

# TECHNICAL MANUAL



## ACR® PHILLIPS® Drive Systems

Includes comprehensive engineering Recess and Gage Standards, Fastener Drawings, Driver and Gage Standards, and Punch Standards.



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# ACR® PHILLIPS® Drive System Technical Manual



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# ACR<sup>®</sup> RIBBED PHILLIPS<sup>®</sup> ENGINEERING MANUAL

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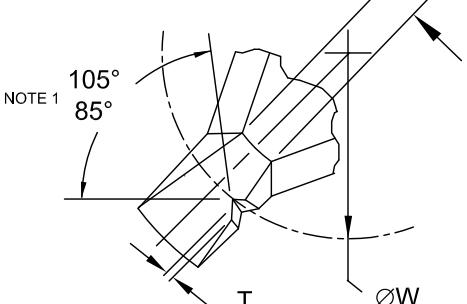
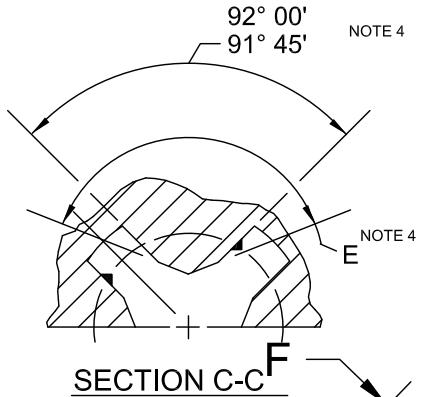
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	100° Oval Head	PSC-4004	1 of 1	05/01/13
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# ACR® RIBBED PHILLIPS® ENGINEERING MANUAL

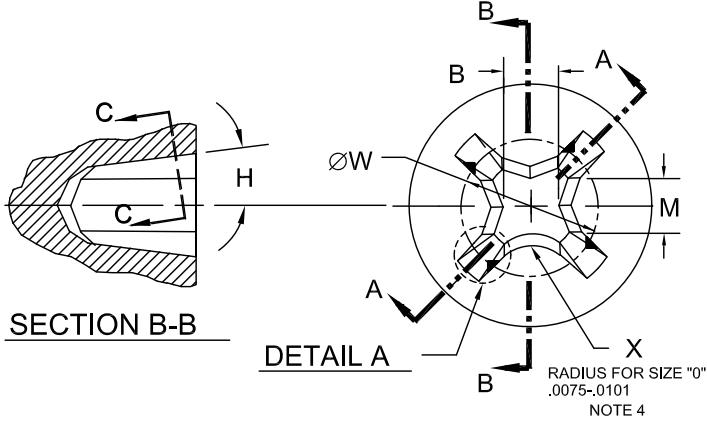
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## RECESS AND GAGES TABLE OF CONTENTS

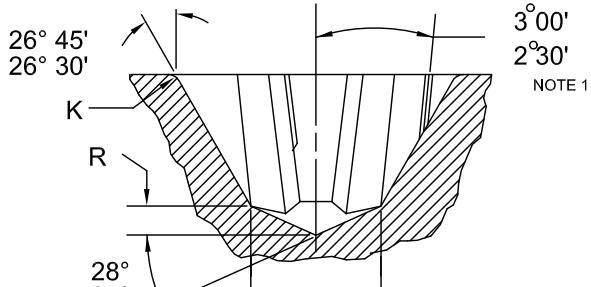
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E.	Recess Inspection Procedure	PSC-1004	1 of 7	05-01-13
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DETAIL A



DETAIL A RADIUS FOR SIZE "0" .0075-.0101  
NOTE 4



SECTION A-A

RECESS SIZE	B	E +0° 00' -0° 15'	F	ØG +.002 -.000	H +0 15' -0 00'	K RAD	M	R REF.	ØW	T
0	.0260 .0240	-	.012 .014	.032	7° 00'	.O12 MAX.	.0104 .0140	.009	.048 .040	.003 .001
1	.0380 .0370	138° 00'	.018 .020	.050	7° 00'	.020	.016 .018	.013	.072 .064	.004 .002
2	.0588 .0568	140° 00'	.026 .029	.090	5° 45'	.025	.031 .033	.024	.123 .111	.005 .003
3	.0960 .0940	146° 00'	.029 .032	.150	5° 45'	.030	.078 .080	.040	.177 .165	
4S	.1380 .1360	153° 00'	.047 .050	.200	7° 00'	.035	.094 .096	.053	.244 .232	
4L	.1380 .1360	153° 00'	.047 .050	.200	7° 00'	.035	.094 .096	.053	.280 .268	
5	.2280 .2260	162° 46'	.067 .070	.311	7° 00'	.040	.159 .161	.083	.417 .401	.007 .004
6	.2770 .2750	157° 57'	.097 .101	.374	7° 00'	.055	.176 .178	.099	.520 .504	

NOTES:

1. RIBS OF 85° TO 105° FORM ARE TO BE INCLINED 2° 30' TO 3° 00' TO THE CENTERLINE AXIS OF THE RECESS IN THE PLANES OF THE WING SIDE WALLS.
2. PUNCH NUMBERS WILL INDICATE SLANT RIBS BY SUBSTITUTING AN "S" IN PLACE OF THE DASH. (EXAMPLE: AN ACR® PUNCH WITH THE DESIGNATION PSC1101-1 WOULD BECOME PSC1101S1 FOR A SLANT RIBBED PUNCH.)
3. THIS PRODUCT IS COVERED BY U.S. PATENT NUMBER 5,120,173 & 5,203,742.
4. INCLUDED WING ANGLE AND ANGLE "E" OR RADIUS "X" ARE TO BE MEASURED NORMAL TO ANGLE "H".

REVISION 1/ REDRAWN 2/ REVISED  
7-30-97 5-1-13

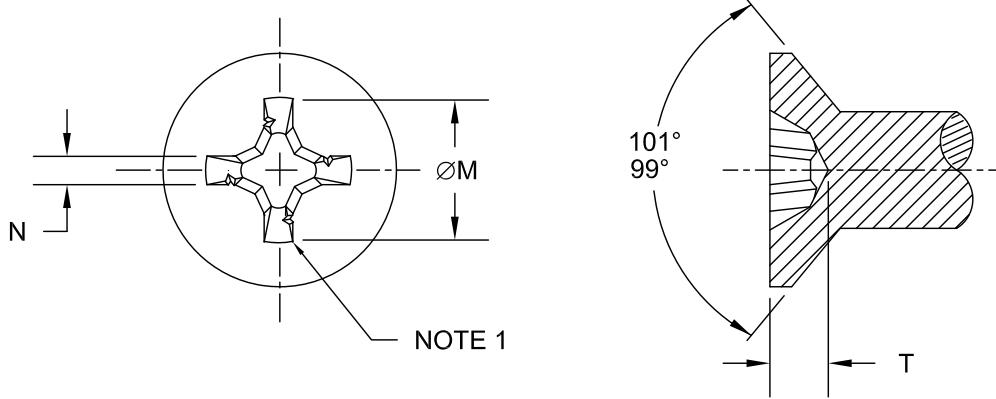
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## ACR® RIBBED PHILLIPS® RECESS DIMENSIONS

DRAWN S. GREGORY	DATE 12-2-93	DRAWING NUMBER <b>PSC-4000</b>
CHECKED: G. LAMONICA	DATE 7-30-97	SHEET 1 OF 1
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ®  
HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



THREAD SIZE		RECESS SIZE	PUNCH NUMBER	ØM		T		N	RECESS PENETRATION	
TENSION HEAD	SHEAR HEAD			MAX	MIN	MAX	MIN		MAX	MIN
.0600-80		0	1101S1	.060	.047	.035	.019	.012	.028	.012
.0730-64		0	1101S17	.068	.055	.043	.027	.014	.036	.020
.0860-56		1	1101S2	.095	.082	.056	.040	.021	.049	.033
.0990-48		1	1101S18	.102	.089	.063	.047	.022	.056	.040
.1120-40		1	1101S3	.117	.104	.078	.062	.024	.071	.055
.1380-20	.1640-32	2	1101S4	.154	.141	.086	.063	.027	.075	.052
.1640-32	.1900-32	2	1101S5	.169	.156	.101	.078	.029	.090	.067
.1900-32	.2500-28	2	1101S6	.184	.171	.116	.093	.030	.105	.082
.2500-28	.3125-24	3	1101S7	.247	.234	.135	.112	.033	.118	.095
.3125-24	.3750-24	4S	1101S8	.317	.304	.168	.146	.057	.148	.126
.3750-24	.4375-20	4S	1101S9	.341	.328	.193	.171	.060	.173	.151
.4375-20	.5000-20	4L	1101S10	.364	.351	.216	.194	.064	.196	.174
.5000-20	.5625-18	4L	1101S11	.393	.380	.245	.223	.068	.225	.203
.5625-18	.6250-18	4L	1101S12	.424	.411	.276	.254	.072	.256	.234
.6250-18	.7500-16	5	1101S13	.516	.493	.281	.255	.087	.248	.222
.7500-16	.8750-14	5	1101S14	.577	.554	.342	.316	.097	.309	.283
.8750-14	1.0000-12	6	1101S15	.750	.727	.469	.445	.141	.433	.409
1.0000-12	-	6	1101S16	.813	.790	.533	.509	.151	.497	.473

NOTES:

1. RECESS PER PSC-4000.

REVISION 1/ECC# 130 2/UPDATE 5-1-13  
11-24-97

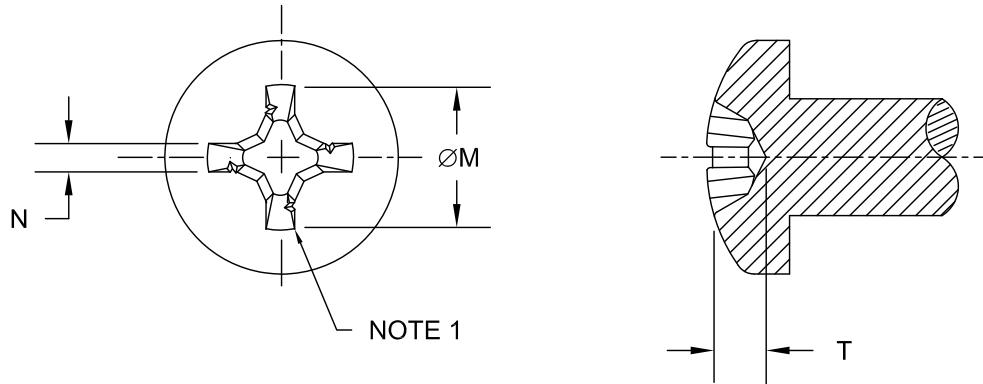
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## ACR® RIBBED PHILLIPS® 100° FLUSH HEAD SCREW

DRAWN R. CHERLIN	DATE 7-30-97	DRAWING NUMBER <b>PSC-4001</b>
CHECKED: G. LAMONICA	DATE 7-30-97	SHEET 1 OF 1
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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THREAD SIZE	RECESS SIZE	PUNCH NUMBER	ALTERNATE PUNCH NUMBER	$\varnothing M$		T		N	RECESS PENETRATION	
				MAX	MIN	MAX	MIN		MAX	MIN
.0600-80	0	1102S1	-	.067	.054	.039	.021	.013	.032	.014
.0730-64	0	1102S17	-	.074	.061	.047	.030	.015	.040	.023
.0860-56	1	1102S2	1106S2	.104	.091	.059	.041	.022	.052	.034
.0990-48	1	1102S18	-	.112	.099	.068	.050	.024	.061	.043
.1120-40	1	1102S3	1106S3	.122	.109	.078	.060	.024	.071	.053
.1380-32	2	1102S4	1106S4	.166	.153	.091	.066	.029	.080	.054
.1640-32	2	1102S5	1106S5	.182	.169	.108	.082	.031	.096	.071
.1900-32	2	1102S6	1106S6	.199	.186	.124	.100	.032	.114	.089
.2500-28	3	1102S7	1106S7	.281	.268	.161	.135	.037	.144	.118
.3125-24	4S	1102S8	1106S8	.350	.337	.193	.169	.062	.173	.149
.3750-24	4L	1102S9	1106S9	.389	.376	.233	.210	.067	.213	.189
.4375-20	4L	1102S10	1106S10	.413	.400	.259	.234	.071	.238	.214
.5000-20	4L	1102S11	1106S11	.434	.421	.280	.255	.074	.260	.237
.5625-18	4L	1102S12	-	.466	.453	.312	.289	.079	.292	.269
.6250-18	5	1102S13	-	.586	.563	.344	.315	.099	.311	.282
.7500-16	5	1102S14	-	.633	.610	.390	.362	.106	.357	.329

NOTES:

1. RECESS PER PSC-4000.

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### ACR® RIBBED PHILLIPS® PAN HEAD SCREW

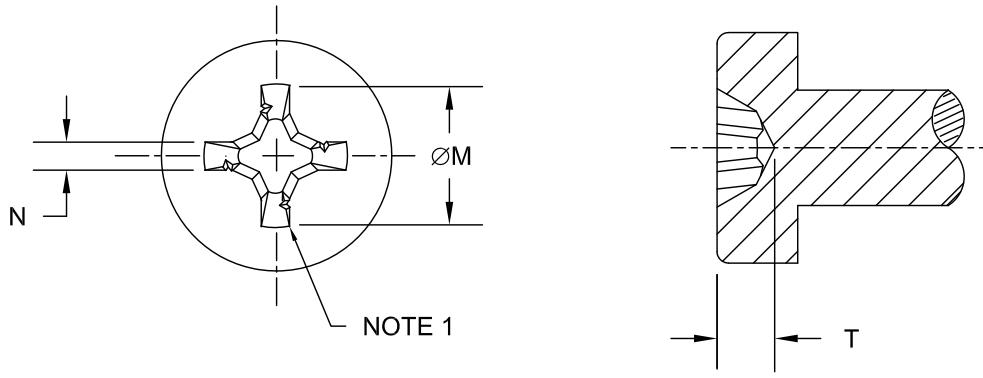
DRAWN R. CHERLIN	DATE 7-30-97	DRAWING NUMBER <b>PSC-4002</b>
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CHECKED: G. LAMONICA	DATE 7-30-97	SHEET 1 OF 1
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PHONE: 774-396-6190 FAX: 508-966-2326

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REVISION 1\ UPDATE  
5-1-13



THREAD SIZE	RECESS SIZE	PUNCH NUMBER	ALTERNATE PUNCH NUMBER	ØM		T		N	RECESS PENETRATION	
				MAX	MIN	MAX	MIN		MIN	MAX
.0600-80	0	1103S1	1101S17	.068	.055	.043	.027	.014	.036	.020
.0730-64	0	1103S17	-	.076	.063	.051	.035	.015	.044	.028
.0860-56	1	1103S2	1101S18	.102	.089	.063	.047	.022	.056	.040
.0990-48	1	1103S18	-	.107	.094	.068	.052	.023	.061	.045
.1120-40	1	1103S3	1101S3	.117	.104	.078	.062	.024	.071	.055
.1380-32	2	1103S4	-	.164	.151	.096	.073	.029	.085	.062
.1640-32	2	1103S5	-	.174	.161	.106	.083	.030	.095	.072
.1900-32	2	1103S6	-	.189	.176	.121	.098	.032	.110	.087
.2500-28	3	1103S7	-	.268	.255	.156	.133	.035	.139	.116
.3125-24	4S	1103S8	-	.334	.321	.186	.164	.060	.166	.144
.3750-24	4L	1103S9	-	.364	.351	.216	.194	.064	.196	.174
.4375-20	4L	1103S10	1101S11	.393	.380	.245	.223	.068	.225	.203
.5000-20	4L	1103S11	-	.409	.396	.261	.239	.070	.241	.219
.5625-18	4L	1103S12	-	.448	.435	.300	.278	.076	.280	.258
.6250-18	5	1103S13	1101S14	.577	.554	.342	.316	.097	.309	.283
.7500-16	5	1103S14	-	.640	.617	.406	.380	.107	.373	.347
.8750-14	6	1103S15	1101S15	.750	.727	.469	.445	.141	.433	.409
1.0000-12	6	1103S16	1101S16	.813	.790	.533	.509	.151	.497	.473

REVISION 1 \ UPDATE 5-1-13

#### NOTES:

1. RECESS PER PSC-4000.

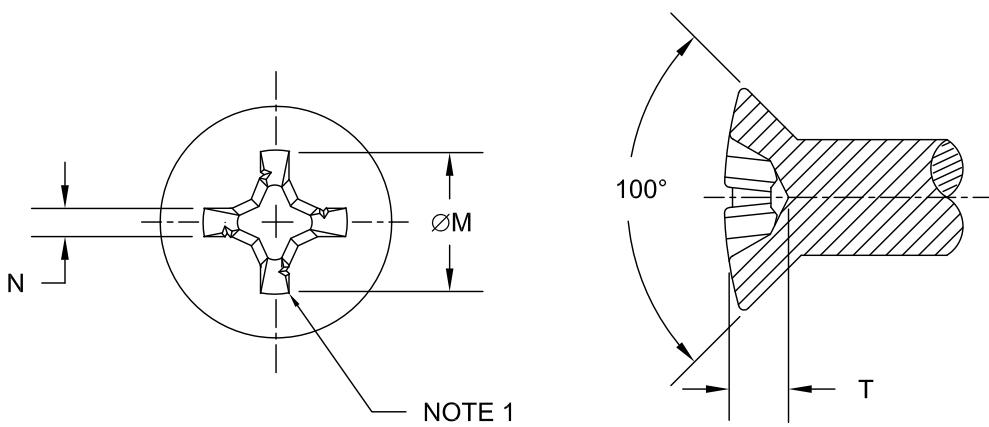
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#### ACR® RIBBED PHILLIPS® FILLISTER HEAD SCREW

DRAWN R. CHERLIN	DATE 7-30-97	DRAWING NUMBER <b>PSC-4003</b>
CHECKED: G. LAMONICA	DATE 7-30-97	SHEET 1 OF 1
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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THREAD SIZE	RECESS SIZE	PUNCH NUMBER	$\varnothing M$		T		N	RECESS PENETRATION	
			MAX	MIN	MAX	MIN		MAX	MIN
.0860-56	1	1104S2	.101	.088	.058	.041	.022	.051	.034
.0990-48	1	1104S18	.110	.097	.068	.051	.023	.061	.044
.1120-40	1	1104S3	.125	.112	.083	.065	.025	.076	.058
.1380-32	2	1104S4	.178	.165	.105	.081	.030	.094	.069
.1640-32	2	1104S5	.192	.179	.119	.095	.032	.108	.084
.1900-32	2	1104S6	.209	.196	.137	.113	.033	.126	.102
.2500-28	3	1104S7	.290	.277	.172	.148	.036	.155	.131
.3125-24	4L	1104S8	.390	.377	.234	.210	.069	.214	.190
.3750-24	4L	1104S9	.410	.397	.255	.232	.071	.235	.212

NOTES:

1. RECESS PER PSC-4000.

REVISION 1\ UPDATE  
5-1-13

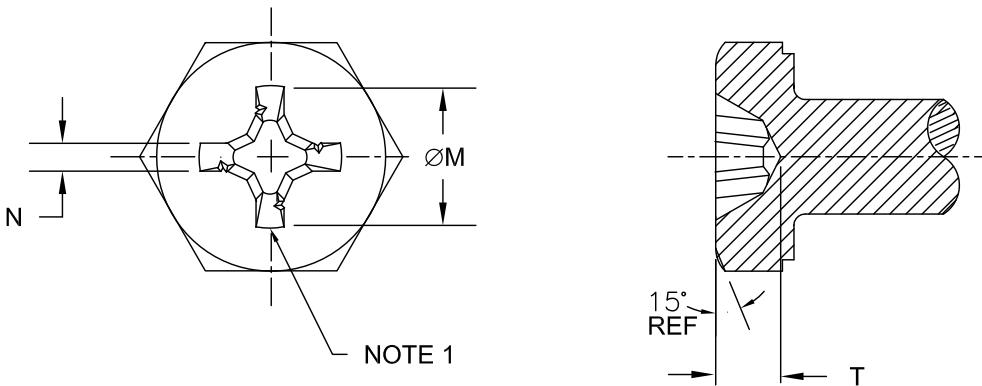
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## ACR® RIBBED PHILLIPS® 100° OVAL HEAD SCREW

DRAWN R. CHERLIN	DATE 7-30-97	DRAWING NUMBER <b>PSC-4004</b>
CHECKED: G. LAMONICA	DATE 7-30-97	SHEET 1 OF 1
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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THREAD SIZE	HEX SIZE	RECESS SIZE	PUNCH NUMBER	ØM		T		N	RECESS PENETRATION	
				MAX	MIN	MAX	MIN		MIN	MAX
.1120-40	3/16	1	1105S3	.124	.111	.085	.069	.025	.078	.062
.1380-32	1/4	2	1105S4	.149	.136	.081	.058	.027	.070	.047
.1640-32	1/4	2	1105S5	.189	.176	.121	.098	.032	.110	.087
.1900-32	5/16	2	1105S6	.204	.191	.136	.113	.033	.125	.102
.1900-32	3/8	2	1105S6A	.204	.191	.136	.113	.033	.125	.102
.2500-28	3/8	3	1105S7	.283	.270	.171	.148	.037	.154	.131
.2500-28	7/16	3	1105S7A	.283	.270	.171	.148	.037	.154	.131
.3125-24	1/2	4L	1105S8	.364	.351	.216	.194	.064	.196	.174
.3125-24	7/16	4L	1105S8A	.364	.351	.216	.194	.064	.196	.174
.3750-24	1/2	4L	1105S9	.393	.380	.245	.223	.068	.225	.203
.3750-24	9/16	4L	1105S9A	.393	.380	.245	.223	.068	.225	.203
.4375-20	5/8	4L	1105S10	.409	.396	.261	.239	.071	.241	.219
.4375-20	11/16	4L	1105S10A	.409	.396	.261	.239	.071	.241	.219
.5000-20	3/4	4L	1105S11	.424	.411	.276	.254	.072	.256	.234

REVISION 1\ UPDATE 5-1-13

NOTES:

1. RECESS PER PSC-4000.
2. THESE HEADS ARE NOT DESIGNED TO WITHSTAND TENSILE LOADS BASED ON FED-STD-H28 TENSILE STRESS AREAS.

