



A-L SERIES INSERT PROFILE

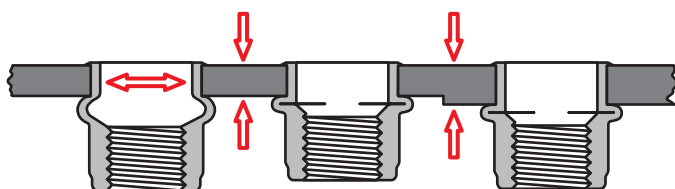
The **A-L Series Insert** features a knurled body and large diameter—low profile head making it ideal for use in punched or drilled holes. It offers the highest all around strength characteristics and has been designed to be used with Grade 5 or Metric 8.8/9.8 mating screws. The A-L Series is AVK's most versatile performer.

The A-L Series Insert can be installed using AVK's ARO brand pneumatic tools or AVK's SPP™ pneumatic/hydraulic tooling. These tools can be located at any position on your assembly line. The A-L Series can be installed either before or after finish.

SPINWALL TECHNOLOGY™

HOW HOLE FILL WORKS FOR YOU

As the A-L Series is installed, the knurled body expands 360° **FILLING THE HOLE**. This feature provides exceptional torque strength and vibration resistance.



The installation tool then continues to install the insert forming a backside flange even in multiple or variable thickness materials **WITHOUT ADJUSTMENT**.

DESIGN BENEFITS

- **EXCEPTIONAL TORQUE STRENGTH** is achieved as the insert's knurled body expands **FILLING THE HOLE**.
- **QUALITY INSTALLATIONS** even in variable thickness materials are assured by AVK's spin/spin ARO pneumatic tools and our pneumatic hydraulic SPP2 Tool™.
- **SUPERIOR THREAD STRENGTH** is provided due to our internal rolled thread manufacturing process.
- **THREADS GAUGE** before and after installation due to the increased cross-sectional thickness of the thread area. Thread dilation is prevented.
- **INVENTORY REDUCTION** is possible because of the A-L Series' wide grip range capacity. It is 2.5 times greater than conventional rivet nuts.
- **SUPERIOR CORROSION RESISTANCE** is provided by our standard zinc/yellow trivalent finish (120 hours. salt spray to white corrosion). For exceptional corrosion protection we offer a trivalent tin/zinc alloy finish.
- **AVAILABLE** in steel. Additional materials such as aluminum, brass and monel are available by special order. Contact an AVK Sales Representative.

ADDITIONAL DESIGN TYPES

CLOSED END

Thread area is enclosed eliminating leakage past the threads from either side of the application. See page 11.



SEALED HEAD

A PVC foam seal is bonded to the underside of the head and when installed provides a weather tight seal. (Also available in the closed end version.) See page 18 for important grip information.



WEDGE HEAD

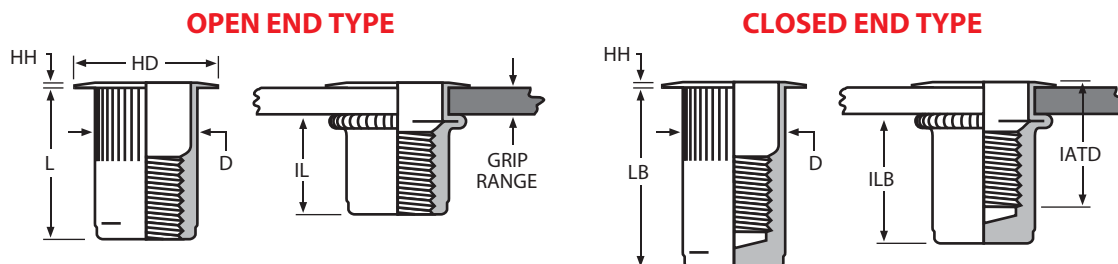
The addition of wedges under the head provides even greater torque capability, especially in soft or thin materials and is excellent for electrical grounding applications. Contact an AVK Sales Representative for details.



