



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

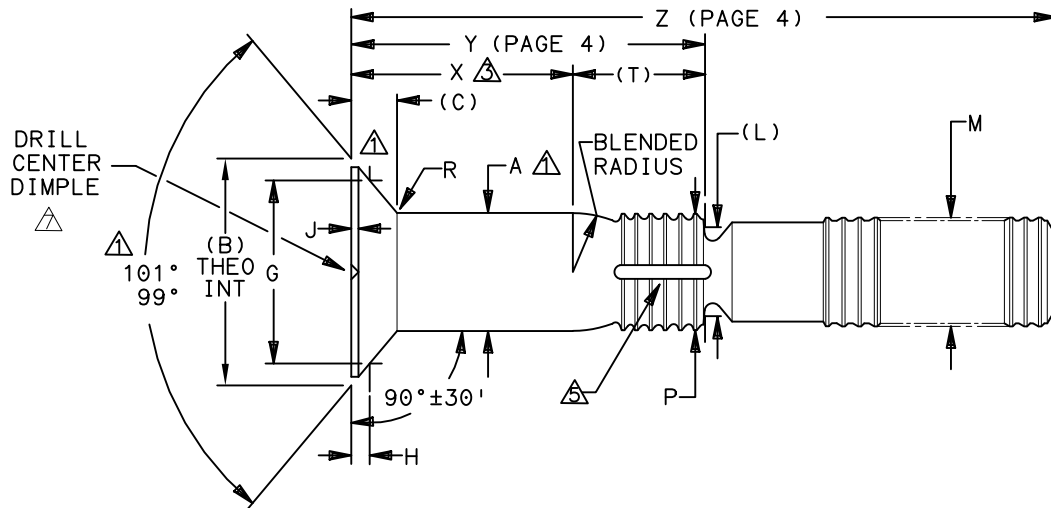
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LGP®  
 Composite  
**ENGINEERING  
 STANDARD**

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



LGP PIN FAMILY NUMBER	NOM SIZE	A SHANK DIA +.0005 - .0000	A SHANK DIA COATED ±.0005	(B) HEAD DIA NOM	(C) HEAD HEIGHT NOM	G GAGE DIA ±.0001	H GAGE HEIGHT		J REF	(L) REF	M MAX	P DIA MAX	R RAD ±.005	S	(T) REF
							MAX	MIN							
(H)LGPL7SC-V05B( ) ( )	.1640	.1630	.1630	.2877	.0523	.2559	.0155	.0112	.010	.126	.156	.156	.020	.0045	.175
(H)LGPL7SC-V06B( ) ( )	.1900	.1890	.1890	.3515	.0682	.2981	.0243	.0205	.015	.150	.184	.184	.025	.0045	.176
(H)LGPL7SC-V07B( ) ( )	.2187	.2177	.2177	.4108	.0810	.3314	.0351	.0315	.015	.173	.213	.213	.025	.0045	.244
(H)LGPL7SC-V08B( ) ( )	.2500	.2490	.2490	.4725	.0938	.4049	.0310	.0257	.015	.187	.244	.244	.025	.0045	.244
(H)LGPL7SC-V10B( ) ( )	.3125	.3115	.3115	.5606	.1015	.4790	.0367	.0318	.015	.244	.306	.306	.035	.0045	.313
(H)LGPL7SC-V12B( ) ( )	.3750	.3740	.3740	.6904	.1327	.5941	.0428	.0380	.015	.298	.370	.370	.035	.0060	.374
(H)LGPL7SC-V14B( ) ( )	.4375	.4365	.4365	.7992	.1522	.7241	.0342	.0288	.022	.312	.431	.431	.045	.0060	.437
(H)LGPL7SC-V16B( ) ( )	.5000	.4990	.4990	.9119	.1732	.8011	.0495	.0435	.022	.375	.492	.492	.045	.0060	.503

- CONCENTRICITY: CONICAL SURFACE OF COUNTERSUNK HEAD TO "A" DIAMETER TO BE WITHIN .005 TIR.
- SHANK STRAIGHTNESS: WITHIN "S" VALUES TIR PER INCH OF SHANK LENGTH.
- GRIP LENGTH IS MEASURED FROM THE TOP OF THE HEAD TO THE END OF THE FULL CYLINDRICAL PORTION OF THE SHANK. (SEE DIMENSION X ON PAGE 4)
- 4. DIMENSIONS B AND C ARE FOR REFERENCE ONLY, NOT FOR INSPECTION PURPOSES.
- DIMENSIONS X, Y AND Z ARE LOCATED FROM THE TOP OF THE HEAD.
- 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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REVISED COMPANY LOGO & UPDATED TRADEMARK INFORMATION.  
 CHANGED "KALGARD" TO "KAL-GARD" ON PAGE 2. (REF. ECR2779)

