



**HOWMET
AEROSPACE**

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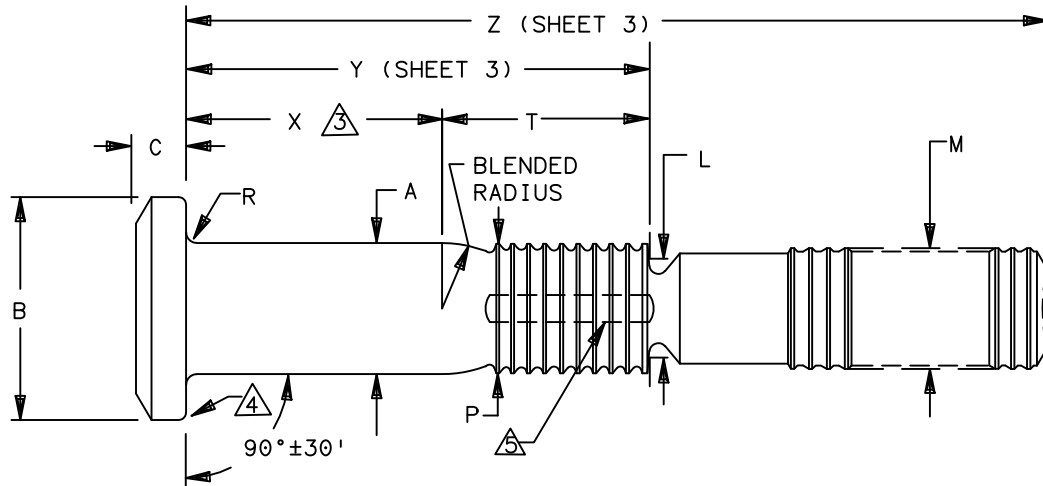
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GP™

**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 FAMILY NUMBER	NOM SIZE	A SHANK DIA + .0005 - .0000	A SHANK DIA COATED ± .0005	B HEAD DIA		C HEAD HEIGHT ± .005	L DIA REF	M DIA MAX	P DIA MAX	R RAD ± .005	S △	T REF
				MAX	MIN							
GPL8TP-EU05-() ()	.164	.1630	.1630	.332	.306	.060	.136	.156	.156	.020	.0045	.279
GPL8TP-EU06-() ()	.190	.1890	.1890	.377	.357	.069	.164	.184	.184	.020	.0045	.319
GPL8TP-EU08-() ()	.250	.2490	.2490	.440	.415	.085	.224	.244	.244	.020	.0045	.381
GPL8TP-EU10-() ()	.312	.3115	.3115	.505	.475	.107	.268	.306	.306	.025	.0045	.472
GPL8TP-EU12-() ()	.375	.3740	.3740	.600	.565	.135	.339	.368	.370	.025	.0060	.523

- △ CONCENTRICITY: CONICAL SURFACE OF PROTRUDING HEAD TO "A" DIAMETER TO BE WITHIN 5% OF "A" DIAMETER 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. (SEE DIMENSION "X" SHEET 3)
- △ PERMISSIBLE NATURAL FLOW OF MATERIAL, MUST BE FREE FROM SHARP CORNERS.

MATERIAL: A-286 CRES PER AMS5737

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.

PROCUREMENT SPECIFICATION: NAS1413
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DIMENSIONS IN INCHES

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

C ₄	REVISED COMPANY LOGO & UPDATED TRADEMARK INFORMATION. (REF. ECR2779)		
ISSUED	10/22/82	PIN, GROOVE PROPORTIONED GP™ PULL-TYPE, SWAGE LOCKING, TENSION PROTRUDING HEAD A-286 CRES. (95 KSI SHEAR)	GPL8TP-EU()-() ()
REVISED	08/10/21		
PAGE	1 OF 3		GPL110

