AT SERIES NUTSERT® HOLE SIZE SELECTION CHART

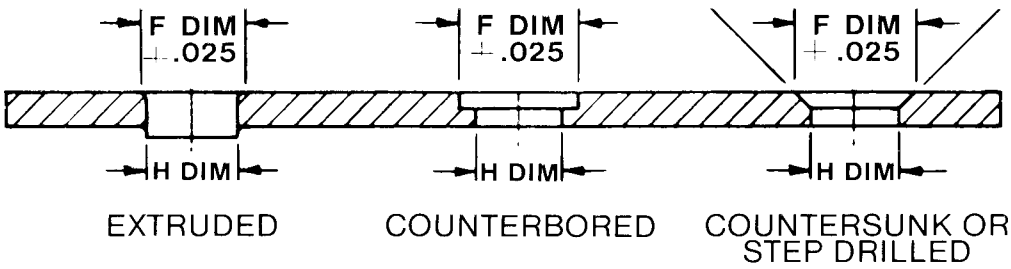
Selecting the proper hole size is necessary to obtain optimum AT Series Nutsert® performance. Refer to the hole size selection chart below. The strength of the parent material also affects performance. Since there is such a vast number of materials in which the AT Series Nutsert® can be used, and because minor hole adjustments may be required, we recommend that the inserts be tested in the application before finalizing hole sizes. Standard drilled and punched hole tolerances are acceptable (Do not go below nominal hole size).

HOLE SIZE VERSUS MATERIAL THICKNESS

THREAD SIZE	.030 -.090		.091 -.124		.125 -.186		.187 & OVER	
	DRILL	DECIMAL	DRILL	DECIMAL	DRILL	DECIMAL	DRILL	DECIMAL
4-40	3/16	.1875	#10	.1935	#10	.1935	#9	.1960
6-32	7/32	.2188	#2	.2210	#1	.2280	#1	.2280
8-32	1/4	.2500	"F"	.2570	17/64	.2656	17/64	.2656
10-24 10-32	9/32	.2812	"L"	.2900	"L"	.2900	19/64	.2969
1/4-20 1/4-28	3/8	.3750	3/8	.3750	"W"	.3860	25/64	.3906
5/16-18 5/16-24	1/2	.5000	1/2	.5000	33/64	.5156	33/64	.5156
3/8-16 3/8-24	9/16	.5625	9/16	.5625	37/64	.5781	37/64	.5781
M3 x 0.5	3/16	.1875	#10	.1935	#10	.1935	#9	.1960
M4 x 0.7	1/4	.2500	"F"	.2570	17/64	.2656	17/64	.2656
M5 x 0.8	9/32	.2812	"L"	.2900	"L"	.2900	19/64	.2969
M6 x 1.0	3/8	.3750	3/8	.3750	"W"	.3860	25/64	.3906
M8 x 1.25	1/2	.5000	1/2	.5000	33/64	.5156	33/64	.5156
M10 x 1.5	9/16	.5625	9/16	.5625	37/64	.5781	37/64	.5781

HOLE PREPARATION FOR ABSOLUTELY FLUSH AT SERIES NUTSERT® INSTALLATION

AT Series Nutserts install nearly flush. The flange may protrude up to .015" above the surface of the application; however, this is considered adequately flush for most applications. If a technically flush application is required, the hole may be prepared as shown below.

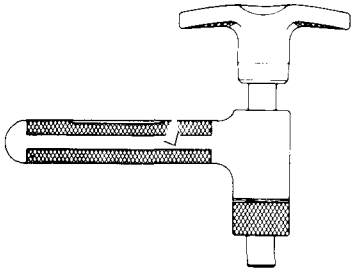


See page four (4) for "F" dimensions.

