



AVK TEST DATA

The test data on this page is intended to provide the designer with approximate strength values in various materials and thicknesses. The figures shown are averages of multiple tests. AVK recommends that this data be used only as a guide since various application factors may affect AVK product performance. We recommend testing your application when an exact strength figure is required or the load to be applied comes close to the published data.

Unified (Inch) thread size data is provided in pounds (lbs.) for force and inch pounds (in-lbs.) for torque. Metric data is provided in kilonewtons (kN) for force and newton meters (Nm) for torque.



PULL-OUT is the force required to pull the AVK product from the parent material. The parent material is restrained by a hold down ring 3x the AVK part "D" dim.

PUSH-OUT is the force required to push the AVK product through the parent material. The parent material is supported by a hold down ring 3x the AVK part "D" dim.

SPIN-OUT is the torque required to turn the AVK product in the parent material after installation without influencing clamp load on the AVK product.

ASSEMBLY TORQUE is the amount of torque suggested for Grade 5 or Metric Class 8.8/9.8 mating hardware based on industry standards.

A-L, A-K, A-H, A-S Series product was tested with the -4 finish. R-N Series was Cadmium plated.

	THREAD SIZE	PULL-OUT								PUSH-OUT		SPIN-OUT*		ASSEMBLY TORQUE
		IN STEEL SHEET				IN ALUMINUM SHEET				IN STEEL		IN STEEL	IN ALUM	
		.030 in.	.062 in.	.090 in.	.125 in.	.030 in.	.062 in.	.090 in.	.125 in.	.125 in.		.062 in.	.062 in.	
		0,76 mm	1,57 mm	2,28 mm	3,17 mm	0,76 mm	1,57 mm	2,28 mm	3,17 mm	3,17 mm		1,57 mm	1,57 mm	
A-L / A-K SERIES	6-32	310	850	1570	1830	320	830	1450	1580					12
	8-32	310	850	1570	1830	320	830	1450	1580					22
	10-24	460	1020	1730	2670	440	1000	1700	2380					32
	10-32	460	1020	1730	2670	440	1000	1700	2380					36
	1/4-20	510	1270	2090	3250	490	1180	1920	3020					75
	5/16-18	520	1370	2380	3810	500	1350	2230	3670					156
	3/8-16	520	1370	2380	3810	500	1350	2230	3670					276
	1/2-13		2000	3040	4480		1830	2940	4350					660
	M4	1.4	3.8	7.0	8.1	1.4	3.7	6.5	7.0					2.5
	M5	2.0	4.5	7.7	11.9	2.0	4.5	7.6	10.6					5.0
	M6	2.3	5.7	9.3	14.5	2.2	5.3	8.5	13.4					8.6
	M8	2.3	6.1	10.6	17.0	2.2	6.0	9.9	16.3					21.0
	M10	2.3	6.1	10.6	17.0	2.2	6.0	9.9	16.3					42.0
	M12		8.9	13.5	19.9		8.1	13.1	19.4					72.0
A-H SERIES	6-32	270	660	990	860	270	660	830	840			40	40	12
	8-32	270	660	990	860	270	660	830	840			40	40	22
	10-24	420	990	1670	2520	380	880	1550	2050			80	70	32
	10-32	420	990	1670	2520	380	880	1550	2050			80	70	36
	1/4-20	460	1150	1780	2690	430	1530	2240	3210			130	90	75
	5/16-18	480	1110	1870	2280	460	1050	1680	2890			240	230	156
	3/8-16	480	1110	1870	2280	460	1050	1680	2890			240	230	276
	M4	1.2	2.9	4.4	3.8	1.2	2.9	3.7	3.7			4.5	4.5	2.5
	M5	1.9	4.4	7.4	11.2	1.7	3.9	6.9	9.1			9.0	7.9	5.0
	M6	2.0	5.1	7.9	12.0	1.9	6.8	10.0	14.3			14.7	10.2	8.6
	M8	2.1	4.9	8.3	10.1	2.0	4.7	7.5	12.9			27.1	25.5	21.0
	M10	2.1	4.9	8.3	10.1	2.0	4.7	7.5	12.9			27.1	25.5	42.0
A-S SERIES	6-32	310	850	1570	1830	320	830	1450	1580	630				12
	8-32	310	850	1570	1830	320	830	1450	1580	630				22
	10-24	460	1020	1730	2670	440	1000	1700	2380	580				32
	10-32	460	1020	1730	2670	440	1000	1700	2380	580				36
	1/4-20	510	1270	2090	3250	490	1180	1920	3020	880				75
	5/16-18	520	1370	2380	3810	500	1350	2230	3670	1140				156
	3/8-16	520	1370	2380	3810	500	1350	2230	3670	1160				276
	M4	1.4	3.8	7.0	8.1	1.4	3.7	6.5	4.4	2.7				2.5
	M5	2.0	4.5	7.7	11.9	2.0	4.5	7.6	10.6	2.5				5.0
	M6	2.3	5.7	9.3	14.5	2.2	5.3	8.5	13.4	3.8				8.6
	M8	2.3	6.1	10.6	17.0	2.2	6.0	9.9	16.3	5.0				21.0
	M10	2.3	6.1	10.6	17.0	2.2	6.0	9.9	16.3	5.1				42.0
R-N SERIES	1/4-20	350	860	1770		400	850	2100		2000		100	60	75
	5/16-18	580	1210	2010		540	1110	2244		2690		180	110	156
	3/8-16	630	1230	2050		590	1180	2110		3700		320	120	276
	1/2-13	620	1320	2240		780	1390	2643		3880		450	220	660
	M6	1.5	3.7	7.8		1.7	3.7	9.3		8.8		16.8	10.6	8.6
	M8	2.5	5.3	8.9		2.6	2.9	9.9		11.9		30.3	12.7	21.0
	M10	2.7	5.4	9.0		2.6	5.2	9.3		16.4		40.2	13.5	42.0
	M12	2.7	5.8	9.9		3.4	6.1	11.7		17.2		53.3	48.8	72.0