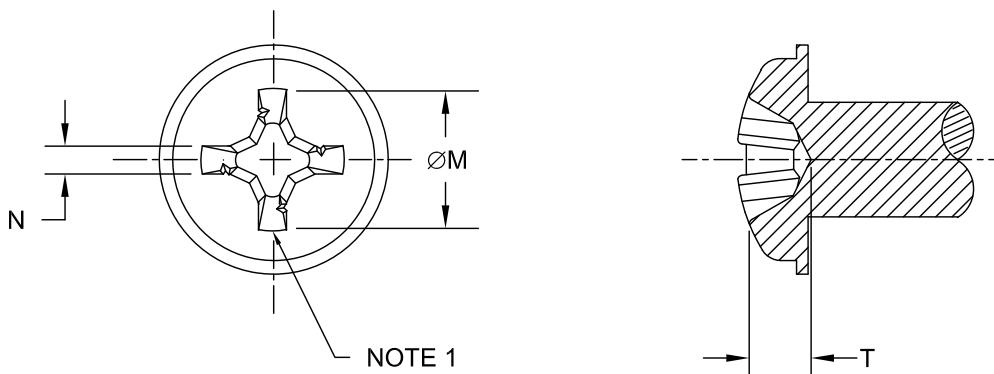
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### ACR® RIBBED PHILLIPS® TRIMMED HEX HEAD SCREW

DRAWN R. CHERLIN	DATE 7-30-97	DRAWING NUMBER <b>PSC-4005</b>
CHECKED: G. LAMONICA	DATE 7-30-97	SHEET 1 OF 1
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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THREAD SIZE	RECESS SIZE	PUNCH NUMBER	$\varnothing M$		T		N	RECESS PENETRATION	
			MAX	MIN	MAX	MIN		MAX	MIN
.1640-32	2	1107S5	.169	.156	.096	.072	.029	.085	.061
.1900-32	2	1107S6	.184	.171	.112	.088	.030	.101	.077
.2500-28	3	1107S7	.253	.240	.135	.111	.033	.118	.094

NOTES:

1. RECESS PER PSC-4000.

REVISION 1\ UPDATE  
5-1-13

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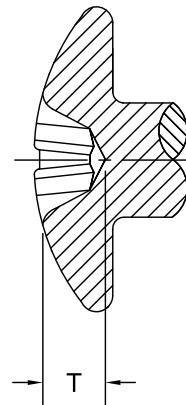
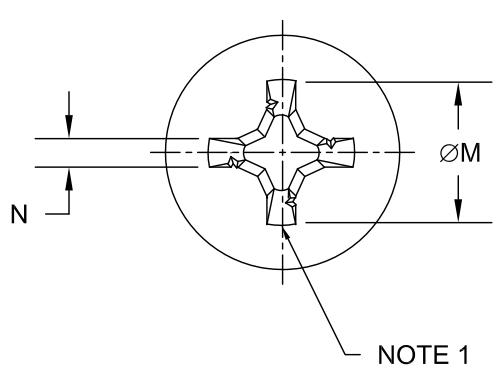
## ACR® RIBBED PHILLIPS® WASHER HEAD SCREW

DRAWN R. CHERLIN	DATE 7-30-97	DRAWING NUMBER <b>PSC-4006</b>
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CHECKED: G. LAMONICA	DATE 7-30-97	SHEET 1 OF 1
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HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



THREAD SIZE NOTE 2	RECESS SIZE	PUNCH NUMBER	$\emptyset M$		T		N	RECESS PENETRATION	
			MAX	MIN	MAX	MIN		MAX	MIN
.1380-32	2	1108S4	.155	.142	.079	.054	.027	.068	.043
.1640-32	2	1108S5	.168	.155	.093	.068	.028	.082	.057
.1900-32	2	1108S6	.181	.168	.107	.082	.029	.096	.071
.2500-28	3	1108S7	.254	.241	.133	.108	.032	.116	.091
.3125-24	4S	1108S8	.331	.318	.171	.147	.056	.151	.127
.3750-24	4L	1108S9	.361	.348	.202	.178	.060	.182	.158
.4375-20	4L	1108S10	.388	.375	.230	.206	.064	.210	.186
.5000-20	4L	1108S11	.414	.401	.257	.232	.067	.237	.212
.5625-18	4L	1108S12	.447	.434	.290	.266	.073	.270	.246

NOTES:

1. RECESS PER PSC-4000.
2. SOME BRAZIER HEAD PARTS HAVE BODY DIAMETERS MUCH LARGER THAN THE THREAD SIZE.  
FOR THOSE PARTS, CHOOSE PUNCHES BASED ON BODY DIAMETERS.

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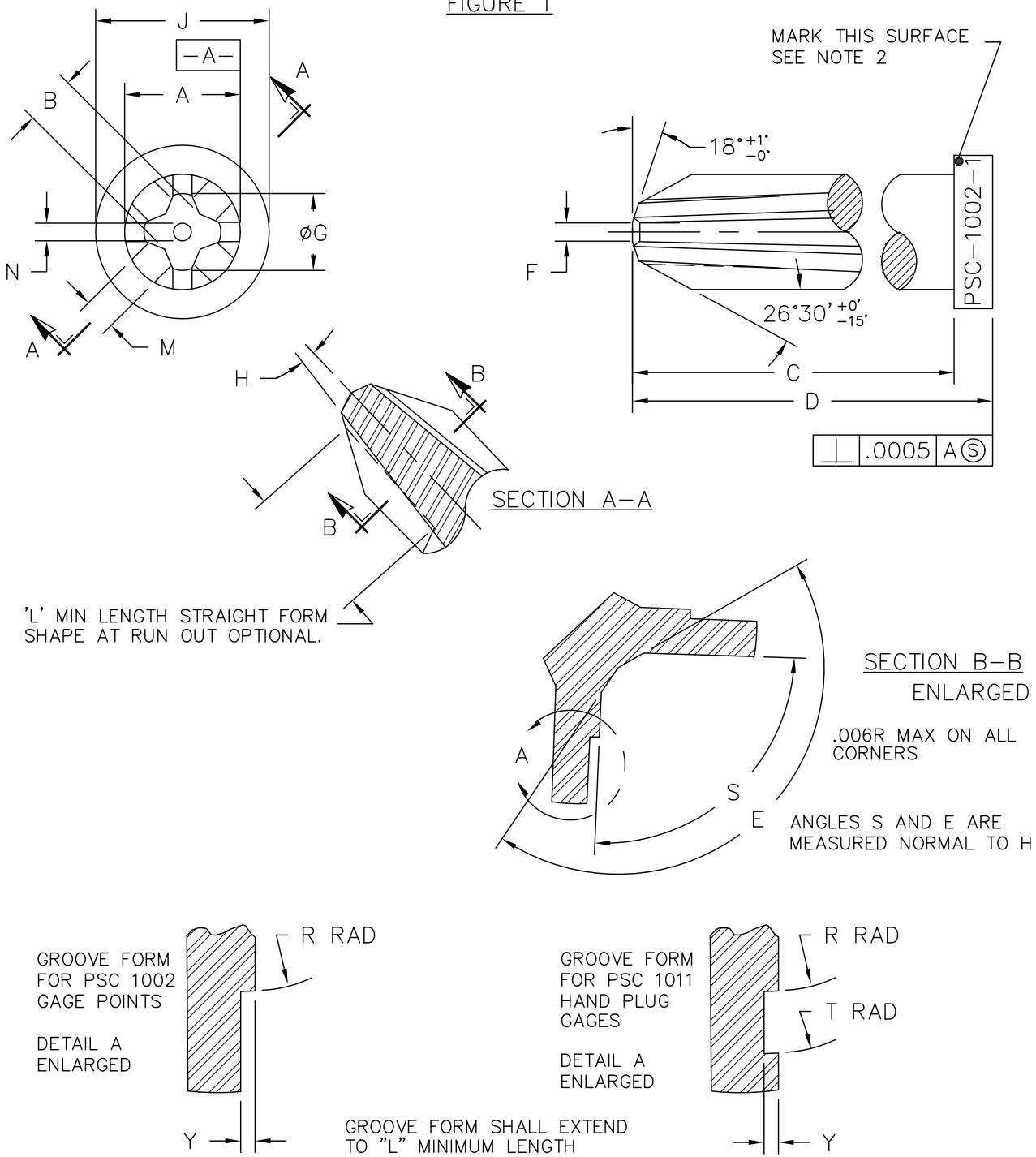
## ACR® RIBBED PHILLIPS® BRAZIER HEAD SCREW

DRAWN R. CHERLIN	DATE 7-30-97	DRAWING NUMBER <b>PSC-4007</b>
CHECKED: G. LAMONICA	DATE 7-30-97	SHEET 1 OF 1
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5-1-13

FIGURE 1



REISSUED SEPT. 11, 1988 | REV 1 ECO 85 DEC. 30, 1991 | REV 2 ECO 107 JUNE 24, 1993 | 3\ UPDATE 5-1-13

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TITLE:

## GAGE POINT ACR<sup>®</sup> RIBBED PHILLIPS<sup>®</sup> RECESS

DRAWN: S. BRENNAN	DATE: 10/01/1983	DRAWING NUMBER
CHECKED: J. GRADY	DATE: 01/01/1984	
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

PHILLIPS II<sup>®</sup> PHILLIPS<sup>®</sup> POZIDRIV<sup>®</sup> ACR<sup>®</sup> POZISQUARE<sup>®</sup> PHILLIPS SQUARE-DRIV<sup>®</sup> TORQ-SET<sup>®</sup> TRI-WING<sup>®</sup> MORTORQ<sup>®</sup>  
HEXSTIX<sup>®</sup> POZILOCK<sup>®</sup> ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

**TABLE I**

GAGE SIZE	A <sup>+.0002</sup> <sub>-.0002</sub>	B <sup>+.0000</sup> <sub>-.0010</sub>	C <sup>+.005</sup> <sub>-.005</sub>	D <sup>+.005</sup> <sub>-.005</sub>	E <sup>+.0° 15'</sup> <sub>-.0° 0'</sub>	F <sup>+.001</sup> <sub>-.001</sub>	G <sup>+.001</sup> <sub>-.000</sub>	H <sup>+.0° 0'</sup> <sub>-.0° 15'</sub>	J <sup>+.005</sup> <sub>-.005</sub>	L <sub>MIN</sub>	M <sup>+.0000</sup> <sub>-.0010</sub>	N	S <sup>+.0° 15'</sup> <sub>-.0° 0'</sub>	R <sup>+.000</sup> <sub>-.002</sub>	T <sup>+.002</sup> <sub>-.000</sub>	Y <sup>+.001</sup> <sub>-.000</sub>	
0	.0450	.0240	.656	.781	.0090 .0109 RAD	.011	.032	7° 0'	.094	.094	.0125 .0151	.010 .015	.015 .020	92° 0'	.016	.028	.004
1	.0870	.0394	.688	.812	138° 0'	.019	.050		.156	.125	.0202				.025	.040	.005
2	.1410	.0606	.750	.875	140° 0'	.024	.090		.219	.188	.0434				.050	.065	.005
3	.2090	.0983	.781	.906	146° 0'	.030	.150		.250	.250	.0826				.078	.095	.005
4	.3120	.1407	.844	.969	153° 0'	.043	.200		.359	.344	.1078				.108	.150	.005
5	.5000	.2310	1.031	1.156	162° 46'	.062	.311		.531	.438	.1730				.190	.221	.007
6	.6490	.2805	1.500	1.625	157° 57'	.093	.374		.719	.468	.1898				.240	.275	.007

REV 1 ECO 9 FEB. 21, 1980  
REV 2 ECO 40 OCT. 25, 1983  
REISSUED SEPT. 11, 1988  
REV 3 ECO 88 DEC. 31, 1991  
4\ UPDATE 5-1-13

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TITLE:

**GAGE POINT**  
**ACR® RIBBED PHILLIPS RECESS®**

DRAWN:  
S. BRENNAN

DATE:  
10/01/1983

DRAWING NUMBER

**PSC-1002**

SHEET 2 OF 4

CHECKED:  
J. GRADY

DATE:  
01/01/1984

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326

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## NOTES:

1. REQUIREMENTS:
  - A. Description: Gage points for use in penetration gage assemblies, PSC-1003, used to inspect ACR® Ribbed PHILLIPS® Recesses.
  - B. Material: Cres, 440 C.
  - C. Hardness: 58–62 Rc.
  - D. Surface Finish: Ground Surfaces shall have a maximum roughness of 32 Microinches per ANSI B 46.1.
  - E. Finishes: Passivate per QQ-P-35.
  - F. Design and Construction:
    - (1) Dimensions and configuration shall conform to Figure 1 and Table I.
  - G. Physical Properties:
    - (1) Metallurgical requirements
      - (A) Discontinuities: Points shall not contain discontinuities such as laps, seams, or inclusions greater than 0.001 inches in depth.
  - H. Workmanship: Hanging burrs and slivers which might become dislodged under usage shall be removed. Parts shall be clean and free from surface contamination.
2. MARKING: Identify with this drawing number, appropriate dash number and serial number, as shown in Figure 1. Serial numbers shall be assigned and etched onto the parts only after all inspections are complete and the parts are accepted. Part numbers shall be engraved or etched.
3. QUALITY ASSURANCE PROVISIONS: Quality Assurance Provisions shall be as specified herein.
  - A. Lot verification records: Inspection and control records shall be maintained by Phillips Screw Company and shall be available for review by the user for a minimum period of five years.
  - B. Responsibility for inspection: Unless otherwise specified in the contract or order, Phillips Screw Company is responsible for the performance of all inspection requirements as specified herein.
  - C. Change of Product: Any change of product as regards materials, finished design, construction, or methods of manufacture shall require review and approval of Phillips Screw Company prior to incorporation.
  - D. Screening inspection: 100 percent screening inspection shall consist of the examinations and tests listed in Table II.
  - E. Quality Conformance Inspection: Quality conformance inspection shall consist of the examinations and tests listed in Table III.
4. Only the item(s) described on this drawing when procured from the vendor(s) listed hereon is approved by Phillips Screw Company for use in the application specified hereon. A substitute item shall not be used without prior approval by Phillips Screw Company.

REV 1 ECO 9 2/ REISSUED 3\ UPDATE  
FEB. 21, 1980 SEPT. 11, 1988 5-1-13

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TITLE: **GAGE POINT**  
**ACR® RIBBED PHILLIPS RECESS®**

DRAWN:	DATE:	DRAWING NUMBER
S. BRENNAN	10/01/1983	<b>PSC-1002</b>
CHECKED:	DATE:	
J. GRADY	01/01/1984	SHEET 3 OF 4

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TABLE II	
100 PERCENT SCREENING INSPECTION	
TESTING SEQUENCE	CONDITIONS AND REQUIREMENTS
Dimensions B H R T RELIEF DEPTH G F POINT ANGLE WING ANGLE L	INSPECT USING GAGE TEST BENCH

TABLE III			
QUALITY CONFORMANCE INSPECTION			
MIL-STD-105	EXAMINATION OR TEST	CONDITIONS AND REQUIREMENTS	
LEVEL	AQL		
II	2.5	DIMENSIONS S E A J M N C D	INSPECT USING GAGE TEST BENCH
II	4.0	MATERIAL FINISH	STANDARD INSPECTION EQUIPMENT

REV 1 ECO 9 REISSUED REV 3 ECO 144  
FEB. 21, 1980 SEPT. 11, 1988 SEP. 16, 2011 4\ UPDATE  
5-1-13

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TITLE:

## GAGE POINT ACR® RIBBED PHILLIPS® RECESS

DRAWN:  
S. BRENNAN

DATE:  
10/01/1983

DRAWING NUMBER

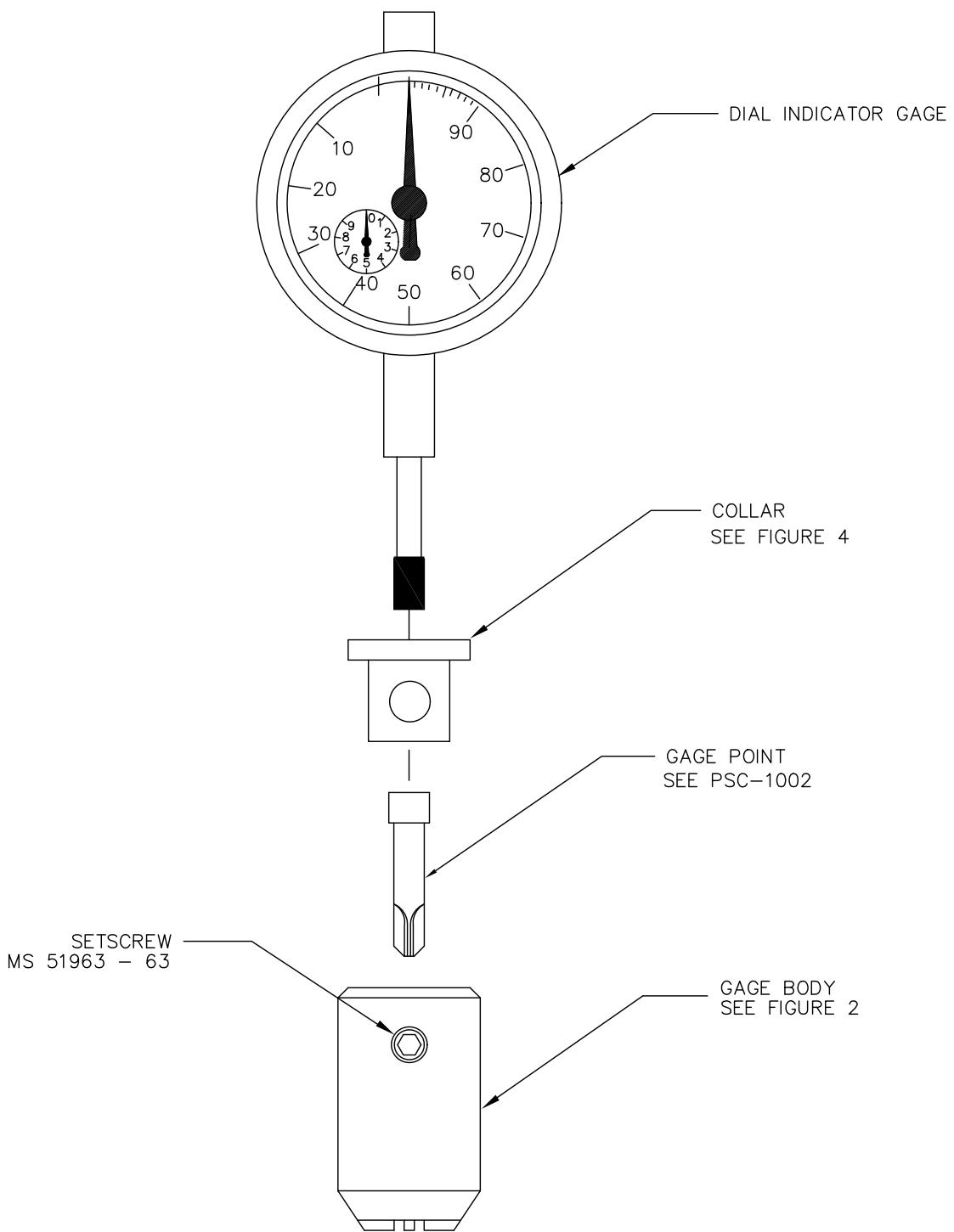
**PSC-1002**

SHEET 4 OF 4

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**FIGURE 1**



REISSUED	REV 1 ECO 144	2\ UPDATE
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TITLE:

**PENETRATION GAGE ASSEMBLY  
ACR® RIBBED PHILLIPS® RECESS**

DRAWN: S. BRENNAN DATE: 10/25/1983

CHECKED: J. GRADY DATE: 11/01/1983

DRAWING NUMBER

**PSC-1003**

SHEET 1 OF 6

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ITEM		ASSEMBLY DASH NO.		DESCRIPTION		PART NO.		FIGURE	
1	1	1	1	1	1	SET SCREW	MSS51963-63	-	
1	1					COLLAR	PSC-1003-C	4	
1						GAGE BODY	PSC-1003-B6		
	1						B5		
	1						B4		
	1						B3		
	1						B2		
	1						B1		
	1					GAGE BODY	PSC-1003-B0		
	1					GAGE POINT	PSC-1002-6		
	1						5		
	1						4		
	1						3		
	1						2		
	1						1		
	1					GAGE POINT	PSC-1002-0		
	1			1	1	DIAL INDICATOR GAGE	PSC-1003-G	-	
6	5	4	3	2	1	0			
6	5	4	3	2	1	0			

## BILL OF MATERIALS

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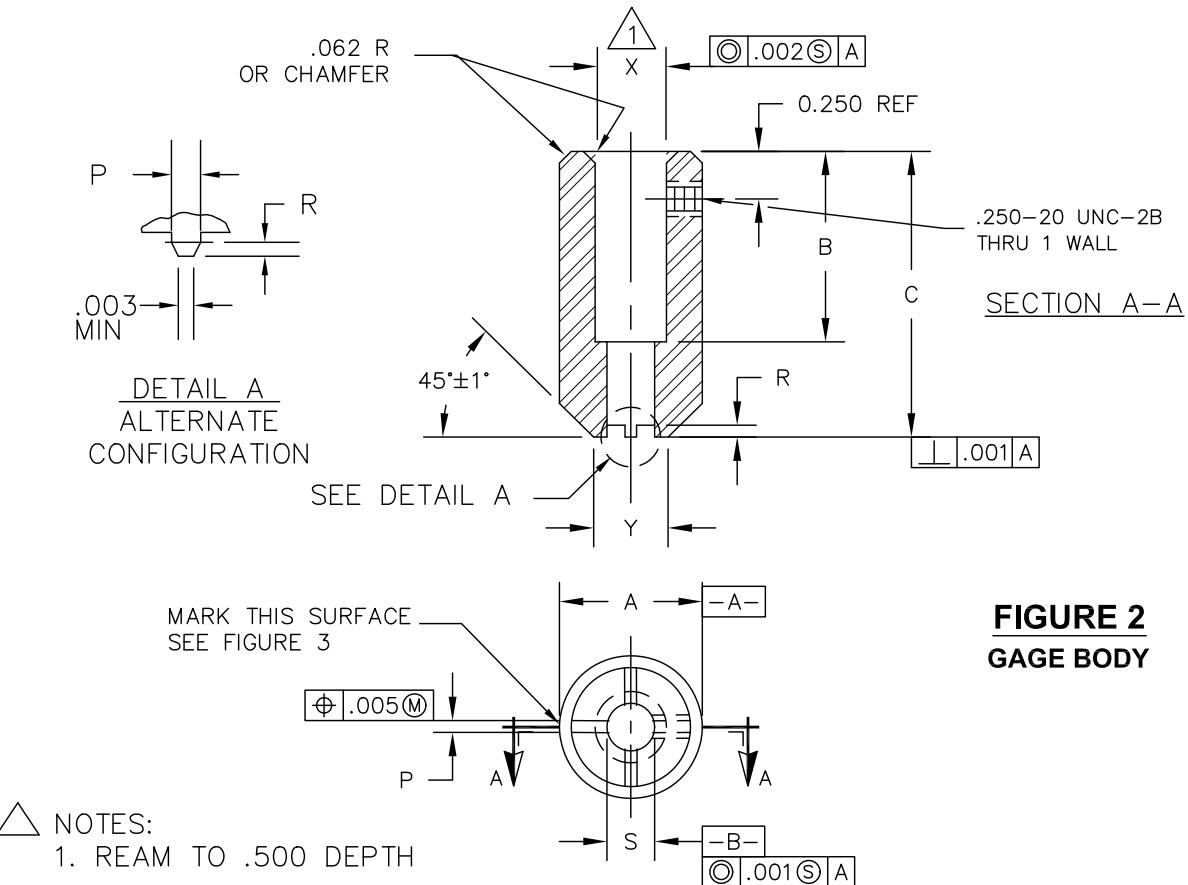
**TITLE: PENETRATION GAGE ASSEMBLY  
ACR® RIBBED PHILLIPS® RECESS**

DRAWN: \_\_\_\_\_ DATE: \_\_\_\_\_ DRAWING NUMBER \_\_\_\_\_

PSC-1003

SHEET 2 OF 6

J. GRADY 11/01/1983 SHEET 2 OF  
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326



**FIGURE 2**  
**GAGE BODY**

**TABLE 1**

	B0	B1	B2	B3	B4	B5	B6
A ±.016	.875					1.250	
B ±.016	1.126					1.134	1.562
C ±.016	1.688					1.896	2.375
P ±.002	.008	.012	.018	.022	.031	.041	.063
R ±.003	.015	.020	.031	.037	.062	.094	.156
S ±.0002	.0460	.0880	.1420	.2100	.3130	.5010	.6500
X +.002 -.000	.376					.751	
Y ±.005	.562					.750	1.000

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TITLE:

## PENETRATION GAGE ASSEMBLY ACR® RIBBED PHILLIPS® RECESS

DRAWN:  
S. BRENNAN

CHECKED:  
J. GRADY

DATE:  
10/25/1983

DATE:  
11/01/1983

DRAWING NUMBER

**PSC-1003**

SHET 3 OF 6

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REV 2 ECO 9 FEB. 21, 1980	REV 3 ECO 10 OCT. 25, 1983	REISSUED SEPT. 11, 1988	REV 4 ECO 82 DEC. 13, 1991	REV 5 ECO 144 SEP. 16, 2011	6\ UPDATE 5-1-13
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**FIGURE 3**  
**MARKING OUTLINE**

SCALE 2/1

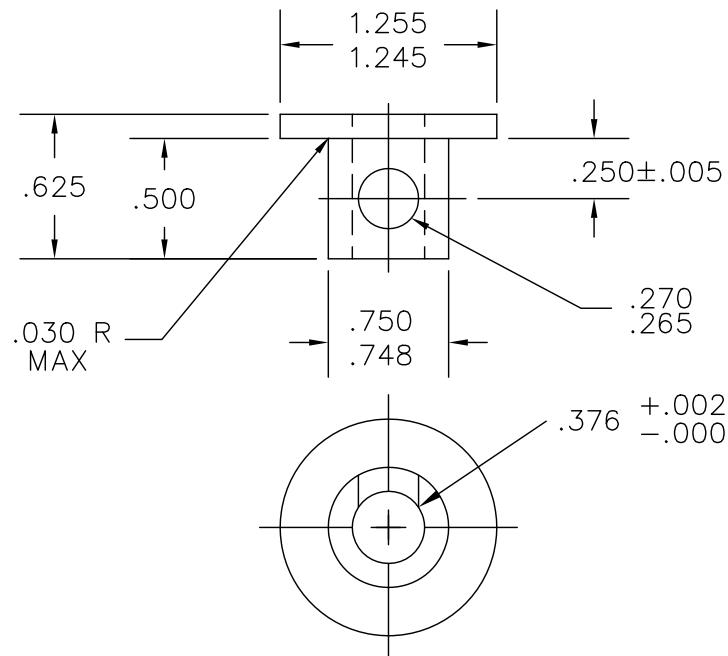
**PHILLIPS SCREW CO.**  
**PSC-1003-1**  
**ACR<sup>®</sup> PHILLIPS<sup>®</sup>**  
**GAGE**  
**NO. 1 RECESS**

NOTE: ETCH OR ENGRAVE WITH APPROPRIATE DASH NO. AND RECESS NO.

