



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

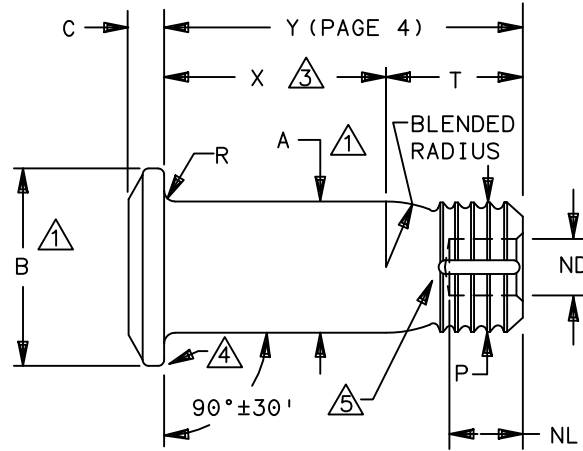
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LGP<sup>®</sup>

ENGINEERING  
 STANDARD



LGP STUMP FAMILY NUMBER	NOM SIZE	A SHANK DIA +.0005 -.0000	A SHANK DIA COATED ±.0005	B HEAD DIA ±.005	C HEAD HEIGHT		ND DIA REF	NL DEPTH MAX	P DIA MAX	R RAD ±.005	S △	T REF
					MAX	MIN						
(H)LGPS2SP-V05-( ) ( )	.1640	.1630	.1630	.250	.048	.038	.065	.110	.156	.020	.0045	.162
(H)LGPS2SP-V06-( ) ( )	.1900	.1890	.1890	.294	.057	.047	.086	.118	.184	.020	.0045	.171
(H)LGPS2SP-V08-( ) ( )	.2500	.2490	.2490	.376	.071	.061	.109	.162	.244	.020	.0045	.231
(H)LGPS2SP-V10-( ) ( )	.3125	.3115	.3115	.460	.081	.071	.141	.216	.306	.025	.0045	.296
(H)LGPS2SP-V12-( ) ( )	.3750	.3740	.3740	.539	.098	.086	.171	.243	.370	.025	.0060	.345
(H)LGPS2SP-V14-( ) ( )	.4375	.4365	.4365	.619	.109	.097	.199	.260	.431	.025	.0060	.392
(H)LGPS2SP-V16-( ) ( )	.5000	.4990	.4990	.707	.119	.107	.230	.275	.492	.025	.0060	.444

- △ CONCENTRICITY: CONICAL SURFACE OF PROTRUDING HEAD TO "A" DIAMETER TO BE WITHIN .008 TIR.
- △ SHANK STRAIGHTNESS: WITHIN "S" VALUES TIR PER INCH OF SHANK LENGTH.
- △ GRIP LENGTH IS MEASURED FROM THE UNDERSIDE OF THE HEAD 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.

PROCUREMENT SPECIFICATION: C2010  
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DIMENSIONS IN INCHES

DRAWN BY	DH	FSCM (Cage Code) 17446 - Carson FSCM (Cage Code) F6167 - France
CHECKED BY	MM	

ISSUED	04/15/81	STUMP, LIGHTWEIGHT GROOVE PROPORTIONED PROTRUDING HEAD, SWAGE LOCKING, 6AL-4V TITANIUM. (95 KSI SHEAR)	(H)LGPS2SP-V( )-( ) ( )
	08/11/21		
	1 OF 4		

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

**SHEAR STRENGTH:** 95 KSI MINIMUM

**SURFACE TEXTURE:** Ra MAX PER ANSI/ASME B46.1 BEFORE COATING. BEARING SURFACE OF HEAD, HEAD TO SHANK FILLET RADIUS, SHANK AND TRANSITION RADIUS, -32, OTHER SURFACES -125.

**FINISH:** NO LETTER = UNCOATED PIN PLUS CETYL ALCOHOL LUBE PER AS87132.

AC = ALUMINUM COATING KAL-GARD 2240C (EU ONLY) / HI-KOTE™1 PER NAS4006 OR KALGARD 2242 / HI-KOTE™1 NC PER NAS4006NC. PLUS CETYL ALCOHOL LUBE PER AS87132.

ACN = ALUMINUM COAT HI-KOTE™1 NC PER EN4473 TYPE II, OPTIONAL ON STUMP END, WITH CETYL ALCOHOL LUBE PER EN6117.

ACY = ALUMINUM COATING HI-KOTE™1 PER NAS4006 OR KAL-GARD 2242 / HI-KOTE™1 NC PER NAS4006NC. IDENTIFY BY YELLOW COLOR ON STUMP END. PLUS CETYL ALCOHOL LUBE PER AS87132.

