

## AN Bolts

We stock a large selection of AN, MS and NAS hardware. These fasteners are manufactured to rigorous quality control standards from raw material to final plating. They offer a combination of properties that are simply not available in SAE graded hardware. Carroll Smith stated in his excellent book, **Prepare To Win**:

"Don't be deceived — use no SAE grade bolts, of whatever specification, in a stressed application. ... The F.A.A. doesn't allow the use of SAE graded bolts on aircraft and that should be some sort of clue."

— Carroll Smith

That statement was true in 1975 when the book was first published and it's even more true now that cars have gotten lighter, faster and capable of higher cornering forces. Designers have, in general, gone to smaller fasteners that offer a lower safety factor in order to optimize the performance of their cars. If you have not read **Prepare To Win**, or have not reviewed it for several years, we suggest at least taking a look at Chapter 1.

Thread Length Chart		
Bolt Size	Thread Size	Approximate Thread Length *
AN3	10-32	.406 inch
AN4	1/4 - 28	.469 inch
AN5	5/16 - 24	.531 inch
AN6	3/8 - 24	.641 inch
AN7	7/16 - 20	.656 inch
AN8	1/2 - 20	.680 inch

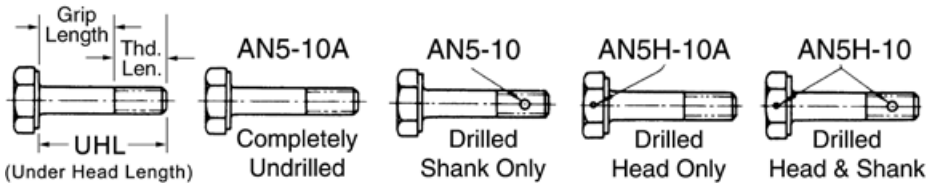
\* Note: Some of the very shortest lengths of AN bolts, such as AN4-3A, have shorter thread lengths than standard.

### Airframe Bolts, AN3 through AN8

The most obvious difference between an SAE bolt and an AN bolt is that the AN bolt has just enough thread length to install a nut and one or two flat washers. The idea is to keep the threaded portion of the bolt out of the shear area of the bolted joint. Not only does the threaded portion greatly weaken the shear strength, but when subjected to vibration, it acts like a low speed milling cutter and will inevitably enlarge the hole and loosen the joint. Correct application of the bolt is therefore dependent upon grip length, the length of the unthreaded portion of the bolt shank. They are available in 1/8 inch increments of length so that an exact fit can be achieved. AN960 flat washers are used to fine tune the fit and make sure that the nut doesn't bottom out on the unthreaded portion of the shank. You

must measure the joint carefully to be sure to order the correct bolt. A dial caliper is almost a must for this use. Bolts with drilled shanks are generally used with AN310 castellated nuts and cotter pins (see page 98). Bolts with drilled heads are available for use with safety wire. Plain, unthreaded bolts are usually used with self-locking nuts or are assembled with Loctite to avoid loosening problems. The best advice is to check every bolt often. These hex head bolts have tensile strength of 125,000 psi and shear strength of 76,000 psi.

**Remember to order by Grip Length!**  
See page 98 for our handy AN bolt length gauge.



### Please Note

We are constantly expanding our inventory of AN bolts. The particular sizes and styles that we add are based upon requests from customers like you. Please feel free to request a price and delivery quotation on any AN bolt. However, be aware that not every part number listed in these charts has actually been produced and some sizes may not be readily available.