UNIFIED (INCH) AND METRIC THREAD SIZES



INSERT
KNURLED THREADED INSERTS



Thread Specifications: Unified 2B/21 per ASME B1.1
Metric 6H/21 per ASME B1.13M

THREAD SIZE	THREAD CALL OUT	GRIP RANGE	GRIP CALL OUT	HOLE SIZE +.006 / -.000	HD ±.010 ±.025*	HH ±.003	L ±.015	D MAX.	IL MAX.	LB MAX.	ILB MAX.	IATD** MAX.
6-32 UNC	632	.020 - .080	80	17/64 (.2656)	.390	.030	.420	.265	.305	.755	.640	.610
6-32 UNC	632	.080 - .130	130	17/64 (.2656)	.390	.030	.470	.265	.305	.755	.580	.670
8-32 UNC	832	.020 - .080	80	17/64 (.2656)	.390	.030	.420	.265	.305	.755	.640	.610
8-32 UNC	832	.080 - .130	130	17/64 (.2656)	.390	.030	.470	.265	.305	.755	.580	.670
10-24 UNC	1024	.020 - .130	130	19/64 (.2969)	.415	.030	.475	.296	.315	1.005	.845	.730
10-24 UNC	1024	.130 - .225	225	19/64 (.2969)	.415	.030	.585	.296	.315	1.005	.735	.840
10-32 UNF	1032	.020 - .130	130	19/64 (.2969)	.415	.030	.475	.296	.315	1.005	.845	.730
10-32 UNF	1032	.130 - .225	225	19/64 (.2969)	.415	.030	.585	.296	.315	1.005	.735	.840
1/4-20 UNC	420	.027 - .165	165	25/64 (.3906)	.500	.030	.580	.390	.380	1.205	1.005	.895
1/4-20 UNC	420	.165 - .260	260	25/64 (.3906)	.500	.030	.680	.390	.380	1.205	.905	1.035
5/16-18 UNC	518	.027 - .150	150	17/32 (.5312)	.685*	.035	.690	.530	.470	1.405	1.175	.995
5/16-18 UNC	518	.150 - .312	312	17/32 (.5312)	.685*	.035	.805	.530	.425	1.405	1.025	1.120
3/8-16 UNC	616	.027 - .150	150	17/32 (.5312)	.685*	.035	.690	.530	.470	1.405	1.175	.995
3/8-16 UNC	616	.150 - .312	312	17/32 (.5312)	.685*	.035	.805	.530	.425	1.405	1.025	1.120
1/2-13 UNC	813	.063 - .200	200	11/16 (.6875)	.865*	.047	1.150	.685	.850	2.380	2.070	1.505
1/2-13 UNC	813	.200 - .350	350	11/16 (.6875)	.865*	.047	1.300	.685	.850	2.380	1.920	1.505
1/2-13 UNC	813	.350 - .500	500	11/16 (.6875)	.865*	.047	1.450	.685	.860	2.380	1.770	1.505