**FIGURE 4**

**COLLAR**

FOR # 5 AND # 6 GAGE SIZES



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TITLE: **PENETRATION GAGE ASSEMBLY**  
**ACR<sup>®</sup> RIBBED PHILLIPS<sup>®</sup> RECESS**

DRAWN: S. BRENNAN DATE: 10/25/1983

CHECKED: J. GRADY DATE: 11/01/1983

DRAWING NUMBER

**PSC-1003**

SHEET 4 OF 6

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326

REV 2 ECO 9 FEB. 21, 1980	REISSUED SEPT. 11, 1988	REV 3 ECO 144 SEP. 16, 2011	4\ UPDATE 5-1-13
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PHILLIPS II<sup>®</sup> PHILLIPS<sup>®</sup> POZIDRIV<sup>®</sup> ACR<sup>®</sup> POZISQUARE<sup>®</sup> PHILLIPS SQUARE-DRIV<sup>®</sup> TORQ-SET<sup>®</sup> TRI-WING<sup>®</sup> MORTORQ<sup>®</sup>  
HEXSTIX<sup>®</sup> POZILOCK<sup>®</sup> ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

## NOTES:

1. REQUIREMENTS:
  - A. Description: Penetration Gage Assembly for Inspection of ACR® Ribbed Phillips® Recesses.
  - B. Materials:
    - (1) Body: Cres. 440C
    - (2) Collar: Cres. 440C
  - C. Heat Treatment:
    - (1) Body: 30–35 Rc
    - (2) Collar: 30–35 Rc
  - D. Finishes:
    - (1) body: Passivate Per QQ-P-35
    - (2) Collar: Passivate Per QQ-P-35
  - E. Design and Construction:
    - (1) Dimensions and configuration shall conform to Figure 1.
    - (2) All dimensions are in inches.
    - (3) Unless otherwise specified, tolerances are ± 0.016.
  - F. Physical Properties:
    - (1) Metallurgical Requirements:
      - (A) Discontinuities: Bodies and collars shall not contain discontinuities such as laps, seams, or inclusions greater than 0.010 inches in depth.
      - (B) Cracks: Bodies and collars shall be free from cracks in any location or direction. A crack is defined as a clean crystalline break passing through the grain or boundary without the inclusion of foreign elements.
    - G. Workmanship: Hanging burrs and slivers which might become dislodged under usage shall be removed. Parts shall be clean and free from surface contamination.
2. MARKING: Identified as shown in Figures 2 and 3.
3. QUALITY ASSURANCE PROVISIONS: Quality Assurance Provisions shall be as specified herein.
  - A. Lot verification records: Inspection and control records shall be maintained by Phillips Screw Company and shall be available for review by the user for a minimum period of five years.
  - B. Responsibility for inspection: Unless otherwise specified in the contract or order, Phillips Screw Company is responsible for the performance of all inspection requirements as specified herein.
  - C. Change of Product: Any change of product as regards materials, finishes, design, construction, or methods of manufacture shall require review and approval of Phillips Screw Company prior to incorporation.
  - D. Screening inspection: 100 percent screening inspection shall consist of the examinations ad tests listed in Table II.
  - E. Quality Conformance Inspection: Quality conformance inspection shall consist of the examinations and tests listed in Table III.
4. Only the item(s) described on this drawing when procured from the vendor(s) listed hereon is approved by Phillips Screw Company for use in the application specified hereon. A substitute item shall not be used without prior approval by Phillips Screw Company.

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TITLE: **PENETRATION GAGE ASSEMBLY**  
**ACR® RIBBED PHILLIPS® RECESS**

DRAWN: S. BRENNAN	DATE: 10/25/1983	DRAWING NUMBER <b>PSC-1003</b>
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CHECKED: J. GRADY	DATE: 11/01/1983
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HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

TABLE II	
100 PERCENT SCREENING INSPECTION	
TESTING SEQUENCE	CONDITIONS AND REQUIREMENTS
ASSEMBLIES: Presence of all Parts	
Zero Adjustment	ADJUST POINT FLAT FOR PROPER READING IN MASTER RECESS BLOCK
BODIES: Dimensions:  X Ø .500 Dp REAM S Ø P Ø X Ø S Ø P	STANDARD INSPECTION EQUIPMENT
COLLARS: Dimensions:  .376 Ø .750 Ø	STANDARD INSPECTION EQUIPMENT

TABLE III			
QUALITY CONFORMANCE INSPECTION			
MIL-STD-105	EXAMINATION OR TEST	CONDITIONS AND REQUIREMENTS	
LEVEL	AQL		
II	2.5	BODIES: Dimensions B C R Y	STANDARD INSPECTION EQUIPMENT
II	2.5	MATERIAL FINISH	
II	4.0	Ø A	
II	2.5	COLLARS Dimensions 1.255 Ø .250 .500 .625 MATERIAL FINISH	STANDARD INSPECTION EQUIPMENT

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TITLE: **PENETRATION GAGE ASSEMBLY  
ACR® RIBBED PHILLIPS® RECESS**

DRAWN: S. BRENNAN	DATE: 10/25/1983	DRAWING NUMBER
CHECKED: J. GRADY	DATE: 11/01/1983	<b>PSC-1003</b>
SHEET 6 OF 6		
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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- SCOPE: This specification defines the recess inspection requirements for qualification inspection, first article, and quality conformance inspection of ACR® Ribbed Phillips® recesses.
- REFERENCE DOCUMENTS: The following documents form a part of this specification to the extent specified herein. In the event of conflict between referenced documents and this specification, this specification shall govern.
 

STANDARDS:	
MIL-STD-105	Sampling Plan and Tables for Inspection by Attributes
MIL-STD-1312, TEST 25	Driving Recess Torque Quality Conformance Test
NAS7100	Recess, Phillips® Dimensions of Recess and Gages
DRAWINGS – PHILLIPS SCREW COMPANY	
PSC-746	Adaptors for End Load Control–Sturtevant TTF-1/4 and TTF-1/2 Torque Test Fixtures
PSC-747	Screw Holding Device for Sturtevant TTF-1/4 and TTF-1/2 Torque Testing Fixtures
PSC-1000	Recess Dimensions of ACR® Ribbed Phillips® Recess
PSC-1001	Dimensions of ACR® Ribbed Phillips® Driver Point
PSC-1002	Gage Points, ACR® Ribbed Phillips®
PSC-1003	Penetration Gage Assy, ACR® Ribbed Phillips® Recess
PSC-1010	Milling Angle Gage, ACR® Ribbed Phillips® Recess
PSC-1011	Hand Plug Gage, ACR® Ribbed Phillips® Recess
PSC-1101 THRU 1199	Punch Drawings, ACR® Ribbed Phillips® Recess
PSC-1200	Drivers and Driver Bits – ACR® Ribbed Phillips® Procurement Specification

### 3. EQUIPMENT REQUIRED:

- Quality Conformance and Qualification Inspection:
  - Penetration gages of appropriate size per PSC-1003 (NAS7100)
  - Depth Gage
  - Style A Milling Angle Gage of appropriate size per PSC-1010
  - 10x loupe or equal
  - Sturtevant torque test fixture of appropriate capacity modified per PSC-746 or equivalent fixture with suitable weight for 5 pound total end load. Screw holding fixture per PSC-747 may be used.
  - Appropriate driver bits per PSC-1001 and PSC-1200.
  - Calibrated torque wrench of appropriate capacity with adapters as necessary.
  - Hand plug gage per PSC-1011
  - Wobble gage per PSC-1012

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TITLE: **RECESS INSPECTION PROCEDURE**  
**ACR® RIBBED PHILLIPS® RECESS**

DRAWN: J. O'BRIEN	DATE: 01/07/1980	DRAWING NUMBER <b>PSC-1004</b>
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CHECKED: J. GRADY	DATE: 01/18/1980
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- 3.2 First Article Inspection
- Penetration gages of appropriate size per PSC-1003 (NAS-7100).
  - Depth Gage.
  - 10x loupe or equal.
  - Style A Milling Angle Gage of appropriate size per PSC-1010.
4. TEST PROCEDURES:
- 4.1 Qualification Inspection: Qualification inspection shall be performed by Phillips Screw Company at initial product qualification and at periodic inspection as required by the product and trademark licenses.
- 4.1.1. Sampling Plans:
- 4.1.1.1. Initial Qualification: A minimum of 50 pieces of each recess size and head style to be qualified are required. 25 pieces shall be retained by Phillips Screw Company as reference material.
- 4.1.1.2. Periodic Inspection: A minimum of 5 pieces of each recess size and head style are required.
- 4.1.2. Defects: Any defect in any qualification test or inspection shall be cause for rejection, or loss of qualification status.
- 4.1.3. Visual Inspection: Using a magnifying optical device of at least 10 power, visually inspect the recess for:
- Presence of rib on all four removal walls; and
  - Definition of rib and recess formation. All surface intersections should exhibit clean radii.
  - The presence of irregular surfaces, as may be caused by a chipped punch are acceptable, provided that both the gage penetration and torque values obtained are acceptable.
- 4.1.4. Gaging:
- 4.1.4.1. Penetration Gaging: Using the appropriate sized grooved penetration gage assembly per PSC-1003.
- Check the zero adjustment against a known flat piece of steel stock.
  - Measure and record the gage penetration. Reading must be within acceptable limits per the parts standard, or PSC-1000, as applicable.
  - Gage readings beyond the stated limits are cause for rejection.
- 4.1.4.2. Depth Gaging: Using a suitable depth gage, measure and record the depth of the recess point from the recess diameter plane. The depth shall conform to the limits of the parts standard, or PSC-1000, as applicable.
- 4.1.4.3. Style A Milling Angle Gaging: Using the appropriate size Style A gage pin per PSC-1010, determine that the recess milling angle is within its maximum limits as follows.
- Place the gage pin into the recess using light finger pressure only, until the gage is seated into the recess.
  - Maintaining light axial pressure on the gage pin, rotate the pin 1 to 2 revolutions and remove the gage pin from the recess.
  - Using a 10x loupe or equal, inspect the recess to determine where the gage pin made contact. With the Style A gage pin, no contact is permitted at the bottom of the gage penetration. All contact must be towards the head surface.
  - A sharp impression at or near the G plane in the recess indicates an oversize milling angle and constitutes cause for rejection.

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TITLE: <b>RECESS INSPECTION PROCEDURE</b> <b>ACR® RIBBED PHILLIPS® RECESS</b>		DRAWING NUMBER
DRAWN: J. O'BRIEN	DATE: 01/07/1980	<b>PSC-1004</b>
CHECKED: J. GRADY	DATE: 01/18/1980	
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SHEET 2 OF 7		

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#### 4.1.4.4 Recess Wobble Gaging:

The wobble of a master plug gage, per PSC-1011, into an ACR® ribbed Phillips® recess. The Phillips wobble gage assembly is shown on print PSC-1012 of the ACR® ribbed Phillips® technical manual. Screws coated to a thickness greater than .0003 inches shall be stripped of such coating before inspection.

The limits of angular wobble for various recess sizes are as follows:

<u>Recess size</u>	<u>Allowable Wobble Angle</u>
0	6
1	6
2	6
3	6
4	6
5	6
6	6

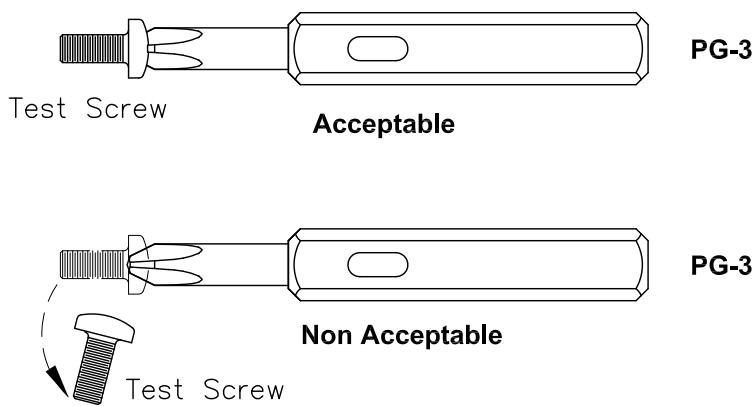
**TABLE I**

Any individual piece having a reading beyond the tabulated limits shall be considered a defective recess.

#### 4.1.4.5 Functional Gage Fit:

This feature defines the functional gage fit of the ACR® ribbed Phillips® recess. This is achieved when a screw blank or finished screw is pushed with light finger pressure on to a plug gage. The screw should remain on the gage when both are held in a horizontal position. See figure 1 below for a depiction of acceptable / non-acceptable criterion.

**Figure 1**



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TITLE: **RECESS INSPECTION PROCEDURE**  
**ACR® RIBBED PHILLIPS® RECESS**

DRAWN: L. DOUGAN DATE: 05/01/13

CHECKED: G. DILLING DATE: 05/02/13

DRAWING NUMBER

**PSC-1004**

SHEET 3 OF 7

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- 4.1.5. Torque Testing: Test 25, MIL-STD-1312 shall be used except as noted herein. Torques values and deformation limits shall conform to the applicable procurement document. If no values are established by the procurement document, the torque values of Table I shall be employed.
- A. Torque Direction: Removal
  - B. End Load: 5.0 LB  $\pm$ 0.5 LB
  - C. Apply removal torque smoothly at a uniform rate to the required torque value.
  - D. Cam-out failure or deformation of the head surface in excess of 0.005 inches is cause for rejection.
- 4.2 First Article Inspection: The following procedure is recommended for first article inspection at the header.
- 4.2.1. Visual Inspection: Using a magnifying optical device of at least 10 power, visually inspect the recess for:
- A. Presence of rib on all four removal walls; and
  - B. Definition of rib and recess formation. All surface intersections should exhibit clean radii.
- 4.2.2. Gaging:
- 4.2.2.1. Penetration Gaging: Using the appropriate sized grooved penetration gage assembly per PSC-1003:
- A. Check the zero adjustment against a known flat piece of steel stock.
  - B. Measure and record the gage penetration. Readings obtained must be within acceptable limits per the applicable punch drawing.
  - C. Gage readings beyond the stated limits require header adjustment or indicate a defective punch.
- 4.2.2.2. Depth Gaging: Using a suitable depth gage, measure and record the depth of the recess point from the recess diameter plane. The depth shall conform to the limits of the applicable parts standard. If no limits are given thereby, the limits of PSC-1000 shall apply. Measurements out of tolerance shall be cause for rejection.
- 4.2.2.3. Style A Milling Angle Gaging: Using the appropriate size Style A gage pin per PSC-1010, determine that the recess milling angle is within its maximum limit as follows:
- A. Place the gage pin into the recess using light finger pressure only.
  - B. Maintaining light axial pressure on the gage pin, rotate the pin 1 to 2 revolutions and remove the gage pin from the recess.
  - C. Using a 10x loupe or equal, inspect the recess to determine where the gage pin made contact. With the Style A gage pin no contact is permitted at the bottom of the gage penetration. All contact must be towards the head surface.
  - D. A sharp impression at or near the G plane in the recess indicates an oversize milling angle and constitutes cause for rejection. The problem may be solved through header adjustment, first blow form change, or may indicate a defective punch.

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DRAWN: J. O'BRIEN	DATE: 01/07/1980	
CHECKED: J. GRADY	DATE: 01/18/1980	SHEET 4 OF 7
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- 4.3 Quality Conformance Inspection: The following procedure is suggested for the final quality conformance inspection:
- 4.3.1. Sampling Plan: Sampling for quality shall be as specified in the part procurement document. If no recess inspection is required thereby, use AQL 2.5 percent, Inspection Level S-2, in accordance with MIL-STD-105.
- 4.3.1.1. Sampling for Torque Testing: AQL 2.5 percent, Inspection Level S-2 in accordance with MIL-STD-105.
- 4.3.2. Visual Inspection: Using a magnifying optical device of at least 10 power, visually inspect the recess for:
- A. Presence of rib on all four removal walls; and
  - B. Definition of rib and recess formation. All surface intersections should exhibit clean radii.
  - C. The presence of irregular surfaces, as may be caused by a chipped punch are acceptable, provided that both the gage penetration and torque values obtained are acceptable.
- 4.3.3. Gaging:
- 4.3.3.1. Penetration Gaging: Using the appropriate sized grooved penetration gage assembly per PSC-1003:
- A. Check the zero adjustment against a known flat piece of steel stock.
  - B. Measure and record the gage penetration. Readings obtained must be within acceptable limits per the applicable parts standard. If no limits are given thereby, the limits of PSC-1000 shall apply.
  - C. Measurements out of tolerance shall be cause for rejection.
- 4.3.3.2. Depth Gaging: Using a suitable depth gage, measure and record the depth of the recess point from the recess diameter plane. The depth shall conform to the limits of the applicable parts standard. If no limits are given thereby, the limits of PSC-1000 shall apply. Measurements out of tolerance shall be cause for rejection.
- 4.3.4. Torque Testing: Test 25, MIL-STD-1312 shall be used except as noted herein. Torque values and deformation limits shall conform to the applicable procurement document. If no values are established by the procurement document, the values of Table I shall be employed.
- A. Torque Direction: Removal
  - B. End Load: 5.0 LB ±0.5 LB
  - C. Apply removal torque smoothly at a uniform rate to the required torque value.
  - D. Cam-out failure or deformation of the head surface in excess of 0.005 inches is cause for rejection.
5. TEST REPORTS: The form on page 7 may be used to summarize test and inspection findings.

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TITLE: <b>RECESS INSPECTION PROCEDURE</b>		
<b>ACR® RIBBED PHILLIPS® RECESS</b>		
DRAWN: J. O'BRIEN	DATE: 01/07/1980	DRAWING NUMBER <b>PSC-1004</b>
CHECKED: J. GRADY	DATE: 01/18/1980	
SHEET 5 OF 7		
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**TABLE I**

Nominal Screw Size		Recess Size	Minimum Recess Strength— Removal Direction (in-lbs)	
Tension Head	Shear Head		70–150 KSI	151–180 KSI
.0600		0		
.0860		1		
.1120		1		13
.1380		2		25
.1640	.1900	2		35
.1900	.2500	2		50
.2500	.3125	3		125
.3125	.3750	4		230
.3750	.4375	4		300
.4375	.5000	4		
.5000	.5625	4		
.5625	.6250	4		
.6250	.7500	5		
.7500	.8750	5		
.8750	1.0000	6		
1.0000		6		

Note: Torque values for other sizes and materials are not established at this time.

