2"
5/16-24	X 1 1/4"	12pt. flange	3/4"	10	1/2"



BEAD LOCK BOLTS NATIONAL COURSE THREADS

Bolts are offered in three (3) strengths, grade 5, grade 8, and grade 10. Bead lock rings tend to cause bolt bending during tightening. Excessive bending will cause bolt failure, usually while tightening. Bending can be reduced by uniformly tightening all bolts and using low torque values. Grade 5 bolts are more ductile and have lower strength. Grade 8 bolts have greater strength and less ductility. Grade 5 bolts work well if adequate care is taken for uniform tightening and using lower torque values. If your crew members have a tendency to over torque bolts, we recommend using grade 8 bolts. For the ultimate in strength, Mettec offers a grade 10 titanium bolt that exceeds a grade 10 steel bolt specifications. The applications for these high grade titanium bolts are open wheel, alcohol and fuel drag cars.

Dia.	Lng.	Head Style	Grip	Grade	Thread Length
1/4-20	X 1"	Hex	1/8"	8	7/8"
1/4-20	X 1 1/4"	Hex	1/4"	8	1"
5/16-18	X 1"	Hex	1/4"	5	3/4"
5/16-18	x 1"	Hex	1/4"	8	3/4"
5/16-18	x 1 1/4"	Hex	1/4"	5	1"
5/16-18	x 1 1/4"	Hex	1/4"	8	1"
5/16-24	x 1 1/4"	Hex	1/4"	10	1"
5/16-18	x 1 1/4"	12 pt flanged	1/4"	10	1"



WIDE 5 LUG BOLTS WITH BULLET NOSE

Mettec offers bullet nose lug studs to help make your wheel changes faster & easier. Bullet nose studs eliminate dropping your nuts on the ground during wheel changes. We also offer titanium Hex Flange nuts to complete your assembly.

Dia.	Lng.	Head Style	Grip	Thread Length
3/8-16	x 1 1/4"	12pt. Star Head	0	1 1/4"
12pt Star Head replaces "Button Head" lug bolts				
3/8-16	x 1 1/4"	Flush Head	0	1 1/4"
Flush heads are For Sanders Hubs				

Part Number	Description
NUTHF375-16	Titanium 3/8-16 Hex Flange Nut





DRIVE PINS TITANIUM 5/8" DIAMETER

Mettec's titanium drive pins are gundrilled for additional weight savings. The threads are rolled to increase fatigue resistance. Mettec drive pins have been proven in "USAC" pavement Sprint Car and Silver Crown divisions. Our drive pins are strong enough for both front and rear wheels.

Description

5/8" dia. X 2" long shoulder, with 1/2 -20 thread

Part Number

DRVPIN625X287



TORQUE TUBE BOLTS & STUDS

Mettec offers titanium studs and bolts for torque tube to rear end fastening.

Bolts

Dia.		Lng.	Head Style	Grip	Thread Length
3/8-16	X	1 1/4"	7/16 Flanged	1/4"	1"
3/8-16	X	1 3/8"	7/16 Flanged	3/8"	1"
3/8-16	X	1 1/2"	7/16 Flanged	1/2"	1"
3/8-16	X	1 5/8"	7/16 Flanged	1/2"	1 1/8"

Studs

3/8-16-24	X	1 3/4"	NC = 3/4" / NF = 3/4"
3/8-16-24	X	2"	NC = 1" / NF = 3/4"

Nuts for torque tube studs.

Part Number Description

MS21042L6	Jet Nut / MS Lock Nut 3/8-24, Moly Coated 450 F, Reduced Hexagon
AN365-824A	3/8-24 Nylock Nut—Standard 125,000 psi



BELL HOUSING TO MOTOR PLATE & TORQUE BALL RETAINING RING BOLTS & STUDS

Bolts for Bell Housing to Motor Plate

Dia.		Lng.	Head Style	Grip	Thread Length
3/8-16	x	1"	Hex	1/8"	7/8"
3/8-16	x	1 1/8"	Hex	3/8"	3/4"
3/8-16	x	1"	7/16" Hex Flange	1/8"	7/8"
3/8-16	x	1 1/8"	7/16" Hex Flange	1/8"	1"



Mettec recommends using 5/16" studs on your Torque Ball Retaining Ring. Aluminum and Magnesium Bell Housings are soft. Bolt will wear out the threads and eventually strip out.

Bolts for Torque Ball Retaining Ring

Dia.		Lng.	Head Style	Grip	Thread Length
5/16-18	x	1 1/8"	Hex	1/4"	7/8"
5/16-18	x	1 1/4"	Hex	1/4"	1"

Studs for Torque Ball Retaining Ring

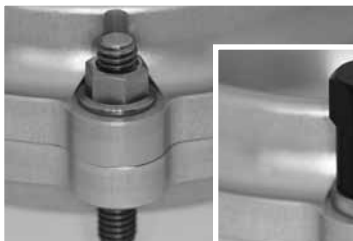
Part Number Description

STUD312x1750	Stud 5/16" - 18 x 1 3/4" (Use with Single-Ball Retaining Ring)
STUD312x2000	Stud 5/16" - 18 x 2" (Use with DMI Style, Two-Piece Ball Retaining Ring)

Titanium and Aluminum Nuts For Retaining Ring Studs

Part Number Description

NUTHF312-18	Titanium 5/16 - 18 Hex Flange Nut
ALUMNUT312-18SW	Aluminum 5/16 - 18 Nut with Steel Washer