AD = ALUMINUM COAT KAL-GARD 2245 OR HI-KOTE™1 PER EN4473 TYPE I, OR HI-KOTE™1 NC PER EN4473 TYPE II, OPTIONAL ON STUMP END. OPTIONAL TO COLOR STUMP END WHITE, WITH CETYL ALCOHOL LUBE PER EN6117.

APY = ALUMINUM COATING KAL-GARD 2242 / HI-KOTE™1 PER NAS4006 OR HI-KOTE™1 NC PER NAS4006NC. IDENTIFY BY YELLOW COLOR ON STUMP END. APPLY SEALANT UNDER HEAD PER BMS-5-95. PLUS CETYL ALCOHOL LUBE PER AS87132.

AS = SULPHURIC ACID ANODIZE (BLUE) PER ISO 8080. PLUS CETYL ALCOHOL LUBE PER AS87132.

B = UNCOATED PIN AND NO LUBRICATION.

D = ION VAPOR DEPOSITED ALUMINUM COATING PER MIL-DTL-83488 TYPE II, CLASS 3, EXCEPT THICKNESS .0002/.0005. OPTIONAL TO COLOR STUMP END BLACK. PLUS CETYL ALCOHOL LUBE PER AS87132.

**HEAD MARKING:** HEADS SHALL BE MARKED WITH THE MANUFACTURER'S SYMBOL, THE BASIC PART NUMBER (LGP2), AND (V), 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 LGP PINS FOR SHEAR APPLICATIONS (LGPL).

THE SECOND SET OF LETTERS & NUMBER (2SC) 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 .03125 INCH INCREMENTS.

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

SEE FINISH CODE FOR SUFFIX INFORMATION.

E11

DIMENSIONS IN INCHES

ISSUED	04/15/81	STUMP, LIGHTWEIGHT GROOVE PROPORTIONED PROTRUDING HEAD, SWAGE LOCKING, 6AL-4V TITANIUM. (95 KSI SHEAR)	(H)LGPS2SP-V()-()-()
	08/11/21		
	2 OF 4		
E11 REVISED COMPANY LOGO & UPDATED TRADEMARK INFORMATION. CHANGED "KALGARD" TO "KAL-GARD" ON PAGE 2. (REF. ECR2779)		LGP104	



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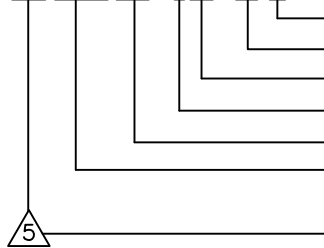
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MECHANICAL PROPERTIES						
LGP STUMP PART NUMBER	STUMP NOM SIZE	MINIMUM DOUBLE SHEAR POUNDS	COLLAR PART NUMBER	MIN ULTIMATE TENSILE LBS WITH LISTED COLLAR	MAXIMUM SQUEEZE LOAD	PIN POSITION SWAGE GAGE
(H)LGPS2SP-V05-(( ))	.1640	4010	3SLC-C05	1400	2500	HG113-05
			SLC-MV05			TBD
			SLC-M05			
			SLC-EU05			
(H)LGPS2SP-V06-(( ))	.1900	5380	3SLC-C06	1600	3000	HG113-06
			SLC-MV06			TBD
			SLC-M06			
			SLC-EU06			
(H)LGPS2SP-V08-(( ))	.2500	9300	3SLC-C08	3000	5500	HG113-08
			SLC-MV08			TBD
			SLC-M08			
			SLC-EU08			
(H)LGPS2SP-V10-(( ))	.3125	14600	3SLC-C10	5000	9300	HG113-10
			SLC-MV10			TBD
			SLC-M10			
			SLC-EU10			
(H)LGPS2SP-V12-(( ))	.3750	21000	3SLC-C12	7000	10600	HG113-12
			SLC-MV12			TBD
			SLC-M12			
			SLC-EU12			
(H)LGPS2SP-V14-(( ))	.4375	28600	3SLC-C14	9500	11000	HG113-14
(H)LGPS2SP-V16-(( ))	.5000	37300	3SLC-C16	12500	11900	HG113-16

EXAMPLE: (H)LGPS2SP-V08-06()



- FINISH SUFFIX (SEE FINISH CODE).
- GRIP LENGTH IN .0625 INCH INCREMENTS.
- SHANK DIA IN .03125 INCH INCREMENTS
- 6AL-4V TITANIUM.
- PROTRUDING HEAD FOR SHEAR APPLICATIONS.
- FAMILY OF LGP LIGHTWEIGHT STUMPS FOR AEROSPACE APPLICATIONS.
- ADD "H" PREFIX TO PART NUMBER TO INCLUDE SEALANT ESCAPE GROOVE.

