

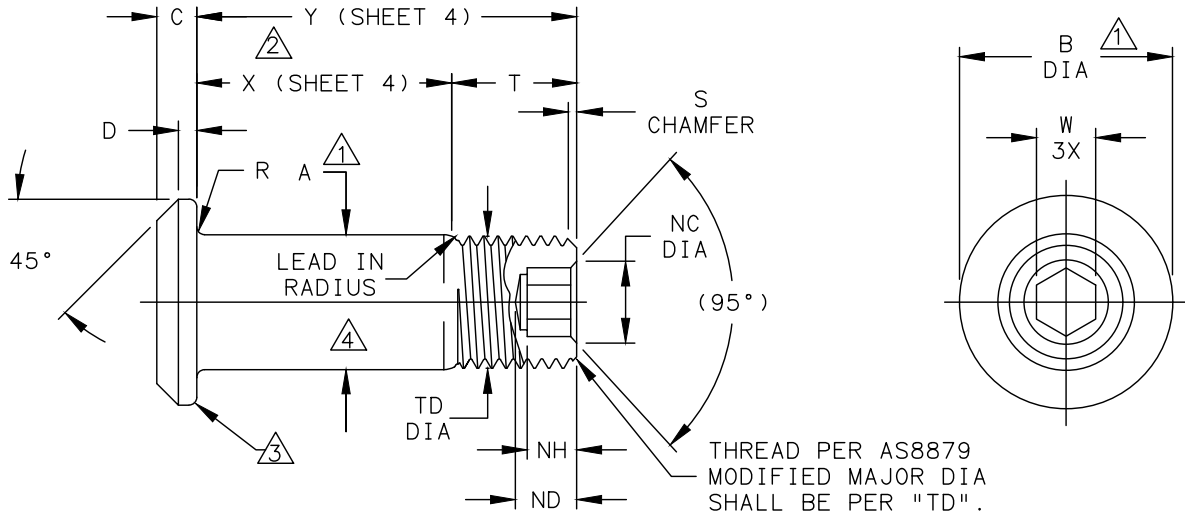


HOWMET AEROSPACE

Howmet Fastening Systems
Carson Operations
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HFS\_Carson\_Engineering@howmet.com

AERO-LITE®
ENGINEERING STANDARD



THREAD PER AS8879
MODIFIED MAJOR DIA
SHALL BE PER "TD".

Table with 18 columns: AL PIN FAMILY NUMBER, NOM SIZE, THREAD (MODIFIED), A SHANK DIA BARE, A SHANK DIA COATED, B HEAD DIA, C HEAD HEIGHT, D REF, NC CHAMFER DIA, ND DRILL DEPTH MAX, NH HEX DEPTH, R RAD ±.005, S CHAMFER, T REF, TD DIA, W HEX 3X, DOUBLE SHEAR LBS MIN, TENSION LBS MIN. Rows include specifications for sizes .1640 to 1.0000.

- 1 CONCENTRICITY: "B" HEAD DIAMETER TO "A" SHANK DIAMETER TO BE WITHIN .010 TIR.
2 GRIP LENGTH IS MEASURED FROM THE UNDERSIDE OF THE HEAD TO THE MAXIMUM GRIP PLANE.
3 PERMISSIBLE NATURAL FLOW OF MATERIAL. MUST BE FREE FROM SHARP CORNERS.
4 MAXIMUM "A" DIAMETER MAY BE INCREASED BY .0002 TO ALLOW FOR DRY FILM LUBE

DIMENSIONS IN INCHES AFTER FINISH

PROCUREMENT SPECIFICATION: C380
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Table with columns: DRAWN BY, DH, CHECKED BY, MM, FSCM (Cage Code) 17446 - Carson

Table with columns: D, ECR 3040 - ADDED FINISH CODE "GM", ISSUED, REVISED, PAGE, PIN, AERO-LITE® LIGHTWEIGHT PROTRUDING SHEAR HEAD, 6AL-4V TITANIUM, AL 10/108()-(-)-(-), AL 101

THIS DRAWING, THE STRUCTURAL DESIGN DISCLOSED THEREIN AND THE TECHNICAL DATA AND ENGINEERING SERVICE REPRESENTED THEREBY ARE THE EXCLUSIVE PROPERTY OF HUCK INTERNATIONAL INCORPORATED.