NOTE 1: Ultimate torque testing should be done using actual customer components and mating hardware due to plating/lubrication variables. AVK's fasteners have been designed to exceed the ultimate torque strength of the appropriate grade/class of mating hardware.

NOTE 2: For test data on other AVK products, contact an AVK Sales Representative.

*NOTE 3: R-N Series Spin-out. Test drop values are keyed steel rivet nuts tested in steel plates and keyed aluminum rivet nut tested in 2024-T4 aluminum plates.



TECHNICAL
DATA

DECIMAL EQUIVALENTS & DRILL SIZE CHART

DRILL SIZE	INCH (Dec.)	METRIC (mm)	DRILL SIZE	INCH (Dec.)	METRIC (mm)	DRILL SIZE	INCH (Dec.)	METRIC (mm)	DRILL SIZE	INCH (Dec.)	METRIC (mm)	DRILL SIZE	INCH (Dec.)	METRIC (mm)
80	.0135	.343	50	.0700	1,778	22	.1570	3,988	G	.2610	6,630	31/64	.4844	12,304
79	.0145	.368	49	.0730	1,854	21	.1590	4,039	17/64	.2656	6,746	1/2	.5000	12,700
1/64	.0156	.396	48	.0760	1,930	20	.1610	4,089	H	.2660	6,756	33/64	.5156	13,096
78	.0160	.406	5/64	.0781	1,984	19	.1660	4,216	I	.2720	6,909	17/32	.5312	13,492
77	.0180	.457	47	.0785	1,994	18	.1695	4,305	J	.2770	7,036	35/64	.5469	13,891
76	.0200	.508	46	.0810	2,057	11/64	.1719	4,366	K	.2810	7,137	9/16	.5625	14,288
75	.0210	.533	45	.0820	2,083	17	.1730	4,394	9/32	.2812	7,142	37/64	.5781	14,684
74	.0225	.572	44	.0860	2,184	16	.1770	4,496	L	.2900	7,366	19/32	.5938	15,083
73	.0240	.609	43	.0890	2,261	15	.1800	4,572	M	.2950	7,493	39/64	.6094	15,479
72	.0250	.635	42	.0935	2,375	14	.1820	4,623	19/64	.2969	7,541	5/8	.6250	15,875
71	.0260	.660	3/32	.0938	2,383	13	.1850	4,700	N	.3020	7,671	41/64	.6406	16,271
70	.0280	.711	41	.0960	2,438	3/16	.1875	4,763	5/16	.3125	7,938	21/32	.6562	16,667
69	.0292	.742	40	.0980	2,489	12	.1890	4,801	O	.3160	8,026	43/64	.6719	17,066
68	.0310	.787	39	.0995	2,527	11	.1910	4,851	P	.3230	8,204	11/16	.6875	17,463
1/32	.0312	.792	38	.1015	2,578	10	.1935	4,915	21/64	.3281	8,334	45/64	.7031	17,859
67	.0320	.813	37	.1040	2,642	9	.1960	4,978	Q	.3320	8,433	23/32	.7188	18,258
66	.0330	.838	36	.1065	2,705	8	.1990	5,055	R	.3390	8,611	47/64	.7344	18,654
65	.0350	.889	7/64	.1094	2,779	7	.2010	5,105	11/32	.3438	8,733	3/4	.7500	19,050
64	.0360	.914	35	.1100	2,794	13/64	.2031	5,159	S	.3480	8,839	49/64	.7656	19,446
63	.0370	.940	34	.1110	2,819	6	.2040	5,182	T	.3580	9,093	25/32	.7812	19,842
62	.0380	.965	33	.1130	2,870	5	.2055	5,220	23/64	.3594	9,129	51/64	.7969	20,241
61	.0390	.991	32	.1160	2,946	4	.2090	5,309	U	.3680	9,347	13/16	.8125	20,638
60	.0400	1,016	31	.1200	3,048	3	.2130	5,410	3/8	.3750	9,525	53/64	.8281	21,034
59	.0410	1,041	1/8	.1250	3,175	7/32	.2188	5,558	V	.3770	9,576	27/32	.8438	21,433
58	.0420	1,067	30	.1285	3,264	2	.2210	5,613	W	.3860	9,804	55/64	.8594	21,829
57	.0430	1,092	29	.1360	3,454	1	.2280	5,791	25/64	.3906	9,921	7/8	.8750	22,225
56	.0465	1,181	28	.1405	3,569	A	.2340	5,944	X	.3970	10,084	57/64	.8906	22,621
3/64	.0469	1,191	9/64	.1406	3,571	15/64	.2344	5,954	Y	.4040	10,262	29/32	.9062	23,017
55	.0520	1,321	27	.1440	3,658	B	.2380	6,045	13/32	.4062	10,317	59/64	.9219	23,416
54	.0550	1,397	26	.1470	3,734	C	.2420	6,147	Z	.4130	10,490	15/16	.9375	23,813
53	.0595	1,511	25	.1495	3,797	D	.2460	6,248	27/64	.4219	10,716	61/64	.9531	24,209
1/16	.0625	1,588	24	.1520	3,861	1/4	.2500	6,350	7/16	.4375	11,113	31/32	.9688	24,608
52	.0635	1,613	23	.1540	3,912	E	.2500	6,350	29/64	.4531	11,509	63/64	.9844	25,004
51	.0670	1,702	5/32	.1562	3,967	F	.2570	6,528	15/32	.4688	11,908	1	1.000	25,400