Titanium Hex Flange
Nut on Retaining Ring



Aluminum Hex Nut
with built-in Steel Washer

ENGINE TO MOTOR PLATE BOLTS

NATIONAL COURSE THREADS

<i><u>Dia.</u></i>	<i><u>Lng.</u></i>	<i><u>Head Style</u></i>	<i><u>Grip</u></i>	<i><u>Thread Length</u></i>
3/8-16	X 1"	Hex	1/8"	7/8"
3/8-16	X 1 1/8"	Hex	1/8"	1"
3/8-16	X 2 1/4"	Hex	1 1/4"	1"
3/8-16	X 2 1/2"	Hex	1"	1 1/2"
3/8-16	X 2 3/4"	Hex	1 1/8"	1 5/8"
3/8-16	X 1 1/8"	Hex Flanged	1/8"	1"
3/8-16	X 1 1/4"	Hex Flanged	1/4"	1"
3/8-16	X 1 3/8"	Hex Flanged	3/8"	1"
3/8-16	X 1 1/2"	Hex Flanged	1/2"	1"
3/8-16	X 1 5/8"	Hex Flanged	1/2"	1 1/8"



FRONT AND REAR MOTOR PLATE BOLTS TO FRAME

NATIONAL FINE THREADS

<i><u>Dia.</u></i>	<i><u>Lng.</u></i>	<i><u>Head Style</u></i>	<i><u>Grip</u></i>	<i><u>Thread Length</u></i>
3/8-24	X 7/8"	Hex	1/4"	5/8"
3/8-24	X 1"	Hex	1/4"	3/4"
3/8-24	X 2 1/4"	Hex	1 1/4"	1"
3/8-24	X 2 1/2"	Hex	1 1/2"	1"
3/8-24	x 2 3/4"	Hex	1 3/4"	1"

<u>Part Number</u>	<u>Description</u>
MS21042L6	3/8" moly coated Jet nut

We recommend using these moly coated nuts for your motor plate to frame bolts.



BUMPER & NERF BAR BOLTS

<i><u>Dia.</u></i>	<i><u>Lng.</u></i>	<i><u>Head Style</u></i>	<i><u>Grip</u></i>	<i><u>Thread Length</u></i>	<i><u>Thread Pitch</u></i>
3/16"	X 1 1/2"	Hex	1 1/8"	3/8"	10-32

NUTS FOR 3/16" BOLTS

<u>Part Number</u>	<u>Description</u>
364-1032A	3/16 Nylock Nut-Shear
364D1032A	Aluminum 3/16 Nylock Nut-Shear
MS21042L3	3/16 Moly Coated Jet Nut





WINTERS – REAR END SIDE COVER AND REAR COVER STUDS

These titanium studs feature rolled threads. Titanium studs weigh half the weight of steel studs.

Winters Side Cover Studs, Nuts and Washers

<u>Dia.</u>		<u>Lng.</u>	<u>Head Style</u>	<u>Part Number</u>
7/16"	X	1 5/8"	Stud	STUD437X1625
7/16"	X	1 15/16"	Stud	STUD437X1930
1/2"-13	X	2"	Stud Adj.	STUD500-13X2
7/16" -20		(moly coated jet nut)	Lock nut	MS21042L7
7/16"			washer	AN960-716L
1/2"- 13			Hex Flange Nut	NUTHF500-13

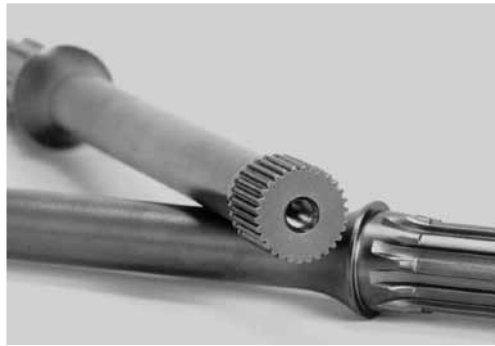
Winters Rear Cover Studs (Full Thread Length)

<u>Dia.</u>		<u>Lng.</u>	<u>Part Number</u>
3/8-16	X	2"	STUD375-16X2

Winters Side Cover Stud Kit

Part Number Winters side cover kit includes:

WINSTUDKIT	1 ea. 7/16 x 1 5/8" stud
	10 ea. 7/16 x 1 15/16" studs
	11 ea. 7/16-20 Lock nuts (Moly Coated Jet Nuts)
	11 ea. 7/16 washer



WINTERS REPLACEMENT LOWER SHAFTS

Part Number Description

WINSHAFT14	Winters 14" Titanium External Shaft (Replaces Winters P/N 6249)
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Part Number Description

WINSHAFT10	Winters 10" Titanium Internal Coupler Shaft This shaft is gundrilled to save weight. (Replaces Winters P/N 6678-01)
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DMI – REAR END SIDE COVER AND REAR COVER STUDS

These titanium studs feature rolled threads.
Titanium studs weigh half the weight of steel studs.