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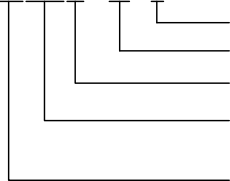
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MATERIAL: 6AL-4V TITANIUM ALLOY PER AMS4967 OR AMS4928.  
MINIMUM SHEAR STRENGTH: 95 KSI (05Ø THRU 24Ø)  
89 KSI (28Ø THRU 32Ø).  
SURFACE TEXTURE: Ra MAX PER ANSI-B46.1 BEFORE COATING. BEARING SURFACE OF HEAD,  
HEAD TO SHANK FILLET RADIUS, SHANK AND LEAD-IN RADIUS, -32,  
OTHER SURFACES -125.

HEAD MARKING: HEADS SHALL BE MARKED WITH THE MANUFACTURER'S SYMBOL, THE BASIC  
NUMBER (AL10 OR AL108) 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 (AL).  
THE NEXT SET OF NUMBERS DESIGNATE HEAD SIZE, STYLE, MATERIAL AND LOAD  
APPLICATION. THE NUMBER (108) DESIGNATES OVERSIZE HEX  
SOCKET (ONLY VALID FOR 5/32 DIAMETER).  
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: AL108()-10-6



GRIP LENGTH IN .0625 INCH INCREMENTS.  
SHANK DIA IN .03125 INCH INCREMENTS.  
FINISH SUFFIX (SEE FINISH CODE).  
TITANIUM PROTRUDING HEAD FOR SHEAR APPLICATIONS,  
WITH OVERSIZE HEX SOCKET.  
AL FAMILY OF AERO-LITE® LIGHTWEIGHT  
PINS FOR AEROSPACE APPLICATIONS.

D		ECR 3040 - ADDED FINISH CODE "GM", ADDED NOTES 5 & 6 TO CLARIFY COVERAGE REQUIREMENTS FOR "GD" AND "GM" FINISHES.		
ISSUED	08/07/95	PIN, AERO-LITE® LIGHTWEIGHT PROTRUDING SHEAR HEAD, 6AL-4V TITANIUM		AL10/108()-()-()
REVISED	03/31/2023			
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- FINISH: SUFFIX "AG" = ALUMINUM COATING PER NAS4006 WITH ORANGE COLOR ON THREAD END PLUS CETYL ALCOHOL LUBE PER AS87132.
- SUFFIX "AP" = ALUMINUM COATING PER NAS4006 PLUS CETYL ALCOHOL LUBE PER AS87132.
- SUFFIX "BJ" = ION VAPOR DEPOSITED ALUMINUM COATING PER MIL-C-83488, TYPE II, CLASS 3 PLUS CETYL ALCOHOL LUBE PER AS87132.
- SUFFIX "BL" = ION VAPOR DEPOSITED ALUMINUM COATING PER MIL-C-83488 TYPE II, CLASS 3 WITH BLACK COLOR ON THREAD END PLUS CETYL ALCOHOL LUBE PER AS87132.
- SUFFIX "GD" = ALUMINUM COATING PER NAS4006 ON THREADS ONLY PLUS CETYL ALCOHOL LUBE PER AS87132.  $\triangle_5$
- SUFFIX "GM" = ALUMINUM COATING PER NAS4006 ON THREADS AND TOP OF HEAD ONLY WITH WHITE COLOR ON THREAD END PLUS CETYL LUBE PER AS87132.  $\triangle_5 \triangle_6$
- SUFFIX "RP" = PHOSPHATE FLUORIDE TREAT PER AMS2486 WITH ORANGE COLOR ON THREAD END PLUS CETYL ALCOHOL LUBE PER AS871322.
- 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 AS87132.
- SUFFIX "WF" = SULFURIC ACID ANODIZE (BLUE) PER ISO 8080 WITH BLACK COLOR ON THREAD END PLUS CETYL ALCOHOL LUBE PER AS87132.
- NO LETTER = UNCOATED PIN PLUS CETYL ALCOHOL LUBE PER AS87132.

$\triangle_5$  NO OVERSPRAY ON SHANK DIAMETER "A". INCOMPLETE COVERAGE ON THREADS PERMITTED UP TO .030 MAX INTO THREADS FROM "X".

$\triangle_6$  OVERSPRAY ON BEARING SURFACE OF HEAD PERMITTED UP TO .005 MAXIMUM.