DECIMAL EQUIVALENT OF STANDARD GAUGE SHEET ALUMINUM & SHEET METAL

NO. OF GAUGE	GAUGE		NO. OF GAUGE	GAUGE		NO. OF GAUGE	GAUGE	
	ALUM (B&S)	STEEL (US STD.)		ALUM (B&S)	STEEL (US STD.)		ALUM (B&S)	STEEL (US STD.)
10	.1019	.1345	17	.0453	.0538	24	.0201	.0239
11	.0907	.1196	18	.0403	.0478	25	.0179	.0209
12	.0808	.1046	19	.0359	.0418	26	.0159	.0179
13	.0720	.0897	20	.0320	.0359	27	.0142	.0164
14	.0641	.0747	21	.0285	.0329	28	.0126	.0149
15	.0571	.0673	22	.0253	.0299	29	.0113	.0135
16	.0508	.0598	23	.0226	.0269	30	.0100	.0120

SUGGESTED ASSEMBLY TORQUE VALUES TO PRODUCE CORRESPONDING BOLT LOADS

THREAD SIZE	SAE GRADE 5 BOLTS		
	CLAMP LOAD	ASSY TORQUE - DRY	ASSY TORQUE - PLATED
#4-40	380 lbs.	8 in.- lbs.	6 in.- lbs.
#6-32	580 lbs.	16 in.- lbs.	12 in.- lbs.
#8-32	900 lbs.	30 in.- lbs.	22 in.- lbs.
#10-24	1120 lbs.	43 in.- lbs.	32 in.- lbs.
#10-32	1285 lbs.	49 in.- lbs.	36 in.- lbs.
1/4-20	2000 lbs.	96 in.- lbs.	75 in.- lbs.
1/4-28	2300 lbs.	120 in.- lbs.	86 in.- lbs.
5/16-18	3350 lbs.	204 in.- lbs.	156 in.- lbs.
5/16-24	3700 lbs.	228 in.- lbs.	168 in.- lbs.
3/8-16	4950 lbs.	360 in.- lbs.	276 in.- lbs.
3/8-24	5600 lbs.	420 in.- lbs.	300 in.- lbs.