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TITLE:

**RECESS INSPECTION PROCEDURE  
ACR® RIBBED PHILLIPS® RECESS**

DRAWN:

J. O'BRIEN

DATE:

01/07/1980

DRAWING NUMBER

**PSC-1004**

SHEET 6 OF 7

CHECKED:

J. GRADY

DATE:

01/18/1980

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HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

**CHECK LIST FOR INSPECTION  
OF ACR® RIBBED PHILLIPS® SCREWS**

Part No.: \_\_\_\_\_

Description: \_\_\_\_\_  
\_\_\_\_\_

Report No.: \_\_\_\_\_

Sheet \_\_\_\_\_ of \_\_\_\_\_

Date: \_\_\_\_\_

Inspector: \_\_\_\_\_

Mfr: \_\_\_\_\_

Lot No. \_\_\_\_\_

Strength Level: \_\_\_\_\_

**MEASUREMENTS**

**SPECIFICATIONS**

Sample Size		
Head Marking		
Visual Inspection		
Penetration Gage		
Depth Gage		
Style A Milling Angle Gage		
Removal Torque –		
Deformation		
Hardness – Rc		
Wobble		

DISPOSITION: Accept \_\_\_\_\_

Reject \_\_\_\_\_

REASON \_\_\_\_\_  
\_\_\_\_\_

COMMENTS:

REISSUED SEPT. 11, 1988 REVISED MAY 1, 2013

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TITLE:

**RECESS INSPECTION PROCEDURE  
ACR® RIBBED PHILLIPS® RECESS**

DRAWN:

J. O'BRIEN

DATE:

01/07/1980

DRAWING NUMBER

**PSC-1004**

SHEET 7 OF 7

CHECKED:

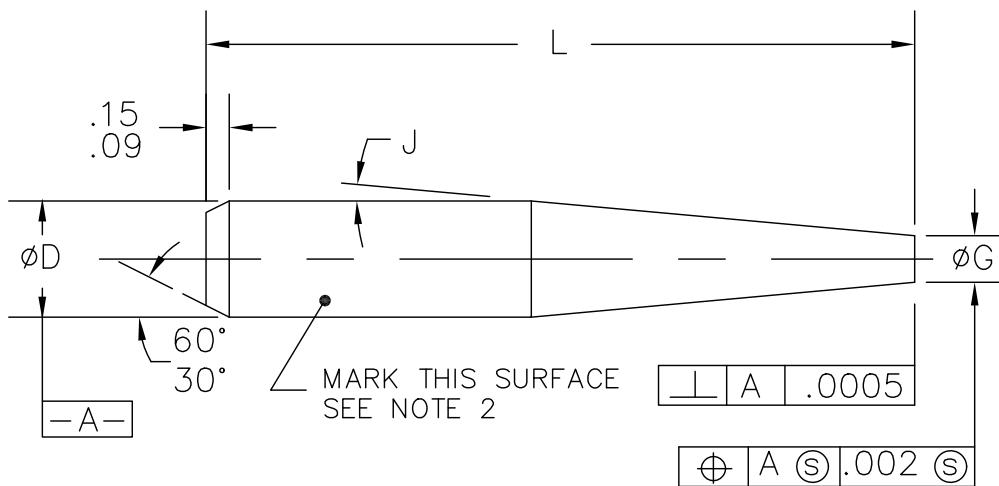
J. GRADY

DATE:

01/18/1980

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ  
HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



**FIGURE 1**

**GAGE PIN**

**TABLE 1**

DASH NO.	$\pm .005$ $\varnothing D$	$.001$ $-\ .000$ $\varnothing G$	J		$L \pm .062$	RECESS SIZE	STYLE
			MAX	MIN			
A0	.094	.027	7° 30'	7° 15'	1.000	0	A
A1	.125	.042				1	
A2	.188	.064				2	
A3	.250	.101				3	
A4	.375	.144				4	
A5	.500	.234				5	
A6	.625	.283				6	
B0	.078	.027	7° 00'	6° 45'	.750	0	B
B1	.109	.042				1	
B2	.172	.064				2	
B3	.234	.101				3	
B4	.359	.144				4	
B5	.484	.234				5	
B6	.609	.283				6	

REVISION  
SEPT. 11, 1988  
5-1-13

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DRAWN: S. BRENNAN	DATE: 12/01/1983	DRAWING NUMBER <b>PSC-1010</b>											
CHECKED: J. GRADY	DATE: 01/01/1984	SHEET 1 OF 3											
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326													
<p>PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ® HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY</p>													

**NOTES:**

1. REQUIREMENTS:
  - A. DESCRIPTION: Plug Gages for Measurement of the milling angle of ACR® Ribbed Phillips® Recesses.
  - B. MATERIAL: Cres, 440C
  - C. HARDNESS: 61–63 Rc
  - D. FINISH: Passivate Per QQ-P-35
  - E. DESIGN AND CONSTRUCTION:
    1. Dimensions and configuration shall conform to figure 1 and Table I.
    2. All dimensions are in inches.
    3. Geometric Form Tolerances: Interpret in accordance with ANSI Y14.5
- F. APPLICATION AND DESIGN CRITERIA: See PSC-1004.
- G. WORKMANSHIP: Hanging burrs and slivers which might become dislodged under usage shall be removed. Parts shall be clean and free from surface contamination.
2. MARKING: Mark with this drawing number and applicable dash number on the cylindrical surface by either etching or engraving.
3. QUALITY ASSURANCE PROVISIONS: Quality assurance provisions shall be as specified herein.
  - A. LOT VERIFICATION RECORDS: Inspection and control records shall be maintained by the supplier and shall be available for review by the user for a minimum period of two years.
  - B. RESPONSIBILITY FOR INSPECTION: Unless otherwise specified in the contract or order, the supplier is responsible for the performance of all inspection requirements as specified herein.
  - C. CHANGE OF PRODUCT: Any change of product as regards materials, finishes, design, construction, or methods of manufacture shall require review and approval of Phillips Screw Company prior to incorporation.
  - D. SCREENING INSPECTION: 100 percent screening inspection shall consist of the examinations and tests listed in Table II.
  - E. QUALITY CONFORMANCE INSPECTION: Quality conformance inspection shall consist of the examinations and tests listed in Table III.
4. Only the item(s) described on this drawing when procured from the vendor(s) listed hereon is approved by Phillips Screw Company for use in the application specified hereon. A substitute item shall not be used without prior approval by Phillips Screw Company.

REVISION SEPT. 11, 1988	REVISION 5-1-13
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TITLE:		<b>MILLING ANGLE GAGE</b> <b>ACR® RIBBED PHILLIPS®</b>	
DRAWN:	S. BRENNAN	DATE:	12/01/1983
CHECKED:	J. GRADY	DATE:	01/01/1984
DRAWING NUMBER <b>PSC-1010</b> SHEET 2 OF 3			PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ  
HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

TABLE II	
100 PERCENT SCREENING INSPECTION	
TESTING SEQUENCE	CONDITIONS AND REQUIREMENTS
Dimension Ø G J Perpendicularity of G Plane	Toolmaker's Microscope or Gage Test bench

TABLE III		
QUALITY CONFORMANCE INSPECTION		
MIL-STD-105	EXAMINATION OR TEST	CONDITIONS AND REQUIREMENTS
LEVEL	AQL	
II	2.5	Overall length Position of G Plane Ø D Standard Inspection Equipment

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TITLE: **MILLING ANGLE GAGE**  
**ACR® RIBBED PHILLIPS®**

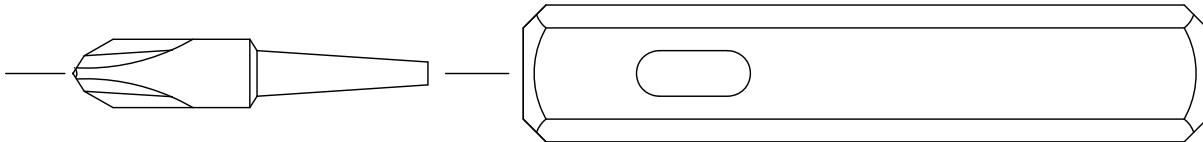
DRAWN: S. BRENNAN	DATE: 12/01/1983	DRAWING NUMBER <b>PSC-1010</b>
CHECKED: J. GRADY	DATE: 01/01/1984	SHEET 3 OF 3
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

REVISION 11, 1988 REV 2 ECO 144  
SEPT. 16, 2011 REVISION 5-1-13

PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ  
HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

# FIGURE 1

## GAGE ASSEMBLY



**GAGE POINT**  
SEE FIGURE 3

**GAGE HANDLE**  
SEE FIGURE 2

RECESS NO.	DESCRIPTION	PART NO.	FIGURE
6 5 4 3 2 1 0			
ITEM			
ASSEMBLY DASH NO.			
1 1	HANDLE	PSC-1011-H3	2
1 1		-H2	
1 1		-H1	
1	HANDLE	PSC-1011-H0	
1	GAGE POINT	PSC-1011-G6	
1		G5	
1		G4	
1		G3	3
1		G2	
1		G1	
1	GAGE POINT	PSC-1011-G0	
6 5 4 3 2 1 0			

### BILL OF MATERIALS

REVISION SEPT. 11, 1988      REVISION 5-1-13

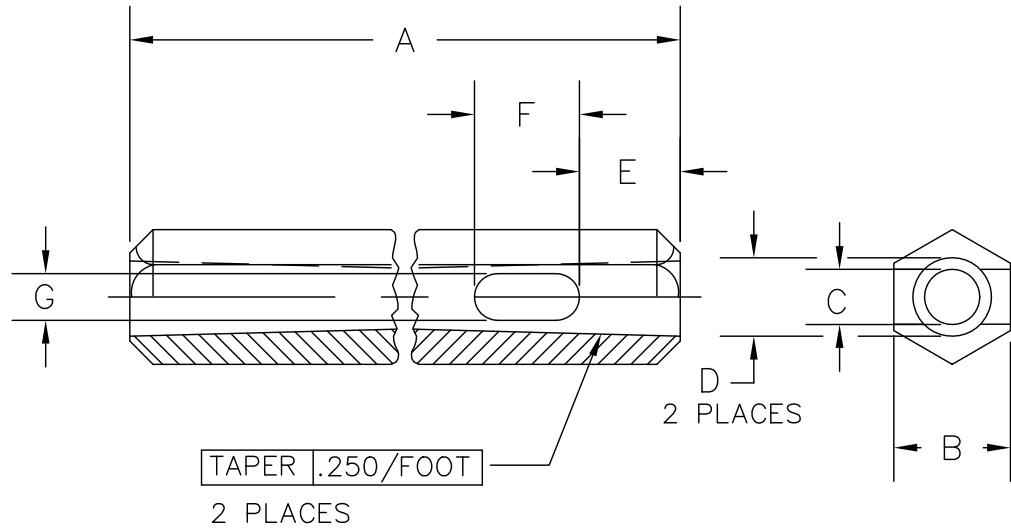
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### HAND PLUG, GAGE ASSEMBLY, ACR® RIBBED PHILLIPS® RECESS

DRAWN S. BRENNAN	DATE 25OCT83	DRAWING NUMBER <b>PSC-1011</b>
CHECKED: J. GRADY	DATE DEC 83	SHEET 1 OF 6
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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HEXTIX® POZLOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

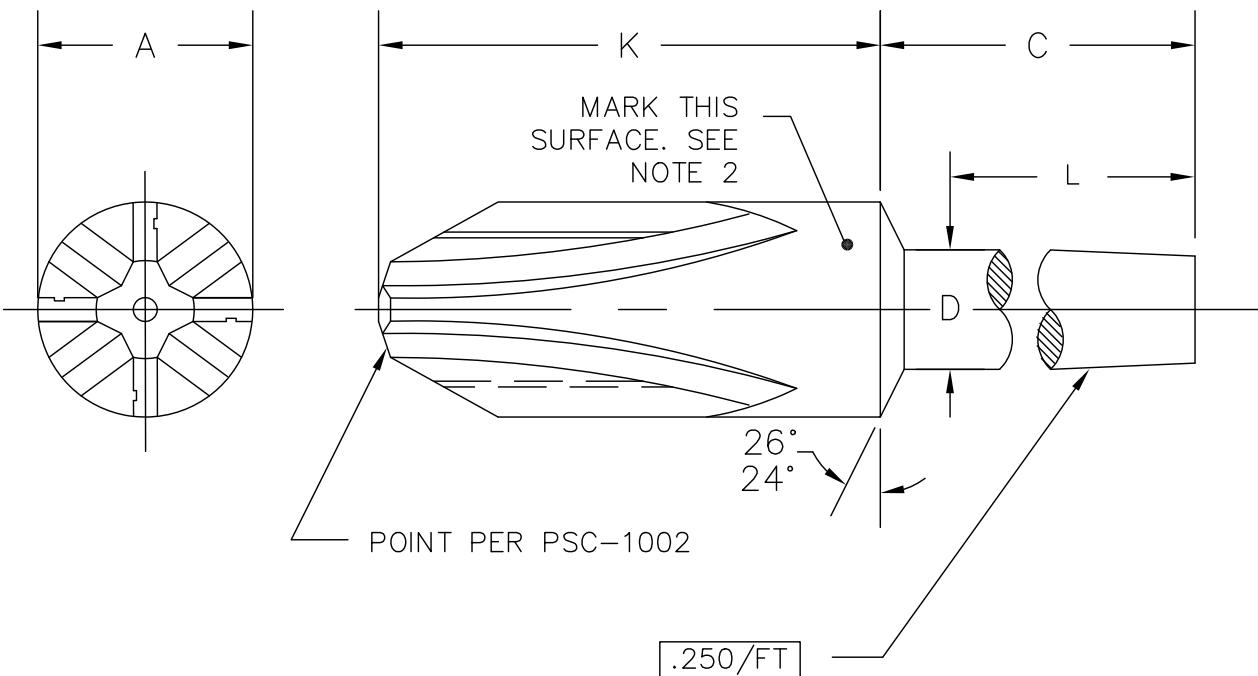


**FIGURE 2**  
**GAGE HANDLE**

**TABLE I**

GAGE SIZE	0	1	2	3	4	5	6
A $\pm .120$	1.500	2.000		2.750	3.500		
B $\pm .020$	.188	.312		.375	.875		
C $\pm .005$	.109	.161		.213	.578		
D $\pm .001$	.122	.181		.240	.609		
E $\pm .060$	.440		.500		.750		
F $\pm .020$	.250	.375		.500	—		
G $\pm .010$	.062		.125		.375		
DASH NO.	H0	H1		H2	H3		

Not defined at this time.



**FIGURE 3**

**GAGE POINT**

**TABLE II**

GAGE SIZE	0	1	2	3	4	5	6
A $\pm .010$	.125	.187	.250	.312	.375	.750	1.000
C $\pm .062$	.750	.750	.750	1.000	1.000	1.250	1.250
D $\pm .001$	.122	.181	.181	.240	.240	.609	.609
K $\pm .062$	.875	.875	.875	1.000	1.000	1.000	1.500
L $\pm .062$	.500	.625	.625	.625	.625	1.000	1.000
DASH NO.	G0	G1	G2	G3	G4	G5	G6

**NOTES:**

## 1. REQUIREMENTS:

- A. DESCRIPTION: Hand Plug Gage Assembly for Inspection of ACR® Ribbed Phillips® Recesses.
- B. MATERIALS:
  - (1) Gage Points: 440C Cres or equal
  - (2) Handles: 2024-T3 Aluminum or equal
- C. HARDNESS:
  - (1) Gage points: 58–62 Rc
- D. SURFACE FINISH:
  - (1) Gage points: Ground surfaces shall have a maximum roughness of 32 microinches per ANSI B46.1.
- E. FINISHES:
  - (1) Gage points: Passivate per QQ-P-35
  - (2) Handles: Anodize per MIL-A-8625
- F. DESIGN AND CONSTRUCTION:
  - (1) Dimensions and configuration shall conform to Figure 1, 2, and 3 as applicable.
  - (2) All dimensions are in inches.
- G. PHYSICAL PROPERTIES:
  - (1) Metallurgical Requirements:
    - (A) Discontinuities: Gage points shall not contain discontinuities such as laps, seams, or inclusions greater than 0.001 inches in depth.
    - (B) Cracks: Gage points and handles shall be free from cracks in any location or direction. A crack is defined as a clean crystalline break passing through the grain or grain boundary without the inclusion of foreign elements.
- H. APPLICATION AND DESIGN CRITERIA:
  - (1) Intended Use: See PSC-1004
- J. WORKMANSHIP: Hanging burrs and slivers which might become dislodged under usage shall be removed. Parts shall be clean and free from surface contamination.
- 2. MARKING: Identify with this drawing number and appropriate assembly dash number as shown in Figure 3. Serial numbers shall be assigned and etched onto the parts only after all inspections are complete and the parts accepted.
- 3. QUALITY ASSURANCE PROVISIONS: Quality assurance provisions shall be as specified herein.
  - A. LOT VERIFICATION RECORDS: Inspection and control records shall be maintained by Phillips Screw Company and shall be available for review by the user for a minimum period of five years.
  - B. RESPONSIBILITY FOR INSPECTION: Unless otherwise specified in the contract or order, Phillips Screw Company is responsible for the performance of all inspection requirements as specified herein.

- C. Change Of Product: Any change of product as regards materials, finishes, design, construction, or methods of manufacture shall require review and approval of Phillips Screw Company prior to incorporation.
  - D. Screening Inspection: 100 percent screening inspection shall consist of the examinations and tests listed in Table III.
  - E. Quality Conformance Inspection: Quality conformance inspection shall consist of the examinations and tests listed in Table IV.
4. Only the item(s) described on this drawing when procured from the vendor(s) listed hereon is approved by Phillips Screw Company for use in the application specified hereon. A substitute item shall not be used without prior approval by Phillips Screw Company.

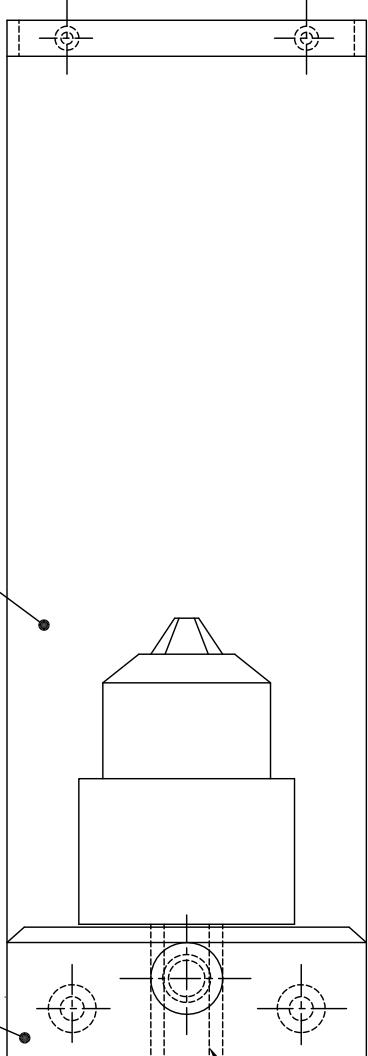
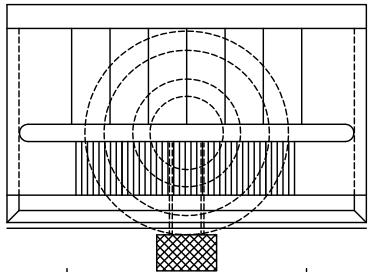
**TABLE III**

ITEM	<b>100 PERCENT SCREENING INSPECTION</b>	
	TESTING SEQUENCE	CONDITIONS AND REQUIREMENTS
Gage Points	Point Dimensions	Inspection per PSC-1002, Table I, using gage test bench
	ØD Taper	Inspect using gage test bench
Assemblies	Presence of Both parts	Visual

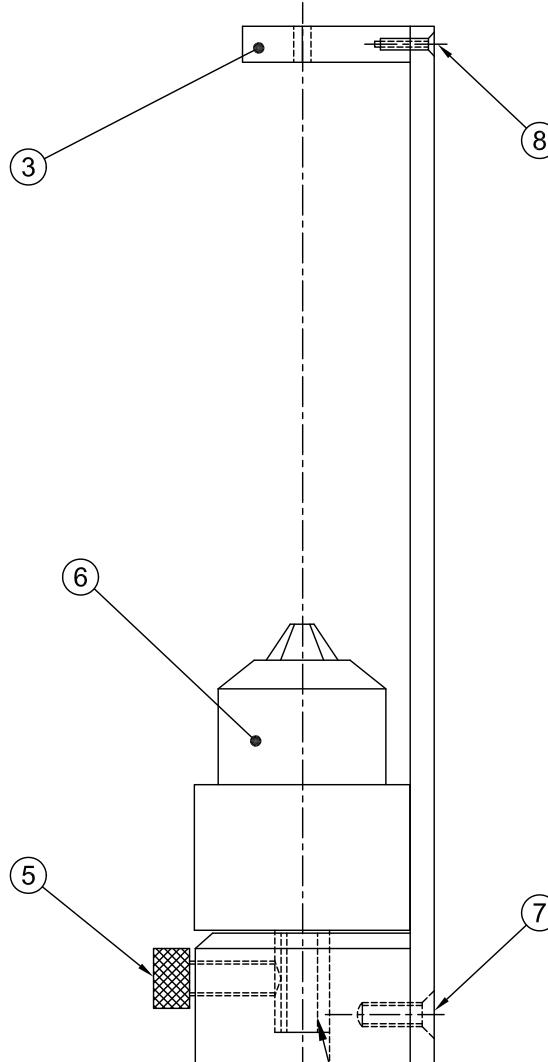
TABLE IV				
QUALITY CONFORMANCE INSPECTION				
ITEM	MIL-STD-105		EXAMINATION OR TEST	CONDITIONS AND REQUIREMENTS
	LEVEL	AQL		
Gage Points	II	2.5	Point Dimensions	Inspect per PSC-1002, Table II, using gage test bench.
			Dimensions $\emptyset$ A K C	Standard Inspection Equipment
	S-2	2.5	Material Finish	
Handles	II	2.5	$\emptyset$ D Both Ends Taper $\emptyset$ C	Standard Inspection Equipment
			All remaining Dimensions	
	S-2	2.5	Material Finish	

## BILL OF MATERIALS

DASH NO.	REQ'D	DESCRIPTION
2	1	BACK PLATE
3	1	TOP PLATE
4	1	BASE
5	1	THUMB SCREW
6	1	3/8 CAPACITY CHUCK -.500 SHANK
7	2	10-32 x .500 POZIDRIV FLAT HD. SCR.
8	2	6-32 x .500 POZIDRIV FLAT HD. SCR.



.125 WIDE FLAT ON  
STRAIGHT SHANK  
CHUCK ADAPTOR



3/8 HOLE THRU.  
CHUCK AND  
ADAPTOR

### NOTES:

- (1) ALL PARTS ARE BLACK ANODIZED ALUMINUM
- (2) ALL SHARP EDGES TO BE BROKEN
- (3) MARK DEGREE LINES AFTER ANODIZING.

REVISION

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TITLE:

## RECESS WOBBLE GAUGE MODEL D

DRAWN:  
L. DOUGAN

DATE:  
5-01-13

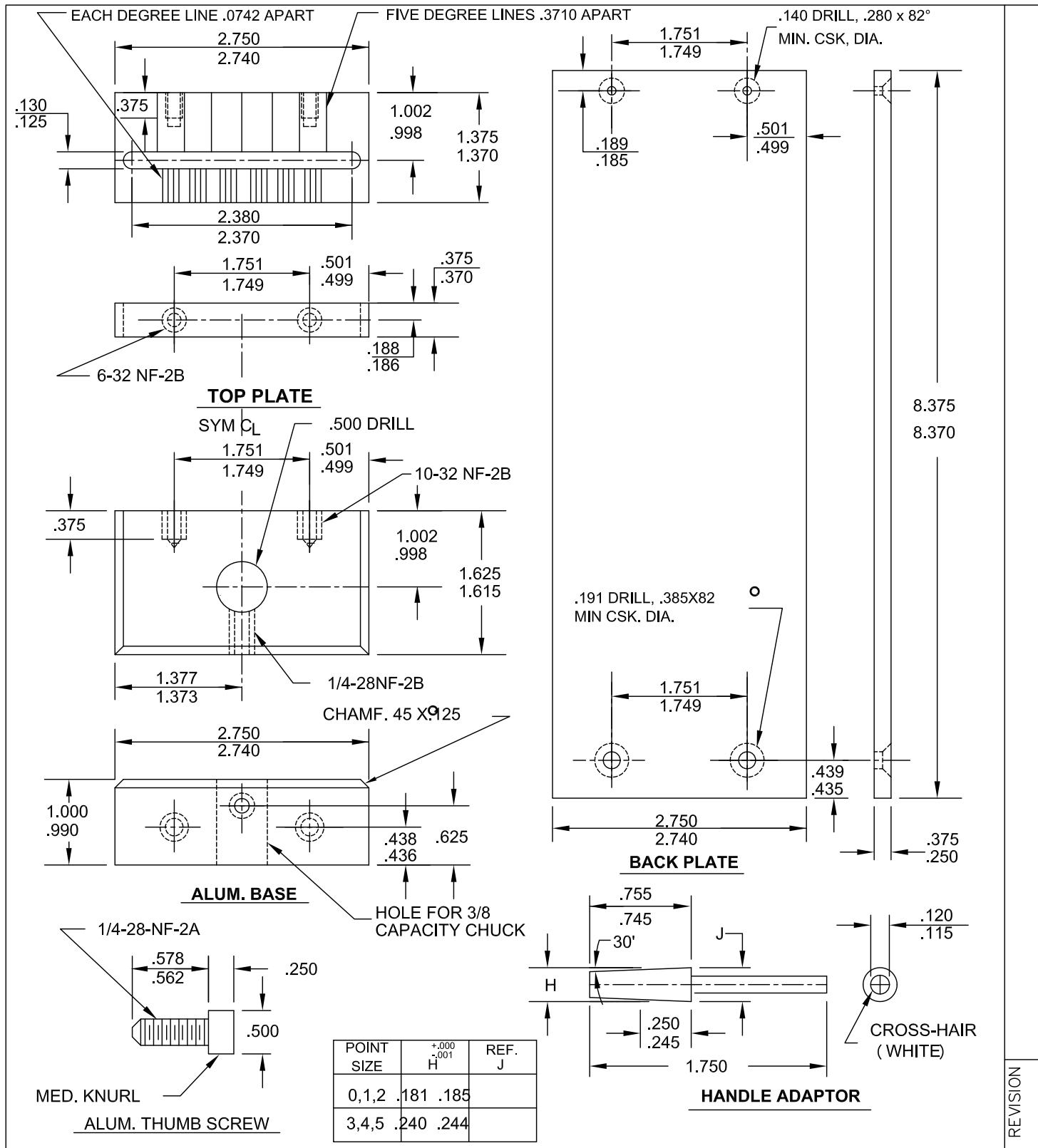
DRAWING NUMBER

**PSC-1012**

SHEET 1 OF 2

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PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ  
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TITLE:

