Howmet Fastening Systems
Carson Operations
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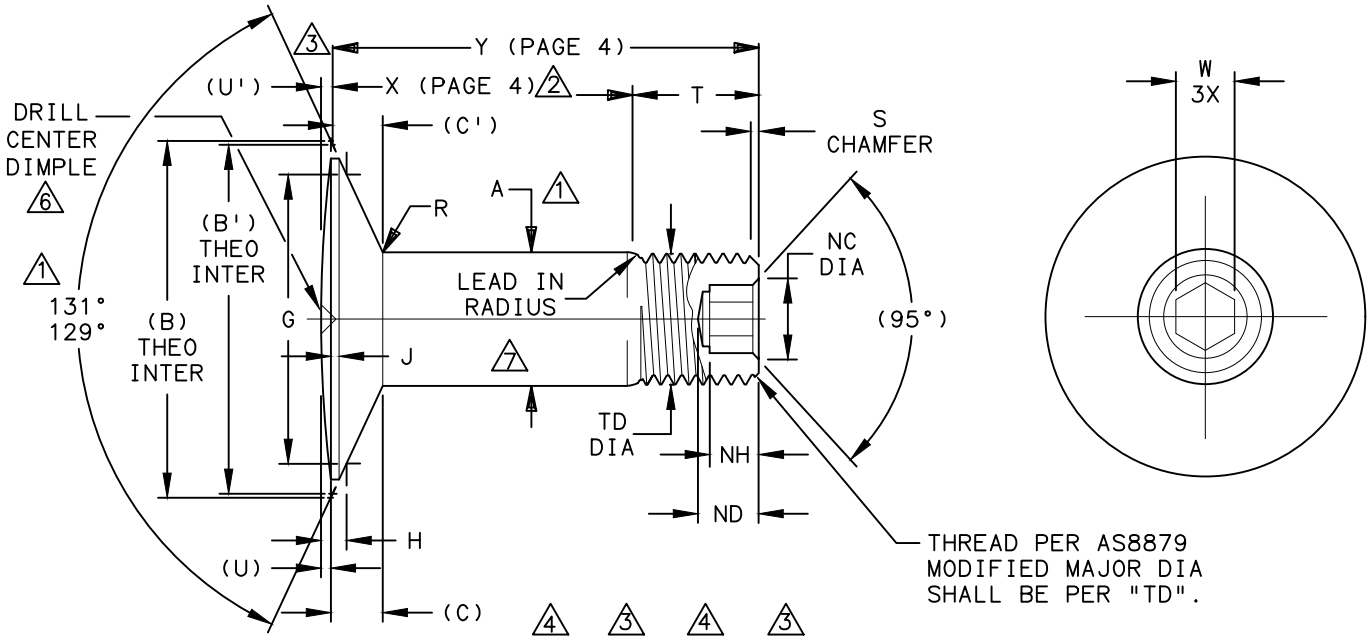
AERO-LITE®
ENGINEERING STANDARD



AL PIN FAMILY NUMBER	NOM SIZE	THREAD (MODIFIED)	A SHANK DIA BARE +.0005 -.0000	A SHANK DIA COATED ±.0005	(B) THEO INTER NOM	(B') THEO INTER NOM	(C) HEAD HEIGHT NOM	(C') HEAD HEIGHT NOM	G GAGE DIA ±.0001	H GAGE HEIGHT	J MAX	NC CHAMFER DIA	ND DRILL DEPTH MAX	NH HEX DEPTH	R RAD ±.005
AL315()-5-()	.1640	.1640-32 UNJC-3A	.1630	.1630	.3352	.3271	.0402	.0383	.2559	.0264 .0236	.012	.104 .094	.135	.100 .080	.020
AL315()-6-()	.1900	.1900-32 UNJF-3A	.1890	.1890	.3869	.3813	.0461	.0448	.2981	.0258 .0226	.015	.119 .104	.135	.100 .080	.025
AL315()-8-()	.2500	.2500-28 UNJF-3A	.2490	.2490	.5070	.5020	.0601	.0590	.4049	.0302 .0264	.015	.142 .122	.160	.110 .090	.025
AL315()-10-()	.3125	.3125-24 UNJF-3A	.3115	.3115	.5995	.5946	.0672	.0660	.4790	.0352 .0310	.015	.180 .160	.200	.130 .110	.035
AL315()-12-()	.3750	.3750-24 UNJF-3A	.3740	.3740	.7048	.6996	.0771	.0759	.5941	.0343 .0293	.015	.217 .197	.235	.160 .140	.035
AL315()-14-()	.4375	.4375-20 UNJF-3A	.4365	.4365	.8472	.8412	.0958	.0944	.7241	.0379 .0325	.020	.253 .233	.275	.190 .170	.045

