



**HOWMET
AEROSPACE**

Howmet Fastening Systems
Carson Operations
900 E. Watson Center Road
Carson, California 90745 U.S.A.

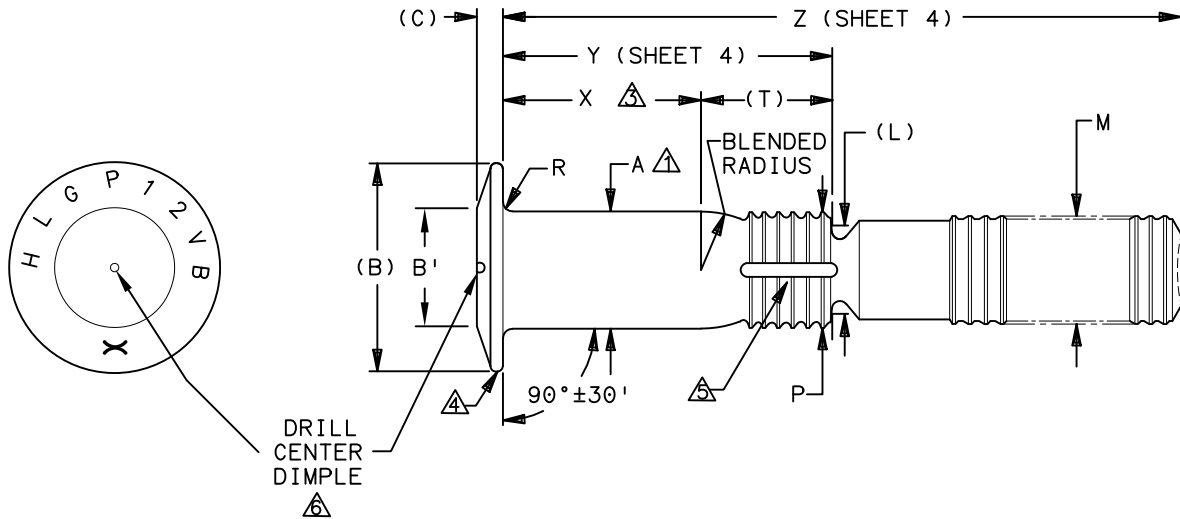
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LGP®
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**ENGINEERING
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LGP PIN FAMILY NUMBER	NOM SIZE	A SHANK DIA +.0005 -.0000	A SHANK DIA COATED ±.0005	(B) HEAD DIA ±.005	B' FLAT DIA ±.010	(C) HEAD HEIGHT ±.005	(L) REF	M MAX	P DIA MAX	R RAD ±.005	S △	(T) REF
(H)LGPL12SPV05B() ()	.1640	.1630	.1630	.329	.237	.060	.126	.156	.156	.020	.0045	.175
(H)LGPL12SPV06B() ()	.1900	.1890	.1890	.372	.268	.069	.150	.184	.184	.020	.0045	.176
(H)LGPL12SPV08B() ()	.2500	.2490	.2490	.472	.345	.085	.187	.244	.244	.020	.0045	.244
(H)LGPL12SPV10B() ()	.3125	.3115	.3115	.594	.400	.107	.244	.306	.306	.035	.0045	.313
(H)LGPL12SPV12B() ()	.3750	.3740	.3740	.710	.513	.135	.298	.370	.370	.035	.0060	.374
(H)LGPL12SPV14B() ()	.4375	.4365	.4365	.844	.599	.155	.312	.431	.431	.035	.0060	.437
(H)LGPL12SPV16B() ()	.5000	.4990	.4990	.965	.688	.183	.375	.492	.492	.035	.0060	.503

- △ CONCENTRICITY: CONICAL SURFACE OF PROTRUDING HEAD TO "A" DIAMETER TO BE WITHIN .005 TIR.
- △ SHANK STRAIGHTNESS: WITHIN "S" VALUES TIR PER INCH OF SHANK LENGTH.
- △ DIMENSIONS X, Y AND Z ARE MEASURED FROM THE UNDERSIDE OF THE HEAD. DIM. X IS MEASURED TO THE END OF THE FULL CYLINDRICAL PORTION OF THE SHANK.
- △ PERMISSIBLE NATURAL FLOW OF MATERIAL. MUST BE FREE FROM SHARP CORNERS.
- △ SEALANT ESCAPE GROOVE (SEE PAGE 2).
- △ DRILL CENTER DIMPLE IN TOP OF HEAD .035 MAX DIA, .010 MAX DEPTH AND CONCENTRIC TO "A" WITHIN .008.