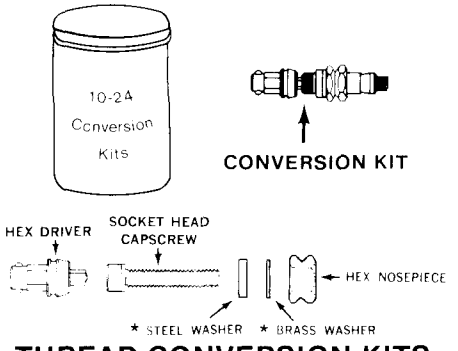
THE Hi-Torquer® MANUAL PLACING TOOL

The Hi-Torquer® manual placing tool system offers a low-cost method of installing AVK's AT Series Nutsert® threaded inserts in low-volume production applications, or in the field to make modifications or repairs. The unique Hi-Torquer® incorporates a "Quick-Change" thread adaptation kit which now makes it possible to change over the base tool (tool body with "T" handle) to place different thread sizes without the need for any tools like allen wrenches or screw drivers. One manual tool body and handle may be used to set all sizes of AT Series Nutserts simply by using the appropriate thread conversion kit to change from one thread size to another.

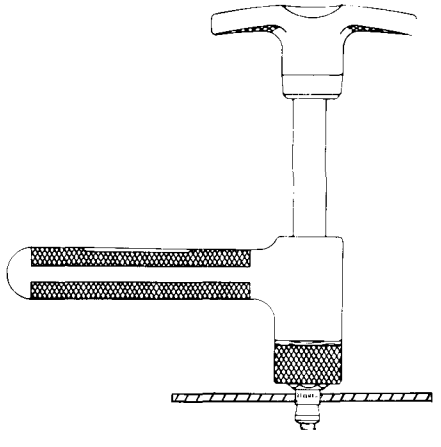
AA-112 TOOL



HI-TORQUER® BASE TOOL
Part Number AA-112



THREAD CONVERSION KITS
Part Numbers AAT-202-XXX



INSTALLATION

THREAD SIZE	Thread Conversion Kit Part Numbers	Replacement Placing Screws Socket Head Capscrew GR8 (Ref. Not. Avail. From AVK)
4-40	AAT-202-440	4-40 x 3/4" long
6-32	AAT-202-632	6-32 x 3/4" long
8-32	AAT-202-832	8-32 x 3/4" long
10-24	AAT-202-1024	10-24 x 7/8" long
10-32	AAT-202-1032	10-32 x 7/8" long
1/4-20	AAT-202-420	1/4-20 x 1.0" long
1/4-28	AAT-202-428	1/4-28 x 1.0" long
5/16-18	AAT-202-518	5/16-18 x 1¼" long
5/16-24	AAT-202-524	5/16-24 x 1¼" long
3/8-16	AAT-202-616	3/8-16 x 1¼" long
3/8-24	AAT-202-624	3/8-24 x 1¼" long
M3 x 0.5	AAT-202-350	M3, 20mm long
M4 x 0.7	AAT-202-470	M4, 20mm long
5M x 0.8	AAT-202-580	M5, 25mm long
M6 x 1.0	AAT-202-610	M6, 25mm long
M8 x 1.25	AAT-202-8125	M8, 30mm long
M10 x 1.5	AAT-202-1015	M10, 35mm long

ORDERING NOTE:

FOR ONE COMPLETE TOOL, ORDER 1 EACH AA-112 BASE TOOL AND APPROPRIATE AAT-202-XXX CONVERSION KIT. ADDITIONAL AAT-202-XXX THREAD CONVERSION KITS MAY BE PURCHASED SEPARATELY, WITHOUT NEED OF MORE AA-112 BASE TOOLS.