AL PIN FAMILY NUMBER	NOM SIZE	S CHAMFER	T REF	TD DIA	(U)	(U')	W HEX 3X	DOUBLE SHEAR LBS MIN	TENSION LBS MIN
AL315()-5-()	.1640	1/32"	.280	.1595 .1570	.0065	.0081	.0806 .0791	4010	1650
AL315()-6-()	.1900	1/32"	.290	.1840 .1810	.0035	.0046	.0806 .0791	5380	2000
AL315()-8-()	.2500	1/32"	.320	.2440 .2410	.0045	.0058	.0967 .0947	9300	3700
AL315()-10-()	.3125	3/64"	.380	.3060 .3020	.0050	.0065	.1295 .1270	14600	5000
AL315()-12-()	.3750	3/64"	.420	.3680 .3640	.0060	.0078	.1617 .1582	21000	7200
AL315()-14-()	.4375	3/64"	.485	.4310 .4260	.0065	.0081	.1930 .1895	28600	10000

DIMENSIONS IN INCHES AFTER FINISH

PROCUREMENT SPECIFICATION: C380

DRAWN BY	DH
CHECKED BY	MM

FSCM (Cage Code) 17446 - Carson

A13	REMOVE HI-KOTE I AND KAL-GARD 2242 FROM PAGE 2. (REF. ECR 2906)

ISSUED	09/03/96
REVISED	09/12/2022
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PIN, AERO-LITE® LIGHTWEIGHT
130° CROWN COUNTERSUNK SHEAR HEAD
FOR COMPOSITE APPLICATIONS.
6AL-4V TITANIUM.(95 KSI SHEAR)

AL315()-()-()

AL106

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1. CONCENTRICITY: CONICAL SURFACE OF COUNTERSUNK HEAD TO "A" SHANK DIAMETER TO BE WITHIN .005 TIR.
2. GRIP LENGTH IS MEASURED FROM THE THEORETICAL INTERSECTION OF THE CROWN HEAD RADIUS AND HEAD ANGLE TO THE MAXIMUM GRIP PLANE. TRANSITION AREA AND THREAD FORM WILL ALLOW MATING COLLAR TO ACHIEVE MINIMUM GRIP CONDITION WITHOUT INTERFERENCE. (SEE DESIGN GRIP RANGE AND DIMENSION "X" PAGE 4).
3. DIMENSIONS B', C', U', X AND Y ARE MEASURED FROM THE THEORETICAL INTERSECTION OF THE CROWN RADIUS AND HEAD ANGLE.
4. DIMENSION B, C AND U ARE MEASURED FROM THE TOP OF "J" LAND.
5. DIMENSIONS B, B', C, C', U AND U' ARE FOR ENGINEERING REFERENCE ONLY AND ARE NOT TO BE USED FOR INSPECTION PURPOSES.
6. DRILL CENTER DIMPLE IN TOP OF HEAD .035 MAX DIA., .010 MAX DEPTH AND CONCENTRIC TO A WITHIN .008.
7. MAXIMUM "A" DIAMETER MAY BE INCREASED BY .0002 TO ALLOW FOR DRY FILM LUBE (SUFFIX "RS" FINISH ONLY).