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ISSUED	08/07/95	PIN, AERO-LITE® LIGHTWEIGHT PROTRUDING SHEAR HEAD, 6AL-4V TITANIUM		
REVISED	03/31/2023			AL 10/108()-()-()
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GRIP NUMBER TABULATION															
GRIP DASH NO.	DESIGN GRIP RANGE		X ±.005	05	06	08	10	12	14	16	18	20	24	28	32
	MIN.	MAX.		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
				±.010	±.010	±.010	±.010	±.010	±.010	±.010	±.010	±.010	±.010	±.010	±.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	.837	.912	-	-	-	-
6	.313	.375	.375	.655	.665	.695	.755	.795	.860	.900	.975	1.035	1.270	-	-
7	.376	.438	.438	.718	.728	.758	.818	.858	.923	.963	1.038	1.098	1.333	1.438	1.598
8	.439	.500	.500	.780	.790	.820	.880	.920	.985	1.025	1.100	1.160	1.395	1.500	1.660
9	.501	.562	.562	.842	.852	.882	.942	.982	1.047	1.087	1.162	1.222	1.457	1.562	1.722
10	.563	.625	.625	.905	.915	.945	1.005	1.045	1.110	1.150	1.225	1.285	1.520	1.625	1.785
11	.626	.688	.688	.968	.978	1.008	1.068	1.108	1.173	1.213	1.288	1.348	1.583	1.688	1.848
12	.689	.750	.750	1.030	1.040	1.070	1.130	1.170	1.235	1.275	1.350	1.410	1.645	1.750	1.910
13	.751	.812	.812	1.092	1.102	1.132	1.192	1.232	1.297	1.337	1.412	1.472	1.707	1.812	1.972
14	.813	.875	.875	1.155	1.165	1.195	1.255	1.295	1.360	1.400	1.475	1.535	1.770	1.875	2.035
15	.876	.938	.938	1.218	1.228	1.258	1.318	1.358	1.423	1.463	1.538	1.598	1.833	1.938	2.098
16	.939	1.000	1.000	1.280	1.290	1.320	1.380	1.420	1.485	1.525	1.600	1.660	1.895	2.000	2.160
17	1.001	1.062	1.062	1.342	1.352	1.382	1.442	1.482	1.547	1.587	1.662	1.722	1.957	2.062	2.222
18	1.063	1.125	1.125	1.405	1.415	1.445	1.505	1.545	1.610	1.650	1.725	1.785	2.020	2.125	2.285
19	1.126	1.188	1.188	1.468	1.478	1.508	1.568	1.608	1.673	1.713	1.788	1.848	2.083	2.188	2.348
20	1.189	1.250	1.250	1.530	1.540	1.570	1.630	1.670	1.735	1.775	1.850	1.910	2.145	2.250	2.410
21	1.251	1.312	1.312	1.592	1.602	1.632	1.692	1.732	1.797	1.837	1.912	1.972	2.207	2.312	2.472
22	1.313	1.375	1.375	1.655	1.665	1.695	1.755	1.795	1.860	1.900	1.975	2.035	2.270	2.375	2.535
23	1.376	1.438	1.438	1.718	1.728	1.758	1.818	1.858	1.923	1.963	2.038	2.098	2.333	2.438	2.598
24	1.439	1.500	1.500	1.780	1.790	1.820	1.880	1.920	1.985	2.025	2.100	2.160	2.395	2.500	2.660
25	1.501	1.562	1.562	1.842	1.852	1.882	1.942	1.982	2.047	2.087	2.162	2.222	2.457	2.562	2.722
26	1.563	1.625	1.625	1.905	1.915	1.945	2.005	2.045	2.110	2.150	2.225	2.285	2.520	2.625	2.785
27	1.626	1.688	1.688	1.968	1.978	2.008	2.068	2.108	2.173	2.213	2.288	2.348	2.583	2.688	2.848
28	1.689	1.750	1.750	2.030	2.040	2.070	2.130	2.170	2.235	2.275	2.350	2.410	2.645	2.750	2.910
29	1.751	1.812	1.812	2.092	2.102	2.132	2.192	2.232	2.297	2.337	2.412	2.472	2.707	2.812	2.972
30	1.813	1.875	1.875	2.155	2.165	2.195	2.255	2.295	2.360	2.400	2.475	2.535	2.770	2.875	3.035
31	1.876	1.938	1.938	2.218	2.228	2.258	2.318	2.358	2.423	2.463	2.538	2.598	2.833	2.938	3.098
32	1.939	2.000	2.000	2.280	2.290	2.320	2.380	2.420	2.485	2.525	2.600	2.660	2.895	3.000	3.160

DIMENSIONS IN INCHES  
AFTER FINISH

**D** ECR 3040 - ADDED FINISH CODE "GM", ADDED NOTES 5 & 6 TO CLARIFY COVERAGE REQUIREMENTS FOR "GD" AND "GM" FINISHES.

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REVISED 03/31/2023  
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PIN, AERO-LITE® LIGHTWEIGHT  
PROTRUDING SHEAR HEAD,  
6AL-4V TITANIUM

AL10/108()-(-)-(-)  
AL101