ISSUED	11/11/88	PIN, COMPOSITE APPLICATIONS, LIGHTWEIGHT HUCKCOMP LGP, SHEAR TYPE, 100° COUNTERSUNK HEAD, REDUCED HEAD HEIGHT, 6AL-4V TITANIUM. (95 KSI SHEAR)	(H)LGPL7SC-V( )B( ) ( )
REVISED	08/06/21		
PAGE	1 OF 4		COM107

B10



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B<sub>1c</sub>

MATERIAL: 6AL-4V TITANIUM ALLOY PER AMS4967.  
 MINIMUM SHEAR STRENGTH: 95 KSI.  
 SURFACE TEXTURE: R<sub>a</sub> MAX PER ANSI/ASME 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 COATING KAL-GARD 2240C (EU ONLY) / HI-KOTE™ 1 PER NAS4006 OR KAL-GARD 2242 / HI-KOTE™ 1 NC PER NAS4006NC, OPTIONAL ON PINTAIL END. PLUS CETYL ALCOHOL LUBE PER AS87132.

SUFFIX "AD" = ALUMINUM COAT (KAL-GARD 2245) PER NAS4006 OPTIONAL TO COLOR PINTAIL END WHITE, PLUS CETYL ALCOHOL LUBE PER MIL-L-87132.

SUFFIX "AS" = SULFURIC ACID ANODIZE (BLUE) PER ISO 8080 PLUS CETYL ALCOHOL LUBE, PLUS CETYL ALCOHOL LUBE PER MIL-L-87132.

SUFFIX "B" = UNCOATED STUMP 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 FLUORIDE PER BAC5861.

SUFFIX "EPR" = PHOSPHATE FLUORIDE PER BAC5861, WITH RED IDENTIFICATION DYE ON STUMP END, PLUS CETYL ALCOHOL LUBE PER MIL-L-87132.

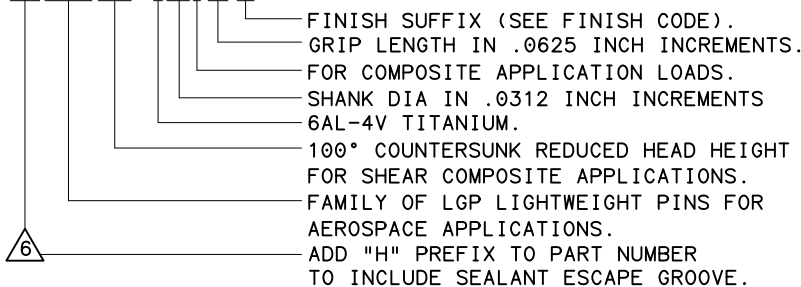
SUFFIX "PB" = POWDERED BLAST TOP SURFACE OF HEAD PLUS CETYL ALCOHOL LUBE PER MIL-L-87132 (R<sub>a</sub> 50/80 SURFACE ROUGHNESS).

NO LETTER = UNCOATED PIN PLUS CETYL ALCOHOL.

HEAD MARKING: HEADS SHALL BE MARKED WITH THE MANUFACTURER'S SYMBOL, THE BASIC NUMBER (LGP7) AND VB DEPRESSED .006 MAX DEPTH ARRANGEMENT OPTIONAL, FOR PINS REQUIRING A SEALANT ESCAPE GROOVE, AN "H" WILL BE INCLUDED ON THE HEAD IDENTIFICATION CALLOUT.

CODING: THE FIRST SET OF LETTERS DESIGNATE THE FAMILY OF LIGHTWEIGHT GP PINS FOR SHEAR APPLICATION (LGPL).  
 THE SECOND SET OF LETTERS & NUMBER 7SC 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 LOADS.  
 THE FINAL NUMBERS DESIGNATE THE GRIP LENGTH NUMBER OR THE NOMINAL PIN SHANK LENGTH IN .0625 INCH INCREMENTS.  
 SEE FINISH CODE FOR SUFFIX INFORMATION.