MATERIAL: 6AL-4V TITANIUM ALLOY PER AMS4967 OR AMS4928.
MINIMUM SHEAR STRENGTH: 95 KSI.
SURFACE TEXTURE: Ra MAX PER ANSI-B46.1 BEFORE COATING. BEARING SURFACE OF HEAD, HEAD TO SHANK FILLET RADIUS, SHANK AND LEAD-IN RADIUS, -32, OTHER SURFACES -125.

FINISH: SUFFIX "AG" = ALUMINUM COATING PER NAS4006 WITH ORANGE COLOR ON THREAD END PLUS CETYL ALCOHOL LUBE PER MIL-L-87132.

SUFFIX "AP" = ALUMINUM COATING PER NAS4006 PLUS CETYL ALCOHOL LUBE PER MIL-L-87132.

SUFFIX "BJ" = ION VAPOR DEPOSITED ALUMINUM COATING PER MIL-C-83488, TYPE II, CLASS 3 PLUS CETYL ALCOHOL LUBE PER MIL-L-87132.

SUFFIX "BL" = ION VAPOR DEPOSITED ALUMINUM COATING PER MIL-C-83488 TYPE II LUBE CLASS 3 WITH BLACK COLOR ON THREAD END PLUS CETYL ALCOHOL LUBE PER MIL-L-87132. A13

SUFFIX "GM" = ALUMINUM COATING PER NAS4006 ON THREADS (NO OVERSPRAY ON SHANK) AND TOP OF HEAD (.005 MAX OVERSPRAY ON BEARING SURFACE) ONLY WITH WHITE COLOR ON THREAD END PLUS CETYL ALCOHOL LUBE PER AS87132.

SUFFIX "HY" = ALUMINUM COATING PER NAS4006 WITH ORANGE COLOR ON THREAD END PLUS APPLY SEALANT UNDER HEAD PER BMS 5-95 AND CETYL ALCOHOL LUBE PER MIL-L-87132.

SUFFIX "RS" = PHOSPHATE FLUORIDE TREAT PER AMS2486 AND DRY FILM LUBE PER AS5272 WITH ORANGE COLOR ON THREAD END.

SUFFIX "SU" = ALUMINUM COATING PER NAS4006 WITH LIGHT BLUE COLOR ON THREAD END PLUS CETYL ALCOHOL LUBE PER MIL-L-87132.

SUFFIX "WF" = SULFURIC ACID ANODIZE (BLUE) PER ISO 8080 WITH BLACK COLOR ON THREAD END PLUS CETYL ALCOHOL LUBE PER MIL-L-87132.

NO LETTER = UNCOATED PIN PLUS CETYL ALCOHOL LUBE PER MIL-L-87132.

A13	REMOVE HI-KOTE I AND KAL-GARD 2242 FROM PAGE 2. (REF. ECR 2906)		
ISSUED	09/03/96	PIN, AERO-LITE® LIGHTWEIGHT 130° CROWN COUNTERSUNK SHEAR HEAD, FOR COMPOSITE APPLICATIONS. 6AL-4V TITANIUM.(95 KSI SHEAR)	AL315( )-( )-( )
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HEAD MARKING: HEADS SHALL BE MARKED WITH THE MANUFACTURER'S SYMBOL,THE BASIC NUMBER (AL315) AND DASH NUMBER DESIGNATING DIAMETER, DEPRESSED .006 MAX DEPTH ARRANGEMENT OPTIONAL.

CODING: THE FIRST SET OF LETTERS DESIGNATE THE FAMILY OF LIGHTWEIGHT AERO-LITE® PINS FOR AEROSPACE APPLICATIONS.

THE NEXT SET OF NUMBERS DESIGNATE HEAD SIZE, STYLE, MATERIAL AND LOAD APPLICATION (315).

THE NEXT SET OF LETTERS DESIGNATE FINISH (SEE FINISH CODE FOR SUFFIX INFORMATION).