INSTALLATION INSTRUCTIONS

HI-TORQUER® MANUAL TOOLS:

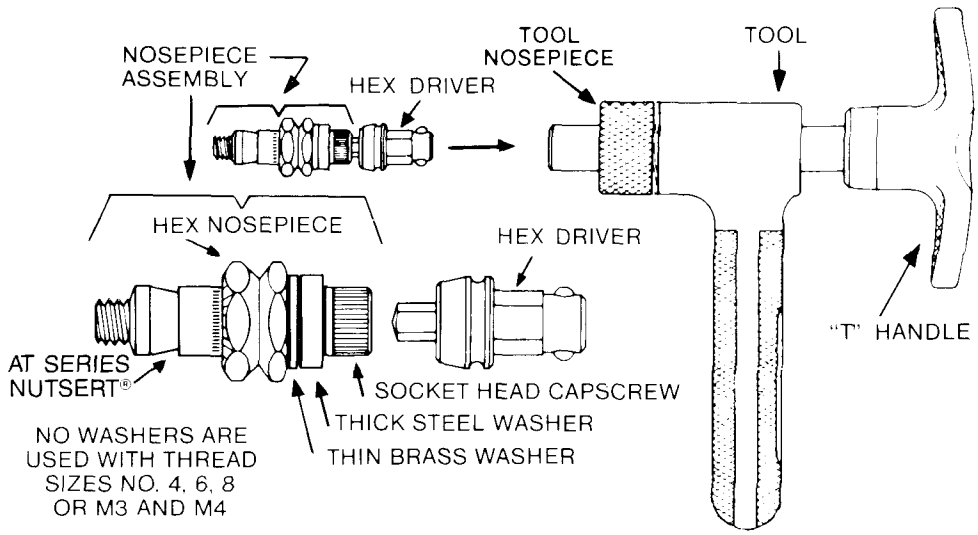
Screw an AT Series Nutsert® sleeveside first into the tool's placing screw. Hold the tool in one hand. Using the tool, insert the AT Series Nutsert® into a hole until the tool comes to rest against the parent material. Push in on the "T" handle and turn with the other hand until the AT Series Nutsert® is installed. Remove the tool by unscrewing the "T" handle out of the installed AT Series Nutsert® . A 1/4" socket wrench can be used to generate greater torque for placing the 3/8 or M10 size by pusing it into the 1/4" recess built into the top of the handle.

* Brass and steel washers are not used with thread sizes No. 4, 6, 8, and M 3 & 4.

Hi-Torquer® THREAD SIZE CHANGE-OVER INSTRUCTIONS

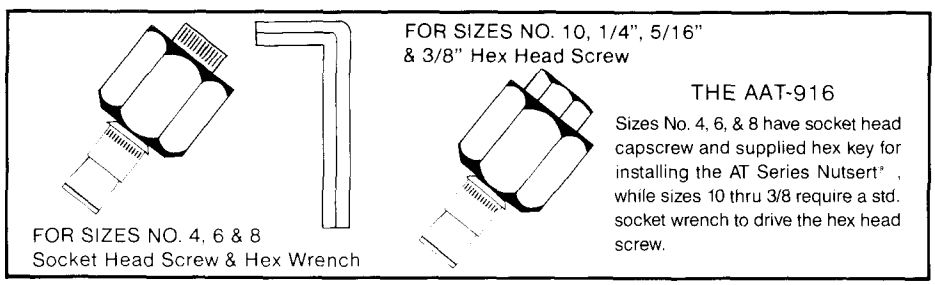
Insert the desired thread size conversion kit into the AT Series Nutsert® Hi-Torquer® manual installation tool following the instructions below:

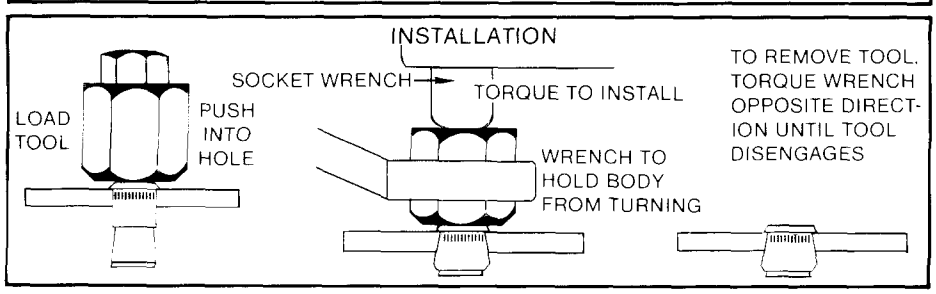
A. Screw an AT Series Nutsert® sleeveside first onto the socket head capscrew to hold the nosepiece assembly together as shown.
B. Rotate tool nosepiece to the "Open" position.
C. With handle through tool, put hex driver into handle, rotate while pushing.
D. Engage nosepiece assembly with hex driver as shown.
E. Push assembly into tool allowing "T" handle to slide through tool. Hex nosepiece should be flush with tool nosepiece.
F. Rotate tool nosepiece to the "Lock" position.