DIMENSIONS IN INCHES

PROCUREMENT SPECIFICATION: C2022
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FSCM (Cage Code) 17446 - Carson
FSCM (Cage Code) F6167 - France

B₇ REVISED COMPANY LOGO & UPDATED TRADEMARK INFORMATION. (REF. ECR2872)

ISSUED	12/10/87	PIN, COMPOSITE APPLICATIONS, LIGHTWEIGHT HUCKCOMP LGP, SHEAR TYPE, PROTRUDING HEAD, SWAGE LOCKING, 6AL-4V TITANIUM. (95 KSI SHEAR)	(H)LGPL12SPV()B() ()
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B₇



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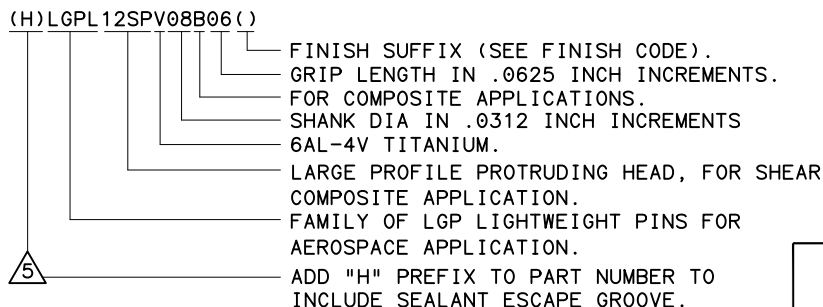
MATERIAL: 6AL-4V TITANIUM ALLOY PER AMS4967.
 MINIMUM SHEAR STRENGTH: 95 KSI.
 SURFACE TEXTURE: Ra MAX PER ANSI-B46.1 BEFORE COATING. CONICAL SURFACE OF HEAD, HEAD TO SHANK FILLET RADIUS, SHANK AND TRANSITION RADIUS, -32, OTHER SURFACES -125.

FINISH: SUFFIX "AC" = ALUMINUM COAT (KALGARD 2242 OR HI-KOTE 1) PER NAS4006, OPTIONAL ON PINTAIL END, PLUS CETYL ALCOHOL LUBE PER MIL-L-87132.
 SUFFIX "AD" = ALUMINUM COAT (KALGARD 2245) PER NAS4006, OPTIONAL TO COLOR PINTAIL END WHITE, PLUS CETYL ALCOHOL LUBE PER MIL-L-87132.
 SUFFIX "AS" = SULPHURIC ACID ANODIZE (BLUE) PER ISO 8080 PLUS CETYL ALCOHOL LUBE PER MIL-L-87132.
 SUFFIX "B" = UNCOATED PIN AND NO LUBRICATION.
 SUFFIX "D" = ION VAPOR DEPOSITED ALUMINUM COATING PER MIL-C-83488 TYPE II CLASS 3. OPTIONAL TO COLOR PINTAIL END BLACK, PLUS CETYL ALCOHOL LUBE PER MIL-L-87132.
 SUFFIX "EP" = PHOSPHATE FLOURIDE TREAT PER AMS2486.
 SUFFIX "EPR" = PHOSPHATE FLOURIDE PER BAC5861, WITH RED IDENTIFICATION DYE ON PINTAIL END. PLUS CETYL ALCOHOL LUBE PER MIL-L-87132.
 SUFFIX "PB" = POWDER BLAST TOP SURFACE OF HEAD PLUS CETYL ALCOHOL LUBE PER MIL-L-87132 (Ra 50/80 SURFACE ROUGHNESS).
 NO LETTER = UNCOATED PIN PLUS CETYL ALCOHOL LUBE PER MIL-L-87132.

HEAD MARKING: HEAD SHALL BE MARKED WITH THE MANUFACTURER'S SYMBOL, THE BASIC NUMBER (LGP12) AND VB DEPRESSED .006 MAX DEPTH ARRANGEMENT OPTIONAL, FOR PINS REQUIRING A SEALANT ESCAPE GROOVE "H" WILL ON THE HEAD IDENTIFICATON

CODING: THE FIRST SET OF LETTERS DESIGNATE THE FAMILY OF LIGHTWEIGHT GP PINS FOR SHEAR APPLICATION (LGPL).
 THE SECOND SET OF LETTERS & NUMBER 12SP DESIGNATE HEAD SIZE, STYLE, AND LOAD APPLICATION.
 THE NEXT LETTER "V", IS THE MATERIAL DESIGNATOR FOR 6AL-4V TITANIUM ALLOY, MIN SHEAR STRENGTH: 95 KSI.
 THE NUMBERS FOLLOWING THE MATERIAL DESIGNATE THE NOMINAL PIN SHANK DIAMETER IN .0312 INCH INCREMENTS.
 THE LETTER B REPRESENTS A COMPOSITE APPLICATION LOAD.
 THE FINAL NUMBER(S) DESIGNATES THE GRIP LENGTH NUMBER OR THE NOMINAL PIN SHANK LENGTH IN .0625 INCH INCREMENTS.
 SEE FINISH CODE FOR SUFFIX INFORMATION.