### AN3 Bolts – 3/16 inch Nominal Diameter – 10-32 Thread

Length in Inches		Completely Undrilled		Drilled Shank Only		Drilled Head Only		Drilled Head and Shank	
UHL	Grip	Part No.	Price	Part No.	Price	Part No.	Price	Part No.	Price
3/8	1/16	AN3-3A	19¢	AN3-3	33¢	AN3H-3A	37¢	AN3H-3	94¢
1/2	1/8	AN3-4A	19¢	AN3-4	28¢	AN3H-4A	44¢	AN3H-4	69¢
5/8	1/4	AN3-5A	19¢	AN3-5	37¢	AN3H-5A	45¢	AN3H-5	94¢
3/4	3/8	AN3-6A	20¢	AN3-6	49¢	AN3H-6A	54¢	AN3H-6	99¢
7/8	1/2	AN3-7A	22¢	AN3-7	99¢	AN3H-7A	54¢	AN3H-7	99¢
1	5/8	AN3-10A	24¢	AN3-10	39¢	AN3H-10A	59¢	AN3H-10	99¢
1 1/8	3/4	AN3-11A	29¢	AN3-11	49¢	AN3H-11A	64¢	AN3H-11	\$2.19
1 1/4	7/8	AN3-12A	33¢	AN3-12	49¢	AN3H-12A	64¢	AN3H-12	call
1 3/8	1	AN3-13A	41¢	AN3-13	49¢	AN3H-13A	89¢	AN3H-13	\$2.19
1 1/2	1 1/8	AN3-14A	36¢	AN3-14	49¢	AN3H-14A	74¢	AN3H-14	\$2.19
1 5/8	1 1/4	AN3-15A	41¢	AN3-15	40¢	AN3H-15A	74¢	AN3H-15	\$2.19
1 3/4	1 3/8	AN3-16A	42¢	AN3-16	40¢	AN3H-16A	79¢	AN3H-16	\$2.19
1 7/8	1 1/2	AN3-17A	49¢	AN3-17	40¢	AN3H-17A	99¢	AN3H-17	\$2.19
2	1 5/8	AN3-20A	49¢	AN3-20	45¢	AN3H-20A	84¢	AN3H-20	\$2.29
2 1/8	1 3/4	AN3-21A	49¢	AN3-21	42¢	AN3H-21A	89¢	AN3H-21	call
2 1/4	1 7/8	AN3-22A	49¢	AN3-22	54¢	AN3H-22A	94¢	AN3H-22	call
2 3/8	2	AN3-23A	54¢	AN3-23	99¢	AN3H-23A	94¢	AN3H-23	\$2.29
2 1/2	2 1/8	AN3-24A	54¢	AN3-24	94¢	AN3H-24A	\$2.29	AN3H-24	call
2 5/8	2 1/4	AN3-25A	54¢	AN3-25	99¢	AN3H-25A	\$2.39	AN3H-25	call
2 3/4	2 3/8	AN3-26A	64¢	AN3-26	69¢	AN3H-26A	\$1.09	AN3H-26	call
2 7/8	2 1/2	AN3-27A	74¢	AN3-27	\$1.09	AN3H-27A	\$2.59	AN3H-27	call
3	2 5/8	AN3-30A	69¢	AN3-30	\$1.09	AN3H-30A	\$2.99	AN3H-30	call
3 1/8	2 3/4	AN3-31A	74¢	AN3-31	\$1.09	AN3H-31A	\$1.29	AN3H-31	call
3 1/4	2 7/8	AN3-32A	79¢	AN3-32	\$1.19	AN3H-32A	\$4.49	AN3H-32	call
3 3/8	3	AN3-33A	79¢	AN3-33	\$1.19	AN3H-33A	\$1.49	AN3H-33	call
3 1/2	3 1/8	AN3-34A	79¢	AN3-34	\$1.19	AN3H-34A	call	AN3H-34	call
3 5/8	3 1/4	AN3-35A	\$1.29	AN3-35	\$1.19	AN3H-35A	call	AN3H-35	call
3 3/4	3 3/8	AN3-36A	\$2.59	AN3-36	\$1.29	AN3H-36A	call	AN3H-36	call
3 7/8	4 1/2	AN3-37A	\$1.69	AN3-37	\$1.29	AN3H-37A	\$4.99	AN3H-37	call
4	3 5/8	AN3-40A	94¢	AN3-40	\$1.29	AN3H-40A	\$16.99	AN3H-40	call
4 1/8	3 3/4	AN3-41A	\$1.09	AN3-41	\$1.39	AN3H-41A	\$10.79	AN3H-41	call
4 1/4	3 7/8	AN3-42A	\$1.09	AN3-42	\$1.39	AN3H-42A	\$10.99	AN3H-42	call
4 3/8	4	AN3-43A	\$1.99	AN3-43	\$2.29	AN3H-43A	call	AN3H-43	call
4 1/2	4 1/8	AN3-44A	\$1.39	AN3-44	call	AN3H-44A	\$20.49	AN3H-44	\$21.99
4 5/8	4 1/4	AN3-45A	\$2.59	AN3-45	call	AN3H-45A	call	AN3H-45	call
4 3/4	4 3/8	AN3-46A	call	AN3-46	call	AN3H-46A	call	AN3H-46	call
4 7/8	4 1/2	AN3-47A	\$2.49	AN3-47	\$2.89	AN3H-47A	\$18.99	AN3H-47	call
5	4 5/8	AN3-50A	call	AN3-50	\$12.99	AN3H-50A	call	AN3H-50	call

Please call or check our website for availability of longer lengths.

