



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

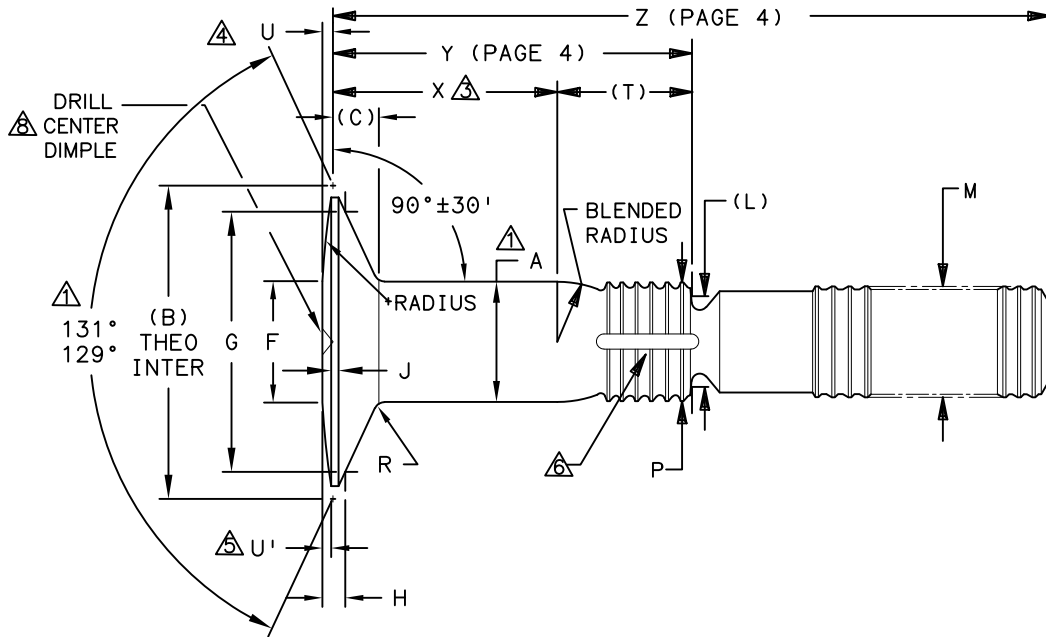
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Howmet Fastening Systems
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Phone +33-1-30.27.95.00
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LGP®
 Composite
**ENGINEERING
 STANDARD**

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) THEO DIA NOM	(C) HEAD HEIGHT NOM	F FLAT DIA ± .0100	G GAGE DIA ± .0001	H GAGE HEIGHT		J MAX	(L) REF	M MAX	P DIA MAX	R RAD ± .005	S	T REF	U ± .0010	U' REF
								MAX	MIN									
(H)LGPL9SC-V05B() ()	.1640	.1630	.1630	.3280	.0385	.1250	.2559	.0263	.0235	.010	.126	.156	.156	.020	.0045	.175	.0081	.0065
(H)LGPL9SC-V06B() ()	.1900	.1890	.1890	.3816	.0449	.1560	.2981	.0257	.0225	.013	.150	.184	.184	.025	.0045	.176	.0046	.0035
(H)LGPL9SC-V07B() ()	.2187	.2177	.2177	.4398	.0518	.1720	.3314	.0323	.0288	.015	.173	.213	.213	.025	.0045	.244	.0052	.0040
(H)LGPL9SC-V08B() ()	.2500	.2490	.2490	.5009	.0587	.1900	.4049	.0301	.0263	.017	.187	.244	.244	.025	.0045	.244	.0058	.0045
(H)LGPL9SC-V10B() ()	.3125	.3115	.3115	.5921	.0654	.2500	.4790	.0350	.0308	.020	.244	.306	.306	.035	.0045	.313	.0065	.0050
(H)LGPL9SC-V12B() ()	.3750	.3740	.3740	.6969	.0753	.3120	.5941	.0343	.0293	.023	.298	.370	.370	.035	.0060	.374	.0078	.0060
(H)LGPL9SC-V14B() ()	.4375	.4365	.4365	.8403	.0941	.3750	.7241	.0379	.0325	.023	.312	.431	.431	.045	.0060	.437	.0081	.0065
(H)LGPL9SC-V16B() ()	.5000	.4990	.4990	.9458	.1042	.4380	.8011	.0447	.0387	.023	.375	.492	.492	.045	.0060	.503	.0080	.0065

PROCUREMENT SPECIFICATION: C2022
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DRAWN BY		DH	FSCM (Cage Code) 17446 - Carson FSCM (Cage Code) F6167 - France
CHECKED BY		MM	

ISSUED	07/01/81	PIN, COMPOSITE APPLICATIONS, LIGHTWEIGHT HUCKCOMP LGP, SHEAR TYPE, 130° COUNTERSUNK HEAD, SWAGE LOCKING, 6AL-4V TITANIUM. (95 KSI SHEAR)	(H)LGPL9SC-V()B() ()
	08/06/21		
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			COM103

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- ▲ 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 THEORETICAL INTERSECTION OF CROWN RADIUS AND HEAD ANGLE TO THE END OF THE FULL CYLINDRICAL PORTION OF THE SHANK.
- ▲ DIMENSIONS (B), (C), U, Y AND Z ARE MEASURED FROM THE THEORETICAL INTERSECTION OF CROWN RADIUS AND HEAD ANGLE.
- ▲ DIMENSION U' IS MEASURED AT TOP OF "J" LAND.
- ▲ SEALANT ESCAPE GROOVE (SEE PAGE 2).
- ▲ DIMENSIONS (B), (C) AND U' ARE FOR ENGINEERING REFERENCE ONLY AND ARE NOT TO BE USED FOR INSPECTION PURPOSES.
- ▲ DRILL CENTER DIMPLE IN TOP OF HEAD .035 MAX DIA, .010 MAX DEPTH AND CONCENTRIC TO "A" WITHIN .008.