Hi-Torquer® SINGLE SIZE "EXPENDABLE" PLACING TOOLS

AVK's "916" single size placing tools offer an inexpensive means of installing small quantities of AT Series Nutserts in the field with low cost, expendable tools. Ideal to send out with a small bag of AT Series Nutserts for accessory installations, field modifications, or rework and repair. Each tool is individually packaged with instructions for use.





THREAD SIZE	PART NUMBER
4-40	AAT-916-440
6-32	AAT-916-632
8-32	AAT-916-832
10-24	AAT-916-1024
10-32	AAT-916-1032
1/4-20	AAT-916-420
1/4-28	AAT-916-428
5/16-18	AAT-916-518
5/16-24	AAT-916-524
3/8-16	AAT-916-616
3/8-24	AAT-916-624

PACKAGING OF HI-TORQUERS AND AT SERIES NUTSERTS®

Chances are that you may have a special requirement where you need a specific quantity of AT Series Nutserts packaged along with a Hi-Torquer® tool, like the "916"—or perhaps you want to ut out a permanent type kit with a production version "Professional" type installation tool, which would more specifically meet your requirements than our standards AAT-312 kits on the next page.

Whatever the situation, AVK would welcome the opportunity to quote your requirement. Naturally, there should be sufficient volume to warrant a special packaging project; and your local AVK sales representative will be glad to help discern that for you . . .

AT SERIES NUTSERT KNURLED THREADED INSERTS

PROTOTYPE & THREAD REPAIR KITS

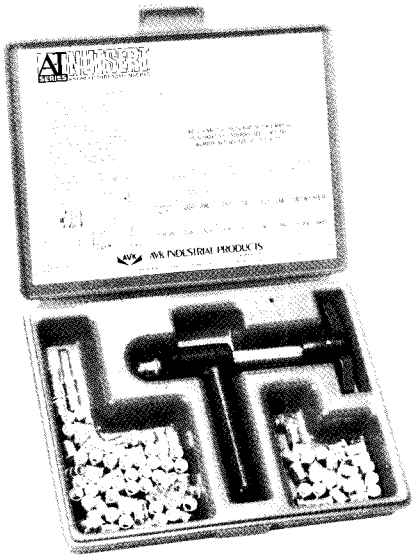
AVK's "Prototype and Thread Repair Kits" have been designed to be used to assemble your prototype units, to repair stripped or damaged threads or sheet metal screws or for test and experimental uses. The kits are packaged in rugged polyethylene cases ready for use under the most harsh conditions, in the plant or in the field.

MASTER ASSORTMENTS
Inch and Metrics

CONTAINS: Complete installation instructions, Hi-Torquer® manual installation tools, conversion kits and an assortment of AT Series Nutserts® as shown below:

Inch Series Part No. AAT-312-A	
50 pcs.	4-40
50 pcs.	6-32
50 pcs.	8-32
50 pcs.	10-32
50 pcs.	1/4-20
50 pcs.	5/16-18

Metric Series Part No. AAT-312-B	
50 pcs.	M3 x 0.5
50 pcs.	M4 x 0.7
50 pcs.	M5 x 0.8
50 pcs.	M6 x 1.0
50 pcs.	M8 x 1.25



SINGLE SIZE KITS
Inch and Metrics

CONTAINS: Complete installation instructions, a Hi-Torquer® manual tool set-up for the appropriate thread size, and one size AT Series Nutsert®.