## RECESS WOBBLE GAUGE MODEL D

DRAWN:  
L. DOUGAN

CHECKED:  
G. DILLING

DATE:  
5-01-13

DATE:  
5-02-13

DRAWING NUMBER

**PSC-1012**

SHEET 2 OF 2

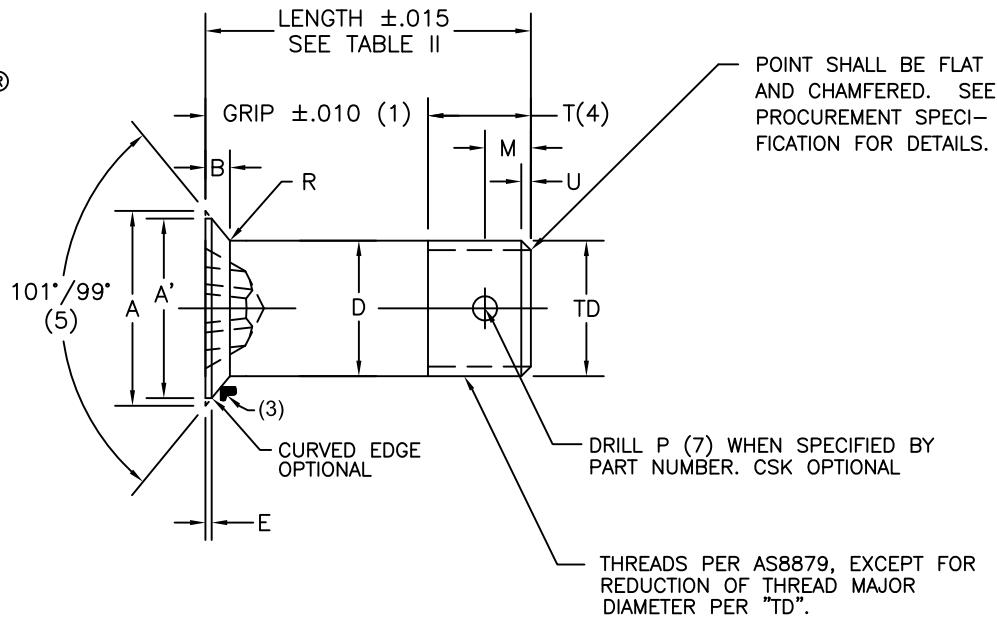
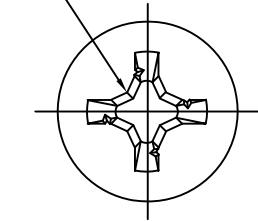
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326

05/23/14  
UPDATED

**ACR® RIBBED PHILLIPS® ENGINEERING MANUAL**  
**DRAWING SPECIFICATIONS**

<b>DRAWING SPEC.</b>	<b>DESCRIPTION</b>	<b>DATE</b>
PSC-731	BOLT, 100° REDUCED HEAD, ACR® RIBBED PHILLIPS® RECESS, CLOSE TOLERANCE, ALLOY STEEL, SHORT THREAD NON-LOCKING	05/12/14
PSC-732	BOLT, 100° REDUCED HEAD, ACR® RIBBED PHILLIPS® RECESS, CLOSE TOLERANCE, A286 STEEL, SHORT THREAD NON-LOCKING	05/13/14
PSC-733	BOLT, 100° REDUCED HEAD, ACR® RIBBED PHILLIPS® RECESS, CLOSE TOLERANCE, 6AL-4V TITANIUM ALLOY, SHORT THREAD NON-LOCKING	05/13/14
PSC-734	SCREW MACHINE-FLAT FILLISTER HEAD, FULL THREAD, ACR® RIBBED PHILLIPS® RECESS, ALLOY STEEL, SELF-LOCKING AND NON-LOCKING	05/13/14
PSC-735	SCREW MACHINE-FLAT FILLISTER HEAD, FULL THREAD, ACR® RIBBED PHILLIPS® RECESS, A286 CRES, SELF-LOCKING AND NON-LOCKING	05/14/14
PSC-736	SCREW MACHINE-FLAT FILLISTER HEAD, FULL THREAD, ACR® RIBBED PHILLIPS® RECESS, 6AL-4V TITANIUM ALLOY, SELF-LOCKING AND NON-LOCKING	05/14/14
PSC-737	SCREW, 100° HEAD, ACR® RIBBED PHILLIPS® RECESS, ALLOY STEEL, FULL THREAD, SELF-LOCKING AND NON-LOCKING	05/14/14
PSC-738	SCREW, 100° HEAD, ACR® RIBBED PHILLIPS® RECESS, A286 CRES, FULL THREAD, SELF-LOCKING AND NON-LOCKING	05/14/14
PSC-739	SCREW, 100° HEAD, ACR® RIBBED PHILLIPS® RECESS, 6AL-4V TITANIUM ALLOY, FULL THREAD, SELF-LOCKING AND NON-LOCKING	05/23/14
PSC-740	SCREW, HEX HEAD, ACR® RIBBED PHILLIPS® RECESS, ALLOY STEEL, FULL THREAD, NON-LOCKING	05/22/14
PSC-741	SCREW, HEX HEAD, ACR® RIBBED PHILLIPS® RECESS, A286 CRES, FULL THREAD, NON-LOCKING	05/22/14
PSC-742	SCREW, HEX HEAD, ACR® RIBBED PHILLIPS® RECESS, 6AL-4V TITANIUM ALLOY, FULL THREAD, NON-LOCKING	05/23/14
PSC-743	SCREW, 100° OVAL HEAD, ACR® RIBBED PHILLIPS® RECESS, A286 CRES, FULL THREAD, SELF-LOCKING AND NON-LOCKING	05/23/14

ACR® RIBBED PHILLIPS®  
RECESS PER PSC-4001  
SEE TABLE I



HEAD MARKING SHALL BE RAISED OR DEPRESSED (.010 MAX.) AND ARRANGED AS FOLLOWS:

- MARK WITH BASIC PART NUMBER ("PSC" OPTIONAL)
- MARK WITH MANUFACTURER'S SYMBOL OR TRADEMARK (SYMBOL LOCATION OPTIONAL IN ANY SECTOR)
- GRIP DASH NUMBER "D" WHEN APPLICABLE.
- "D" IDENTIFIES BOLT WITH DRILLED SHANK.
- MARK WITH RECESS DASH NUMBER, ENCIRCLED. RECESS NUMBER SHOULD BE APPROXIMATELY 25% LARGER THAN OTHER NUMERALS IN HEAD MARKING.

TABLE I DIMENSIONS (CONTINUED ON SHEET 2)

Ø DASH NUMBER	THREAD SIZE	(2) MAX. ØA	(2) ABSOLUTE MIN. ØA'	(2) MAX. B	ØD	MAX. E	M $\pm .010$	P (7) $.005$ $-.000$	T (4) REF.
					AFTER PLATING				
-3	.1900-32	.303	.266	.049	.1895/.1885	.012	.164	.070	.323
-4	.2500-28	.397	.355	.063	.2495/.2485	.014	.170	.076	.370
-5	.3125-24	.477	.429	.071	.3120/.3110	.016	.182	.076	.438
-6	.3750-24	.564	.510	.081	.3745/.3735	.018	.183	.106	.454
-7	.4375-20	.672	.612	.101	.4370/.4360	.020	.199	.106	.528
-8	.5000-20	.755	.688	.109	.4995/.4985	.022	.198	.106	.528
-9	.5625-18	.838	.766	.119	.5615/.5605	.024	.207	.141	.594
-10	.6250-18	.925	.848	.129	.6240/.6230	.026	.207	.141	.626
-12	.7500-16	1.099	1.010	.150	.7490/.7480	.030	.222	.141	.666

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TITLE: BOLT, 100° REDUCED HEAD  
ACR® RIBBED PHILLIPS® RECESS  
ALLOY STEEL, SHORT THD, NON-LOCKING

DRAWN: S. GUARINO	DATE: 08-22-79	DRAWING NUMBER <b>PSC-731</b>
CHECKED: G. LAMONICA	DATE: 08-10-04	SHEET 1 OF 5
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ®  
HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

REVISION 1 / ECO 12-07-79	2 / AutoCAD Update 10-23-02	3 / AutoCAD Update 08-10-04	4 / AutoCAD Update 05-01-13	5 / AutoCAD Update 05-01-14
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TABLE I CONTINUED

Ø DASH NUMBER	ØTD	RADIUS R	MAX. U	Y (5)	Z (6)	TORQUE IN-LBS MIN(8)	RAISED METAL MAX(8)	RECESS SIZE	
-3	.184/.181	.020 .010	.039	.0045	.0040	35	.005	2	
-4	.244/.241		.045		.0030	50	.005		
-5	.306/.302		.025 .010		125	.005	3	4S	
-6	.368/.364				.0025	230	.005		
-7	.431/.426	.030 .015	.052		300	.006			
-8	.493/.488		.062	.0020	—	4L	4L		
-9	.555/.550				—				
-10	.618/.612				.068			—	
-12	.743/.737				.078		—	5	

MATERIAL: ALLOY STEEL - 4340 (UNS G43406) PER AMS6415 OR AMS6484,  
OR 8740 (UNS G87400) PER AMS6322, AMS6325 OR AMS6327

HEAT TREAT: DEVELOP BASIC MATERIAL PROPERTIES AS FOLLOWS WITH CONTROLS PER AMS-2759:  
ALLOY STEEL:160 TO 180 KSI FTU; 95 KSI MINIMUM FSU.

FINISH: CADMIUM PLATE PER QQ-P-416, TYPE II, CLASS 2. EMBRITTLENESS REQUIREMENT  
PER NAS4002.

CODE: BASIC PART NUMBER - BOLT WITH UNDRILLED SHANK.  
FIRST DASH NUMBER INDICATES DIAMETER.  
ADD "D" AFTER DIAMETER DASH NUMBER FOR DRILLED SHANK BOLT.  
SECOND DASH NUMBER INDICATES GRIP (LENGTH) IN .0625 INCREMENTS.  
SEE TABLE II FOR TABULATIONS OF LENGTH DIMENSIONS. INTERMEDIATE OR  
LONGER LENGTHS MAY BE SPECIFIED BY USE OF WHOLE DASH NUMBER ONLY.

EXAMPLE OF PART NUMBER: (SEE SHEET 5 FOR EXAMPLES OF OVERSIZED BOLTS)

PSC731-3-10 = BOLT, .1900 THREAD, .625 GRIP, UNDRILLED SHANK.  
PSC731-3D10 = BOLT, .1900 THREAD, .625 GRIP, DRILLED SHANK

REVISION	1 / 12-07-79	ECO 2 / 10-23-02	AutoCAD Update 3 / 08-10-04	AutoCAD Update 4 / 05-01-13	AutoCAD Update 5 / 05-12-14
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TITLE: BOLT, 100° REDUCED HEAD  
ACR® RIBBED PHILLIPS® RECESS  
ALLOY STEEL, SHORT THD, NON-LOCKING

DRAWN: S. GUARINO	DATE: 08-22-79	DRAWING NUMBER <b>PSC-731</b>
CHECKED: G. LaMONICA	DATE: 08-10-04	SHEET 2 OF 5

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HEXSTIX R POZILOCK R ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

NOTES:

- (1) GRIP LENGTH OF BOLT SHALL BE MEASURED FROM THE TOP OF BOLT HEAD TO THE END OF THE FULL CYLINDRICAL PORTION OF THE SHANK.
- (2) DIMENSIONS A, A', AND B ARE INCLUDED FOR ENGINEERING REFERENCE ONLY AND ARE NOT TO BE USED FOR INSPECTION. VALUES A, A', AND B ARE CALCULATED LIMITS RESULTING FROM TOLERANCES ON D, HEAD ANGLE AND THE APPLICABLE HEAD PROTRUSION AND GAGE DIAMETER AS DEFINED IN NAS9800.
- (3) FLUSHNESS GAGE PROTRUSION SHALL BE INSPECTED PER NAS9800.
- (4) REFERENCE DIMENSIONS ARE FOR DESIGN PURPOSES ONLY.  
NOT AN INSPECTION REQUIREMENT.
- (5) CONCENTRICITY: CONICAL SURFACE OF HEAD TO "D" DIAMETER WITHIN .003 FIM,  
"D" DIAMETER TO THREAD PITCH DIAMETER WITHIN "Y" FIM.
- (6) SHANK STRAIGHTNESS WITHIN "Z" FIM PER INCH OF LENGTH.
- (7) COTTER PIN HOLE CENTERLINE WITHIN .010 AND NORMAL WITHIN 2° OF BOLT CENTERLINE.
- (8) MINIMUM TORQUE VALUES (LBF-IN) WHICH RECESS MUST DEVELOP IN REMOVAL  
DIRECTION WITH APPROPRIATE DRIVERS PER PSC-1201 THROUGH PSC-1204 AND  
5 POUND MAXIMUM END LOAD. PARTS ARE ACCEPTABLE IF RAISED METAL AT  
EDGE OF RECESS DOES NOT EXCEED TABULATED VALUES.
- (9) DIMENSIONS TO BE MET AFTER PLATING.
- (10) DIMENSIONS ARE IN INCHES.
- (11) FASTENERS FABRICATED FROM 4340 (UNS G43400) ALLOY STEEL PRIOR TO MARCH 1, 1995, WHICH  
WERE OTHERWISE ACCEPTABLE AT THE TIME OF MANUFACTURE, MAY BE SUPPLIED TO DEPLETION.
- (12) IF REQUIRED, TENSILE TESTING OF BOLTS REQUIRING CROSS-DRILLED THREADS SHALL BE PERFORMED  
PRIOR TO DRILLING AND THE APPLICATION OF PLATING/OR COATINGS. WHEN BOLTS HAVE BEEN DRILLED,  
STRENGTH MAY BE VERIFIED BY SHEAR TESTING, IN LIEU OF TENSILE TESTING, IN ACCORDANCE WITH  
NASM1312. USERS SHOULD BE AWARE THAT FASTENERS WITH CROSS-DRILLED THREADS MAY  
EXHIBIT A REDUCTION IN TENSILE STRENGTH.

SURFACE TEXTURE:

"D" DIAMETER CONICAL SURFACE OF THE HEAD, THREAD FLANKS AND THREAD ROOT 32 MICROINCHES RA;  
ALL OTHER SURFACES 125 MICROINCHES RA PER ASME B46.1.

PROCUREMENT SPECIFICATION:

NAS4002, EXCEPT AS NOTED. COLD WORKING OF HEAD TO SHANK FILLET IS NOT REQUIRED  
FOR .1900-32 BOLTS ONLY.  
FATIGUE TESTING IS NOT REQUIRED.

PREPARED FOR ROLLS-ROYCE TO REPLACE NAS 4703 THRU 4712

REVISION 1 / ECO 12-07-79 2 / AutoCAD Update 3 / AutoCAD Update 4 / AutoCAD Update 5 / AutoCAD Update 05-01-13 08-10-04 05-01-13 05-12-14

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	DRAWN: S. GUARINO	DATE: 08-22-79	DRAWING NUMBER <b>PSC-731</b>
	CHECKED: G. LaMONICA	DATE: 08-10-04	SHEET 3 OF 5
	PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		
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TABLE II - GRIP AND LENGTH DIMENSION

GRIP DASH NO.	GRIP ±.010	LENGTH ± .015 (SEE NOTES BELOW)									
		DASH NUMBER FOR DIAMETER									
-3	-4	-5	-6	-7	-8	-9	-10	-11	-12		
.1900-32	.2500-28	.3125-24	.3750-24	.4375-20	.5000-20	.5625-18	.6250-18	.6875-16	.7500-16		
1	0.062	0.385	—	—	—	—	—	—	—		
2	0.125	0.448	0.495	0.563	0.579	0.653	—	—	—		
3	0.188	0.511	0.558	0.626	0.642	0.716	0.716	0.782	0.814		
4	0.250	0.573	0.620	0.688	0.704	0.778	0.778	0.844	0.876	0.916	
5	0.312	0.635	0.682	0.750	0.766	0.840	0.840	0.906	0.938	0.978	
6	0.375	0.698	0.745	0.813	0.829	0.903	0.903	0.969	1.001	1.041	
7	0.438	0.761	0.808	0.876	0.892	0.966	0.966	1.032	1.064	1.104	
8	0.500	0.823	0.870	0.938	0.954	1.028	1.028	1.094	1.126	1.166	
9	0.562	0.885	0.932	1.000	1.016	1.090	1.090	1.156	1.188	1.228	
10	0.625	0.948	0.995	1.063	1.079	1.153	1.153	1.219	1.251	1.291	
11	0.688	1.011	1.058	1.126	1.142	1.216	1.216	1.282	1.314	1.354	
12	0.750	1.073	1.120	1.188	1.204	1.278	1.278	1.344	1.376	1.416	
13	0.812	1.135	1.182	1.250	1.266	1.340	1.340	1.406	1.438	1.478	
14	0.875	1.198	1.245	1.313	1.329	1.403	1.403	1.469	1.501	1.541	
15	0.938	1.261	1.308	1.376	1.392	1.466	1.466	1.532	1.564	1.604	
16	1.000	1.323	1.370	1.438	1.454	1.528	1.528	1.594	1.626	1.666	
17	1.062	1.385	1.432	1.500	1.516	1.590	1.590	1.656	1.688	1.728	
18	1.125	1.448	1.495	1.563	1.579	1.653	1.653	1.719	1.751	1.791	
19	1.188	1.511	1.558	1.626	1.642	1.716	1.716	1.782	1.814	1.854	
20	1.250	1.573	1.620	1.688	1.704	1.778	1.778	1.844	1.876	1.916	
21	1.312	1.635	1.682	1.750	1.766	1.840	1.840	1.906	1.938	1.978	
22	1.375	1.698	1.745	1.813	1.829	1.903	1.903	1.969	2.001	2.041	
23	1.438	1.761	1.808	1.876	1.892	1.966	1.966	2.032	2.064	2.104	
24	1.500	1.823	1.870	1.938	1.945	2.028	2.028	2.094	2.126	2.166	
25	1.562	1.885	1.932	2.000	2.016	2.090	2.090	2.156	2.188	2.228	
26	1.625	1.948	1.995	2.063	2.079	2.153	2.153	2.219	2.251	2.291	
27	1.688	2.011	2.058	2.126	2.142	2.216	2.216	2.282	2.314	2.354	
28	1.750	2.073	2.120	2.188	2.204	2.278	2.278	2.344	2.376	2.416	
29	1.812	2.135	2.182	2.250	2.266	2.340	2.340	2.406	2.438	2.478	
30	1.875	2.198	2.245	2.313	2.329	2.403	2.403	2.469	2.501	2.541	
31	1.938	2.261	2.308	2.376	2.392	2.466	2.466	2.532	2.564	2.604	
32	2.000	2.323	2.370	2.438	2.454	2.528	2.528	2.594	2.626	2.666	
34	2.125	2.448	2.495	2.563	2.579	2.653	2.653	2.719	2.751	2.791	
36	2.250	2.573	2.620	2.688	2.704	2.778	2.778	2.844	2.876	2.916	
38	2.375	2.698	2.745	2.813	2.829	2.903	2.903	2.969	3.001	2.041	
40	2.500	2.823	2.870	2.938	2.954	3.028	3.028	3.094	3.126	3.166	
42	2.625	2.948	2.995	3.063	3.079	3.153	3.153	3.219	3.251	3.291	
44	2.750	3.073	3.120	3.188	3.204	3.278	3.278	3.344	3.376	3.416	
46	2.875	3.198	3.245	3.313	3.329	3.403	3.403	3.469	3.501	3.541	
48	3.000	3.323	3.370	3.438	3.454	3.528	3.528	3.594	3.626	3.666	
50	3.125	3.448	3.495	3.563	3.579	3.653	3.653	3.719	3.751	3.791	
52	3.250	3.573	3.620	3.688	3.704	3.778	3.778	3.844	3.876	3.916	
54	3.375	3.698	3.745	3.813	3.829	3.903	3.903	3.969	4.001	4.041	
56	3.500	3.823	3.870	3.938	3.954	4.028	4.028	4.094	4.126	4.166	
58	3.625	3.948	3.995	4.063	4.079	4.153	4.153	4.219	4.251	4.291	
60	3.750	4.073	4.120	4.188	4.204	4.278	4.278	4.344	4.376	4.416	
62	3.875	4.198	4.245	4.313	4.329	4.403	4.403	4.469	4.501	4.541	
64	4.000	4.323	4.370	4.438	4.454	4.528	4.528	4.594	4.626	4.666	

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2 / AutoCAD Update 10-23-02  
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TITLE: BOLT, 100° REDUCED HEAD  
ACR® RIBBED PHILLIPS® RECESS  
ALLOY STEEL, SHORT THD, NON-LOCKING

DRAWN: S. GUARINO	DATE: 08-22-79	DRAWING NUMBER  <b>PSC-731</b>
CHECKED: G. LaMONICA	DATE: 08-10-04	SHEET 4 OF 5

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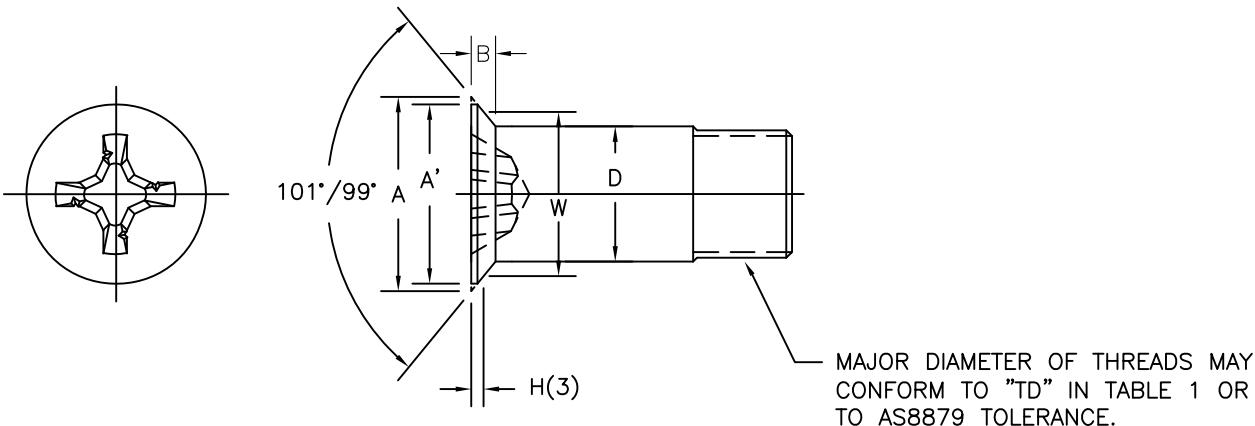
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.0156 AND .0312 OVERSIZE SHANK FOR REPLACEMENT OF BOLTS SHOWN ON SHEET 1.

HEAD MARKING IS THE SAME AS SHOWN ON SHEET 1  
PLUS IDENTIFICATION FOR OVERSIZE, WHERE APPLICABLE:  
IDENTIFY .0156 OVERSIZE BY "X"  
IDENTIFY .0312 OVERSIZE BY "Y"

HEAD HEIGHT DIMENSION "B" FOR .0156 OVERSIZED BOLTS IS .0065 LESS  
THAN THE VALUE TABULATED ON SHEET 1, BECAUSE OF THE INCREASE IN  
THE "D" DIAMETER.