MATERIAL: 6AL-4V TITANIUM ALLOY PER AMS4967.

MINIMUM SHEAR STRENGTH: 95 KSI.

SURFACE TEXTURE: Ra 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 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 CETY ALCOHOL LUBE PER MIL-L-87132.

SUFFIX "EP" = PHOSPHATE FLUORIDE PER BAC5861.

SUFFIX "EPR" = PHOSPHATE FLUORIDE PER BAC5861 WITH RED IDENTIFICATION DYE ON PINTAIL 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 (Ra 50/80 SURFACE ROUGHNESS).

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

HEAD MARKING: HEADS SHALL BE MARKED WITH THE MANUFACTURER'S SYMBOL, THE BASIC NUMBER (LGP9) 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 9SC 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 COMPOSITE APPLICATION LOADS.

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

SEE FINISH CODE FOR SUFFIX INFORMATION.

C₉ REVISED COMPANY LOGO & UPDATED TRADEMARK INFORMATION.
 CHANGED "KALGARD" TO "KAL-GARD" ON PAGE 2. (REF. ECR2779)

ISSUED	07/01/81	PIN, COMPOSITE APPLICATIONS, LIGHTWEIGHT HUCKCOMP LGP, SHEAR TYPE, 130° COUNTERSUNK HEAD, SWAGE LOCKING, 6AL-4V TITANIUM. (95 KSI SHEAR)	
REVISED	08/06/21		(H)LGPL9SC-V()B() ()
PAGE	2 OF 4		COM103



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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)LGPL9SC-V05B() ()	.1640	4010	SLFC-MV05	1500	HG118-05	
(H)LGPL9SC-V06B() ()	.1900	5380	SLFC-MV06	1900	HG118-06	
(H)LGPL9SC-V07B() ()	.2187	7200	SLFC-MV07	.2250	HG118-07	
(H)LGPL9SC-V08B() ()	.2500	9300	SLFC-MV08	3450	HG118-08	
(H)LGPL9SC-V10B() ()	.3125	14600	SLFC-MV10	6000	HG118-10	
(H)LGPL9SC-V12B() ()	.3750	21000	SLFC-MV12	8000	HG118-12	
(H)LGPL9SC-V14B() ()	.4375	28600	SLFC-MV14	12100	HG118-14	
(H)LGPL9SC-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)LGPL9SC-V05B() ()	.1640	4010	3SLC-C05	1400	HG131-05	
(H)LGPL9SC-V06B() ()	.1900	5380	3SLC-C06	1600	HG131-06	
(H)LGPL9SC-V07B() ()	.2187	7200	3SLC-C07	2250	HG131-07	
(H)LGPL9SC-V08B() ()	.2500	9300	3SLC-C08	3000	HG131-08	
(H)LGPL9SC-V10B() ()	.3125	14600	3SLC-C10	5000	HG131-10	
(H)LGPL9SC-V12B() ()	.3750	21000	3SLC-C12	7000	HG131-12	
(H)LGPL9SC-V14B() ()	.4375	28600	3SLC-C14	9500	HG131-14	
(H)LGPL9SC-V16B() ()	.5000	37300	3SLC-C16	12500	HG131-16	

DIMENSIONS IN INCHES

C₉ REVISED COMPANY LOGO & UPDATED TRADEMARK INFORMATION.
CHANGED "KALGARD" TO "KAL-GARD" ON PAGE 2. (REF. ECR2779)

ISSUED	07/01/81	PIN, COMPOSITE APPLICATIONS, LIGHTWEIGHT HUCKCOMP LGP, SHEAR TYPE, 130° COUNTERSUNK HEAD, SWAGE LOCKING, 6AL-4V TITANIUM. (95 KSI SHEAR)	(H)LGPL9SC-V()B() ()
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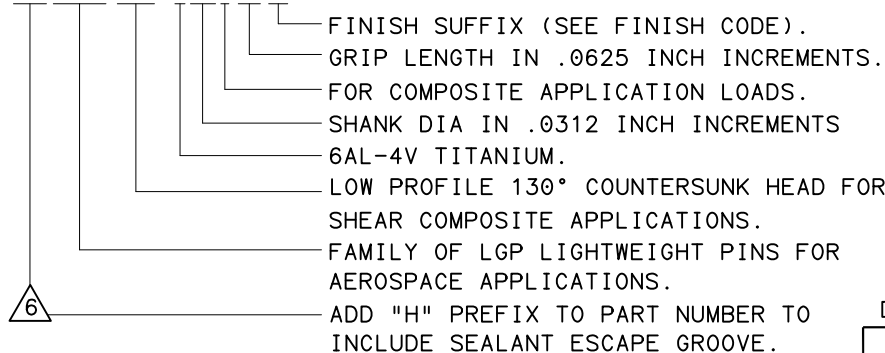
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GRIP NUMBER TABULATION

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 ±.010	Z +.060 -.000	Y ±.010	Z +.060 -.000	Y ±.010	Z +.060 -.000	Y ±.010	Z +.060 -.000	Y ±.010	Z +.060 -.000	Y ±.010	Z +.060 -.000	Y ±.010	Z +.060 -.000	Y ±.010	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

PART NUMBER

EXAMPLE: (H)LGPL9SC-V08B06()



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PAGE	4 OF 4		

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