PART NUMBER
 EXAMPLE: (H)LGPL12SPV08B06()



DIMENSIONS IN INCHES

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ISSUED	12/10/87	PIN, COMPOSITE APPLICATIONS, LIGHTWEIGHT HUCKCOMP LGP, SHEAR TYPE, PROTRUDING HEAD, SWAGE LOCKING, 6AL-4V TITANIUM. (95 KSI SHEAR)	(H)LGPL12SPV()B()()
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MECHANICAL PROPERTIES						
LGP PIN PART NUMBER	PIN NOM SIZE	MINIMUM DOUBLE SHEAR POUNDS	COLLAR PART NUMBER	MIN ULTIMATE TENSILE LBS WITH LISTED COLLAR	PIN POSITION SWAGE GAGE	STANDARD COMPOSITE APPLICATIONS
(H)LGPL12SPV05B(())	.1640	4010	SLFC-MV05	1500	HG118-05	
(H)LGPL12SPV06B(())	.1900	5380	SLFC-MV06	1900	HG118-06	
(H)LGPL12SPV08B(())	.2500	9300	SLFC-MV08	3450	HG118-08	
(H)LGPL12SPV10B(())	.3125	14600	SLFC-MV10	6000	HG118-10	
(H)LGPL12SPV12B(())	.3750	21000	SLFC-MV12	8000	HG118-12	
(H)LGPL12SPV14B(())	.4375	28600	SLFC-MV14	12100	HG118-14	
(H)LGPL12SPV16B(())	.5000	37300	SLFC-MV16	15300	HG118-16	

MECHANICAL PROPERTIES						
LGP PIN PART NUMBER	PIN NOM SIZE	MINIMUM DOUBLE SHEAR POUNDS	COLLAR PART NUMBER	MIN ULTIMATE TENSILE LBS WITH LISTED COLLAR	PIN POSITION SWAGE GAGE	OPTIONAL COMPOSITE/METALLIC APPLICATIONS
(H)LGPL12SPV05B(())	.1640	4010	3SLC-C05	1400	HG131-05	
(H)LGPL12SPV06B(())	.1900	5380	3SLC-C06	1600	HG131-06	
(H)LGPL12SPV08B(())	.2500	9300	3SLC-C08	3000	HG131-08	
(H)LGPL12SPV10B(())	.3125	14600	3SLC-C10	5000	HG131-10	
(H)LGPL12SPV12B(())	.3750	21000	3SLC-C12	7000	HG131-12	
(H)LGPL12SPV14B(())	.4375	28600	3SLC-C14	9500	HG131-14	
(H)LGPL12SPV16B(())	.5000	37300	3SLC-C16	12500	HG131-16	

