



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

Phone (310) 830-8200  
 HFS\_Carson\_Engineering@howmet.com

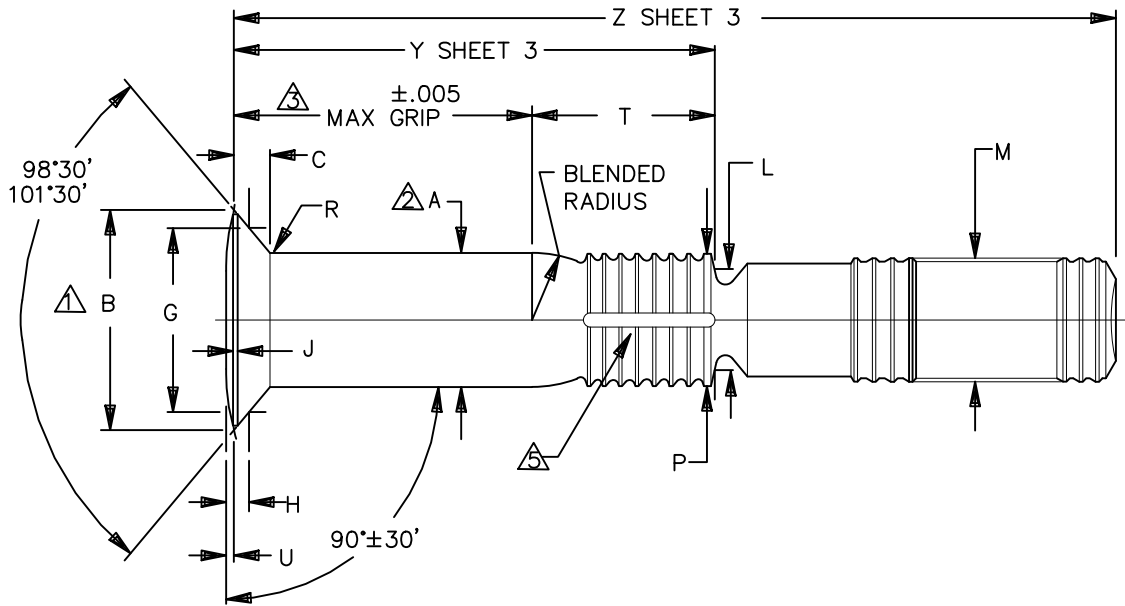
Howmet Fastening Systems  
 Us Operations  
 Clos D' Asseville BP 30004  
 95450 Us Par Vigny France

Phone +33-1-30.27.95.00  
 Fax +33-1-34.66.06.00

GP<sup>®</sup>

ENGINEERING  
 STANDARD

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GP FAMILY NUMBER	NOM SIZE	A SHANK DIA +.0005 -.0000	A SHANK DIA COATED ±.0005	B THEO INTER DIA NOM	C HEAD HEIGHT NOM	G GAGE DIA ±.0001	H GAGE HEIGHT		J MAX	L DIA REF	M DIA MAX	P DIA MAX	R RAD ±.005	S $\Delta$	T (REF)	U (REF)
							MAX	MIN								
GPL3SC-EU05-()	.1640	.1630	.1630	.2556	.0388	.2027	.0316	.0286	.011	.126	.156	.156	.020	.0045	.241	.0079
GPL3SC-EU06-()	.1900	.1890	.1890	.2974	.0455	.2440	.0283	.0251	.013	.164	.184	.184	.025	.0045	.279	.0043
GPL3SC-EU08-()	.2500	.2490	.2490	.3908	.0595	.3314	.0320	.0282	.017	.224	.244	.244	.025	.0045	.324	.0052
GPL3SC-EU10-()	.3120	.3115	.3115	.4695	.0663	.4046	.0352	.0310	.020	.268	.306	.306	.035	.0045	.407	.0059
GPL3SC-EU12-()	.3750	.3740	.3740	.5557	.0760	.4853	.0393	.0343	.023	.339	.368	.370	.035	.0060	.442	.0075

- $\Delta$  CONCENTRICITY: CONICAL SURFACE OF COUNTERSUNK HEAD TO "A" DIAMETER TO BE WITHIN .005 TIR.
- $\Delta$  SHANK STRAIGHTNESS: WITHIN "S" VALUES TIR PER INCH OF SHANK LENGTH.
- $\Delta$  GRIP LENGTH IS MEASURED FROM THE THEORETICAL INTERSECTION OF CROWN & HEAD ANGLE TO THE END OF THE FULL CYLINDRICAL PORTION OF SHANK.
- 4 DIMENSION B AND C FOR ENGINEERING REFERENCE ONLY, NOT FOR INSPECTION PURPOSES

MATERIAL: A-286 CRES.  
 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.