THREAD SIZE	THREAD CALL OUT	GRIP RANGE	GRIP CALL OUT	HOLE SIZE +.015 / -.000	HD ±.025 ±.064*	HH ±.008	L ±.038	D MAX.	IL MAX.	LB MAX.	ILB MAX.	IATD** MAX.
M4 x 0,7 ISO	470	0,50 - 2,00	2.0	6,75	9,91	0,76	10,67	6,73	7,75	19,18	16,26	15,49
M4 x 0,7 ISO	470	2,00 - 3,30	3.3	6,75	9,91	0,76	11,94	6,73	7,75	19,18	14,73	17,02
M5 x 0,8 ISO	580	0,50 - 3,30	3.3	7,60	10,54	0,76	12,07	7,52	8,00	25,53	21,46	18,54
M5 x 0,8 ISO	580	3,30 - 5,70	5.7	7,60	10,54	0,76	14,86	7,52	8,00	25,53	18,67	21,34
M6 x 1,0 ISO	610	0,70 - 4,20	4.2	10,00	12,70	0,76	14,73	9,91	9,65	30,61	25,53	22,73
M6 x 1,0 ISO	610	4,20 - 6,60	6.6	10,00	12,70	0,76	17,27	9,91	9,65	30,61	22,99	26,29
M8 x 1,25 ISO	8125	0,70 - 3,80	3.8	13,50	17,40*	0,89	17,53	13,46	11,94	35,69	29,85	25,27
M8 x 1,25 ISO	8125	3,80 - 7,90	7.9	13,50	17,40*	0,89	20,45	13,46	10,80	35,69	26,04	28,45
M10 x 1,5 ISO	1015	0,70 - 3,80	3.8	13,50	17,40*	0,89	17,53	13,46	11,94	35,69	29,85	25,27
M10 x 1,5 ISO	1015	3,80 - 7,90	7.9	13,50	17,40*	0,89	20,45	13,46	10,80	35,69	26,04	28,45
M12 x 1,75 ISO	12175	1,60 - 5,10	5.1	17,45	21,97*	1,19	29,21	17,4	21,59	60,45	52,58	38,23
M12 x 1,75 ISO	12175	5,10 - 8,90	8.9	17,45	21,97*	1,19	33,02	17,4	21,59	60,45	48,77	38,23
M12 x 1,75 ISO	12175	8,90 - 12,7	12.7	17,45	21,97*	1,19	36,83	17,4	21,84	60,45	44,96	38,23

NOTE 1: Grip range can be affected by parent material density and actual hole size. AVK suggests trial installations to determine optimum grip.

NOTE 2: Additional UNF fine threads are available. Contact an AVK Sales Representative for details.

NOTE 3: Additional grip lengths are available. Contact an AVK Sales Representative for details. **Dimensions in minimum grip condition.

PART NUMBERING SYSTEM

SAMPLE NUMBER: ALS3T-420-165

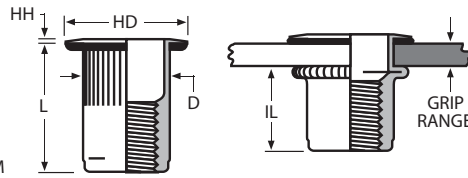
AL	()	()	-()	-()	()																																
PRODUCT SERIES	MATERIAL	FINISH	THREAD CALL OUT	GRIP CALL OUT	TYPE																																
	<table><tr><th>CALL OUT</th><th>GRADE</th></tr><tr><td>S</td><td>Steel 1010/1008</td></tr><tr><td>A</td><td>Aluminum 5056</td></tr><tr><td>B</td><td>Brass 270/260</td></tr><tr><td>M</td><td>Monel 400</td></tr><tr><td>C</td><td>CRES 302</td></tr></table>	CALL OUT	GRADE	S	Steel 1010/1008	A	Aluminum 5056	B	Brass 270/260	M	Monel 400	C	CRES 302	<table><tr><th>CALL OUT</th><th>SPECIFICATION</th></tr><tr><td>3T</td><td>ZINC TRIVALENT PER ASTM-B-633, FE/ZN .0003 (8μ) WITH CLEAR PROTECTIVE COATING</td></tr><tr><td>4T</td><td>YELLOW ZINC TRIVALENT PER ASTM-B-633, FE/ZN .0003 (8μ) WITH CLEAR PROTECTIVE COATING</td></tr><tr><td>9T</td><td>TIN ZINC TRIVALENT PER ESP-P-004, .0003 (8μ) WITH CLEAR PROTECTIVE COATING</td></tr><tr><td colspan="2">Note: For Additional Plating See Chart on Page 46</td></tr></table>	CALL OUT	SPECIFICATION	3T	ZINC TRIVALENT PER ASTM-B-633, FE/ZN .0003 (8μ) WITH CLEAR PROTECTIVE COATING	4T	YELLOW ZINC TRIVALENT PER ASTM-B-633, FE/ZN .0003 (8μ) WITH CLEAR PROTECTIVE COATING	9T	TIN ZINC TRIVALENT PER ESP-P-004, .0003 (8μ) WITH CLEAR PROTECTIVE COATING	Note: For Additional Plating See Chart on Page 46				<table><tr><th>CALL OUT</th><th>TYPE</th></tr><tr><td>BLANK</td><td>Open End</td></tr><tr><td>B</td><td>Closed End</td></tr><tr><td>S</td><td>Sealed (See Pg.18)</td></tr><tr><td>W</td><td>Wedge Head</td></tr></table>	CALL OUT	TYPE	BLANK	Open End	B	Closed End	S	Sealed (See Pg.18)	W	Wedge Head
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For air tool selection see pages 30 and 31