METRIC CONVERSIONS

LINEAR	Multiply INCHES	by 25.4	to get MILLIMETERS (mm)	Multiply MILLIMETERS (mm)	by .03937	to get INCHES
	Multiply FEET	by 0.3048	to get METERS (m)	Multiply METERS (m)	by 3.281	to get FEET
	Multiply INCHES	by 2.54	to get CENTIMETERS (cm)	Multiply CENTIMETERS (cm)	by .3937	to get INCHES
TORQUE	Multiply INCH-POUNDS	by 0.11298	to get NEWTON-METERS (Nm)	Multiply NEWTON-METERS (Nm)	by 8.851	to get INCH-POUNDS
	Multiply FOOT-POUNDS	by 1.3558	to get NEWTON-METERS (Nm)	Multiply NEWTON-METERS (Nm)	by 0.7376	to get FOOT-POUNDS
FORCE	Multiply POUNDS	by .00445	to get KILONEWTONS (kN)	Multiply KILONEWTONS (kN)	by 224.72	to get PONDS
PRESSURE	Multiply PSI	by .069	to get BARS	Multiply BARS	by 14.5	to get PSI

TROUBLE SHOOTING

SYMPTOM	CHECK LIST
1. Tool does not operate.	Air lines clear? Tool inlet clear? Tool exhaust clear? Motor Lubrication?
2. Tool runs but stalls before product is installed.	Proper tool RPM for thread size being used? Adequate air pressure with tool running? TAK bearing in place and lubricated? Damaged mandrel? Wrong grip part?
3. Tool strips product threads.	Proper tool RPM for thread size being used? Too much air pressure? Has the mandrel worn too small?
4. Mandrels wear/break.	Is there too much air pressure? Is the tool being held perpendicular during installation?

PLATING CHART



AK, AL, AH, AS, AO, AT, AW, RN, EL, & EH SERIES PRODUCT FINISHES						
AVK#	TYPE	SPECIFICATION	THICKNESS	COLOR	WHITE CORROSION	RED CORROSION
1	Plain Finish	Plain with clear protective coating		Clear	No Req.	No Req.
2*	Cad Plate/Clear	AMS-QQ-P-416, TY I Class 3, clear and clear protective coating	.0002 min	Silver	No Req.	No Req.
3	Zinc	ASTM-B-633, Fe/Zn 8μ, with clear protective coating	.0003 min	Silver	12 hrs	No Req.
		AVK SPEC ESP-P-006	.0003 min	Silver	12 hrs	No Req.
3R	Zinc	ASTM-B-633, Fe/Zn 8μ	.0003 min	Silver	12 hrs	No Req.
		AVK SPEC ESP-P-006	.0003 min	Silver	12 hrs	No Req.
3T	Zinc Trivalent	ASTM-B-633, Fe/Zn 8μ, with clear protective coating	.0003 min	Silver	72 hrs	No Req.
		AVK SPEC ESP-P-003	.0003 min	Silver	120 hrs	384 hrs
4	Yellow Zinc	ASTM-B-633, Fe/Zn 8μ, with clear protective coating	.0005 min	Yellow	96 hrs	No Req.
4T	Yellow Zinc Trivalent	ASTM-B-633, Fe/Zn 8μ, with clear protective coating	.0003 min	Yellow	120 hrs	No Req.
		AVK SPEC ESP-P-002	.0003 min	Yellow	120 hrs	458 - 800 hrs
5*	Dull Tin	MIL-T-10727 TY I with clear protective coating	.0003 min	Gray	No Req.	24 hrs
6*	Silver Plate	QQ-S-365 TY III, Grade A with clear protective coating	.0003 min	Silver	96 hrs	No Req.
7	Cadmium	AMS-QQ-P-416 TY II, class 2 yellow dichromate with clear protective coating	.0003 min	Gold	96 hrs	No Req.
8	Chemical Film	MIL-C 5541 with clear protective coating	Film	No Color Specified	120 hrs	No Req.
9	Yellow Tin Zinc	BPS-TZ-327 8μ, with clear protective coating	.0003 min	Dull Gold	120 hrs	300 hrs
		AVK SPEC ESP-P-007	.0003 min	Dull Gold	120 hrs	300 hrs
9A	Yellow Tin Zinc	BPS-TZ-327 10μ, with clear protective coating	.0004 min	Dull Gold	120 hrs	400 hrs
		AVK SPEC ESP-P-007 (9A)	.0004 min	Dull Gold	120 hrs	400 hrs
9B	Yellow Tin Zinc	BPS-TZ-327 12μ, with clear protective coating	.0005 min	Dull Gold	120 hrs	500 hrs
		AVK SPEC ESP-P-007 (9B)	.0005 min	Dull Gold	120 hrs	500 hrs
9T*	Tin Zinc Trivalent	ESP-P-004 8μ, with clear protective coating	.0003 min	Silver	120 hrs	500 - 800 hrs
10	Zinc Nickel	BPS-TZ-427 8μ, with clear protective coating	.0003 min	Silver	240 hrs	1000 hrs

Note 1: All of these finishes may be applied to any of the products listed at the top of the above chart.

Note 2: *These finishes minus the clear protective coating can be applied to our AT and AW series products.

Note 3: AVK reserves the right to substitute Trivalent ("T") finishes as an alternative on orders placed under non ROHS compliant platings.

Example: ALS9T-420-165 may substitute ALS9-420-165

Note 4: All Trivalent plating meets or exceeds Hexavalent plating requirements.