PART NUMBER  
 EXAMPLE: (H)LGPL7SC-V08B06()



DIMENSIONS IN INCHES

B <sub>10</sub>	REVISED COMPANY LOGO & UPDATED TRADEMARK INFORMATION. CHANGED "KALGARD" TO "KAL-GARD" ON PAGE 2. (REF. ECR2779)		
	ISSUED	11/11/88	PIN, COMPOSITE APPLICATIONS, LIGHTWEIGHT HUCKCOMP LGP, SHEAR TYPE, 100° COUNTERSUNK HEAD, REDUCED HEAD HEIGHT 6AL-4V TITANIUM. (95 KSI SHEAR)
	REVISED	08/06/21	
PAGE	2 OF 4		(H)LGPL7SC-V( )B( ) ( ) COM107



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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)LGPL7SC-V05B( ) ( )	.1640	4010	SLFC-MV05	1500	HG118-05	
(H)LGPL7SC-V06B( ) ( )	.1900	5380	SLFC-MV06	1900	HG118-06	
(H)LGPL7SC-V07B( ) ( )	.2187	7200	SLFC-MV07	2250	HG118-07	
(H)LGPL7SC-V08B( ) ( )	.2500	9300	SLFC-MV08	3450	HG118-08	
(H)LGPL7SC-V10B( ) ( )	.3125	14600	SLFC-MV10	6000	HG118-10	
(H)LGPL7SC-V12B( ) ( )	.3750	21000	SLFC-MV12	8000	HG118-12	
(H)LGPL7SC-V14B( ) ( )	.4375	28600	SLFC-MV14	12100	HG118-14	
(H)LGPL7SC-V16B( ) ( )	.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)LGPL7SC-V05B( ) ( )	.1640	4010	3SLC-C05	1400	HG131-05	
(H)LGPL7SC-V06B( ) ( )	.1900	5380	3SLC-C06	1600	HG131-06	
(H)LGPL7SC-V07B( ) ( )	.2187	7200	3SLC-C07	TBD	HG131-07	
(H)LGPL7SC-V08B( ) ( )	.2500	9300	3SLC-C08	3000	HG131-08	
(H)LGPL7SC-V10B( ) ( )	.3125	14600	3SLC-C10	5000	HG131-10	
(H)LGPL7SC-V12B( ) ( )	.3750	21000	3SLC-C12	7000	HG131-12	
(H)LGPL7SC-V14B( ) ( )	.4375	28600	3SLC-C14	9500	HG131-14	
(H)LGPL7SC-V16B( ) ( )	.5000	37300	3SLC-C16	12500	HG131-16	

DIMENSIONS IN INCHES

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ISSUED	11/11/88
REVISED	08/06/21
PAGE	3 OF 4

PIN, COMPOSITE APPLICATIONS, LIGHTWEIGHT  
 HUCKCOMP LGP, SHEAR TYPE, 100°  
 COUNTERSUNK HEAD, REDUCED HEAD HEIGHT  
 6AL-4V TITANIUM. (95 KSI SHEAR)

(H)LGPL7SC-V( )B( ) ( )  
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GRIP NUMBER TABULATION

GRIP DASH NO.	PERMISSIBLE MINIMUM GRIP OVERLAP	DESIGN GRIP RANGE		PERMISSIBLE MAXIMUM GRIP OVERLAP	X ±.005	05		06		07		08		10		12		14		16			
		MIN	MAX			Y	Z +.060 -.000	Y	Z +.060 -.000	Y	Z +.060 -.000	Y	Z +.060 -.000	Y	Z +.060 -.000	Y	Z +.060 -.000	Y	Z +.060 -.000	Y	Z +.060 -.000	Y	Z +.060 -.000
02	.047	.063	.125	.141	.125	.300	.827	.301	.899	—	—	—	—	—	—	—	—	—	—	—	—		
03	.109	.126	.188	.203	.188	.363	.890	.364	.962	.432	1.032	.432	1.085	.501	1.199	—	—	—	—	—	—		
04	.172	.189	.250	.266	.250	.425	.952	.426	1.024	.494	1.094	.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	1.156	.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	1.219	.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	1.282	.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	1.344	.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	1.406	.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	1.469	.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	1.532	.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	1.594	.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	1.656	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	1.719	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	1.782	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	1.844	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	1.906	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	1.969	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	2.032	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	2.094	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	2.156	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	2.219	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	2.282	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	2.344	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	2.406	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	2.469	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	2.532	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	2.594	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	2.656	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	2.719	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	2.782	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	2.844	2.244	2.897	2.313	3.011	2.374	3.141	2.437	3.309	2.503	3.465		

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 COUNTERSUNK HEAD, REDUCED HEAD HEIGHT,  
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