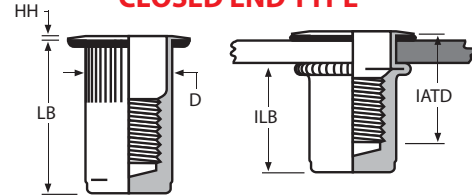
A-L SERIES SEALED HEAD INSERT PROFILE

The **A-L Series Sealed Head Insert** provides all the features of the standard A-L Series Insert plus the addition of a PVC foam seal that is bonded to the underside head of the insert. This feature provides a weather resistant seal that will withstand 50 PSI - 3.4 BARS of pressure.

OPEN END TYPE



CLOSED END TYPE



Thread Specifications:

Unified 2B/21 per ASME B1.1
Metric 6H/21 per ASME B1.13M

UNIFIED (INCH) AND METRIC THREAD SIZES

THREAD SIZE	THREAD CALL OUT	GRIP RANGE	GRIP CALL OUT	HOLE SIZE +.006 / -.000	HD ±.010 ±.025*	HH ±.003	L ±.015	D MAX.	IL MAX.	LB MAX.	ILB MAX.	IATD** MAX.
6-32 UNC	632	.020 - .060	80	17/64 (.2656)	.390	.030	.420	.265	.305	.755	.640	.610
6-32 UNC	632	.060 - .100	130	17/64 (.2656)	.390	.030	.470	.265	.305	.755	.580	.670
8-32 UNC	832	.020 - .060	80	17/64 (.2656)	.390	.030	.420	.265	.305	.755	.640	.610
8-32 UNC	832	.060 - .100	130	17/64 (.2656)	.390	.030	.470	.265	.305	.755	.580	.670
10-24 UNC	1024	.020 - .100	130	19/64 (.2969)	.415	.030	.475	.296	.315	1.005	.845	.730
10-24 UNC	1024	.100 - .175	225	19/64 (.2969)	.415	.030	.585	.296	.315	1.005	.735	.840
10-32 UNF	1032	.020 - .100	130	19/64 (.2969)	.415	.030	.475	.296	.315	1.005	.845	.730
10-32 UNF	1032	.100 - .175	225	19/64 (.2969)	.415	.030	.585	.296	.315	1.005	.735	.840
1/4-20 UNC	420	.027 - .125	165	25/64 (.3906)	.500	.030	.580	.390	.380	1.205	1.005	.895
1/4-20 UNC	420	.125 - .195	260	25/64 (.3906)	.500	.030	.680	.390	.380	1.205	.905	1.035
5/16-18 UNC	518	.027 - .115	150	17/32 (.5312)	.685*	.035	.690	.530	.470	1.405	1.175	.995
5/16-18 UNC	518	.130 - .250	312	17/32 (.5312)	.685*	.035	.805	.530	.425	1.405	1.025	1.120
3/8-16 UNC	616	.027 - .115	150	17/32 (.5312)	.685*	.035	.690	.530	.470	1.405	1.175	.995
3/8-16 UNC	616	.130 - .250	312	17/32 (.5312)	.685*	.035	.805	.530	.425	1.405	1.025	1.120
1/2-13 UNC	813	.063 - .150	200	11/16 (.6875)	.865*	.047	1.150	.685	.850	2.380	2.070	1.505
1/2-13 UNC	813	.150 - .280	350	11/16 (.6875)	.865*	.047	1.300	.685	.850	2.380	1.920	1.505
1/2-13 UNC	813	.280 - .400	500	11/16 (.6875)	.865*	.047	1.450	.685	.860	2.380	1.770	1.505