DMI Side Cover Studs, Nuts and Washers

<u>Dia.</u>		<u>Lng.</u>	<u>Head Style</u>	<u>Part Number</u>
7/16"	X	1 5/8"	Stud	STUD437X1625
7/16"	X	1 15/16"	Stud	STUD437X1930
1/2"-13	X	2"	Stud Adj.	STUD500-13X2
7/16" -20		(moly coated jet nut)	Lock nut	MS21042L7
7/16"			washer	AN960-716L
1/2" - 13			Hex Flange Nut	NUTHF500-13

DMI Rear Cover Studs (Full Length Thread)

<u>Dia.</u>		<u>Lng.</u>	<u>Part Number</u>
3/8-16	X	2"	STUD375-16X2



U-JOINT BOLTS –UNF THREAD

All of the top race teams work hard to reduce rotating weight. A 12 point 7/16 socket will fit into the tight confines of the U-Joint hole. This is a smart place to save weight and you will not have to hassle with allen head bolts rounding out.

<u>Dia.</u>		<u>Lng.</u>	<u>Head Style</u>	<u>Grip</u>	<u>Thread Length</u>
7/16-20	X	7/8"	12 pt. flanged	3/16"	11/16"



INBOARD BRAKE MOUNTING BOLTS-UNC THREAD

These coarse threaded bolts reduce unsprung weight. We make several lengths to help you custom fit your brake mounts. Remember, unsprung weight is your worst enemy for going fast.

<u>Dia.</u>		<u>Lng.</u>	<u>Head Style</u>	<u>Grip</u>	<u>Thread Length</u>
7/16-14	X	1 1/4"	Hex	3/8"	7/8"
7/16 -14	X	1 1/2"	Hex	1/2"	1"
7/16-14	X	1 3/4"	Hex	3/4"	1"



TOP BIRDCAGE TO TOP RADIUS ROD BOLT

Mettec offers a hex flange bolt with a small flange. Wrench size is a 9/16" hex. This allows the rod end (Heim Joint) to have full range of movement with out binding.

<u>Part Number</u>	<u>Description</u>
T6NF5001500F	Hex Flange 1/2 - 20 X 1 1/2"
T6NF5001500FS	Hex Flange 1/2 - 20 X 1 1/2" - Head drilled for safety wire





STEERING ARM BOLTS

Description	Application	Part Number	Head Style
7/16-20 x 1 3/4"	Flush Head for midgets	T4FNF4371750	Flush
7/16-20 x 1 1/2"	Hex Head for midgets	T4NFO4371500	Hex
7/16-20 X 1 3/4"	Hex Head for midgets	T4NFO4371750	Hex
1/2-20 X 1 3/4"	Hex Head for sprints	T4NFO5001750	Hex
1/2-20 X 2"	Hex Head for sprints	T4NFO5002000	Hex
1/2-20 X 2"	Flush Head	T4FNF5002000	Flush



TITANIUM 1/2" STEERING STUD WITH BROACHED ALLAN KEY FOR DRAG LINK AND TIE ROD

Mettec offers a 1/2" stud that screws into the steering arms and then you use a cone washer for proper spacing. Secure the stud with a half tall aluminum nylock nut on the back side of the arm. Use a steel Nylock nut on the rod end (Heim Joint) side of stud.

Part Number: STUD500X25BR



BRAKE ROTOR BOLTS

Description	Location	Part Number
1/2-20 X 1" Flush Head	Left Front Brake Rotor	T4FNF5001000
5/16-24 X 7/8" Hex Head	Rear Inboard Brake Rotor	T4NFO3120875
5/16-24 X 1" Hex Head	Rear Inboard Brake Rotor	T4NFO3121000
5/16-24 X 1 1/8" Hex Head	Rear Inboard Brake Rotor	T4NFO3121125
5/16-24 X 1 1/4" Hex Head	Rear Inboard Brake Rotor	T4NFO3121250
5/16-24 X 1 3/8" Hex Head	Rear Inboard Brake Rotor	T4NFO3121375



TOP WING , FRONT POST AND WING TREE MOUNTING BOLTS (FOR INTERNAL SLIDERS)

Top Wing Post

Dia.		Lng	Head Style
5/16-24	x	1-1/4"	Hex
5/16-24	x	1-1/2"	Hex

Wing Tree Mounting and Adjusting Bolts

Dia.		Lng	Head Style
1/4-28	X	1"	Hex
1/4-28	X	1 1/8"	Hex
1/4-28	X	1 1/4"	Hex

Wing Ram To Tree and Chassis

Dia.		Lng	Head Style
3/8-24	X	3/4"	Hex
3/8-24	X	7/8"	Hex
3/8-24	X	1"	Hex



JACOB LADDER QUICK PIN KIT 6Pcs

Description

Part Number

Titanium Kit with 3/8" Pin for birdcage heim
(If you are using a 3/8" Pin with a 1/2 " heim you will need to use a spacer in the heim)

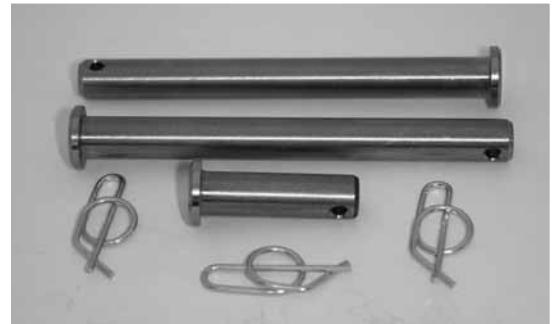
KT515

Steel Kit with 3/8" Pin for birdcage heim
(If you are using a 3/8" Pin with a 1/2 " heim you will need to use a spacer in the heim)