HEAD HEIGHT DIMENSION "B" FOR .0312 OVERSIZED BOLTS IS  
THE SAME AS THE VALUE TABULATED ON SHEET 1. THIS RESULTS IN AN INCREASE  
OF "A, A' AND H" DIMENSIONS AS SHOWN IN THE TABLE BELOW.



PART NUMBER (NONLOCKING & UNDRILLED)	NORMAL THREAD SIZE	"D" DIAMETER .0156 OVERSIZE SHANK				"W" GAGE DIAMETER +.0002 -.0000						
		AFTER PLATING										
			MAX	MIN								
.0156 OVERSIZE												
-3-*X	.1900-32		.2026	.2016								
-4-*X	.2500-28		.2651	.2641								
-5-*X	.3125-24		.3276	.3266								
-6-*X	.3750-24		.3901	.3891								
-7-*X	.4375-20		.4526	.4516								
-8-*X	.5000-20		.5151	.5141								
-9-*X	.5625-18		.5771	.5761								
-10-*X	.6250-18		.6396	.6386								
-12-*X	.7500-16		.7646	.7636								
.0312 OVERSIZE												
"D" DIAMETER .0312 OVERSIZE SHANK												
AFTER PLATING												

\* = GRIP DASH NUMBER IN .0625 INCREMENTS. SEE SHEET 4 FOR GRIP AND LENGTH DIMENSIONS.  
(2) - SEE NOTE ON SHEET 3.

FOR MATERIAL, FINISH, AND PROCUREMENT INFORMATION SEE SHEETS 2 AND 3.

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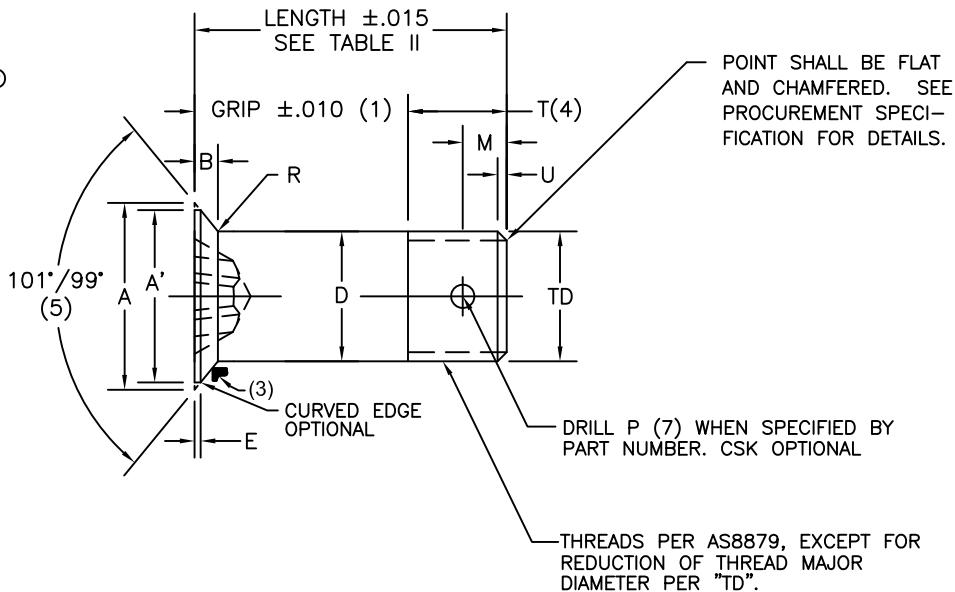
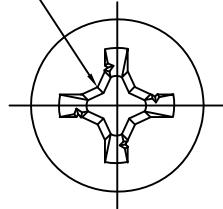
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DRAWN: S. GUARINO	DATE: 08-22-79	DRAWING NUMBER <b>PSC-731</b>
CHECKED: G. LAMONICA	DATE: 08-10-04	SHEET 5 OF 5

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
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ACR® RIBBED PHILLIPS®  
RECESS PER PSC-4001  
SEE TABLE I



HEAD MARKING SHALL BE RAISED OR DEPRESSED (.010 MAX.) AND ARRANGED AS FOLLOWS:

- MARK WITH BASIC PART NUMBER ("PSC" OPTIONAL) EXCEPT MARK .1900-32 SIZE WITH "10". THIS SIZE ALSO TO BE MARKED "C" FOR A286 CRES.
- MARK WITH MANUFACTURER'S SYMBOL OR TRADEMARK (SYMBOL LOCATION OPTIONAL IN ANY SECTOR) GRIP DASH NUMBER AND "D" WHEN APPLICABLE. (NOTE 11) "D" IDENTIFIES BOLT WITH DRILLED SHANK.
- MARK WITH RECESS DASH NUMBER, ENCIRCLED. RECESS NUMBER SHOULD BE APPROXIMATELY 25% LARGER THAN OTHER NUMERALS IN HEAD MARKING.

TABLE I DIMENSIONS (CONTINUED ON SHEET 2)

Ø DASH NUMBER	THREAD SIZE	(2) MAX. ØA	(2) ABSOLUTE MIN. ØA'	(2) MAX. B	ØD PLATED BOLTS	MAX. E	M ±.010	P (7) +.005 -.000	T (4) REF.
					(AFTER PLATING)				
-3	.1900-32	.303	.266	.049	.1895/.1885	.012	.164	.070	.323
-4	.2500-28	.397	.355	.063	.2495/.2485	.014	.170	.076	.370
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-6	.3750-24	.564	.510	.081	.3745/.3735	.018	.183	.106	.454
-7	.4375-20	.672	.612	.101	.4370/.4360	.020	.199	.106	.528
-8	.5000-20	.755	.688	.109	.4995/.4985	.022	.198	.106	.528
-9	.5625-18	.838	.766	.119	.5615/.5605	.024	.207	.141	.594
-10	.6250.18	.925	.848	.129	.6240/.6230	.026	.207	.141	.626
-12	.7500-16	1.099	1.010	.150	.7490/.7480	.030	.222	.141	.666

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TITLE: **BOLT, 100° REDUCED HEAD  
ACR® RIBBED PHILLIPS® RECESS  
A286 CRES, SHORT THD, NON-LOCKING**

DRAWN: S. GUARINO DATE: 09-20-79 DRAWING NUMBER

CHECKED: G. LAMONICA DATE: 08-10-04 **PSC-732**

SHEET 1 OF 5

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326

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TABLE I CONTINUED

Ø DASH NUMBER	ØD UNPLATED BOLTS	ØTD	RADIUS R	MAX. U	Y (5)	Z (6)	TORQUE IN-LBS MIN(8)	RAISED METAL MAX(8)	RECESS SIZE
-3	.1895/.1890	.184/.181	.020 .010 .025 .010 .052 .030 .015 .062 .068	.039	.0045	.0040	35	.005	2
-4	.2495/.2490	.244/.241		.045		.0030	50	.005	
-5	.3120/.3115	.306/.302		.052		125	.005	3	
-6	.3745/.3740	.368/.364		.0025	230	.005	4S		
-7	.4370/.4365	.431/.426			300	.006			
-8	.4995/.4990	.493/.488			-	4L			
-9	.5615/.5610	.555/.550			-				
-10	.6240/.6235	.618/.612			-				
-12	.7490/.7485	.743/.737			.078		-	5	

MATERIAL: A286 (UNS S66286) CRES CONFORMING TO THE CHEMISTRY OF AMS5731, AMS5732, AMS5737, OR AMS5853.

HEAT TREAT: DEVELOP BASIC MATERIAL PROPERTIES AS FOLLOWS, WITH CONTROLS PER AMS2759, CRES: 160 - 190 KSI FTU; 95 KSI MINIMUM FSU.

FINISH: UNPLATED BOLTS - PASSIVATE TO MEET REQUIREMENTS OF NAS4003.  
PLATED BOLTS - CADMIUM PLATE PER QQ-P-416, TYPE II, CLASS 2. EMBRITTLEMENT TEST PER QQ-P-416 DOES NOT APPLY. CADMIUM PLATED A286 CRES SCREWS SHALL BE IDENTIFIED WITH GREEN DYE OR PAINT ON THE THREAD END. MAXIMUM COVERAGE MAY INCLUDE THE CHAMFER PLUS ONE INCOMPLETE THREAD.  
PARTS PLATED TO CLASS 3 MAY BE USED UNTIL STOCK IS DEPLETED.

COATED BOLTS - ALUMINUM COATING PER NAS4006.

CODE: BASIC PART NUMBER - PLATED BOLT WITH UNDRILLED SHANK.  
FIRST DASH NUMBER INDICATES DIAMETER.  
SECOND DASH NUMBER INDICATES GRIP LENGTH IN .0625 INCREMENTS.  
SEE TABLE II FOR TABULATIONS OF LENGTH DIMENSIONS. INTERMEDIATE OR LONGER LENGTHS MAY BE SPECIFIED BY USE OF WHOLE DASH NUMBERS ONLY.  
ADD "A" AFTER DIAMETER DASH NUMBER FOR ALUMINUM COATED BOLTS.  
ADD "D" AFTER DIAMETER DASH NUMBER FOR DRILLED SHANK BOLT.  
ADD "U" AFTER DIAMETER DASH NUMBER FOR UNPLATED BOLTS. MAYBE USED WITH "D" CODE.  
WHEN MULTIPLE LETTER CODES ARE USED, SEQUENCE MUST BE IN ALPHABETICAL ORDER.

EXAMPLE OF PART NUMBER: (SEE SHEET 5 FOR EXAMPLES OF OVERSIZED BOLTS)

PSC732-3-10 = BOLT, .1900-32 THREAD, .625 GRIP, UNDRILLED SHANK PLATED.  
PSC732-3A10 = BOLT, .1900-32 THREAD, .625 GRIP, UNDRILLED SHANK ALUMINUM COATED.  
PSC732-3D10 = BOLT, .1900-32 THREAD, .625 GRIP, DRILLED SHANK PLATED.  
PSC732-3DU10 = BOLT, .1900-32 THREAD, .625 GRIP, DRILLED SHANK UNPLATED.

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TITLE: **BOLT, 100° REDUCED HEAD  
ACR® RIBBED PHILLIPS® RECESS  
A286 CRES, SHORT THD, NON-LOCKING**  
DRAWN: S. GUARINO DATE: 09-20-79 DRAWING NUMBER  
CHECKED: G. LAMONICA DATE: 08-10-04 **PSC-732**  
SHEET 2 OF 5  
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326

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NOTES:

- (1) GRIP LENGTH OF BOLT SHALL BE MEASURED FROM THE TOP OF BOLT HEAD TO THE END OF THE FULL CYLINDRICAL PORTION OF THE SHANK.
- (2) DIMENSIONS A, A', AND B ARE INCLUDED FOR ENGINEERING REFERENCE ONLY AND ARE NOT TO BE USED FOR INSPECTION. VALUES A, A', AND B ARE CALCULATED LIMITS RESULTING FROM TOLERANCES ON W, H, E, AND HEAD ANGLE.
- (3) DIMENSIONS FOR H GAGE PROTRUSION SHALL BE INSPECTED PER NAS9800.
- (4) REFERENCE DIMENSIONS ARE FOR DESIGN PURPOSES ONLY.  
NOT AN INSPECTION REQUIREMENT.
- (5) CONCENTRICITY: CONICAL SURFACE OF HEAD TO "D" DIAMETER WITHIN .003 FIM,  
"D" DIAMETER TO THREAD PITCH DIAMETER WITHIN "Y" FIM.
- (6) SHANK STRAIGHTNESS WITHIN "Z" FIM PER INCH OF LENGTH.
- (7) COTTER PIN HOLE CENTERLINE WITHIN .010 AND NORMAL WITHIN 2° OF BOLT CENTERLINE.
- (8) MINIMUM TORQUE VALUES (LBF-IN) WHICH RECESS MUST DEVELOP IN REMOVAL DIRECTION WITH APPROPRIATE DRIVERS PER PSC-1201 THROUGH PSC-1204 AND 5 POUND MAXIMUM END LOAD. PARTS ARE ACCEPTABLE IF RAISED METAL AT EDGE OF RECESS DOES NOT EXCEED TABULATED VALUES.
- (9) DIMENSIONS TO BE MET AFTER PLATING EXCEPT AS NOTED ON SHEETS 1 AND 5.
- (10) DIMENSIONS ARE IN INCHES.
- (11) "A", ALUMINUM COATED AND "U", UNPLATED CODES NEED NOT APPEAR ON THE BOLT HEAD.
- (12) THE EFFECT OF COLD WORK AND AGING INDUCED DURING THE MANUFACTURING CYCLE MAY INCREASE THE ULTIMATE TENSILE VALUE OF THE FINISHED PART, BUT THIS WILL SHALL NOT EXCEED 1.3 TIMES THE SPECIFIC MINIMUM TENSILE VALUE.
- (13) IF REQUIRED, TENSILE TESTING OF BOLTS REQUIRING CROSS-DRILLED THREADS SHALL BE PERFORMED PRIOR TO DRILLING AND THE APPLICATION OF PLATING/OR COATINGS. WHEN BOLTS HAVE BEEN DRILLED, STRENGTH MAY BE VERIFIED BY SHEAR TESTING, IN LIEU OF TENSILE TESTING, IN ACCORDANCE WITH NASM1312. USERS SHOULD BE AWARE THAT FASTENERS WITH CROSS-DRILLED THREADS MAY EXHIBIT A REDUCTION IN TENSILE STRENGTH.
- (14) MAGNETIC PERMEABILITY SHALL BE LESS THAN 2.0 (AIR = 1.0) FOR FIELD STRENGTH H= 200 OERSTEDS USING A MAGNETIC PERMEABILITY INDICATOR PER ASTM A342/A 342M, TEST METHOD 3.

SURFACE TEXTURE:

"D" DIAMETER CONICAL SURFACE OF THE HEAD, THREAD FLANKS AND THREAD ROOT 32 MICROINCHES RA;  
ALL OTHER SURFACES 125 MICROINCHES RA PER ASME B46.1.

PROCUREMENT SPECIFICATION:

NAS4003, EXCEPT AS NOTED. COLD WORKING OF HEAD TO SHANK FILLET IS NOT REQUIRED FOR .1900-32 BOLTS ONLY. FATIGUE TESTING NOT REQUIRED. RECESS STRENGTH REQUIREMENTS OF NAS4003 SHALL NOT APPLY.

PREPARED FOR ROLLS-ROYCE TO REPLACE NAS 4803 THRU 4816

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	DRAWN: S. GUARINO	DATE: 09-20-79	DRAWING NUMBER <b>PSC-732</b>
	CHECKED: G. LaMONICA	DATE: 08-10-04	SHEET 3 OF 5
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326			
<b>PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ</b> <small>HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY</small>			

TABLE II — GRIP AND LENGTH DIMENSION

GRIP DASH NO.	GRIP ± .010	LENGTH ± .015 (SEE NOTES BELOW)									
		DASH NUMBER FOR DIAMETER									
-3	-4	-5	-6	-7	-8	-9	-10	-11	-12		
1	0.062	0.385	—	—	—	—	—	—	—		
2	0.125	0.448	0.495	0.563	0.579	0.653	—	—	—		
3	0.188	0.511	0.558	0.626	0.642	0.716	0.716	0.782	0.814	—	
4	0.250	0.573	0.620	0.688	0.704	0.778	0.778	0.844	0.876	0.916	
5	0.312	0.635	0.682	0.750	0.766	0.840	0.840	0.906	0.938	0.978	
6	0.375	0.698	0.745	0.813	0.829	0.903	0.903	0.969	1.001	1.041	
7	0.438	0.761	0.808	0.876	0.892	0.966	0.966	1.032	1.064	1.104	
8	0.500	0.823	0.870	0.938	0.954	1.028	1.028	1.094	1.126	1.166	
9	0.562	0.885	0.932	1.000	1.016	1.090	1.090	1.156	1.188	1.228	
10	0.625	0.948	0.995	1.063	1.079	1.153	1.153	1.219	1.251	1.291	
11	0.688	1.011	1.058	1.126	1.142	1.216	1.216	1.282	1.314	1.354	
12	0.750	1.073	1.120	1.188	1.204	1.278	1.278	1.344	1.376	1.416	
13	0.812	1.135	1.182	1.250	1.266	1.340	1.340	1.406	1.438	1.478	
14	0.875	1.198	1.245	1.313	1.329	1.403	1.403	1.469	1.501	1.541	
15	0.938	1.261	1.308	1.376	1.392	1.466	1.466	1.532	1.564	1.604	
16	1.000	1.323	1.370	1.438	1.454	1.528	1.528	1.594	1.626	1.666	
17	1.062	1.385	1.432	1.500	1.516	1.590	1.590	1.656	1.688	1.728	
18	1.125	1.448	1.495	1.563	1.579	1.653	1.653	1.719	1.751	1.791	
19	1.188	1.511	1.558	1.626	1.642	1.716	1.716	1.782	1.814	1.854	
20	1.250	1.573	1.620	1.688	1.704	1.778	1.778	1.844	1.876	1.916	
21	1.312	1.635	1.682	1.750	1.766	1.840	1.840	1.906	1.938	1.978	
22	1.375	1.698	1.745	1.813	1.829	1.903	1.903	1.969	2.001	2.041	
23	1.438	1.761	1.808	1.876	1.892	1.966	1.966	2.032	2.064	2.104	
24	1.500	1.823	1.870	1.938	1.945	2.028	2.028	2.094	2.126	2.166	
25	1.562	1.885	1.932	2.000	2.016	2.090	2.090	2.156	2.188	2.228	
26	1.625	1.948	1.995	2.063	2.079	2.153	2.153	2.219	2.251	2.291	
27	1.688	2.011	2.058	2.126	2.142	2.216	2.216	2.282	2.314	2.354	
28	1.750	2.073	2.120	2.188	2.204	2.278	2.278	2.344	2.376	2.416	
29	1.812	2.135	2.182	2.250	2.266	2.340	2.340	2.406	2.438	2.478	
30	1.875	2.198	2.245	2.313	2.329	2.403	2.403	2.469	2.501	2.541	
31	1.938	2.261	2.308	2.376	2.392	2.466	2.466	2.532	2.564	2.604	
32	2.000	2.323	2.370	2.438	2.454	2.528	2.528	2.594	2.626	2.666	
34	2.125	2.448	2.495	2.563	2.579	2.653	2.653	2.719	2.751	2.791	
36	2.250	2.573	2.620	2.688	2.704	2.778	2.778	2.844	2.876	2.916	
38	2.375	2.698	2.745	2.813	2.829	2.903	2.903	2.969	3.001	3.041	
40	2.500	2.823	2.870	2.938	2.954	3.028	3.028	3.094	3.126	3.166	
42	2.625	2.948	2.995	3.063	3.079	3.153	3.153	3.219	3.251	3.291	
44	2.750	3.073	3.120	3.188	3.204	3.278	3.278	3.344	3.376	3.416	
46	2.875	3.198	3.245	3.313	3.329	3.403	3.403	3.469	3.501	3.541	
48	3.000	3.323	3.370	3.438	3.454	3.528	3.528	3.594	3.626	3.666	
50	3.125	3.448	3.495	3.563	3.579	3.653	3.653	3.719	3.751	3.791	
52	3.250	3.573	3.620	3.688	3.704	3.778	3.778	3.844	3.876	3.916	
54	3.375	3.698	3.745	3.813	3.829	3.903	3.903	3.969	4.001	4.041	
56	3.500	3.823	3.870	3.938	3.954	4.028	4.028	4.094	4.126	4.166	
58	3.625	3.948	3.995	4.063	4.079	4.153	4.153	4.219	4.251	4.291	
60	3.750	4.073	4.120	4.188	4.204	4.278	4.278	4.344	4.376	4.416	
62	3.875	4.198	4.245	4.313	4.329	4.403	4.403	4.469	4.501	4.541	
64	4.000	4.323	4.370	4.438	4.454	4.528	4.528	4.594	4.626	4.666	

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TITLE: **BOLT, 100° REDUCED HEAD  
ACR® RIBBED PHILLIPS® RECESS  
A286 CRES, SHORT THD, NON-LOCKING**

DRAWN: S. GUARINO	DATE: 09-20-79	DRAWING NUMBER
CHECKED: G. LaMONICA	DATE: 08-10-04	<b>PSC-732</b>
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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.0156 AND .0312 OVERSIZE SHANK FOR REPLACEMENT OF BOLTS SHOWN ON SHEET 1.

HEAD MARKING IS THE SAME AS SHOWN ON SHEET 1

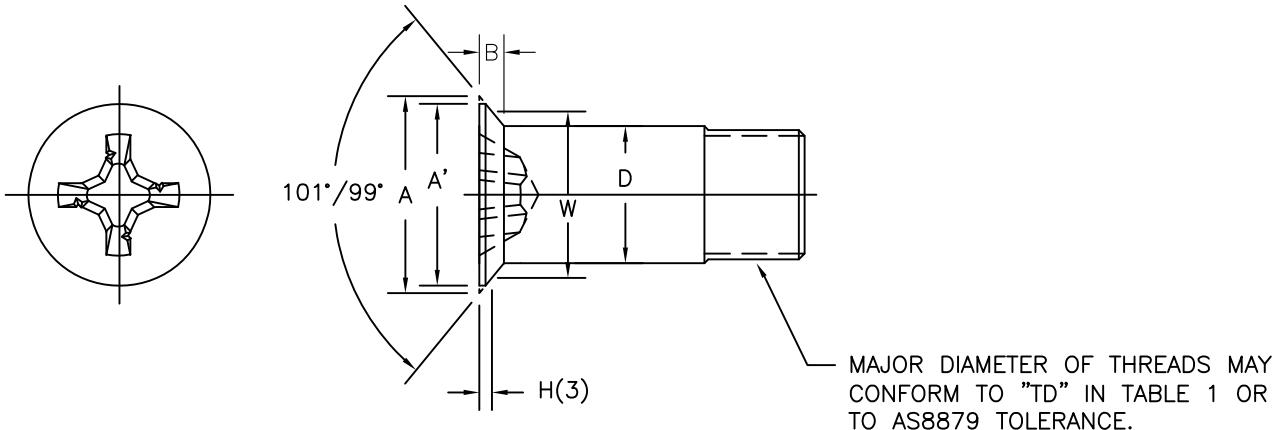
PLUS IDENTIFICATION FOR OVERSIZE, WHERE APPLICABLE:

IDENTIFY .0156 OVERSIZE BY "X"

IDENTIFY .0312 OVERSIZE BY "Y"

HEAD HEIGHT DIMENSION "B" FOR .0156 OVERSIZED BOLTS IS .0065 LESS THAN THE VALUE TABULATED ON SHEET 1, BECAUSE OF THE INCREASE IN THE "D" DIAMETER.

HEAD HEIGHT DIMENSION "B" FOR .0312 OVERSIZED BOLTS IS THE SAME AS THE VALUE TABULATED ON SHEET 1. THIS RESULTS IN AN INCREASE OF "A, A' AND H" DIMENSIONS AS SHOWN IN THE TABLE BELOW.



