SPS TECHNOLOGIES

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DRAWING NUMBER **SPS-S-94709**

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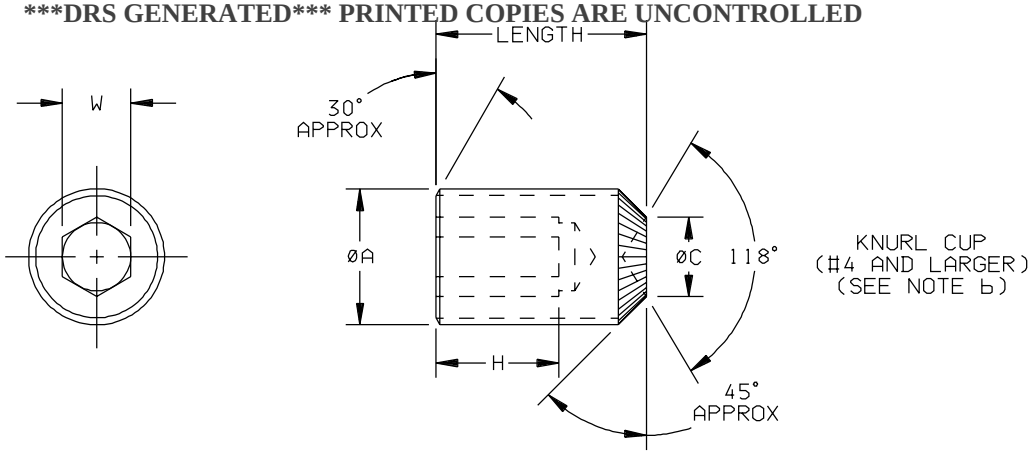
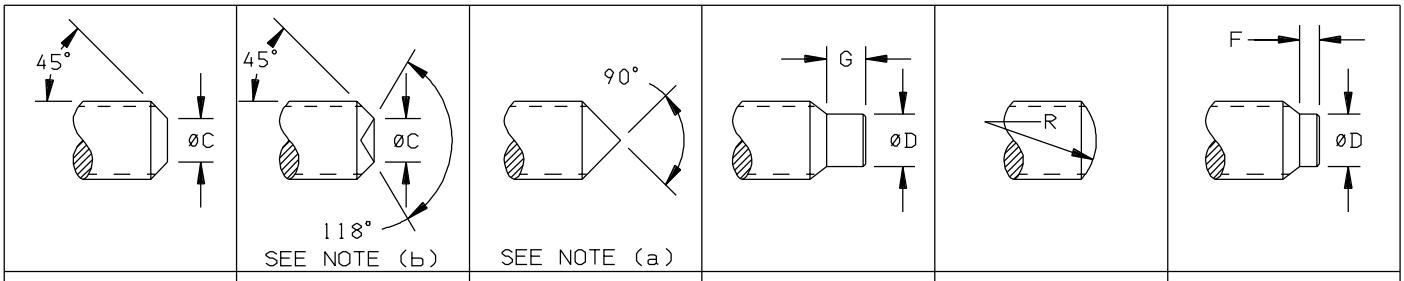


KNURL CUP
(#4 AND LARGER)
(SEE NOTE b)

LENGTH TOLERANCE			
UP TO .630	OVER .630 TO 2.0"	OVER 2.0" TO 6.0"	OVER 6.0"
±.01	±.02	±.03	±.06



FLAT | PLAIN CUP | CONE | FULL DOG | OVAL | HALF DOG

(a) WHEN LENGTH EQUALS NOMINAL DIAMETER OR LESS, INCLUDED ANGLE IS 118°.
(#4 X 1/8 AND #8 X 3/16 ALSO HAVE 118° ANGLE)
(b) WHEN LENGTH EQUALS NOMINAL DIAMETER OR LESS, INCLUDED ANGLE IS 130°.