KS515

Titanium Kit with 1/2" Pin for birdcage heim
(1/2" Titanium Pin is drilled for extra light weight)

KT520



SPHERICAL ROD ENDS (HEIM)

Aluminum Rod Ends

Part Number

1/2" X 5/8" Left Hand Thread
1/2" X 5/8" Right Hand Thread

META8-10L
META8-10R

Steel Rod Ends

Part Number

1/2" X 5/8" Left Hand Thread
1/2" X 5/8" Right Hand Thread

METS8-10L
METS8-10R

Chrome Moly Ends (A Must For Rear Lower Arms)

Part Number

1/2" X 5/8" Left Hand Thread
1/2" X 5/8" Right Hand Thread

METCM8-10L
METCM8-10R

Jam Nuts Aluminum And Steel

Part Number

5/8" Left Hand Aluminum Jam Nut
5/8" Right Hand Aluminum Jam Nut
5/8" Left Hand Steel Jam Nut
5/8" Right Hand Steel Jam Nut

JAMNUT625-18AL
JAMNUT625-18AR
JAMNUT625-18SL
JAMNUT625-18SR



SPRINT CAR TITANIUM CHASSIS BOLT KITS

We assemble three different kits for the most popular chassis.

1. Half Inch (1/2") Titanium Bolt and Nut Kit (1/2" bolts only)
2. Complete Titanium Bolt and Nut Kit
3. Custom titanium Bolt and Nut Kit (You tell us what Bolt and nuts you would like)



Mettec Titanium Quick Pin & One Nut Stud Kits

With Mettec titanium one nut studs you can expect to reduce your weight by 50 percent over a steel equivalent. Our one nut studs also have a built in shoulder which eliminates binding of your shock bearings and rod ends.

Titanium Shock One Nut Stud Kits

Description	Part Number
Titanium Thru Bolt Shock Kit	KT503
Titanium Combo Shock Kit	KT503C
Titanium Screw In Shock Kit	KT503S



Use this kit on axles with thru bolts for mounting lower front shocks

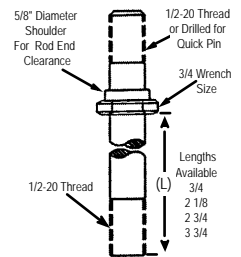


Use this kit on axles with threaded lower spuds to mount front shocks



Use this kit when all frame spuds and axle spuds are threaded

LENGTHS AVAILABLE FOR FRAMES WITH THRU SPUDS



Titanium Shock Quick Pin Stud Kit

Description	Part Number
Titanium Quick Pin Thru Bolt Shock Kit	KT513
Titanium Quick Pin Combo Shock Kit	KT513C
Titanium Quick Pin Screw In Shock Kit	KT513S



Use this kit on axles with thru bolts for mounting lower front shocks



Use this kit on axles with threaded lower spuds to mount front shocks



Use this kit when all frame spuds and axle spuds are threaded

Titanium Radius Rod & Panhard Bar One Nut Stud Kits

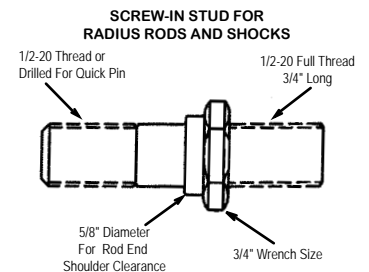
Description	Part Number
Titanium Thru Bolt Kit	KT501
Titanium Screw in Kit	KT501S



Use this kit on frames with thru bolt spuds for mounting radius rods



Use this kit on frames with threaded spuds to mount radius rods



Titanium Radius Rod & Panhard Bar Quick Pin Stud Kits

Description	Part Number
Titanium Thru Bolt Quick Pin Kit	KT511
Titanium Screw in Quick Pin Kit	KT511S



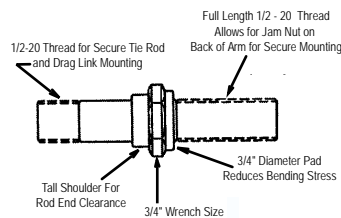
Use this kit on frames with thru bolt spuds for mounting radius rods



Use this kit on frames with threaded spuds to mount radius rods

Titanium Drag Link and Tie Rod One Nut Stud Kit

Description	Part Number
Titanium Drag Link and Tie Rod One Nut Stud Kit	KT502



Individual Part Numbers for Titanium Quick Pins and One Nut Studs

Description	Length (L)	Part Number	Description	Length (L)	Part Number
Titanium One Nut Stud	3/4"	TD501-750	Titanium Quick Pin Stud	3/4"	TD511-750
Titanium One Nut Stud	2 1/8"	TD501-213	Titanium Quick Pin Stud	2 1/8"	TD511-213
Titanium One Nut Stud	2 3/4"	TD501-275	Titanium Quick Pin Stud	2 3/4"	TD511-275
Titanium One Nut Stud	3 3/4"	TD501-375	Titanium Quick Pin Stud	3 3/4"	TD511-375

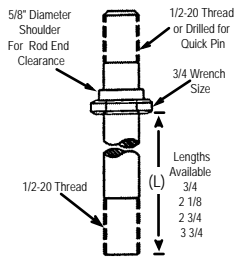
Titanium Lower Rear Shock Arm One Nut Stud	TD503
Titanium Lower Rear Shock Arm Quick Pin Stud	TD513

Titanium Drag Link and Tie Rod One Nut Stud	TD502
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Mettec Steel Quick Pin & One Nut Stud Kits

Our steel one nut stud kits give race teams a affordable option to titanium. Also a great choice for teams that race with associations that do not allow titanium. Our steel one nut studs are made from aerospace grade Chrom-Moly steel. Our steel one nut studs also have a built in shoulder which eliminates the binding of your shock bearings and rod ends.