PART NUMBER NONLOCKING & UNDRILLED .0156 OVERSIZE	NORMAL THREAD SIZE	"D" DIAMETER .0156 OVERSIZE SHANK					
		UNPLATED BOLTS		PLATED BOLTS		MAX	MIN
		MAX	MIN	MAX	MIN		
-3-*x	.1900-32	.2026	.2021			.2026	.2016
-4-*x	.2500-28	.2651	.2646			.2651	.2641
-5-*x	.3125-24	.3276	.3271			.3276	.3266
-6-*x	.3750-24	.3901	.3896			.3901	.3891
-7-*x	.4375-20	.4526	.4521			.4526	.4516
-8-*x	.5000-20	.5151	.5146			.5151	.5141
-9-*x	.5625-18	.5771	.5766			.5771	.5761
-10-*x	.6250-18	.6396	.6391			.6396	.6386
-12-*x	.7500-16	.7646	.7641			.7646	.7636

PART NO. NONLOCK & UNDRILL .0312 OVERSIZE	NORMAL THREAD SIZE	"D" DIAMETER .0312 OVERSIZE SHANK				"A" DIA. TO SHARP CORNER MAX. (2)	A' ABSOLUTE MIN. (2)	"H" GAGE PROTRUSION		"W" GAGE DIAMETER +.0002 -.0000		
		UNPLATED BOLTS		PLATED BOLTS				NOM	±TOL			
		MAX	MIN	MAX	MIN							
-3-*Y	.1900-32	.2182	.2177			.2182	.2172	.334	.297	.0361	.0013	.2438
-4-*Y	.2500-28	.2807	.2802			.2807	.2797	.428	.386	.0386	.0015	.3312
-5-*Y	.3125-24	.3432	.3427			.3432	.3422	.508	.460	.0411	.0017	.4045
-6-*Y	.3750-24	.4057	.4052			.4057	.4047	.595	.541	.0436	.0019	.4852
-7-*Y	.4375-20	.4682	.4677			.4682	.4672	.703	.643	.0531	.0021	.5696
-8-*Y	.5000-20	.5307	.5302			.5307	.5297	.786	.719	.0539	.0023	.6498
-9-*Y	.5625-18	.5927	.5922			.5927	.5917	.869	.797	.0594	.0025	.7198
-10-*Y	.6250-18	.6552	.6547			.6552	.6542	.956	.879	.0531	.0027	.8212
-12-*Y	.7500-16	.7802	.7797			.7802	.7792	1.130	1.041	.0631	.0031	.9700

\* = GRIP DASH NUMBER IN .0625 INCREMENTS. SEE SHEET 4 FOR GRIP AND LENGTH DIMENSIONS.

(2) - SEE NOTE ON SHEET 3.

FOR MATERIAL, FINISH, AND PROCUREMENT INFORMATION SEE SHEETS 2 AND 3.

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TITLE:

**BOLT, 100° REDUCED HEAD  
ACR® RIBBED PHILLIPS® RECESS  
A286 CRES, SHORT THD, NON-LOCKING**

DRAWN:

S. GUARINO

DATE:

09-20-79

DRAWING NUMBER

**PSC-732**

CHECKED:

G. LaMONICA

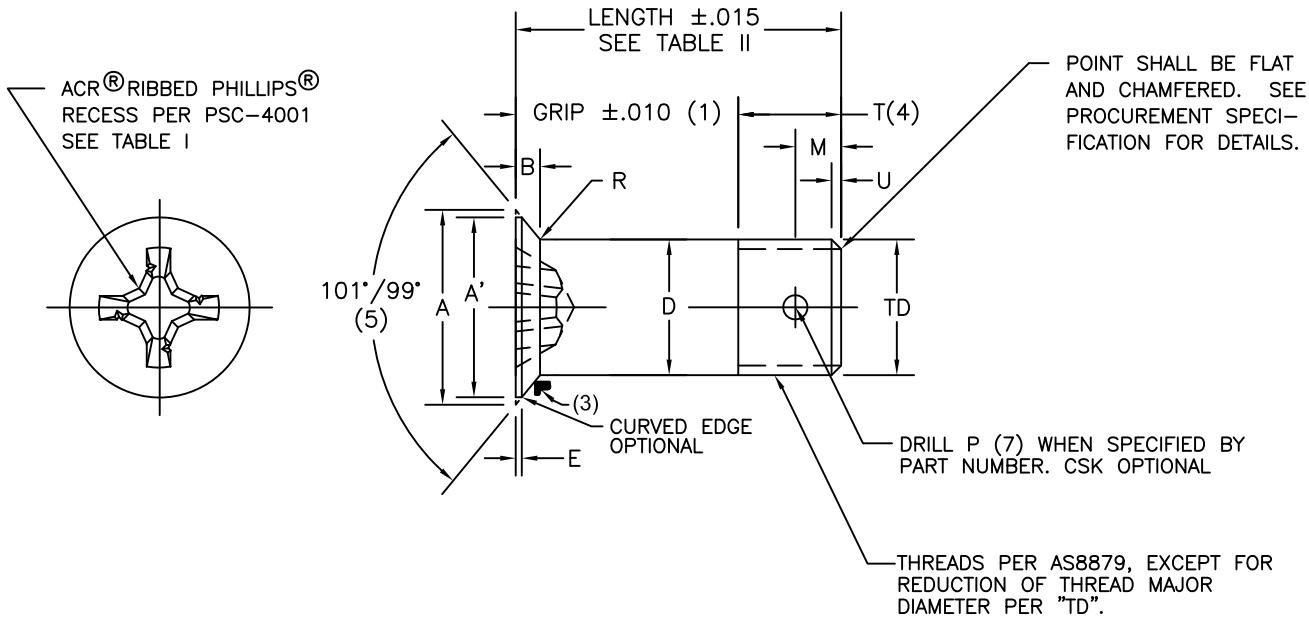
DATE:

08-10-04

SHEET 5 OF 5

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HEAD MARKING SHALL BE RAISED OR DEPRESSED (.010 MAX.) AND ARRANGED AS FOLLOWS:

- MARK WITH BASIC PART NUMBER ("PSC" OPTIONAL) EXCEPT MARK .1900-32 SIZE WITH "10". THIS SIZE ALSO TO BE MARKED "C" FOR A286 CRES.
- MARK WITH MANUFACTURER'S SYMBOL OR TRADEMARK (SYMBOL LOCATION OPTIONAL IN ANY SECTOR ) GRIP DASH NUMBER AND "D" WHEN APPLICABLE. (NOTE 11) "D" IDENTIFIES BOLT WITH DRILLED SHANK.
- MARK WITH RECESS DASH NUMBER, ENCIRCLED. RECESS NUMBER SHOULD BE APPROXIMATELY 25% LARGER THAN OTHER NUMERALS IN HEAD MARKING.

TABLE I DIMENSIONS (CONTINUED ON SHEET 2)

Ø DASH NUMBER	THREAD SIZE	(2) MAX. ØA	(2) ABSOLUTE MIN. ØA'	(2) MAX. B	ØD (PLATED BOLTS)	MAX. E	M ±.010	P (7) +.005 -.000	T (4) REF.
					AFTER PLATING				
-3	.1900-32	.303	.266	.049	.1895/.1885	.012	.164	.070	.323
-4	.2500-28	.397	.355	.063	.2495/.2485	.014	.170	.076	.370
-5	.3125-24	.477	.429	.071	.3120/.3110	.016	.182	.076	.438
-6	.3750-24	.564	.510	.081	.3745/.3735	.018	.183	.106	.454
-7	.4375-20	.672	.612	.101	.4370/.4360	.020	.199	.106	.528
-8	.5000-20	.755	.688	.109	.4995/.4985	.022	.198	.106	.528
-9	.5625-18	.838	.766	.119	.5615/.5605	.024	.207	.141	.594
-10	.6250.18	.925	.848	.129	.6240/.6230	.026	.207	.141	.626
-12	.7500-16	1.099	1.010	.150	.7490/.7480	.030	.222	.141	.666

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TITLE: **BOLT, 100° REDUCED HEAD  
ACR® RIBBED PHILLIPS® RECESS  
TITANIUM, SHORT THD, NON-LOCKING**

DRAWN: S. GUARINO DATE: 09-20-79 DRAWING NUMBER

CHECKED: G. LaMONICA DATE: 08-10-04 **PSC-733**

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ  
HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

TABLE I CONTINUED

Ø DASH NUMBER	ØD UNPLATED	ØTD	RADIUS R	MAX. U	Y (5)	Z (6)	TORQUE IN/LBS MIN(8)	RAISED METAL MAX(8)	RECESS SIZE
-3	.1895/.1890	.184/.181	.020 .010	.039		.0040	35	.005	
-4	.2495/.2490	.244/.241		.045	.0045	.0030	50	.005	2
-5	.3120/.3115	.306/.302	.025 .010		.052		125	.005	3
-6	.3745/.3740	.368/.364				.0025	230	.005	
-7	.4370/.4365	.431/.426		.062			300	.006	4S
-8	.4995/.4990	.493/.488	.030 .015				-		
-9	.5615/.5610	.555/.550		.068	.0060	.0020	-		
-10	.6240/.6235	.618/.612					-		4L
-12	.7490/.7485	.743/.737		.078			-		5

MATERIAL: 6AL-4V (UNS R56400) TITANIUM ALLOY PER AMS4928 OR AMS4967.

HEAT TREAT: DEVELOP BASIC MATERIAL PROPERTIES AS FOLLOWS, WITH CONTROLS PER AMS-H-81200 OR AMS2801.  
TITANIUM (6AL-4V): 160 KSI FTU MIN.; 95 KSI FSU MIN.

FINISH: UNPLATED BOLTS - NONE

COATED BOLTS - ALUMINUM COATING PER NAS4006.

CODE:

BASIC PART NUMBER - BOLT WITH UNDRILLED SHANK.  
FIRST DASH NUMBER INDICATES DIAMETER.  
SECOND DASH NUMBER INDICATES GRIP (LENGTH) IN .0625 INCREMENTS.  
SEE TABLE II FOR TABULATIONS OF LENGTH DIMENSIONS.  
INTERMEDIATE OR LONGER LENGTHS MAY BE SPECIFIED BY USE OF WHOLE DASH NUMBERS ONLY.  
ADD "A" AFTER DIAMETER DASH NUMBER FOR ALUMINUM COATED BOLTS.  
ADD "D" AFTER DIAMETER DASH NUMBER FOR DRILLED SHANK BOLT.  
ADD "U" AFTER DIAMETER DASH NUMBER FOR UNPLATED BOLTS. MAYBE USED WITH "D" CODE.  
WHEN MULTIPLE LETTER CODES ARE USED, SEQUENCE MUST BE IN ALPHABETICAL ORDER.

EXAMPLE OF PART NUMBER: (SEE SHEET 5 FOR EXAMPLES OF OVERSIZED BOLTS)

PSC733-3A10 = BOLT, .1900-32 THREAD, .625 GRIP, UNDRILLED SHANK, ALUMINUM COATED.

PSC733-3DU10 = BOLT, .1900-32 THREAD, .625 GRIP, DRILLED SHANK, UNPLATED.

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		CHECKED: G. LAMONICA	DATE: 08-10-04		
		PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326			
<small>PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ</small> <small>HEXSTIX POZILOCK</small> ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY					

NOTES:

- (1) GRIP LENGTH OF BOLT SHALL BE MEASURED FROM THE TOP OF BOLT HEAD TO THE END OF THE FULL CYLINDRICAL PORTION OF THE SHANK.
- (2) DIMENSIONS A, A', AND B ARE INCLUDED FOR ENGINEERING REFERENCE ONLY AND ARE NOT TO BE USED FOR INSPECTION. VALUES A, A', AND B ARE CALCULATED LIMITS RESULTING FROM TOLERANCES ON W, H, E, AND HEAD ANGLE.
- (3) DIMENSIONS FOR H GAGE PROTRUSION SHALL BE INSPECTED PER NAS9800.
- (4) REFERENCE DIMENSIONS ARE FOR DESIGN PURPOSES ONLY.  
NOT AN INSPECTION REQUIREMENT.
- (5) CONCENTRICITY: CONICAL SURFACE OF HEAD TO "D" DIAMETER WITHIN .003 FIM,  
"D" DIAMETER TO THREAD PITCH DIAMETER WITHIN "Y" FIM.
- (6) SHANK STRAIGHTNESS WITHIN "Z" FIM PER INCH OF LENGTH.
- (7) COTTER PIN HOLE CENTERLINE WITHIN .010 AND NORMAL WITHIN 2° OF BOLT CENTERLINE.
- (8) MINIMUM TORQUE VALUES (LBF-IN) WHICH RECESS MUST DEVELOP IN REMOVAL DIRECTION WITH APPROPRIATE DRIVERS PER PSC-1201 THROUGH PSC-1204 AND 5 POUND MAXIMUM END LOAD. PARTS ARE ACCEPTABLE IF RAISED METAL AT EDGE OF RECESS DOES NOT EXCEED TABULATED VALUES.
- (9) DIMENSIONS TO BE MET AFTER PLATING.
- (10) DIMENSIONS ARE IN INCHES.
- (11) "A", ALUMINUM COATED AND "U", UNPLATED CODES NEED NOT APPEAR ON THE BOLT HEAD.
- (12) IF REQUIRED, TENSILE TESTING OF BOLTS REQUIRING CROSS-DRILLED THREADS SHALL BE PERFORMED PRIOR TO DRILLING AND THE APPLICATION OF PLATING/OR COATINGS. WHEN BOLTS HAVE BEEN DRILLED, STRENGTH MAY BE VERIFIED BY SHEAR TESTING, IN LIEU OF TENSILE TESTING, IN ACCORDANCE WITH NASM1312. USERS SHOULD BE AWARE THAT FASTENERS WITH CROSS-DRILLED THREADS MAY EXHIBIT A REDUCTION IN TENSILE STRENGTH.

SURFACE TEXTURE:

"D" DIAMETER CONICAL SURFACE OF THE HEAD, THREAD FLANKS AND THREAD ROOT 32 MICROINCHES RA; ALL OTHER SURFACES 125 MICROINCHES RA PER ASME B4.1.

PROCUREMENT SPECIFICATION:

NAS4004, EXCEPT AS NOTED. FATIGUE TESTING NOT REQUIRED. COLD WORKING OF HEAD TO SHANK FILLET IS NOT REQUIRED FOR .1900-32 BOLTS ONLY.  
RECESS TORQUE VALUES OF TABLE I SHALL APPLY.

PREPARED FOR ROLLS-ROYCE TO REPLACE NAS 4903 THRU 4916

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TITLE:		<b>BOLT, 100° REDUCED HEAD ACR® RIBBED PHILLIPS® RECESS TITANIUM, SHORT THD, NON-LOCKING</b>		
DRAWN: S. GUARINO	DATE: 09-20-79	DRAWING NUMBER <b>PSC-733</b> SHEET 3 OF 5		
CHECKED: G. LAMONICA	DATE: 08-10-04			
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326				

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TABLE II - GRIP AND LENGTH DIMENSION

GRIP DASH NO.	GRIP ±.010	LENGTH ± .015 (SEE NOTES BELOW)									
		DASH NUMBER FOR DIAMETER									
	-3 .1900-32	-4 .2500-28	-5 .3125-24	-6 .3750-24	-7 .4375-20	-8 .5000-20	-9 .5625-18	-10 .6250-18	-12 .7500-16		
1	0.062	0.385	—	—	—	—	—	—	—	—	—
2	0.125	0.448	0.495	0.563	0.579	0.653	—	—	—	—	—
3	0.188	0.511	0.558	0.626	0.642	0.716	0.716	0.782	0.814	—	—
4	0.250	0.573	0.620	0.688	0.704	0.778	0.778	0.844	0.876	0.916	—
5	0.312	0.635	0.682	0.750	0.766	0.840	0.840	0.906	0.938	0.978	—
6	0.375	0.698	0.745	0.813	0.829	0.903	0.903	0.969	1.001	1.041	—
7	0.438	0.761	0.808	0.876	0.892	0.966	0.966	1.032	1.064	1.104	—
8	0.500	0.823	0.870	0.938	0.954	1.028	1.028	1.094	1.126	1.166	—
9	0.562	0.885	0.932	1.000	1.016	1.090	1.090	1.156	1.188	1.228	—
10	0.625	0.948	0.995	1.063	1.079	1.153	1.153	1.219	1.251	1.291	—
11	0.688	1.011	1.058	1.126	1.142	1.216	1.216	1.282	1.314	1.354	—
12	0.750	1.073	1.120	1.188	1.204	1.278	1.278	1.344	1.376	1.416	—
13	0.812	1.135	1.182	1.250	1.266	1.340	1.340	1.406	1.438	1.478	—
14	0.875	1.198	1.245	1.313	1.329	1.403	1.403	1.469	1.501	1.541	—
15	0.938	1.261	1.308	1.376	1.392	1.466	1.466	1.532	1.564	1.604	—
16	1.000	1.323	1.370	1.438	1.454	1.528	1.528	1.594	1.626	1.666	—
17	1.062	1.385	1.432	1.500	1.516	1.590	1.590	1.656	1.688	1.728	—
18	1.125	1.448	1.495	1.563	1.579	1.653	1.653	1.719	1.751	1.791	—
19	1.188	1.511	1.558	1.626	1.642	1.716	1.716	1.782	1.814	1.854	—
20	1.250	1.573	1.620	1.688	1.704	1.778	1.778	1.844	1.876	1.916	—
21	1.312	1.635	1.682	1.750	1.766	1.840	1.840	1.906	1.938	1.978	—
22	1.375	1.698	1.745	1.813	1.829	1.903	1.903	1.969	2.001	2.041	—
23	1.438	1.761	1.808	1.876	1.892	1.966	1.966	2.032	2.064	2.104	—
24	1.500	1.823	1.870	1.938	1.945	2.028	2.028	2.094	2.126	2.166	—
25	1.562	1.885	1.932	2.000	2.016	2.090	2.090	2.156	2.188	2.228	—
26	1.625	1.948	1.995	2.063	2.079	2.153	2.153	2.219	2.251	2.291	—
27	1.688	2.011	2.058	2.126	2.142	2.216	2.216	2.282	2.314	2.354	—
28	1.750	2.073	2.120	2.188	2.204	2.278	2.278	2.344	2.376	2.416	—
29	1.812	2.135	2.182	2.250	2.266	2.340	2.340	2.406	2.438	2.478	—
30	1.875	2.198	2.245	2.313	2.329	2.403	2.403	2.469	2.501	2.541	—
31	1.938	2.261	2.308	2.376	2.392	2.466	2.466	2.532	2.564	2.604	—
32	2.000	2.323	2.370	2.438	2.454	2.528	2.528	2.594	2.626	2.666	—
34	2.125	2.448	2.495	2.563	2.579	2.653	2.653	2.719	2.751	2.791	—
36	2.250	2.573	2.620	2.688	2.704	2.778	2.778	2.844	2.876	2.916	—
38	2.375	2.698	2.745	2.813	2.829	2.903	2.903	2.969	3.001	2.041	—
40	2.500	2.823	2.870	2.938	2.954	3.028	3.028	3.094	3.126	3.166	—
42	2.625	2.948	2.995	3.063	3.079	3.153	3.153	3.219	3.251	3.291	—
44	2.750	3.073	3.120	3.188	3.204	3.278	3.278	3.344	3.376	3.416	—
46	2.875	3.198	3.245	3.313	3.329	3.403	3.403	3.469	3.501	3.541	—
48	3.000	3.323	3.370	3.438	3.454	3.528	3.528	3.594	3.626	3.666	—
50	3.125	3.448	3.495	3.563	3.579	3.653	3.653	3.719	3.751	3.791	—
52	3.250	3.573	3.620	3.688	3.704	3.778	3.778	3.844	3.876	3.916	—
54	3.375	3.698	3.745	3.813	3.829	3.903	3.903	3.969	4.001	4.041	—
56	3.500	3.823	3.870	3.938	3.954	4.028	4.028	4.094	4.126	4.166	—
58	3.625	3.948	3.995	4.063	4.079	4.153	4.153	4.219	4.251	4.291	—
60	3.750	4.073	4.120	4.188	4.204	4.278	4.278	4.344	4.376	4.416	—
62	3.875	4.198	4.245	4.313	4.329	4.403	4.403	4.469	4.501	4.541	—
64	4.000	4.323	4.370	4.438	4.454	4.528	4.528	4.594	4.626	4.666	—

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TITLE: **BOLT, 100° REDUCED HEAD ACR® RIBBED PHILLIPS® RECESS TITANIUM, SHORT THD, NON-LOCKING**  
 DRAWN: S. GUARINO      DATE: 09-20-79      DRAWING NUMBER: **PSC-733**  
 CHECKED: G. LaMONICA      DATE: 08-10-04      SHEET 4 OF 5  
 PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
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.0156 AND .0312 OVERSIZE SHANK FOR REPLACEMENT OF BOLTS SHOWN ON SHEET 1.

HEAD MARKING IS THE SAME AS SHOWN ON SHEET 1

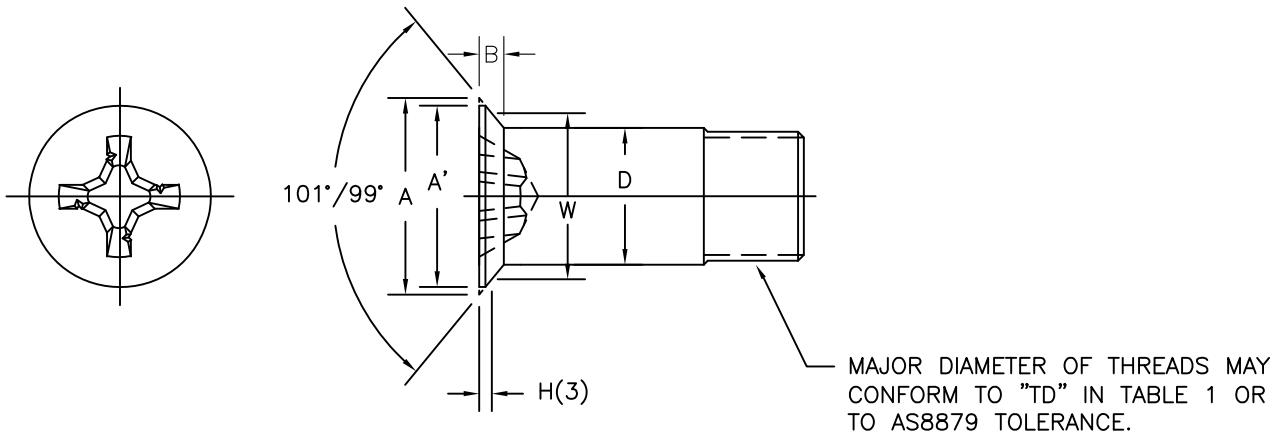
HEAD MARKING IS THE SAME AS SHOWN ON SHEET 1  
PLUS IDENTIFICATION FOR OVERSIZE WHERE APPLICABLE.

PLUS IDENTIFICATION FOR OVERS.  
IDENTIFY 0156 OVERSIZE BY "X"

IDENTIFY .0138 OVERSIZE BY "X"  
IDENTIFY 0312 OVERSIZE BY "Y"

HEAD HEIGHT DIMENSION "B" FOR .0156 OVERSIZED BOLTS IS .0065 LESS THAN THE VALUE TABULATED ON SHEET 1, BECAUSE OF THE INCREASE IN THE "D" DIAMETER.

HEAD HEIGHT DIMENSION "B" FOR .0312 OVERSIZED BOLTS IS THE SAME AS THE VALUE TABULATED ON SHEET 1. THIS RESULTS IN AN INCREASE OF "A, A' AND H" DIMENSIONS AS SHOWN IN THE TABLE BELOW.