C₄



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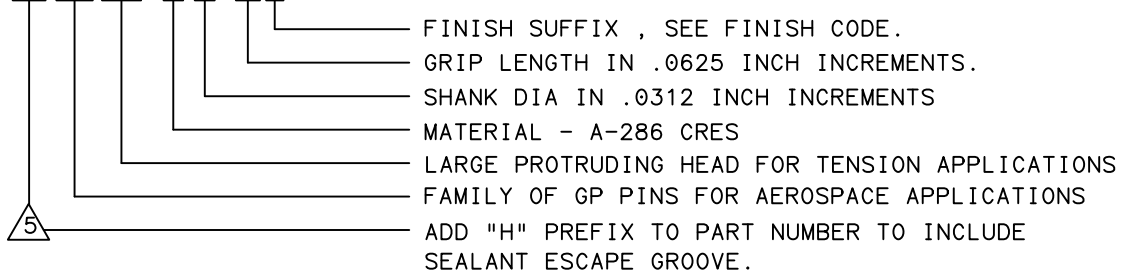
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FINISH: NO LETTER = PASSIVATE PER QQ-P-35 LUBRICATE WITH CETYL ALCOHOL
 SUFFIX "B" = PASSIVATE PER QQ-P-35 BARE-NO LUBRICATION
 SUFFIX "C" = CADMIUM PLATE PER QQ-P-416 TYPE II CLASS 2
 LUBRICATE WITH CHLORINE FREE CETYL ALCOHOL
 SUFFIX "CB" = CADMIUM PLATE AS ABOVE, BARE NON-LUBRICATED PIN

HEAD MARKING: HEADS SHALL BE MARKED WITH THE MANUFACTURER'S SYMBOL, BASIC NUMBER (GP8) AND THE LETTER (C) FOR A-286 CRES MATERIAL, DEPRESSED .010 MAX. ARRANGEMENT OPTIONAL. FOR PINS REQUIRING A SEALANT ESCAPE GROOVE, A DOT (.) MARK WILL ALSO BE INCLUDED ON THE HEAD IDENTIFICATION.

CODING: THE FIRST SET OF LETTERS DESIGNATE THE FAMILY OF GROOVE PROPORTIONED GP PINS FOR AEROSPACE APPLICATIONS (GPL).
 THE SECOND SET OF LETTERS & NUMBER 8TP DESIGNATE HEAD SIZE, STYLE, AND LOAD APPLICATION.
 THE NEXT LETTER "EU", IS THE MATERIAL DESIGNATOR FOR A286 CRES
 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.

EXAMPLE: (H)GPL8TP-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
GPL8TP-EU05-(())	.164	4010	2TC-C05D	2180	HG105-05
GPL8TP-EU06-(())	.190	5380	2TC-C06D	2750	HG105-06
GPL8TP-EU08-(())	.250	9300	2TC-C08D	5000	HG105-08
GPL8TP-EU10-(())	.312	14600	2TC-C10D	8300	HG105-10
GPL8TP-EU12-(())	.375	21000	2TC-C12D	12700	HG105-12

DIMENSIONS IN INCHES

C 4	REVISED COMPANY LOGO & UPDATED TRADEMARK INFORMATION. (REF. ECR2779)		PIN, GROOVE PROPORTIONED GP™ PULL-TYPE, SWAGE LOCKING, TENSION PROTRUDING HEAD A-286 CRES. (95 KSI SHEAR)	GPL8TP-EU(())-(()) GPL110
	ISSUED	10/22/82		
	REVISIED	08/10/21		
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GRIP NUMBER TABULATION