LENGTHS AVAILABLE FOR FRAMES WITH THRU SPUDS



Use this kit on axles with thru bolts for mounting lower front shocks



Use this kit on axles with threaded lower spuds to mount front shocks



Use this kit when all frame spuds and axle spuds are threaded



Use this kit on axles with thru bolts for mounting lower front shocks



Use this kit on axles with threaded lower spuds to mount front shocks



Use this kit when all frame spuds and axle spuds are threaded

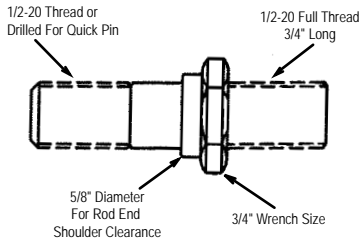
Steel Shock One Nut Stud Kit

Description	Part Number
Steel Thru Bolt Shock Kit	KS503
Steel Combo Shock Kit	KS503C
Steel Screw in Shock Kit	KS503S

Steel Quick Pin Stud Kit

Description	Part Number
Steel Quick Pin Thru Bolt Shock Kit	KS513
Steel Quick Pin Combo Shock Kit	KS513C
Steel Quick Pin Screw in Shock Kit	KS513S

SCREW-IN STUD FOR RADIUS RODS AND SHOCKS



Use this kit on frames with thru bolt spuds for mounting radius rods



Use this kit on frames with threaded spuds to mount radius rods



Use this kit on frames with thru bolt spuds for mounting radius rods



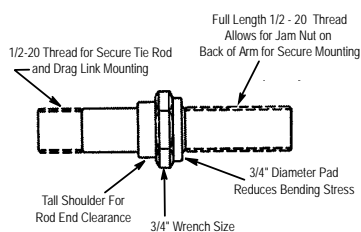
Use this kit on frames with threaded spuds to mount radius rods

Steel Radius Rod & Panhard Bar One Nut Stud Kit

Description	Part Number
Steel Thru Bolt Thru Bolt Kit	KS501
Steel Screw in Bolt Kit	KS501S

Steel Radius Rod & Panhard Bar Quick Pin Stud Kit

Description	Part Number
Steel Thru Bolt Quick Pin Kit	KS511
Steel Screw in Quick Pin Kit	KS511S



Steel Drag Link and Tie Rod One Nut Stud Kit

Description	Part Number
Steel Drag Link and Tie Rod One Nut Stud Kit	KS502

Individual Part Numbers for Steel Quick Pins and One Nut Studs

Description	Length (L)	Part Number	Description	Length (L)	Part Number
Steel One Nut Stud	3/4"	SD501-750	Steel Quick Pin Stud	3/4"	SD511-750
Steel One Nut Stud	2 1/8"	SD501-213	Steel Quick Pin Stud	2 1/8"	SD511-213
Steel One Nut Stud	2 3/4"	SD501-275	Steel Quick Pin Stud	2 3/4"	SD511-275
Steel One Nut Stud	3 3/4"	SD501-375	Steel Quick Pin Stud	3 3/4"	SD511-375

Steel Lower Rear Shock Arm One Nut Stud	SD503
Steel Lower Rear Shock Arm Quick Pin Stud	SD513

Steel Drag Link and Tie Rod One Nut Stud	SD502
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Titanium Engine Fasteners



INTAKE MANIFOLD BOLTS NATIONAL COURSE THREADS

This is an easy place to save 1/3 to 1/2 pound of weight. The heads of the bolts are forged to a 7/16 hex with a small flange. This small head allows for small wrenches to be used in hard to reach places.

Dia.	Lng.	Style	Thread Length	Grip
3/8-16	X 7/8"	7/16 Hex flanged	1/8"	3/4"
3/8-16	X 1"	7/16 Hex flanged	1/8"	7/8"
3/8-16	X 1 1/8"	7/16 Hex flanged	1/8"	1"
3/8-16	X 1 1/4"	7/16 Hex flanged	1/4"	1"
3/8-16	X 1 3/8"	7/16 Hex flanged	3/8"	1"
3/8-16	X 1 1/2"	7/16 Hex flanged	1/2"	1"
3/8-16	X 1 5/8"	7/16 Hex flanged	1/2"	1 1/8"



EXHAUST HEADER STUDS

Part Number	Description
STUD375X1125	Stud 3/8" x 1 1/8"
NF thread Length = .450" NC thread Length = .450"	

Jet Locking Nuts for Header Studs

Part Number	Description
MS21042L6	3/8-24, Moly Coated



OIL PAN , TIMING COVER AND INJECTOR STACK PINCH BOLTS - UNC

Dia.	Lng.	Head Style	Grip	Thread Length
1/4-20	X 5/8"	TSHCS	1/8"	1/2"
1/4-20	X 3/4"	TSHCS	1/8"	5/8"
1/4-20	X 7/8"	TSHCS	1/8"	3/4"
1/4-20	X 1"	TSHCS	1/8"	7/8"
1/4-20	X 1 1/4"	TCHSC	1/4"	1"
1/4-20	X 1 1/2"	TCHSC	3/8"	1 1/8"
1/4-20	X 1 3/4"	TCHSC	5/8"	1 1/8"
1/4-20	X 2"	TCHSC	7/8"	1 1/8"
1/4-20	X 2 1/4"	TCHSC	1 1/8"	1 1/8"
5/16-18	X 5/8"	TCHSC	1/8"	1/2"
5/16-18	X 3/4"	TCHSC	1/8"	5/8"
5/16-18	X 7/8"	TCHSC	1/8"	3/4"
5/16-18	X 1"	TCHSC	1/8"	7/8"

ENGINE FLY WHEEL BOLTS - UNF

Next to unsprung weight, rotating weight is your worst enemy. By reducing your rotating weight, your engine will accelerate and decelerate faster. There are two different head styles to choose from. This is a smart place to save weight.

