



Howmet Fastening Systems
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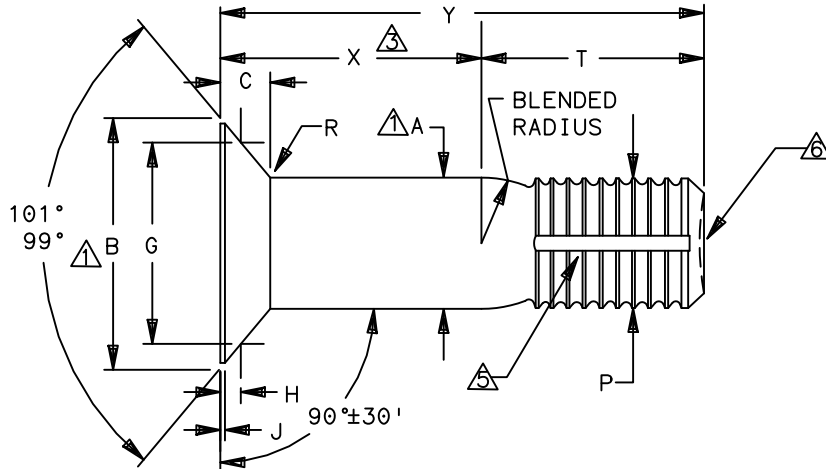
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GP™

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.



GP STUMP 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	P DIA MAX	R RAD ±.005	S △	T REF
							MAX	MIN					
GPS8TC-V05-() ()	.1640	.1630	.1630	.3280	.0692	.2831	.0202	.0175	.010	.156	.020	.0045	.254
GPS8TC-V06-() ()	.1900	.1890	.1890	.3781	.0793	.3271	.0228	.0200	.013	.184	.025	.0045	.303
GPS8TC-V07-() ()	.2187	.2177	.2177	.4415	.0939	.3314	.0477	.0447	.015	.213	.025	.0045	.390
GPS8TC-V08-() ()	.2500	.2490	.2490	.5036	.1068	.4319	.0314	.0288	.017	.244	.025	.0045	.390
GPS8TC-V10-() ()	.3125	.3115	.3115	.6301	.1337	.5450	.0372	.0342	.020	.306	.035	.0045	.496
GPS8TC-V12-() ()	.3750	.3740	.3740	.7571	.1607	.6581	.0430	.0401	.023	.370	.035	.0060	.562

- △ 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.
- △ DIMENSION B AND C FOR ENGINEERING REFERENCE ONLY, NOT FOR INSPECTION PURPOSES
- △ SEALANT ESCAPE GROOVE.
- △ END MAY BE FLAT OR CUPPED. IF CUPPED CHECK "Y" LENGTH TO FLAT AREA OF CUP.

PROCUREMENT SPECIFICATION: C2011
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DIMENSIONS IN INCHES

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

C10

C10 REVISED COMPANY LOGO & UPDATED TRADEMARK INFORMATION. (REF. ECR2779)		
ISSUED	05/03/77	STUMP, GROOVE PROPORTIONED GPT™, SWAGE LOCKING, TENSION 100° FLUSH HEAD 6AL-4V TITANIUM, (95 KSI SHEAR)
REVISED	08/11/21	
PAGE	1 OF 4	
		GPS8TC-V()-() () GPL123



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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 KAL-GARD 2242 / HI-KOTE™1 NC PER NAS4006NC. OPTIONAL TO COLOR STUMP END BLACK. PLUS CETYL ALCOHOL LUBE PER AS87132.

ACH = ALUMINUM COATING PER NAS4006 WITH ORANGE COLOR ON PIN END. PLUS CETYL ALCOHOL LUBE PER AS87132.

AD = ALUMINUM COATING KAL-GARD 2245 / HI-KOTE™1 PER EN4473 TYPE I OR HI-KOTE™1 NC PER EN4473 TYPE II. OPTIONAL TO COLOR STUMP END WHITE. PLUS CETYL ALCOHOL LUBE PER AS87132.

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

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

DR = ION VAPOR DEPOSITED ALUMINUM COATING PER BAC5315, OPTIONAL TO COLOR ON STUMP END RED. PLUS CETYL ALCOHOL LUBE PER AS87132.

HEAD MARKING: HEADS SHALL BE MARKED WITH THE MANUFACTURER'S SYMBOL, BASIC NUMBER (GP8), AND MATERIAL DESIGNATOR (V), DEPRESSED .010 MAX, ARRANGEMENT OPTIONAL. FOR STUMPS WITH A SEALANT ESCAPE GROOVE AN (H) MARK WILL BE INCLUDED.

CODING: THE FIRST SET OF LETTERS DESIGNATE THE FAMILY OF GROOVE PROPORTIONED GP™ STUMPS FOR AEROSPACE APPLICATIONS (GPS).

THE SECOND SET OF LETTERS & NUMBER 8TC DESIGNATE HEAD SIZE, STYLE, AND LOAD APPLICATION.

THE NEXT LETTER "V", IS THE MATERIAL DESIGNATOR FOR 6AL-4V TITANIUM MIN SHEAR STRENGTH: 95 KSI.

THE NUMBERS FOLLOWING THE MATERIAL DESIGNATE 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.