TABLE I

THREAD SIZE		A UNRC		A UNRF		C		D		F		G		H **	W	R
UNRC-3A	UNRF-3A	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MIN	NOM	RAD
	#0-80			.0600	.0568	.033	.027	.040	.037	.0170	.0130	.0330	.0270	.035	.0280	.047
#1-64	#1-72	.0730	.0692	.0730	.0695	.040	.033	.049	.045	.0210	.0170	.0400	.0340	.035	.0350	.055
#2-56	#2-64	.0860	.0819	.0860	.0822	.047	.039	.057	.053	.0240	.0200	.0470	.0390	.035	.0350	.062
#3-48	#3-56	.0990	.0945	.0990	.0949	.054	.045	.066	.062	.0270	.0230	.0540	.0460	.060	.0500	.078
#4-40	#4-48	.1120	.1069	.1120	.1075	.061	.051	.075	.070	.0300	.0260	.0600	.0520	.075	.0500	.084
#5-40	#5-44	.1250	.1199	.1250	.1202	.067	.057	.083	.078	.0330	.0270	.0640	.0560	.075	.0625	.093
#6-32	#6-40	.1380	.1320	.1380	.1329	.074	.064	.092	.087	.0380	.0320	.0740	.0660	.075	.0625	.109
#8-32	#8-36	.1640	.1580	.1640	.1585	.087	.076	.109	.103	.0430	.0370	.0840	.0760	.075	.0781	.125
#10-24	#10-32	.1900	.1828	.1900	.1840	.102	.088	.127	.120	.0490	.0410	.0950	.0850	.105	.0937	.141
1/4-20	1/4-28	.2500	.2419	.2500	.2435	.132	.118	.156	.149	.0665	.0585	.1300	.1200	.105	.1250	.188
5/16-18	5/16-24	.3125	.3038	.3125	.3053	.172	.156	.203	.195	.0820	.0740	.1640	.1480	.140	.1562	.234
3/8-16	3/8-24	.3750	.3656	.3750	.3678	.212	.194	.250	.241	.0987	.0887	.1955	.1795	.140	.1875	.281
7/16-14	7/16-20	.4375	.4272	.4375	.4294	.252	.232	.296	.287	.1140	.1040	.2267	.2107	.190	.2187	.328
1/2-13	1/2-20	.5000	.4891	.5000	.4919	.291	.270	.343	.334	.1300	.1200	.2600	.2400	.210	.2500	.375
9/16-12	9/16-18	.5625	.5511	.5625	.5538	.332	.309	.390	.379	.1456	.1356	.2910	.2710	.265	.2500	.422
5/8-11	5/8-18	.6250	.6129	.6250	.6163	.371	.347	.468	.456	.1640	.1480	.3225	.3025	.265	.3125	.468
3/4-10	3/4-16	.7500	.7371	.7500	.7406	.450	.425	.562	.549	.1955	.1795	.3850	.3650	.330	.3750	.562
7/8-9	7/8-14	.8750	.8611	.8750	.8647	.530	.502	.656	.642	.2267	.2107	.4475	.4275	.450	.5000	.656
1-8	1-12	1.0000	.9850	1.0000	.9897	.609	.579	.750	.734	.2600	.2400	.5100	.4900	.550	.5625	.750
1-1/8-7	1-1/8-12	1.1250	1.1086	1.1250	1.1136	.689	.655	.843	.826	.2910	.2710	.5775	.5475	.650	.5625	.844
1-1/4-7	1-1/4-12	1.2500	1.2336	1.2500	1.2386	.767	.733	.937	.920	.3225	.3025	.6400	.6100	.700	.6250	.938
1-3/8-6	1-3/8-12	1.3750	1.3568	1.3750	1.3636	.848	.808	1.031	1.011	.3537	.3337	.7025	.6725	.700	.6250	1.032
1-1/2-6	1-1/2-12	1.5000	1.4818	1.5000	1.4886	.926	.886	1.125	1.105	.3850	.3650	.7650	.7350	.750	.7500	1.125

** VALUES SHOWN IN COLUMN H ARE FOR MINIMUM STOCK LENGTH CUP POINT SCREWS.

TOLERANCES ±.010 AND ±2°
SURFACE ROUGHNESS 125√
UNLESS OTHERWISE NOTED

THIS PRODUCT DRAWING IS DRAFTED IN ACCORDANCE WITH ASME Y14.5M

DRAWN BY: STEVE FOSTER — DATE: 7/28/97
APPROVED: S. BUZOLITS
APPROVED: L. KLINE — DATE: 3/21/01

SPS TECHNOLOGIES

FSCM NO. 56878
CUSTODIAN: JENKINTOWN, PA.