Dia	Lng.	Head Style	Grip	Thread Length
7/16-20	X 7/8"	12 point Flanged	3/16"	11/16"
7/16-20	X 1"	12 point Flanged	3/16"	13/16"
7/16-20	X 7/8"	12 point 5/8 Star Head	1/4"	5/8"
7/16-20	X 1"	12 point 5/8 Star Head	3/16"	13/16"



T & D ROCKER STAND HOLD DOWN BOLTS - UNC

Rocker stand bolts are a great place to reduce weight. Titanium bolts save a 1/2 pound of weight above your center of gravity. This will allow you to move weight to other locations to improve handling. Buy them once and they work for you the life of your engine.

Dia	Lng.	Head Style	Grip	Thread Length
7/16-14	X 5/8"	12 Pt. Flange	0	5/8"
7/16-14	X 3/4"	12Pt. Flange	1/8"	5/8"
7/16-14	X 7/8"	12Pt. Flange	1/8"	3/4"
7/16-14	X 1"	12Pt. Flange	1/8"	7/8"
7/16-14	X 1 1/8"	12Pt. Flange	1/4"	7/8"
7/16-14	X 1 1/4"	12Pt. Flange	1/4"	1"



JEZEL ROCKER STAND HOLD DOWN BOLTS - UNC

Rocker stand bolts are a great place to reduce weight. Titanium bolts save a 1/2 pound of weight above your center of gravity. This will allow you to move weight to other locations to improve handling. Buy them once and they work for you the life of your engine.

Dia	Lng.	Head Style	Grip	Thread Length
7/16-14	X 3/4"	12Pt. Star Head	1/8"	5/8"
7/16-14	X 7/8"	12Pt. Star Head	1/8"	3/4"
7/16-14	X 1"	12Pt. Star Head	1/8"	7/8"
7/16-14	X 1 1/8"	12Pt. Star Head	1/4"	7/8"
7/16-14	X 1 1/4"	12Pt. Star Head	1/4"	1"



TITANIUM DISTRIBUTOR CLAMP

Part Number	Description
DISTCLAMP	Titanium Dist clamp
Stud375x1500	Ti stud 3/8X1 1/8"
MS21042L6	Ti 3/8 jet nut moly coated



Metric Thread Titanium Bolts



METRIC THREAD TITANIUM BOLTS

M6-Alan Head Bolt (TSHCS = Tapered Socket Head Cap Screw)			
Size x Lng	Head Style	Grip	Thread Length
M6-1.00 x 8mm	TSHCS	2mm	6mm
M6-1.00 x 10mm	TSHC	2mm	8mm
M6-1.00 x 12mm	TSHCS	2mm	10mm
M6-1.00 x 15mm	TSHCS	2mm	13mm
M6-1.00 x 18mm	TSHCS	2mm	16mm
M6-1.00 x 20mm	TSHCS	2mm	18mm
M6-1.00 x 25mm	TSHCS	2mm	23mm
M6-1.00 x 30mm	TSHCS	5mm	25mm
M6-1.00 x 35mm	TSHCS	5mm	30mm
M6-1.00 x 40mm	TSHCS	10mm	30mm
M6-1.00 x 45mm	TSHCS	15mm	30mm
M6-1.00 x 50mm	TSHCS	30mm	20mm
M6-1.00 x 55mm	TSHCS	35mm	20mm
M6-1.00 x 60mm	TSHCS	40mm	20mm
M6-1.00 x 65mm	TSHCS	45mm	20mm
M6-1.00 x 70mm	TSHCS	45mm	25mm
M6-1.00 x 80mm	TSHCS	55mm	25mm
M6-1.00 x 100mm	TSHCS	75mm	25mm

M8-Alan Head Bolt (TSHCS = Tapered Socket Head Cap Screw)			
Size x Lng.	Head Style	Grip	Thread Length
M8-1.25 x 15mm	TSHCS	2mm	13mm
M8-1.25 x 20mm	TSHCS	2mm	18mm
M8-1.25 x 25mm	TSHCS	2mm	23mm
M8-1.25 x 30mm	TSHCS	5mm	25mm
M8-1.25 x 35mm	TSHCS	10mm	25mm
M8-1.25 x 40mm	TSHCS	5mm	35mm
M8-1.25 x 45mm	TSHCS	10mm	35mm
M8-1.25 x 50mm	TSHCS	20mm	30mm
M8-1.25 x 55mm	TSHCS	25mm	30mm
M8-1.25 x 60mm	TSHCS	30mm	30mm
M8-1.25 x 75mm	TSHCS	35mm	40mm
M8-1.25 x 100mm	TSHCS	60mm	40mm
M8-1.25 x 120mm	TSHCS	90mm	30mm