△ GRIP DASH NO.	MINIMUM PERMISSIBLE GRIP OVERLAP	DESIGN GRIP RANGE		MAXIMUM PERMISSIBLE GRIP OVERLAP	X ±.005	Ø5		Ø6		Ø8		10		12	
		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
02	.047	.063	.125	.141	.125	.404	1.38	.444	1.42	.506	1.50	—	—	—	—
03	.109	.126	.188	.203	.188	.467	1.44	.507	1.48	.569	1.56	.660	1.86	—	—
04	.172	.189	.250	.266	.250	.529	1.51	.569	1.55	.631	1.62	.722	1.92	.773	2.13
05	.234	.251	.312	.328	.312	.591	1.57	.631	1.61	.693	1.68	.784	1.99	.835	2.20
06	.297	.313	.375	.391	.375	.654	1.63	.694	1.67	.756	1.75	.847	2.05	.898	2.26
07	.359	.376	.438	.453	.438	.717	1.69	.757	1.73	.819	1.81	.910	2.11	.961	2.32
08	.422	.439	.500	.516	.500	.779	1.76	.819	1.80	.881	1.87	.972	2.17	1.023	2.38
09	.484	.501	.562	.578	.562	.841	1.82	.881	1.86	.943	1.93	1.034	2.24	1.085	2.44
10	.547	.563	.625	.641	.625	.904	1.88	.944	1.92	1.006	2.00	1.097	2.30	1.148	2.51
11	.609	.626	.688	.703	.688	.967	1.95	1.007	1.99	1.069	2.06	1.160	2.36	1.211	2.57
12	.672	.689	.750	.766	.750	1.029	2.01	1.069	2.05	1.131	2.12	1.222	2.42	1.273	2.63
13	.734	.751	.812	.828	.812	1.091	2.07	1.131	2.11	1.193	2.18	1.284	2.48	1.335	2.69
14	.797	.813	.875	.891	.875	1.154	2.13	1.194	2.17	1.256	2.25	1.347	2.55	1.398	2.76
15	.859	.876	.938	.953	.938	1.217	2.20	1.257	2.24	1.319	2.31	1.410	2.61	1.461	2.82
16	.922	.939	1.000	1.016	1.000	1.279	2.26	1.319	2.30	1.381	2.37	1.472	2.67	1.523	2.88
17	.984	1.001	1.062	1.078	1.062	1.341	2.32	1.381	2.36	1.443	2.43	1.534	2.73	1.585	2.95
18	1.047	1.063	1.125	1.141	1.125	1.404	2.38	1.444	2.42	1.506	2.50	1.597	2.80	1.648	3.01
19	1.109	1.126	1.188	1.203	1.188	1.467	2.44	1.507	2.48	1.569	2.56	1.660	2.86	1.711	3.07
20	1.172	1.189	1.250	1.266	1.250	1.529	2.51	1.569	2.55	1.631	2.62	1.722	2.92	1.773	3.13
21	1.234	1.251	1.312	1.328	1.312	1.591	2.57	1.631	2.61	1.693	2.68	1.784	2.99	1.835	3.20
22	1.297	1.313	1.375	1.391	1.375	1.654	2.63	1.694	2.67	1.756	2.75	1.874	3.05	1.898	3.26
23	1.359	1.376	1.438	1.453	1.438	1.717	2.69	1.757	2.73	1.819	2.81	1.910	3.11	1.961	3.32
24	1.422	1.439	1.500	1.516	1.500	1.779	2.76	1.819	2.80	1.881	2.87	1.972	3.17	2.023	3.38
25	1.484	1.501	1.562	1.578	1.562	1.841	2.82	1.881	2.86	1.943	2.93	2.034	3.24	2.085	3.44
26	1.547	1.563	1.625	1.641	1.625	1.904	2.88	1.944	2.92	2.006	3.00	2.097	3.30	2.148	3.51
27	1.609	1.626	1.688	1.703	1.688	1.967	2.95	2.007	2.99	2.069	3.06	2.160	3.36	2.211	3.57
28	1.672	1.689	1.750	1.766	1.750	2.029	3.01	2.069	3.05	2.131	3.12	2.222	3.42	2.273	3.63
29	1.734	1.751	1.812	1.828	1.812	2.091	3.07	2.131	3.11	2.193	3.18	2.284	3.48	2.335	3.69
30	1.797	1.813	1.875	1.891	1.875	2.154	3.13	2.194	3.17	2.256	3.25	2.347	3.55	2.398	3.76
31	1.859	1.876	1.938	1.953	1.938	2.217	3.20	2.257	3.24	2.319	3.31	2.410	3.61	2.461	3.82
32	1.922	1.939	2.000	2.016	2.000	2.279	3.26	2.319	3.30	2.381	3.37	2.472	3.67	2.523	3.88

DIMENSIONS IN INCHES

C4

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REVISED	08/10/21
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PIN, GROOVE PROPORTIONED GP™
PULL-TYPE, SWAGE LOCKING,
TENSION PROTRUDING HEAD
A-286 CRES. (95 KSI SHEAR)

GPL8TP-EU()-()-()
GPL110

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