THREAD SIZE	QTY. INSERTS	PART NO.
4-40	100	AAT-312-440
6-32	100	AAT-312-632
8-32	100	AAT-312-832
10-24	100	AAT-312-1024
10-32	100	AAT-312-1032
1/4-20	100	AAT-312-420
1/4-28	100	AAT-312-428
5/16-18	50	AAT-312-518
5/16-24	50	AAT-312-524

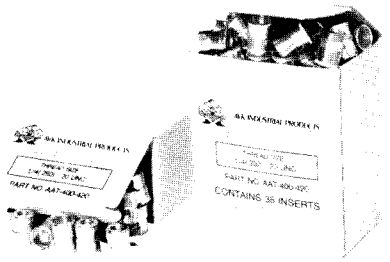
THREAD SIZE	QTY. INSERTS	PART NO.
3/8-16	50	AAT-312-616
3/8-24	50	AAT-312-624
M3 x 0.5	100	AAT-312-350
M4 x 0.7	100	AAT-312-470
M5 x 0.8	100	AAT-312-580
M6 x 1.0	100	AAT-312-610
M8 x 1.25	50	AAT-312-8125
M10 x 1.50	50	AAT-312-1015

PREPACKAGED AT SERIES NUTSERT® REFILL KITS

For replenishing the AT Series Nutsert® in the AAT-312 kits or for very small quantity purchases.

THREAD SIZE	QTY. INSERTS	PART NO.
4-40	50	AAT-400-440
6-32	50	AAT-400-632
8-32	50	AAT-400-832
10-24	50	AAT-400-1024
10-32	50	AAT-400-1032
1/4-20	35	AAT-400-420
1/4-28	35	AAT-400-428
5/16-18	25	AAT-400-518
5/16-24	25	AAT-400-524

THREAD SIZE	QTY. INSERTS	PART NO.
3/8-16	20	AAT-400-616
3/8-24	20	AAT-400-624
M3 x 0.5	50	AAT-400-350
M4 x 0.7	50	AAT-400-470
M5 x 0.8	50	AAT-400-580
M6 x 1.0	35	AAT-400-610
M8 x 1.25	25	AAT-400-8125
M10 x 1.5	20	AAT-400-1015



Ordering Note: 1 pc. of the above part no. = The number of inserts shown.

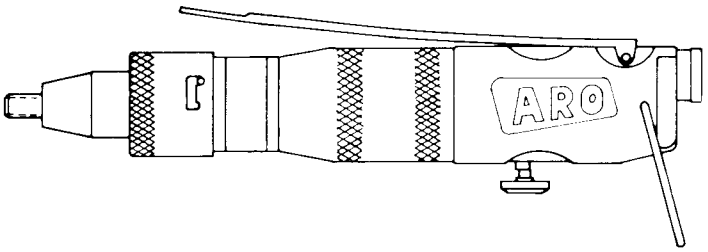
AT SERIES NUTSERT KNURLED THREADED INSERTS

POWER INSTALLATION TOOLS

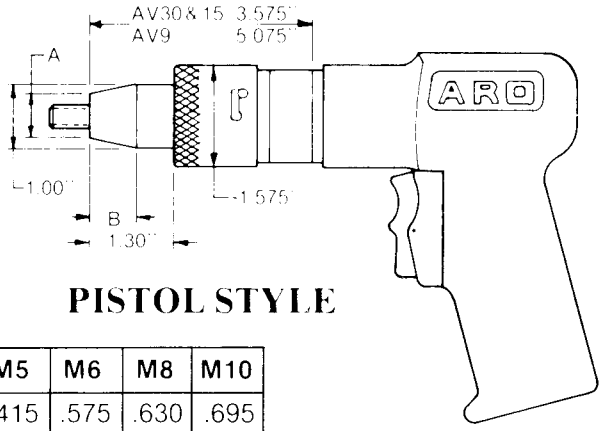
AVK's AT Series Nutsert® pneumatic placing equipment allows an operator to efficiently install the AT Series Nutsert® threaded inserts on the production line where high-volume output and assurance of proper fastener installation is desired.