STANDARDS AND SPECIFICATIONS
FF-S-200

TITLE: SET SCREW, HEXAGON RECESS
VARIOUS POINT STYLES
ALLOY STEEL, STAINLESS STEEL

PART NUMBER: SEE TABLE II & NOTE 5

TABLE II

BASIC PART NUMBER ALLOY STEEL	POINT TYPE	BASIC PART NUMBER STAINLESS STEEL	GENERAL APPLICATIONS
94709	FLAT	94947	USE WHERE PARTS MUST BE FREQUENTLY RE-SET; HARDENED SHAFTS, ADJUSTING SCREW.
94710	PLAIN CUP	94948	USE WHERE HIGH TIGHTENING TORQUES ARE IMPRACTICAL; ZINC, DIE CASTINGS.
94711	CONE	94950	USE WHERE PERMANENT LOCATION IS NECESSARY; PIVOTS, FINE ADJUSTMENTS.
94712	FULL DOG	94974	USE WHERE PERMANENT LOCATION IS NECESSARY; HOLLOW TUBE, REPLACES DOWEL PIN.
94713	KNURL CUP	94949	USE FOR QUICK AND PERMANENT LOCATION; GEARS,COLLARS. RESISTS SCREW LOOSENING.
94714	OVAL	94951	USE FOR FREQUENT ADJUSTMENT WITHOUT DEFORMATION AND AGAINST ANGULAR SURFACES.
94946	HALF DOG	94975	USE WHERE PERMANENT LOCATION IS NECESSARY; HOLLOW TUBE, REPLACES DOWEL PIN.

THE RECOMMENDED SEATING TORQUES LISTED SERVE AS GUIDELINES ONLY. EVEN WHEN USING THE RECOMMENDED SEATING TORQUES, THE INDUCED LOADS OBTAINED MAY VARY AS MUCH AS ±25% DEPENDING UPON THE UNCONTROLLED VARIABLES SUCH AS MATING MATERIAL, PLATING, LUBRICATION, SURFACE FINISH, HARDNESS, BOLT/JOINT COMPLIANCE, METHOD OF TIGHTENING, ETC.

HOWEVER, THE BEST WAY TO DETERMINE THE CORRECT TORQUE IS TO RUN TESTS ON THE PARTICULAR JOINT BY TIGHTENING SAMPLE BOLTS UNTIL THEY JUST BEGIN TO YIELD. THE OPTIMUM TORQUE IS 80% OF THIS VALUE.

TABLE III

SIZE	DASH NUMBER	RECOMMENDED SEATING TORQUE IN POUNDS	
		ALLOY STEEL	STAINLESS STEEL
#0	90	1	.4
#1	91	1.8	1.2
#2	92	1.8	1.2
#3	93	5	4
#4	94	5	4
#5	95	10	7
#6	96	10	7
#8	98	20	16
#10	3	36	26
1/4	4	87	70
5/16	5	165	130
3/8	6	290	230
7/16	7	430	340
1/2	8	620	500
9/16	9	620	500
5/8	10	1325	980
3/4	12	2400	1700
7/8	14	3600	3000
1	16	5000	4000
1-1/8	18	7200	5600
1-1/4	20	9600	7700
1-3/8	22	9600	7700
1-1/2	24	11230	9100

1. MATERIAL: ALLOY STEEL PER AISI 4032, 4037, 40L37SE, 4137, 4140, 8630, 8740 OR EQUIVALENT.
   300 SERIES AUSTENITIC STAINLESS STEEL.
2. HEAT TREAT: 45-53 HRC FOR ALLOY STEEL ONLY. FOR ALLOY STEEL PARTS WITH NYLON PLUG - 28 HRC MINIMUM.
3. FINISH: SEE NOTE 5.
4. DIMENSIONS AND TOLERANCING PER ASME B18.3.
5. PART NUMBERING: 94XXX( ) ( ) ( ) - ( ) ( )

- ( ) FINISH = B-CHEMICAL BLACK OXIDE PER MIL-C-13924.
  C-CADMIUM PLATE PER QQ-P-416,TYPE I,CLASS 3.
  D-CADMIUM PLATE PER QQ-P-416,TYPE II,CLASS 3.
  H-CADMIUM PLATE PER QQ-P-416,TYPE I,CLASS 2.
  J-CADMIUM PLATE PER QQ-P-416,TYPE II,CLASS 2. (YELLOW CHROMATE)
  M-CADMIUM PLATE PER QQ-P-416,TYPE II,CLASS 2. (OLIVE DRAB)
  S-SILVER PLATE PER AMS2410.
  U-ZINC PLATE PER ASTM B633 TYPE III SCI.
  Z-ZINC PLATE PER ASTM B633 TYPE II SCI.
  NO LETTER-THERMAL OXIDE (BLACK) PLUS RUST PREVENTATIVE OIL. (ALLOY STEEL)
  NO LETTER-PASSIVATE PER ASTM A967 OR EQUIVALENT (STAINLESS STEEL)
- ( ) = LENGTH IN SIXTEENTHS
- ( ) THREAD = C-COARSE, F-FINE
- ( ) = DASH NUMBER (SEE TABLE III)
- ( ) LOCKING FEATURE = NO LETTER-NO LOCKING FEATURE, E-TYPE P (PATCH) PER MIL-DTL-18240, K-TYPE N (PELLET) PER MIL-DTL-18240
- 94XXX BASIC PART NUMBER (SEE TABLE II)