DIMENSIONS IN INCHES

PROCUREMENT SPECIFICATION: NAS1413.  
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DRAWN BY	DH	FSCM (Cage Code) 17446 - Carson
CHECKED BY	HJ	

C<sub>2</sub>

REVISED COMPANY LOGO & UPDATED TRADEMARK INFORMATION . (REF. ECR2923)

ISSUED	09/06/83
REVISED	04/21/22
PAGE	1 OF 3

PIN, GROOVE PROPORTIONED GP  
 PULL TYPE, SWAGE LOCKING,  
 SHEAR 100° FLUSH HEAD  
 A-286 CRES. (95 KSI SHEAR)

GPL3SC-EU()-()  
 SK12653

C2



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FINISH: NO LETTER = PASSIVATE PER QQ-P-35 PLUS CHLORINE FREE CETYL ALCOHOL.

SUFFIX "B" = PASSIVATE PER QQ-P-35, BARE-NO LUBRICATION

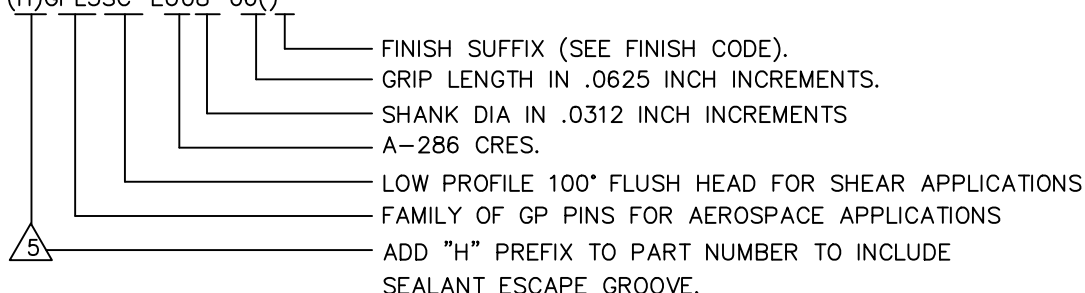
SUFFIX "C" = CADMIUM PLATE PER QQ-P-416 TYPE II CLASS 2 LUBRICATION WITH CHLORINE FREE CETYL ALCOHOL.

SUFFIX "CB" = CADMIUM PLATE AS ABOVE BARE NONE LUBRICATED

HEAD MARKING: HEAD SHALL BE MARKED WITH THE MANUFACTURER'S SYMBOL, BASIC NUMBER (GP3), AND MATERIAL DESIGNATOR (), DEPRESSED .010 MAX, ARRANGEMENT OPTIONAL. FOR PIN WITH A SEALANT ESCAPE GROOVE ADD DOT, DEPRESSED .010 MAX.

CODING: THE FIRST SET OF LETTERS DESIGNATE THE FAMILY OF GROOVE PROPORTIONED PINS FOR AEROSPACE APPLICATIONS (GPL).  
 THE SECOND SET OF LETTERS & NUMBER 3SC DESIGNATE HEAD SIZE, STYLE, AND LOAD APPLICATION.  
 THE NEXT LETTER "EU", IS THE MATERIAL DESIGNATOR FOR A-286 CRES, MIN SHEAR STRENGTH: 95 KSI.  
 THE NUMBERS FOLLOWING THE MATERIAL DESIGNATOR THE NOMINAL PIN SHANK DIAMETER IN .0312 INCH INCREMENTS.  
 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.

EXAMPLE: (H)GPL3SC-EU08-06()



MECHANICAL PROPERTIES					
GP PIN PART NUMBER	PIN NOM SIZE	MINIMUM DOUBLE SHEAR POUNDS	COLLAR PART NUMBER	MIN ULTIMATE TENSILE LBS WITH LISTED COLLARS	PIN POSITION SWAGE GAGE
GPL3SC-EU05-()	.164	4010	2SCC-3C05 2SC-3C05	1400	HG104-05
GPL3SC-EU06-()	.190	5380	2SCC-3C06 2SC-3C06	1600	HG104-06
GPL3SC-EU08-()	.250	9300	2SCC-3C08 2SC-3C08	3000	HG104-08
GPL3SC-EU10-()	.312	14600	2SCC-3C10 2SC-3C10	5000	HG104-10
GPL3SC-EU12-()	.375	21000	2SCC-3C12 2SC-3C12	7000	HG104-12

DIMENSIONS IN INCHES

C <sub>2</sub>	REVISED COMPANY LOGO & UPDATED TRADEMARK INFORMATION . (REF. ECR2923)		
	ISSUED	09/06/84	PIN, GROOVE PROPORTIONED GP PULL TYPE, SWAGE LOCKING, SHEAR 100° FLUSH HEAD A-286 CRES. (95 KSI SHEAR)
	REVISED	04/21/22	
PAGE	2	OF 3	GPL3SC-EU()-() SK12653