**M10 –Alan Head Bolt with 1.25 Thread Pitch
(TSHCS= Taper Socket Head Cap Screw)**

Size x Lng.	Head Style	Grip	Thread Length
M10-1.25 x 20mm	TSHCS	2mm	18mm
M10-1.25 x 25mm	TSHCS	2mm	23mm
M10-1.25 x 30mm	TSHCS	5mm	25mm
M10-1.25 x 35mm	TSHCS	10mm	25mm
M10-1.25 x 40mm	TSHCS	15mm	25mm
M10-1.25 x 45mm	TSHCS	20mm	25mm
M10-1.25 x 50mm	TSHCS	25mm	25mm
M10-1.25 x 55mm	TSHCS	30mm	25mm
M10-1.25 x 60mm	TSHCS	35mm	25mm
M10-1.25 x 70mm	TSHCS	45mm	25mm
M10-1.25 x 80mm	TSHCS	55mm	25mm
M10-1.25 x 90mm	TSHCS	65mm	25mm
M10-1.25 x 100mm	TSHCS	75mm	25mm
M10-1.25 x 120mm	TSHCS	95mm	25mm

**M10- Alan Head Bolt with 1.50 Thread Pitch
(TSHCS =Tapered Socket Head Cap Screw)**

Size x Lng.	Head Style	Grip	Thread Length
M10-1.50 x 20mm	TSHCS	2mm	18mm
M10-1.50 x 25mm	TSHCS	2mm	23mm
M10-1.50 x 30mm	TSHCS	5mm	25mm
M10-1.50 x 35mm	TSHCS	10mm	25mm
M10-1.50 x 40mm	TSHCS	15mm	25mm
M10-1.50 x 45mm	TSHCS	20mm	25mm
M10-1.50 x 50mm	TSHCS	25mm	25mm
M10-1.50 x 55mm	TSHC	30mm	25mm
M10-1.50 x 60mm	TSHCS	35mm	25mm
M10-1.50 x 70mm	TSHCS	45mm	25mm
M10-1.50 x 80mm	TSHCS	55mm	25mm
M10-1.50 x 90mm	TSHCS	65mm	25mm
M10-1.50 x 100mm	TSHCS	75mm	25mm
M10-1.50 x 120mm	TSHCS	95mm	25mm

M6 Flanged Bolt with 8mm Hex Head

Size x Lng.	Head Style	Grip	Thread Length
M6-1.00 x 8mm	Hex Flanged	0mm	8mm
M6-1.00 x 10mm	Hex Flanged	0mm	10mm
M6-1.00 x 12mm	Hex Flanged	2mm	10mm
M6-1.00 x 15mm	Hex Flanged	2mm	13mm
M6-1.00 x 20mm	Hex Flanged	2mm	18mm
M6-1.00 x 25mm	Hex Flanged	3mm	22mm
M6-1.00 x 30mm	Hex Flanged	5mm	25mm
M6-1.00 x 35mm	Hex Flanged	10mm	25mm
M6-1.00 x 40mm	Hex Flanged	15mm	25mm
M6-1.00 x 45mm	Hex Flanged	20mm	25mm
M6-1.00 x 50mm	Hex Flanged	25mm	25mm
M6-1.00 x 55mm	Hex Flanged	30mm	25mm
M6-1.00 x 60mm	Hex Flanged	35mm	25mm
M6-1.00 x 65mm	Hex Flanged	40mm	25mm
M6-1.00 x 70mm	Hex Flanged	45mm	25mm
M6-1.00 x 75mm	Hex Flanged	50mm	25mm
M6-1.00 x 80mm	Hex Flanged	55mm	25mm
M6-1.00 x 85mm	Hex Flanged	60mm	25mm
M6-1.00 x 90mm	Hex Flanged	65mm	25mm
M6-1.00 x 95mm	Hex Flanged	70mm	25mm
M6-1.00 x 100mm	Hex Flanged	75mm	25mm
M6-1.00 x 110mm	Hex Flanged	85mm	25mm
M6-1.00 x 120mm	Hex Flanged	95mm	25mm

M8 Flanged Bolt with 10mm Hex Head

Size Lng.	Head Style	Grip	Thread Length
M8-1.25 x 10mm	Hex Flanged	0mm	10mm
M8-1.25 x 12mm	Hex Flanged	2mm	12mm
M8-1.25 x 15mm	Hex Flanged	2mm	15mm
M8-1.25 x 20mm	Hex Flanged	2mm	18mm
M8-1.25 x 25mm	Hex Flanged	3mm	22mm
M8-1.25 x 30mm	Hex Flanged	5mm	25mm
M8-1.25 x 35mm	Hex Flanged	10mm	25mm
M8-1.25 x 40mm	Hex Flanged	15mm	25mm
M8-1.25 x 45mm	Hex Flanged	20mm	25mm
M8-1.25 x 50mm	Hex Flanged	25mm	25mm
M8-1.25 x 55mm	Hex Flanged	30mm	25mm
M8-1.25 x 60mm	Hex Flanged	35mm	25mm
M8-1.25 x 65mm	Hex Flanged	40mm	25mm
M8-1.25 x 70mm	Hex Flanged	45mm	25mm
M8-1.25 x 75mm	Hex Flanged	50mm	25mm
M8-1.25 x 80mm	Hex Flanged	55mm	25mm
M8-1.25 x 90mm	Hex Flanged	65mm	25mm
M8-1.25 x 95mm	Hex Flanged	70mm	25mm