DIMENSIONS IN INCHES

ISSUED	05/03/77	STUMP, GROOVE PROPORTIONED GP™, SWAGE LOCKING, TENSION 100° FLUSH HEAD 6AL-4V TITANIUM, (95 KSI SHEAR)	GPS8TC-V()-(-)(-)
	08/11/21		
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REVISED COMPANY LOGO & UPDATED TRADEMARK INFORMATION.(REF. ECR2779)			GPL123



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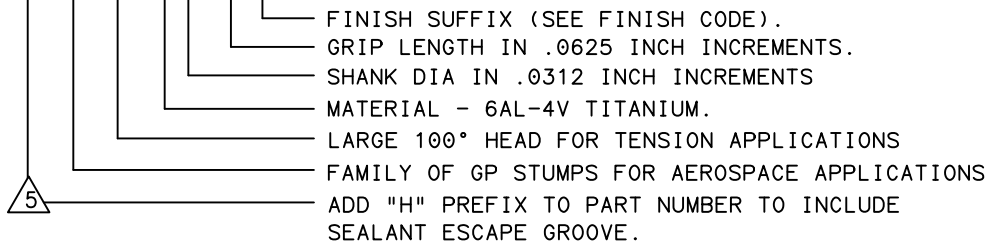
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EXAMPLE: (H)GPS8TC-V08-06()



MECHANICAL PROPERTIES						
GP STUMP PART NUMBER	NOM SIZE	MINIMUM DOUBLE SHEAR POUNDS	COLLAR PART NUMBER	MIN ULTIMATE TENSILE LBS WITH LISTED COLLARS	PIN POSITION SWAGE GAGE	MAX SQUEEZE LOAD LBS
GPS8TC-V05-()()	.1640	4010	2TCC-C05 2TC-C05	2180	HG107-05	TBD
GPS8TC-V06-()()	.1900	5380	2TCC-C06 2TC-C06	2750	HG107-06	3500
GPS8TC-V07-()()	.2187	7200	2TCC-C07 2TC-C07	3875	HG107-07	TBD
GPS8TC-V08-()()	.2500	9300	2TCC-C08 2TC-C08	5000	HG107-08	5950
GPS8TC-V10-()()	.3125	14600	2TCC-C10 2TC-C10	8300	HG107-10	7050
GPS8TC-V12-()()	.3750	21000	2TCC-C12 2TC-C12	12700	HG107-12	10400

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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	07 & 08	10	12
		MIN.	MAX.			Y	Y	Y	Y	Y
						±.010	±.010	±.010	±.010	±.010
02	.047	.063	.125	.141	.125	.379	.428			
03	.109	.126	.188	.203	.188	.442	.491	.578	.684	
04	.172	.189	.250	.266	.250	.504	.553	.640	.746	.812
05	.234	.251	.312	.328	.312	.566	.615	.702	.808	.874
06	.297	.313	.375	.391	.375	.629	.678	.765	.871	.937
07	.359	.376	.438	.453	.438	.692	.741	.828	.934	1.000
08	.422	.439	.500	.516	.500	.754	.803	.890	.996	1.062
09	.484	.501	.562	.578	.562	.816	.865	.952	1.058	1.124
10	.547	.563	.625	.641	.625	.879	.928	1.015	1.121	1.187
11	.609	.626	.688	.703	.688	.942	.991	1.078	1.184	1.250
12	.672	.689	.750	.766	.750	1.004	1.053	1.140	1.246	1.312
13	.734	.751	.812	.828	.812	1.066	1.115	1.202	1.308	1.374
14	.797	.813	.875	.891	.875	1.129	1.178	1.265	1.371	1.437
15	.859	.876	.938	.953	.938	1.191	1.241	1.328	1.434	1.500
16	.922	.939	1.000	1.016	1.000	1.254	1.303	1.390	1.496	1.562
17	.984	1.001	1.062	1.078	1.062	1.316	1.365	1.452	1.558	1.624
18	1.047	1.063	1.125	1.141	1.125	1.379	1.428	1.515	1.621	1.687
19	1.109	1.126	1.188	1.203	1.188	1.442	1.491	1.578	1.684	1.750
20	1.172	1.189	1.250	1.266	1.250	1.504	1.553	1.640	1.746	1.812
21	1.234	1.251	1.312	1.328	1.312	1.566	1.615	1.702	1.808	1.874
22	1.297	1.313	1.375	1.391	1.375	1.629	1.678	1.765	1.871	1.937
23	1.359	1.376	1.438	1.453	1.438	1.692	1.741	1.828	1.934	2.000
24	1.422	1.439	1.500	1.516	1.500	1.754	1.803	1.890	1.996	2.062
25	1.484	1.501	1.562	1.578	1.562	1.816	1.865	1.952	2.058	2.124
26	1.547	1.563	1.625	1.641	1.625	1.879	1.928	2.015	2.121	2.187
27	1.609	1.626	1.688	1.703	1.688	1.942	1.991	2.078	2.184	2.250
28	1.672	1.689	1.750	1.766	1.750	2.004	2.053	2.140	2.246	2.312
29	1.734	1.751	1.812	1.828	1.812	2.066	2.115	2.202	2.308	2.374
30	1.797	1.813	1.875	1.891	1.875	2.129	2.178	2.265	2.371	2.437
31	1.859	1.876	1.938	1.953	1.938	2.191	2.241	2.328	2.434	2.500
32	1.922	1.939	2.000	2.016	2.000	2.254	2.303	2.390	2.496	2.562

DIMENSIONS IN INCHES

C
10

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