DIMENSIONS IN INCHES

E 11	REVISED COMPANY LOGO & UPDATED TRADEMARK INFORMATION. CHANGED "KALGARD" TO "KAL-GARD" ON PAGE 2. (REF. ECR2779)		
	ISSUED	04/15/81	STUMP, LIGHTWEIGHT GROOVE PROPORTIONED PROTRUDING HEAD, SWAGE LOCKING, 6AL-4V TITANIUM. (95 KSI SHEAR)
	REVISED	08/11/21	
PAGE	3 OF 4	(H)LGPS2SP-V()-()-()	LGP104



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GRIP NUMBER TABULATION												
GRIP DASH NO.	MINIMUM PERMISSIBLE GRIP OVERLAP	DESIGN GRIP RANGE		MAXIMUM PERMISSIBLE GRIP OVERLAP	X ±.005	05	06	08	10	12	14	16
		MIN.	MAX.			Y	Y	Y	Y	Y	Y	
						±.010	±.010	±.010	±.010	±.010	±.010	±.010
02	.047	.063	.125	.141	.125	.287	.296	—	—	—	—	—
03	.109	.126	.188	.203	.188	.350	.359	.419	.484	—	—	—
04	.172	.189	.250	.266	.250	.412	.421	.481	.546	.595	.642	.694
05	.234	.251	.312	.328	.312	.474	.483	.543	.608	.657	.704	.756
06	.297	.313	.375	.391	.375	.537	.546	.606	.671	.720	.767	.819
07	.359	.376	.438	.453	.438	.600	.609	.669	.734	.783	.830	.882
08	.422	.439	.500	.516	.500	.662	.671	.731	.796	.845	.892	.944
09	.484	.501	.562	.578	.562	.724	.733	.793	.858	.907	.954	1.006
10	.547	.563	.625	.641	.625	.787	.796	.856	.921	.970	1.017	1.069
11	.609	.626	.688	.703	.688	.850	.859	.919	.984	1.033	1.080	1.132
12	.672	.689	.750	.766	.750	.912	.921	.981	1.046	1.095	1.142	1.194
13	.734	.751	.812	.828	.812	.974	.983	1.043	1.108	1.157	1.204	1.256
14	.797	.813	.875	.891	.875	1.037	1.046	1.106	1.171	1.220	1.267	1.319
15	.859	.876	.938	.953	.938	1.100	1.109	1.169	1.234	1.283	1.330	1.382
16	.922	.939	1.000	1.016	1.000	1.162	1.171	1.231	1.296	1.345	1.392	1.444
17	.984	1.001	1.062	1.078	1.062	1.224	1.233	1.293	1.358	1.407	1.454	1.506
18	1.047	1.063	1.125	1.141	1.125	1.287	1.296	1.356	1.421	1.470	1.517	1.569
19	1.109	1.126	1.188	1.203	1.188	1.350	1.359	1.419	1.484	1.533	1.580	1.632
20	1.172	1.189	1.250	1.266	1.250	1.412	1.421	1.481	1.546	1.595	1.642	1.694
21	1.234	1.251	1.312	1.328	1.312	1.474	1.483	1.543	1.608	1.657	1.704	1.756
22	1.297	1.313	1.375	1.391	1.375	1.537	1.546	1.606	1.671	1.720	1.767	1.819
23	1.359	1.376	1.438	1.453	1.438	1.600	1.609	1.669	1.734	1.783	1.830	1.882
24	1.422	1.439	1.500	1.516	1.500	1.662	1.671	1.731	1.796	1.845	1.892	1.944
25	1.484	1.501	1.562	1.578	1.562	1.724	1.733	1.793	1.858	1.907	1.954	2.006
26	1.547	1.563	1.625	1.641	1.625	1.787	1.796	1.856	1.921	1.970	2.017	2.069
27	1.609	1.626	1.688	1.703	1.688	1.850	1.859	1.919	1.984	2.033	2.080	2.132
28	1.672	1.689	1.750	1.766	1.750	1.912	1.921	1.981	2.046	2.095	2.142	2.194
29	1.734	1.751	1.812	1.828	1.812	1.974	1.983	2.043	2.108	2.157	2.204	2.256
30	1.797	1.813	1.875	1.891	1.875	2.037	2.046	2.106	2.171	2.220	2.267	2.319
31	1.859	1.876	1.938	1.953	1.938	2.100	2.109	2.169	2.234	2.283	2.330	2.382
32	1.922	1.939	2.000	2.016	2.000	2.162	2.171	2.231	2.296	2.345	2.392	2.444

DIMENSIONS IN INCHES

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ISSUED	04/15/81
REVISED	08/11/21
PAGE	4 OF 4

STUMP, LIGHTWEIGHT GROOVE PROPORTIONED PROTRUDING HEAD, SWAGE LOCKING, 6AL-4V TITANIUM. (95 KSI SHEAR)

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