### AN4 Bolts – 1/4 - 28 Thread

Length in Inches		Completely Undrilled		Drilled Shank Only		Drilled Head Only		Drilled Head and Shank	
UHL	Grip	Part No.	Price	Part No.	Price	Part No.	Price	Part No.	Price
3/8	1/16	AN4-3A	25¢	AN4-3	64¢	AN4H-3A	54¢	AN4H-3	call
1/2	1/8	AN4-4A	25¢	AN4-4	35¢	AN4H-4A	54¢	AN4H-4	call
5/8	3/16	AN4-5A	29¢	AN4-5	41¢	AN4H-5A	69¢	AN4H-5	call
3/4	5/16	AN4-6A	32¢	AN4-6	79¢	AN4H-6A	59¢	AN4H-6	call
7/8	7/16	AN4-7A	39¢	AN4-7	49¢	AN4H-7A	64¢	AN4H-7	99¢
1	9/16	AN4-10A	39¢	AN4-10	64¢	AN4H-10A	\$1.29	AN4H-10	99¢
1 1/8	1 1/16	AN4-11A	39¢	AN4-11	46¢	AN4H-11A	59¢	AN4H-11	call
1 1/4	1 3/16	AN4-12A	39¢	AN4-12	69¢	AN4H-12A	\$1.19	AN4H-12	99¢
1 3/8	1 5/16	AN4-13A	59¢	AN4-13	79¢	AN4H-13A	79¢	AN4H-13	call
1 1/2	1 1/2	AN4-14A	59¢	AN4-14	54¢	AN4H-14A	79¢	AN4H-14	\$1.89
1 5/8	1 3/4	AN4-15A	69¢	AN4-15	79¢	AN4H-15A	89¢	AN4H-15	\$1.19
1 3/4	1 5/8	AN4-16A	54¢	AN4-16	69¢	AN4H-16A	89¢	AN4H-16	94¢
1 7/8	1 7/8	AN4-17A	64¢	AN4-17	99¢	AN4H-17A	\$1.19	AN4H-17	\$2.79
2	1 9/16	AN4-20A	59¢	AN4-20	64¢	AN4H-20A	99¢	AN4H-20	\$2.89
2 1/8	1 11/16	AN4-21A	54¢	AN4-21	94¢	AN4H-21A	99¢	AN4H-21	call
2 1/4	1 13/16	AN4-22A	64¢	AN4-22	64¢	AN4H-22A	99¢	AN4H-22	call
2 3/8	1 15/16	AN4-23A	54¢	AN4-23	64¢	AN4H-23A	\$1.09	AN4H-23	call
2 1/2	2 1/16	AN4-24A	59¢	AN4-24	\$1.09	AN4H-24A	\$1.09	AN4H-24	call
2 5/8	2 3/16	AN4-25A	59¢	AN4-25	64¢	AN4H-25A	\$1.09	AN4H-25	call
2 3/4	2 5/16	AN4-26A	64¢	AN4-26	99¢	AN4H-26A	\$1.19	AN4H-26	call
2 7/8	2 7/16	AN4-27A	79¢	AN4-27	89¢	AN4H-27A	\$1.19	AN4H-27	call
3	2 9/16	AN4-30A	79¢	AN4-30	89¢	AN4H-30A	\$1.29	AN4H-30	call
3 1/8	2 11/16	AN4-31A	79¢	AN4-31	\$1.19	AN4H-31A	\$1.29	AN4H-31	call
3 1/4	2 13/16	AN4-32A	99¢	AN4-32	\$1.29	AN4H-32A	\$1.39	AN4H-32	call
3 3/8	2 15/16	AN4-33A	\$1.19	AN4-33	\$1.29	AN4H-33A	\$2.49	AN4H-33	\$3.49
3 1/2	3 1/16	AN4-34A	\$1.39	AN4-34	\$1.89	AN4H-34A	\$1.79	AN4H-34	call
3 5/8	3 3/16	AN4-35A	\$1.39	AN4-35	\$1.89	AN4H-35A	\$1.59	AN4H-35	call
3 3/4	3 5/16	AN4-36A	\$1.59	AN4-36	\$1.39	AN4H-36A	\$4.49	AN4H-36	call
3 7/8	3 7/16	AN4-37A	\$1.59	AN4-37	\$1.59	AN4H-37A	\$1.99	AN4H-37	call
4	3 9/16	AN4-40A	\$1.59	AN4-40	\$2.19	AN4H-40A	\$11.99	AN4H-40	\$22.99
4 1/8	3 11/16	AN4-41A	\$1.59	AN4-41	\$2.29	AN4H-41A	\$6.89	AN4H-41	\$12.99
4 1/4	3 13/16	AN4-42A	\$1.79	AN4-42	\$2.29	AN4H-42A	\$5.99	AN4H-42	call
4 3/8	3 15/16	AN4-43A	\$1.89	AN4-43	\$1.59	AN4H-43A	call	AN4H-43	call
4 1/2	4 1/16	AN4-44A	\$1.29	AN4-44	\$1.69	AN4H-44A	call	AN4H-44	call
4 5/8	4 3/16	AN4-45A	\$1.89	AN4-45	\$1.79	AN4H-45A	call	AN4H-45	call
4 3/4	4 5/16	AN4-46A	\$1.89	AN4-46	\$1.79	AN4H-46A	call	AN4H-46	call
4 7/8	4 7/16	AN4-47A	\$2.29	AN4-47	\$2.19	AN4H-47A	call	AN4H-47	call
5	4 9/16	AN4-50A	\$3.69	AN4-50	\$6.99	AN4H-50A	call	AN4H-50	call

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