THE FOLLOWING NUMBERS DESIGNATE THE NOMINAL PIN SHANK DIAMETER IN .03125 INCH INCREMENTS.

THE FINAL NUMBERS DESIGNATE THE GRIP LENGTH NUMBER OR THE NOMINAL PIN SHANK LENGTH IN .0625 INCH INCREMENTS.

EXAMPLE: AL315()-10-6

- AL315()-10-6
  - GRIP LENGTH IN .0625 INCH INCREMENTS.
  - SHANK DIA IN .03125 INCH INCREMENTS.
  - FINISH SUFFIX (SEE FINISH CODE).
  - TITANIUM 130° CROWN COUNTERSUNK SHEAR HEAD FOR COMPOSITE APPLICATIONS.
  - AL FAMILY OF AERO-LITE® LIGHTWEIGHT PINS FOR AEROSPACE APPLICATIONS.

DIMENSIONS IN INCHES
AFTER FINISH

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HOWMET AEROSPACE

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GRIP NUMBER TABULATION

GRIP DASH NO. (2)	DESIGN GRIP RANGE (2) MIN	DESIGN GRIP RANGE (2) MAX	X ±.005	05 Y ±.010	06 Y ±.010	08 Y ±.010	10 Y ±.010	12 Y ±.010	14 Y ±.010
2	.063	.125	.125	.405	.415	—	—	—	—
3	.126	.188	.188	.468	.478	.508	.568	—	—
4	.189	.250	.250	.530	.540	.570	.630	.670	.735
5	.251	.312	.312	.592	.602	.632	.692	.732	.797
6	.313	.375	.375	.655	.665	.695	.755	.795	.860
7	.376	.438	.438	.718	.728	.758	.818	.858	.923
8	.439	.500	.500	.780	.790	.820	.880	.920	.985
9	.501	.562	.562	.842	.852	.882	.942	.982	1.047
10	.563	.625	.625	.905	.915	.945	1.005	1.045	1.110
11	.626	.688	.688	.968	.978	1.008	1.068	1.108	1.173
12	.689	.750	.750	1.030	1.040	1.070	1.130	1.170	1.235
13	.751	.812	.812	1.092	1.102	1.132	1.192	1.232	1.297
14	.813	.875	.875	1.155	1.165	1.195	1.255	1.295	1.360
15	.876	.938	.938	1.218	1.228	1.258	1.318	1.358	1.423
16	.939	1.000	1.000	1.280	1.290	1.320	1.380	1.420	1.485
17	1.001	1.062	1.062	1.342	1.352	1.382	1.442	1.482	1.547
18	1.063	1.125	1.125	1.405	1.415	1.445	1.505	1.545	1.610
19	1.126	1.188	1.188	1.468	1.478	1.508	1.568	1.608	1.673
20	1.189	1.250	1.250	1.530	1.540	1.570	1.630	1.670	1.735
21	1.251	1.312	1.312	1.592	1.602	1.632	1.692	1.732	1.797
22	1.313	1.375	1.375	1.655	1.665	1.695	1.755	1.795	1.860
23	1.376	1.438	1.438	1.718	1.728	1.758	1.818	1.858	1.923
24	1.439	1.500	1.500	1.780	1.790	1.820	1.880	1.920	1.985
25	1.501	1.562	1.562	1.842	1.852	1.882	1.942	1.982	2.047
26	1.563	1.625	1.625	1.905	1.915	1.945	2.005	2.045	2.110
27	1.626	1.688	1.688	1.968	1.978	2.008	2.068	2.108	2.173
28	1.689	1.750	1.750	2.030	2.040	2.070	2.130	2.170	2.235
29	1.751	1.812	1.812	2.092	2.102	2.132	2.192	2.232	2.297
30	1.813	1.875	1.875	2.155	2.165	2.195	2.255	2.295	2.360
31	1.876	1.938	1.938	2.218	2.228	2.258	2.318	2.358	2.423
32	1.939	2.000	2.000	2.280	2.290	2.320	2.380	2.420	2.485

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