★ FEATURES ★

- Both pistol grip and in-line styles available.
- Super fast "Quick-Change" front-end-no tools needed to change to another size or to change the drive screw or lube the bearing assembly.
- Uses standard length grade 8, socket head capscrews as the placing mandrels – easy to replace from your local distributor's stock.
- Lightweight, balanced and portable.
- Unique "Rocker Style Trigger" is a simple, easy-to-use design – positive forward – reverse at the touch of a finger.
- Uses roller bearings in the front end assy. to cut down on torque-eating friction.
- Works on a "stall" principle – no clutch!



LEVER STYLE



PISTOL STYLE

SIZE:	#4	#6	#8	#10	1/4"	5/16"	3/8"	M3	M4	M5	M6	M8	M10
A dim.	.350	.350	.380	.415	.575	.630	.695	.350	.380	.415	.575	.630	.695
B dim.	.930	.930	.930	.910	.515	.920	.795	.970	.970	.985	.645	.945	.795

Dimensions shown are typical of both tools. Dimensions are for reference only.

TOOL DESIRED TO SET: THREAD SIZE	AT SERIES NUTSERT® PART NO.	PISTOL STYLE TOOL NO. SET-UP, COMPLETE	LEVER STYLE TOOL NO. SET-UP, COMPLETE	P.S.I. SETTING REQ'D. STATIC	RPM
4-40 UNC	ATXX-440	NPT-30P-440	NPT-30L-440	36- 40 PSI	3000 RPM
M3 x 0.5	ATXX-350	NPT-30P-350	NPT-30L-350	36- 40 PSI	
6-32 UNC	ATXX-632	NPT-30P-632	NPT-30L-632	75- 80 PSI	
8-32 UNC	ATXX-832	NPT-30P-832	NPT-30L-832	85- 90 PSI	
M4 x 0.7	ATXX-470	NPT-30P-470	NPT-30L-470	85- 90 PSI	
10-24 UNC	ATXX-1024	NPT-15P-1024	NPT-15L-1024	85- 90 PSI	1500 RPM
10-32 UNF	ATXX-1032	NPT-15P-1032	NPT-15L-1032	85- 90 PSI	
M5 x 0.8	ATXX-580	NPT-15P-580	NPT-15L-580	85- 90 PSI	
1/4-20 UNC	ATXX-420	NPT-15P-420	NPT-15L-420	95-110 PSI	
1/4-28 UNF	ATXX-428	NPT-15P-428	NPT-15L-428	95-110 PSI	
M6 x 1.0	ATXX-610	NPT-15P-610	NPT-15L-610	95-110 PSI	
5/16-18 UNC	ATXX-518	NPT- 6P-518	NPT- 6L-518	95-110 PSI	600 RPM
5/16-24 UNF	ATXX-524	NPT- 6P-524	NPT- 6L-524	95-110 PSI	
M8 x 1.25	ATXX-8125	NPT- 6P-8125	NPT- 6L-8125	95-110 PSI	
3/8-16 UNC	ATXX-616	NPT- 6P-616	NPT- 6L-616	95-110 PSI	
3/8-24 UNF	ATXX-624	NPT- 6P-624	NPT- 6L-624	95-110 PSI	
M10 x 1.5	ATXX-1015	NPT- 6P-1015	NPT- 6L-1015	95-110 PSI	

FURTHER POWER TOOL INFORMATION

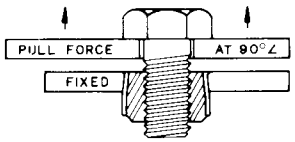
For more detailed information on AVK's power installation tools along with details on tool convertibility, set-up, maintenance and repair see: AVK'S AT SERIES NUTSERT® POWER INSTALLATION TOOLING CATALOG