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GRIP NUMBER TABULATION														
GRIP DASH NO.	MINIMUM PERMISSIBLE GRIP OVERLAP	DESIGN GRIP RANGE		MAXIMUM PERMISSIBLE GRIP OVERLAP	05		06		08		10		12	
		MIN.	MAX.		Y	Z	Y	Z	Y	Z	Y	Z	Y	Z
02		△	.125	.141	.366	1.37	.404	1.38	.449	1.44	—	—	—	—
03	.109	.126	.188	.203	.429	1.43	.467	1.44	.512	1.50	.595	1.80	—	—
04	.172	.189	.250	.266	.491	1.49	.529	1.50	.574	1.56	.657	1.86	.692	2.05
05	.234	.251	.312	.328	.553	1.55	.591	1.56	.636	1.63	.719	1.92	.754	2.11
06	.297	.313	.375	.391	.616	1.62	.654	1.63	.699	1.69	.782	1.99	.817	2.17
07	.359	.376	.438	.453	.679	1.68	.717	1.69	.762	1.75	.845	2.05	.880	2.24
08	.422	.439	.500	.516	.741	1.74	.779	1.75	.824	1.81	.907	2.11	.942	2.30
09	.484	.501	.562	.578	.803	1.80	.841	1.81	.886	1.88	.969	2.17	1.004	2.36
10	.547	.563	.625	.641	.866	1.87	.904	1.88	.949	1.94	1.032	2.24	1.067	2.42
11	.609	.626	.688	.703	.929	1.93	.967	1.94	1.012	2.00	1.095	2.30	1.130	2.49
12	.672	.689	.750	.766	.991	1.99	1.029	2.00	1.074	2.06	1.157	2.36	1.192	2.55
13	.734	.751	.812	.828	1.053	2.05	1.091	2.06	1.136	2.13	1.219	2.42	1.254	2.61
14	.797	.813	.875	.891	1.116	2.12	1.154	2.13	1.199	2.19	1.282	2.49	1.317	2.67
15	.859	.876	.938	.953	1.179	2.18	1.217	2.19	1.262	2.25	1.345	2.55	1.380	2.74
16	.922	.939	1.000	1.016	1.241	2.24	1.279	2.25	1.324	2.31	1.407	2.61	1.442	2.80
17	.984	1.001	1.062	1.078	1.303	2.30	1.341	2.31	1.386	2.38	1.469	2.67	1.504	2.86
18	1.047	1.063	1.125	1.141	1.366	2.37	1.404	2.38	1.449	2.44	1.532	2.74	1.567	2.92
19	1.109	1.126	1.188	1.203	1.429	2.43	1.467	2.44	1.512	2.50	1.595	2.80	1.630	2.99
20	1.172	1.189	1.250	1.266	1.491	2.49	1.529	2.50	1.574	2.56	1.657	2.86	1.692	3.05
21	1.234	1.251	1.312	1.328	1.553	2.55	1.591	2.56	1.636	2.63	1.719	2.92	1.754	3.11
22	1.297	1.313	1.375	1.391	1.616	2.62	1.654	2.63	1.699	2.69	1.782	2.99	1.817	3.17
23	1.359	1.376	1.438	1.453	1.679	2.68	1.717	2.69	1.762	2.75	1.845	3.05	1.880	3.24
24	1.422	1.439	1.500	1.516	1.741	2.74	1.779	2.75	1.824	2.81	1.907	3.11	1.942	3.30
25	1.484	1.501	1.562	1.578	1.803	2.80	1.841	2.81	1.886	2.88	1.969	3.17	2.004	3.36
26	1.547	1.563	1.625	1.641	1.866	2.87	1.904	2.88	1.949	2.94	2.032	3.24	2.067	3.42
27	1.609	1.626	1.688	1.703	1.929	2.93	1.967	2.94	2.012	3.00	2.095	3.30	2.130	3.49
28	1.672	1.689	1.750	1.766	1.991	2.99	2.029	3.00	2.074	3.06	2.157	3.36	2.192	3.55
29	1.734	1.751	1.812	1.828	2.053	3.05	2.091	3.06	2.136	3.13	2.219	3.42	2.254	3.61
30	1.797	1.813	1.875	1.891	2.116	3.12	2.154	3.13	2.199	3.19	2.282	3.49	2.317	3.67
31	1.859	1.876	1.938	1.953	2.179	3.18	2.217	3.19	2.262	3.25	2.345	3.55	2.380	3.74
32	1.922	1.939	2.000	2.016	2.241	3.24	2.279	3.25	2.324	3.31	2.407	3.61	2.442	3.80

△ .080 MINIMUM SHEET THICKNESS RECOMMENDED.

DIMENSIONS IN INCHES

C<sub>2</sub>

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REVISED	04/21/22
PAGE	3 OF 3

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 A-286 CRES. (95 KSI SHEAR)

GPL3SC-EU()-()

SK12653