M8-1.25 x 100mm	Hex Flanged	75mm	25mm
M8-1.25 x 110mm	Hex Flanged	85mm	25mm
M8-1.25 x 115mm	Hex Flanged	90mm	25mm
M8-1.25 x 120mm	Hex Flanged	95mm	25mm
M10 Flanged Bolt with 12mm Hex Head			
Size Lng.	Head Style	Grip	Thread Length
M10-1.25 x 20mm	Hex Flanged	0mm	20mm
M10-1.25 x 25mm	Hex Flanged	2mm	23mm
M10-1.25 x 30mm	Hex Flanged	5mm	25mm
M10-1.25 x 35mm	Hex Flanged	10mm	25mm
M10-1.25 x 40mm	Hex Flanged	15mm	25mm
M10-1.25 x 45mm	Hex Flanged	20mm	25mm
M10-1.25 x 50mm	Hex Flanged	25mm	25mm
M10-1.25 x 55mm	Hex Flanged	30mm	25mm
M10-1.25 x 60mm	Hex Flanged	35mm	25mm
M10-1.25 x 65mm	Hex Flanged	40mm	25mm
M10-1.25 x 70mm	Hex Flanged	45mm	25mm
M10-1.25 x 75mm	Hex Flanged	50mm	25mm
M10-1.25 x 80mm	Hex Flanged	55mm	25mm
M10-1.25 x 85mm	Hex Flanged	60mm	25mm
M10-1.25 x 90mm	Hex Flanged	65mm	25mm
M10-1.25 x 95mm	Hex Flanged	70mm	25mm
M10-1.25 x 100mm	Hex Flanged	75mm	25mm
M10-1.25 x 105mm	Hex Flanged	80mm	25mm
M10-1.25 x 110mm	Hex Flanged	85mm	25mm
M10-1.25 x 115mm	Hex Flanged	90mm	25mm
M10-1.25 x 120mm	Hex Flanged	95mm	25mm
M10-1.25 x 125mm	Hex Flanged	100mm	25mm
M10-1.25 x 130mm	Hex Flanged	105mm	25mm
M10-1.25 x 135mm	Hex Flanged	110mm	25mm
M10-1.25 x 140mm	Hex Flanged	115mm	25mm
M10-1.25 x 145mm	Hex Flanged	120mm	25mm
M10-1.25 x 150mm	Hex Flanged	125mm	25mm
M10-1.25 x 160mm	Hex Flanged	135mm	25mm
M10-1.25 x 165mm	Hex Flanged	140mm	25mm
M10-1.25 x 170mm	Hex Flanged	145mm	25mm
M10-1.25 x 180mm	Hex Flanged	155mm	25mm
M10-1.25 x 220mm	Hex Flanged	195mm	25mm
M10-1.25 x 230mm	Hex Flanged	205mm	25mm
M10-1.25 x 240mm	Hex Flanged	215mm	25mm

M12 Flanged Bolt with 14mm Hex Head and 1.25 Thread Pitch			
Size Lng.	Head Style	Grip	Thread Length
M12-1.25 x 20mm	Hex Flanged	0mm	20mm
M12-1.25 x 25mm	Hex Flanged	2mm	23mm
M12-1.25 x 30mm	Hex Flanged	5mm	25mm
M12-1.25 x 35mm	Hex Flanged	10mm	25mm
M12-1.25 x 40mm	Hex Flanged	15mm	25mm
M12-1.25 x 45mm	Hex Flanged	20mm	25mm
M12-1.25 x 50mm	Hex Flanged	25mm	25mm
M12-1.25 x 55mm	Hex Flanged	30mm	25mm
M12-1.25 x 60mm	Hex Flanged	35mm	25mm
M12-1.25 x 70mm	Hex Flanged	45mm	25mm
M12-1.25 x 80mm	Hex Flanged	55mm	25mm
M12-1.25 x 90mm	Hex Flanged	65mm	25mm
M12 Flanged Bolt with 14mm Hex Head and 1.75 Thread Pitch			
Size x Lng.	Head Style	Grip	Thread Length
M12-1.75 x 20mm	Hex Flanged	2mm	18mm
M12-1.75 x 25mm	Hex Flanged	2mm	23mm
M12-1.75 x 30mm	Hex Flanged	5mm	25mm
M12-1.75 x 35mm	Hex Flanged	10mm	25mm
M12-1.75 x 40mm	Hex Flanged	15mm	25mm
M12-1.75 x 45mm	Hex Flanged	20mm	25mm
M12-1.75 x 50mm	Hex Flanged	25mm	25mm
M12-1.75 x 55mm	Hex Flanged	30mm	25mm
M12-1.75 x 60mm	Hex Flanged	35mm	25mm
M12-1.75 x 70mm	Hex Flanged	45mm	25mm
M12-1.75 x 80mm	Hex Flanged	55mm	25mm
M12-1.75 x 90mm	Hex Flanged	65mm	25mm

Custom sizes available by Special Order

Due to the manufacturing steps to produce a high quality fastener (forging the head, heat treating, grinding and rolling threads), low volume runs of less than 500pcs will be charged additional fees for set up costs. For this reason Mettec prefers to quote only prices for minimum production run sizes of 500pcs or larger.