DIMENSIONS IN INCHES

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GRIP NUMBER TABULATION

GRIP DASH NO.	PERMIS- SIBLE MINIMUM GRIP OVERLAP	DESIGN GRIP RANGE		PERMIS- SIBLE MAXIMUM GRIP OVERLAP	X ±.005	05		06		08		10		12		14		16			
		MIN	MAX			Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
						±.010	+ .060 - .000	±.010	+ .060 - .000	±.010	+ .060 - .000	±.010	+ .060 - .000	±.010	+ .060 - .000	±.010	+ .060 - .000	±.010	+ .060 - .000	±.010	+ .060 - .000
02	.047	.063	.125	.141	.125	.300	.827	.301	.899	—	—	—	—	—	—	—	—	—	—		
03	.109	.126	.188	.203	.188	.363	.890	.364	.962	.432	1.085	.501	1.199	—	—	—	—	—	—		
04	.172	.189	.250	.266	.250	.425	.952	.426	1.024	.494	1.147	.563	1.261	.624	1.391	.687	1.559	.753	1.715		
05	.234	.251	.312	.328	.312	.487	1.014	.488	1.086	.556	1.209	.625	1.323	.686	1.453	.749	1.621	.815	1.777		
06	.297	.313	.375	.391	.375	.550	1.077	.551	1.149	.619	1.272	.688	1.386	.749	1.516	.812	1.684	.878	1.840		
07	.359	.376	.438	.453	.438	.613	1.140	.614	1.212	.682	1.335	.751	1.449	.812	1.579	.875	1.747	.941	1.903		
08	.422	.439	.500	.516	.500	.675	1.202	.676	1.274	.744	1.397	.813	1.511	.874	1.641	.937	1.809	1.003	1.965		
09	.484	.501	.562	.578	.562	.737	1.264	.738	1.336	.806	1.459	.875	1.573	.936	1.703	.999	1.871	1.065	2.027		
10	.547	.563	.625	.641	.625	.800	1.327	.801	1.399	.869	1.522	.938	1.636	.999	1.766	1.062	1.934	1.128	2.090		
11	.609	.626	.688	.703	.688	.863	1.390	.864	1.462	.932	1.585	1.001	1.699	1.062	1.829	1.125	1.997	1.191	2.153		
12	.672	.689	.750	.766	.750	.925	1.452	.926	1.524	.994	1.647	1.063	1.761	1.124	1.891	1.187	2.059	1.253	2.215		
13	.734	.751	.812	.828	.812	.987	1.514	.988	1.586	1.056	1.709	1.125	1.823	1.186	1.953	1.249	2.121	1.315	2.277		
14	.797	.813	.875	.891	.875	1.050	1.577	1.051	1.649	1.119	1.772	1.188	1.886	1.249	2.016	1.312	2.184	1.378	2.340		
15	.859	.876	.938	.953	.938	1.113	1.640	1.114	1.712	1.182	1.835	1.251	1.949	1.312	2.079	1.375	2.247	1.441	2.403		
16	.922	.939	1.000	1.016	1.000	1.175	1.702	1.176	1.774	1.244	1.897	1.313	2.011	1.374	2.141	1.437	2.309	1.503	2.465		
17	.984	1.001	1.062	1.078	1.062	1.237	1.764	1.238	1.836	1.306	1.959	1.375	2.073	1.436	2.203	1.499	2.371	1.565	2.527		
18	1.047	1.063	1.125	1.141	1.125	1.300	1.827	1.301	1.899	1.369	2.022	1.438	2.136	1.499	2.266	1.562	2.434	1.628	2.590		
19	1.109	1.126	1.188	1.203	1.188	1.363	1.890	1.364	1.962	1.432	2.085	1.501	2.199	1.562	2.329	1.625	2.497	1.691	2.653		
20	1.172	1.189	1.250	1.266	1.250	1.425	1.952	1.426	2.024	1.494	2.147	1.563	2.261	1.624	2.391	1.687	2.559	1.753	2.715		
21	1.234	1.251	1.312	1.328	1.312	1.487	2.014	1.488	2.086	1.556	2.209	1.625	2.323	1.686	2.453	1.749	2.621	1.815	2.777		
22	1.297	1.313	1.375	1.391	1.375	1.550	2.077	1.551	2.149	1.619	2.272	1.688	2.386	1.749	2.516	1.812	2.684	1.878	2.840		
23	1.359	1.376	1.438	1.453	1.438	1.613	2.140	1.614	2.212	1.682	2.335	1.751	2.449	1.812	2.579	1.875	2.747	1.941	2.903		
24	1.422	1.439	1.500	1.516	1.500	1.675	2.202	1.676	2.274	1.744	2.397	1.813	2.511	1.874	2.641	1.937	2.809	2.003	2.965		
25	1.484	1.501	1.562	1.578	1.562	1.737	2.264	1.738	2.336	1.806	2.459	1.875	2.573	1.936	2.703	1.999	2.871	2.065	3.027		
26	1.547	1.563	1.625	1.641	1.625	1.800	2.327	1.801	2.399	1.869	2.522	1.938	2.636	1.999	2.766	2.062	2.934	2.128	3.090		
27	1.609	1.626	1.688	1.703	1.688	1.863	2.390	1.864	2.462	1.932	2.585	2.001	2.699	2.062	2.829	2.125	2.997	2.191	3.153		
28	1.672	1.689	1.750	1.766	1.750	1.925	2.452	1.926	2.524	1.994	2.647	2.063	2.761	2.124	2.891	2.187	3.059	2.253	3.215		
29	1.734	1.751	1.812	1.828	1.812	1.987	2.514	1.988	2.586	2.056	2.709	2.125	2.823	2.186	2.953	2.249	3.121	2.315	3.277		
30	1.797	1.813	1.875	1.891	1.875	2.050	2.577	2.051	2.649	2.119	2.772	2.188	2.886	2.249	3.016	2.312	3.184	2.378	3.340		
31	1.859	1.876	1.938	1.953	1.938	2.113	2.640	2.114	2.712	2.182	2.835	2.251	2.949	2.312	3.079	2.375	3.247	2.441	3.403		
32	1.922	1.939	2.000	2.016	2.000	2.175	2.702	2.176	2.774	2.244	2.897	2.313	3.011	2.374	3.141	2.437	3.309	2.503	3.465		

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