THREAD SIZE	THREAD CALL OUT	GRIP RANGE	GRIP CALL OUT	HOLE SIZE +.015 / -.000	HD ±.025 ±.064*	HH ±.008	L ±.038	D MAX.	IL MAX.	LB MAX.	ILB MAX.	IATD** MAX.
M4 x 0,7 ISO	470	0,50 - 1,52	2.0	6,75	9,91	0,76	10,67	6,73	7,75	19,18	16,26	15,49
M4 x 0,7 ISO	470	1,52 - 2,54	3.3	6,75	9,91	0,76	11,94	6,73	7,75	19,18	14,73	17,02
M5 x 0,8 ISO	580	0,50 - 2,54	3.3	7,60	10,54	0,76	12,07	7,52	8,00	25,53	21,46	18,54
M5 x 0,8 ISO	580	2,54 - 4,45	5.7	7,60	10,54	0,76	14,86	7,52	8,00	25,53	18,67	21,34
M6 x 1,0 ISO	610	0,70 - 3,17	4.2	10,00	12,70	0,76	14,73	9,91	9,65	30,61	25,53	22,73
M6 x 1,0 ISO	610	3,17 - 4,95	6.6	10,00	12,70	0,76	17,27	9,91	9,65	30,61	22,99	26,29
M8 x 1,25 ISO	8125	0,70 - 2,92	3.8	13,50	17,40*	0,89	17,53	13,46	11,94	35,69	29,85	25,27
M8 x 1,25 ISO	8125	3,30 - 6,35	7.9	13,50	17,40*	0,89	20,45	13,46	10,80	35,69	26,04	28,45
M10 x 1,5 ISO	1015	0,70 - 2,92	3.8	13,50	17,40*	0,89	17,53	13,46	11,94	35,69	29,85	25,27
M10 x 1,5 ISO	1015	3,30 - 6,35	7.9	13,50	17,40*	0,89	20,45	13,46	10,80	35,69	26,04	28,45
M12 x 1,75 ISO	12175	1,60 - 3,81	5.1	17,45	21,97*	1,19	29,21	17,4	21,59	60,45	52,58	38,23
M12 x 1,75 ISO	12175	3,81 - 7,11	8.9	17,45	21,97*	1,19	33,02	17,4	21,59	60,45	48,77	38,23
M12 x 1,75 ISO	12175	7,11 - 10,16	12.7	17,45	21,97*	1,19	36,83	17,4	21,84	60,45	44,96	38,23

NOTE 1: Grip range can be affected by parent material density and actual hole size. AVK suggests trial installations to determine optimum grip.

NOTE 2: Additional UNF fine threads are available. Contact an AVK Sales Representative for details.

NOTE 3: The A-L Series shown on this page incorporates an under head seal which reduces the standard grip range of the part based on the seal thickness. The grip call out remains based on the standard part for part numbering simplicity.

NOTE 4: The PVC foam seal is not recommended for use with petroleum based liquids. **Dimensions in minimum grip condition.

PART NUMBERING SYSTEM

SAMPLE NUMBER: ALS3T-420-165S

AL	()	()	-()	-()	()
PRODUCT SERIES	MATERIAL	FINISH	THREAD CALL OUT	GRIP CALL OUT	TYPE
CALL OUT	GRADE	CALL OUT	SPECIFICATION		CALL OUT
S	Steel 1010/1008	3T	ZINC TRIVALENT PER ASTM-B-633, FE/ZN .0003 (8µ) WITH CLEAR PROTECTIVE COATING		BLANK
A	Aluminum 5056	4T	YELLOW ZINC TRIVALENT PER ASTM-B-633, FE/ZN .0003 (8µ) WITH CLEAR PROTECTIVE COATING		B
B	Brass 270/260	9T	TIN ZINC TRIVALENT PER ESP-P-004, .0003 (8µ) WITH CLEAR PROTECTIVE COATING		S
M	Monel 400	Note: For Additional Plating See Chart on Page 46			W
C	CRES 302				Wedge Head

For air tool selection see pages 30 and 31