ENGINEERING TEST DATA

The following test data information has been included in this catalog to provide the designer with a reference guide as to the approximate strengths of AVK's AT Series Nutsert® in various materials and thicknesses. The figures listed are averages of multiple tests. Hole sizes are based on AVK's "Hole Size vs. Material Thickness Chart", and AT Series Nutserts® were installed using standard AT Series Nutsert® power installation tools. It is recommended that this data be used only as a guide since different materials, tempers and variances in hole size will affect the strength. When an exact strength figure is required, or the load to be applied comes close to the published data, we recommend it be tested in your application to assure suitability.

PULL-OUT IN STEEL (CRS)

PULL-OUT

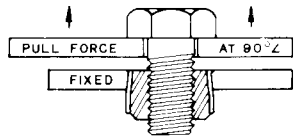


THREAD SIZE	PART NO.	THICKNESS							
		.0359	.0478	.0598	.1046	.1196	.1875	.250	.3125
4-40 unc	ATS2-440	139	228	359	383	406	446	385	369
6-32 unc	ATS2-632	158	267	421	466	483	527	461	408
8-32 unc	ATS2-832	181	289	456	676	721	858	474	430
10-32 unf	ATS2-1032	301	411	619	849	1113	1189	668	631
1/4-20 unc	ATS2-420	329	489	738	1003	1762	1959	896	787
5/16-18 unc	ATS2-518	368	524	823	1108	1999	2411	2696	2527
3/8-16 unc	ATS2-616	381	593	902	1251	2363	3258	3534	3588

ALL FIGURES IN POUNDS

PULL-OUT IN ALUMINUM (2024-T3)

PULL-OUT

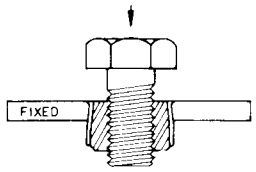


THREAD SIZE	PART NO.	THICKNESS							
		.032	.050	.063	.100	.125	.190	.250	.313
4-40 unc	ATS2-440	196	258	357	423	454	418	393	319
6-32 unc	ATS2-632	246	358	443	489	531	492	479	433
8-32 unc	ATS2-832	321	418	648	713	723	678	515	461
10-32 unf	ATS2-1032	313	458	713	955	998	1231	743	618
1/4-20 unc	ATS2-420	349	518	798	1530	1791	1815	941	798
5/16-18 unc	ATS2-518	382	565	1148	2051	2181	2664	2675	1555
3/8-16 unc	ATS2-616	391	621	1893	2844	2922	3309	3248	3288

ALL FIGURES IN POUNDS

PUSH-OUT

PUSH-OUT



THREAD SIZE	PART NO.	CR STEEL .1196 THK.	2024-T3 ALUM .125 THK.
4-40 unc	ATS2-440	319	304
6-32 unc	ATS2-632	336	315
8-32 unc	ATS2-832	379	339
10-32 unf	ATS2-1032	511	485
1/4-20 unc	ATS2-420	689	617
5/16-18 unc	ATS2-518	693	701
3/8-16 unc	ATS2-616	731	738

ALL FIGURES IN POUNDS

THERE ARE TWO TYPES OF PUSHOUT: **A.** The AT Series Nutsert® as an assembly will push out with enough applied force in very soft or very thin material where the structural integrity of the material itself allows for easy deformation. **B.** The threaded portion will separate from the sleeve in thicker, harder materials. The push-out tests shown are this case.

TORQUE RESISTANCE

When used as depicted on page 5 under design criteria "Recommended, the AT Series Nutsert® will not torque-out. The head of the bolt, up to a grade 8, will twist off before the insert spins. The key to this superior torque resistance is the axial knurl under the AT Series Nutsert's head (or flared flange) and the friction between the top of the flange and the underside of the material being fastened.