PART NUMBER NONLOCKING & UNDRILLED .0156 OVERSIZE	NORMAL THREAD SIZE	"D" DIAMETER .0156 OVERSIZE SHANK				
		UNPLATED BOLTS			COATED BOLTS	
		MAX	MIN		MAX	MIN
-.3-*x	.1900-32	.2026	.2021		.2026	.2016
-.4-*x	.2500-28	.2651	.2646		.2651	.2641
-.5-*x	.3125-24	.3276	.3271		.3276	.3266
-.6-*x	.3750-24	.3901	.3896		.3901	.3891
-.7-*x	.4375-20	.4526	.4521		.4526	.4516
-.8-*x	.5000-20	.5151	.5146		.5151	.5141
-.9-*x	.5625-18	.5771	.5766		.5771	.5761
-.10-*x	.6250-18	.6396	.6391		.6396	.6386
-.12-*x	.7500-16	.7646	.7641		.7646	.7636

PART NO. NONLOCK & UNDRILL .0312 OVERSIZE	NORMAL THREAD SIZE	"D" DIAMETER .0312 OVERSIZE SHANK				"A" DIA. TO SHARP CORNER MAX. (2)	A' ABSOLUTE	"H" GAGE PROTRUSION		"W" GAGE DIAMETER +.0002 -.0000		
		UNPLATED BOLTS		COATED BOLTS				NOM	±TOL			
		MAX	MIN	MAX	MIN			MIN. (2)				
-3-*Y	.1900-32	.2182	.2177	.2182	.2172	.334	.297	.0361	.0013	.2438		
-4-*Y	.2500-28	.2807	.2802	.2807	.2797	.428	.386	.0386	.0015	.3312		
-5-*Y	.3125-24	.3432	.3427	.3432	.3422	.508	.460	.0411	.0017	.4045		
-6-*Y	.3750-24	.4057	.4052	.4057	.4047	.595	.541	.0436	.0019	.4852		
-7-*Y	.4375-20	.4682	.4677	.4682	.4672	.703	.643	.0531	.0021	.5696		
-8-*Y	.5000-20	.5307	.5302	.5307	.5297	.786	.719	.0539	.0023	.6498		
-9-*Y	.5625-18	.5927	.5922	.5927	.5917	.869	.797	.0594	.0025	.7198		
-10-*Y	.6250-18	.6552	.6547	.6552	.6542	.956	.879	.0531	.0027	.8212		
-12-*Y	.7500-16	.7802	.7797	.7802	.7792	1.130	1.041	.0631	.0031	.9700		

\* = GRIP DASH NUMBER IN .0625 INCREMENTS. SEE SHEET 4 FOR GRIP AND LENGTH DIMENSIONS.

(2) = SEE NOTE ON SHEET 3.

(- ) SEE NOTE ON SHEET 3.  
FOR MATERIAL, FINISH, AND PROCUREMENT INFORMATION SEE SHEETS 2 AND 3.

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**TITLE:**

**BOLT, 100° REDUCED HEAD  
ACR® RIBBED PHILLIPS® RECESS  
TITANIUM, SHORT THD, NON-LOCKING**

DRAWN:

S. GUARINO

DATE:

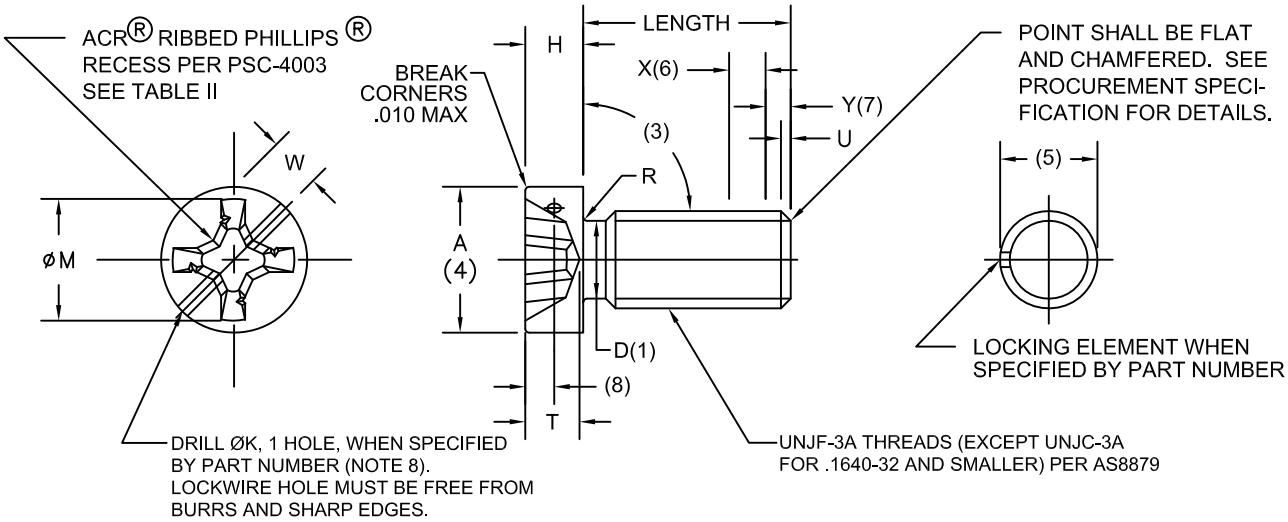
09-20-79

DRAWING NUMBER

PSC-733

3 / 700

LaMUNICA 08-10-04 SHEET 5  
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774 396 6190 FAX: 508 966 2326



HEAD MARKING SHALL BE RAISED OR DEPRESSED (.010 MAX) AND ARRANGED AS FOLLOWS:

- MARK WITH BASIC PART NUMBER ("PSC" OPTIONAL) EXCEPT MARK .1120-40 SIZE WITH "4", .1380-32 SIZE WITH "6", .1640-32 SIZE WITH "8", AND OPTIONAL .1900-32 SIZE WITH "10".
- MARK WITH MANUFACTURER'S SYMBOL OR TRADEMARK (SYMBOL LOCATION OPTIONAL IN ANY SECTOR ) LENGTH DASH NUMBER AND "L" OR "P" WHEN APPLICABLE.  
"L" IDENTIFIES SCREWS WITH OPTIONAL LOCKING ELEMENT.  
"P" IDENTIFIES SCREWS WITH PATCH TYPE LOCKING ELEMENT ONLY.
- MARK WITH RECESS DASH NUMBER, ENCIRCLED. RECESS NUMBER SHOULD BE APPROXIMATELY 25% LARGER THAN OTHER NUMERALS IN HEAD MARKING.

TABLE I DIMENSIONS

Ø DASH NUMBER	THREAD SIZE	NOTE 4 ØA	NOTE 1 ØD	H	ØK	RADIUS R	MAX. U	MAX. W	NOTE 6 X	NOTE 7 Y	RECESS SIZE
-04	.1120-40	.183 .178	.1120 .0939	.069 .059	.042 .034  . . . . .	.010 .005	.031	.157	.125	.075	1
-06	.1380-32	.226 .221	.1380 .1156	.086 .074			.193				2
-08	.1640-32	.270 .265	.1640 .1415	.102 .088		.039	.228	.156	.094		2
-3	.1900-32	.313 .306	.1900 .1674	.118 .103			.263				2
-4	.2500-28	.375 .367	.2500 .2243	.150 .133		.020 .010	.045	.345	.179	.107	3
-5	.3125-24	.438 .429	.3125 .2827	.183 .162		.068 .060		.382			4S
-6	.3750-24	.563 .552	.3750 .3450	.215 .191			.052	.457	.208	.125	4L

REVISION	1/CAD DWG. 08-06-04	2/DWG. UPDATE 12-16-05	3/DWG. UPDATE 05-01-13	4/DWG. UPDATE 05-13-14
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TITLE: SCREW, FLAT FILLISTER HD, FULL THREAD, ACR® RIBBED PHILLIPS® RECESS, ALLOY STEEL, SELF-LOCK & NON-LOCK

DRAWN: S. GUARINO	DATE: 09-11-79	DRAWING NUMBER <b>PSC-734</b>
CHECKED: G. LaMONICA	DATE: 12-16-05	SHEET 1 OF 3
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ®  
HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

TABLE II - RECESS DIMENSIONS

Ø DASH NUMBER	THREAD SIZE	RECESS SIZE	ØM	T	GAGE PENETRATION		TORQUE IN-LBS MIN(9)	RAISED METAL MAX(9)
					MAX.	MIN.		
-04	.1120-40	1	.117 .104	.078 .062	.071	.055	13	.005
-06	.1380-32	2	.164 .151	.096 .073	.085	.062	25	.005
-08	.1640-32	2	.174 .161	.106 .083	.095	.072	35	.005
-3	.1900-32	2	.189 .176	.121 .098	.110	.087	50	.005
-4	.2500-28	3	.268 .255	.156 .133	.139	.116	125	.005
-5	.3125-24	4S	.334 .321	.186 .164	.166	.144	230	.005
-6	.3750-24	4L	.364 .251	.216 .194	.196	.174	300	.006

TABLE III

DASH NO.	DASH NUMBER FOR PREFERRED LENGTH																						
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	20	22	24	26	28	30	32	34 TO 96
LENGTH	.19	.25	.31	.38	.44	.50	.56	.62	.69	.75	.81	.88	.94	1.00	1.12	1.25	1.38	1.50	1.62	1.75	1.88	2.00	2.12 TO 6.00
LENGTH TOL.	+.00 -.03												+.00 -.06						+.00 -.09				

MATERIAL: ALLOY STEEL PER PROCUREMENT SPECIFICATION.  
LOCKING ELEMENT- PLASTIC PER MIL-DTL-18240 AND QPL-18240.

HEAT TREAT: 160 AND 180 KSI ULTIMATE TENSILE.

FINISH: CADMIUM PLATE PER QQ-P-416, TYPE II, CLASS 2. PARTS PLATED TO CLASS 3 MAY BE USED UNTIL STOCK IS DEPLETED. EMBRITTLENESSE REQUIREMENT PER NAS4002. BLACK SCREWS, CODE "B" - CADMIUM PLATE, AS DESCRIBED ABOVE, WITH DULL BLACK CHROMATE TREATMENT.

CODE: FIRST DASH NUMBER INDICATES DIAMETER.  
SECOND DASH NUMBER INDICATES LENGTH IN .0625 INCREMENTS. SEE TABLE III FOR TABULATIONS OF LENGTH DIMENSIONS. INTERMEDIATE OR LONGER LENGTHS MAY BE SPECIFIED BY USE OF WHOLE DASH NUMBERS ONLY. BASIC PART NUMBER = NON SELF-LOCKING SCREW.  
ADD "B" AFTER DIAMETER DASH NUMBER FOR BLACK COLORED SCREWS. MAY BE USED WITH "L" OR "P" CODE.  
ADD "H" AFTER DIAMETER DASH NUMBER FOR DRILLED HEAD SCREWS.  
ADD "L" AFTER DIAMETER DASH NUMBER FOR SELF-LOCKING SCREWS, OPTIONAL CONFIGURATION.  
ADD "P" AFTER DIAMETER DASH NUMBER FOR SELF-LOCKING SCREWS, PATCH TYPE.  
WHEN MULTIPLE LETTER CODES ARE USED, SEQUENCE MUST BE IN ALPHABETICAL ORDER.

EXAMPLE OF PART NUMBER:

PSC734-3-10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, PLATED.  
PSC734-3B10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, BLACK COLOR.  
PSC734-3H10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, DRILLED HEAD, PLATED.  
PSC734-3L10 = SCREW, .1900 THREAD, .625 LENGTH, SELF-LOCKING, OPTIONAL CONFIGURATION, PLATED.  
PSC734-3P10 = SCREW, .1900 THREAD, .625 LENGTH, SELF-LOCKING, PATCH TYPE.

REVISION 1/CAD DWG. 2/DWG. UPDATE 3/ DWG. UPDATE 4/ DWG. UPDATE  
08-06-04 12-16-05 05-01-13 05-13-14

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TITLE: SCREW, FLAT FILLISTER HD, FULL THREAD, ACR® RIBBED PHILLIPS® RECESS, ALLOY STEEL, SELF-LOCK & NON-LOCK

DRAWN: S. GUARINO	DATE: 09-11-79	DRAWING NUMBER <b>PSC-734</b>
CHECKED: G. LaMONICA	DATE: 12-16-05	

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326

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HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

NOTES:

- (1) DIAMETER OF UNTHREADED PORTION OF SHANK SHALL NOT BE LESS THAN MINIMUM PITCH DIAMETER NOR MORE THAN MAXIMUM MAJOR DIAMETER OF THREAD.
- (2) SCREWS LESS THAN 2 DIAMETERS IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF BEARING SURFACE OF HEAD AND INCOMPLETE THREADS MAY EXTEND UP TO BEARING SURFACE.  
SCREWS 2 DIAMETERS THRU 2 INCHES IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF TANGENCY OF "R" AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.  
SCREWS LONGER THAN 2 INCHES - COMPLETE THREADS SHALL EXTEND A MINIMUM OF 1.75 INCHES FROM END OF SCREWS AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.  
INCOMPLETE THREADS - SEE NAS4002.
- (3) BEARING SURFACE SQUARENESS: WITHIN .003 FIM OF SHANK DIAMETER.
- (4) CONCENTRICITY: OUTSIDE DIAMETER "A" TO THREAD PITCH DIAMETER WITHIN .008 FIM.
- (5) PROTRUSION OF LOCKING ELEMENTS SHALL BE CONTROLLED SO THAT IT WILL PASS FREELY OR WITH FINGER PRESSURE THROUGH A RING GAGE WITH DIAMETER OF .010 (.001, -.000) GREATER THAN MAXIMUM MAJOR DIAMETER OF SCREW THREAD.
- (6) "X" MINIMUM (5 THREAD PITCHES) = REGION OF MINIMUM ENGAGEMENT WITH FEMALE THREAD REQUIRED TO MEET MIL-DTL-18240 REQUIREMENTS. LOCKING ELEMENT WITHIN "X" REGION MUST DEVELOP REQUIRED TORQUE WHEN TESTED PER MIL-DTL-18240.
- (7) FOR EASE OF STARTING, LOCKING ELEMENT SHALL NOT BE EFFECTIVE IN "Y" AREA (3 THREAD PITCHES ).
- (8) LOCKWIRE HOLES MAY OR MAY NOT BREAK THRU INTO RECESS FOR ALL SIZES DEPENDING UPON LOCATION USED. PENETRATION THRU TOP OR BASE OF HEAD IS NOT PERMITTED. ADEQUATE EDGE DISTANCE MUST BE PROVIDED TO PREVENT BREAKOUT ON THE PERIPHERY OF THE HEAD. RECESS MUST BE FREE OF BURRS OR SLIVERS THAT INTERFERE WITH DRIVER ENGAGEMENT.
- (9) MINIMUM TORQUE VALUES (LBF-IN) WHICH RECESS MUST DEVELOP IN REMOVAL DIRECTION WITH APPROPRIATE DRIVERS PER PSC-1201 THROUGH PSC-1204 AND 5 POUND MAXIMUM END LOAD. PARTS ARE ACCEPTABLE IF RAISED METAL AT EDGE OF RECESS DOES NOT EXCEED TABULATED VALUES.
- (10) DIMENSIONS TO BE MET AFTER PLATING.
- (11) DIMENSIONS ARE IN INCHES.

SURFACE TEXTURE:

BEARING SURFACE OF THE HEAD, THREAD FLANKS AND THREAD ROOT 32 MICROINCHES RA, ALLOTHER SURFACES 125 MICROINCHES RA PER ASME B46.1.

PROCUREMENT SPECIFICATION:

NAS4002, EXCEPT AS NOTED. COLD WORKING OF HEAD TO SHANK FILLET IS NOT REQUIRED.  
LOCKING ELEMENT FOR SELF-LOCKING SCREWS: PER NASM15981 AND MIL-DTL-18240. ANY TYPE OF CONFIGURATION IS OPTIONAL WHEN "L" CODE IS SPECIFIED. PATCH TYPE LOCKING ELEMENT (WITH NO METAL REMOVED) IS REQUIRED WHEN "P" CODE IS SPECIFIED. LOCKING ELEMENT MUST BE SUPPLIED BY A QUALIFIED SOURCE LISTED IN QPL18240 OR APPROVED FOR LISTING IN QPL18240. SHIPPING NOTICE SHOULD IDENTIFY THE SUPPLIER OF SCREW AND LOCKING ELEMENT SEPARATELY.

PREPARED FOR ROLLS-ROYCE TO REPLACE NAS5300-5306.

REVISION	1/CAD DWG. 08-06-04	2/DWG. UPDATE 12-16-05	3/ DWG. UPDATE 05-01-13	4/ DWG. UPDATE 05-13-14
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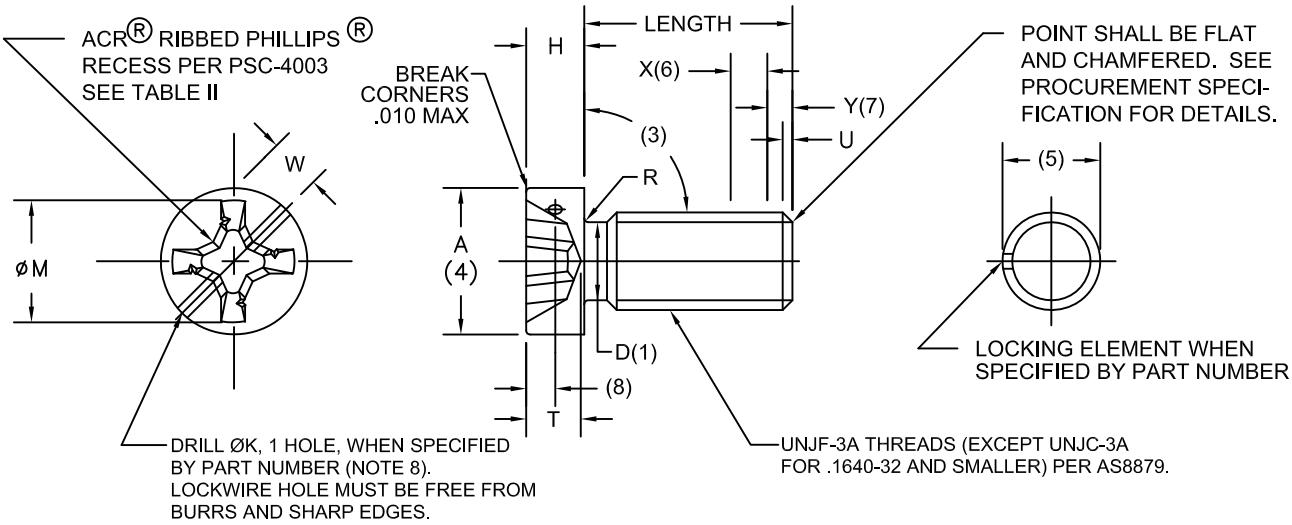
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TITLE: **SCREW, FLAT FILLISTER HD, FULL THREAD, ACR® RIBBED PHILLIPS® RECESS, ALLOY STEEL, SELF-LOCK & NON-LOCK**

DRAWN: S. GUARINO	DATE: 09-11-79	DRAWING NUMBER <b>PSC-734</b>
CHECKED: G. LaMONICA	DATE: 12-16-05	
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		SHEET 3 OF 3

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HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



HEAD MARKING SHALL BE RAISED OR DEPRESSED (.010 MAX) AND ARRANGED AS FOLLOWS:

- MARK WITH BASIC PART NUMBER ("PSC" OPTIONAL) EXCEPT MARK .1120-40 SIZE WITH "4", .1380-32 SIZE WITH "6", .1640-32 SIZE WITH "8", AND OPTIONAL .1900-32 SIZE WITH "10". THESE SIZES ALSO TO BE MARKED "C" FOR A286.
- MARK WITH MANUFACTURER'S SYMBOL OR TRADEMARK (SYMBOL LOCATION OPTIONAL IN ANY SECTOR) LENGTH DASH NUMBER AND "L" OR "P" WHEN APPLICABLE.  
"L" IDENTIFIES SCREWS WITH OPTIONAL LOCKING ELEMENT.  
"P" IDENTIFIES SCREWS WITH PATCH TYPE LOCKING ELEMENT ONLY.
- MARK WITH RECESS DASH NUMBER, ENCIRCLED. RECESS NUMBER SHOULD BE APPROXIMATELY 25% LARGER THAN OTHER NUMERALS IN HEAD MARKING.

TABLE I DIMENSIONS

Ø DASH NUMBER	THREAD SIZE	NOTE 4 ØA	NOTE 1 ØD	H	ØK	RADIUS R	MAX. U	MAX. W	NOTE 6 X	NOTE 7 Y	RECESS SIZE
-04	.1120-40	.183 .178	.1120 .0939	.069 .059	.010 .005 .042 .034 .020 .010 .068 .060	.031	.157	.125	.075	1	
-06	.1380-32	.226 .221	.1380 .1156	.086 .074		.193				2	
-08	.1640-32	.270 .265	.1640 .1415	.102 .088		.039	.228	.156	.094	2	
-3	.1900-32	.313 .306	.1900 .1674	.118 .103			.263			2	
-4	.2500-28	.375 .367	.2500 .2243	.150 .133		.045	.345	.179	.107	3	
-5	.3125-24	.438 .429	.3125 .2827	.183 .162			.382			4S	
-6	.3750-24	.563 .552	.3750 .3450	.215 .191		.052	.457	.208	.125	4L	

REVISION 1/CAD DWG. 2/DWG. UPDATE 3/DWG. UPDATE 4/ UPDATE  
08-06-04 12-16-05 10-10-13 5-14-14

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TITLE: SCREW, FLAT FILLISTER HD, FULL THREAD, ACR® RIBBED PHILLIPS® RECESS, A286 CRES, SELF-LOCK & NON-LOCK

DRAWN: S. GUARINO	DATE: 09-11-79	DRAWING NUMBER <b>PSC-735</b>
CHECKED: G. LaMONICA	DATE: 12-16-05	
SHEET 1 OF 4		
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

TABLE II - RECESS DIMENSIONS

Ø DASH NUMBER	THREAD SIZE	RECESS SIZE	ØM	T	GAGE PENETRATION		TORQUE IN-LBS MIN(9)	RAISED METAL MAX(9)
					MAX.	MIN.		
-04	.1120-40	1	.117 .104	.078 .062	.071	.055	13	.005
-06	.1380-32	2	.164 .151	.096 .073	.085	.062	25	.005
-08	.1640-32	2	.174 .161	.106 .083	.095	.072	35	.005
-3	.1900-32	2	.189 .176	.121 .098	.110	.087	50	.005
-4	.2500-28	3	.268 .255	.156 .133	.139	.116	125	.005
-5	.3125-24	4S	.334 .321	.186 .164	.166	.144	230	.005
-6	.3750-24	4L	.364 .251	.216 .194	.196	.174	300	.006

TABLE III

	DASH NUMBER FOR PREFERRED LENGTH																							
DASH NO.	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	20	22	24	26	28	30	32	34 TO 96	
LENGTH	.19	.25	.31	.38	.44	.50	.56	.62	.69	.75	.81	.88	.94	1.00	1.12	1.25	1.38	1.50	1.62	1.75	1.88	2.00	2.12 TO 6.00	
LENGTH TOL.	+.00 -.03												+.00 -.06						+.00 -.09					

MATERIAL: A286 CRES PER AMS5731, AMS5737 OR AMS5853.  
LOCKING ELEMENT- PLASTIC PER MIL-DTL-18240 AND QPL-18240.

HEAT TREAT: 160 AND 180 KSI ULTIMATE TENSILE.

FINISH: UNPLATED SCREWS - PASSIVATE TO MEET REQUIREMENTS OF NAS4003.

PLATED SCREWS - CADMIUM PLATE PER QQ-P-416, TYPE II, CLASS 2. EMBRITTLEMENT TEST PER QQ-P-416 DOES NOT APPLY. CADMIUM PLATED A286 CRES SCREWS SHALL BE IDENTIFIED WITH GREEN DYE OR PAINT ON THE THREAD END. MAXIMUM COVERAGE MAY INCLUDE THE CHAMFER PLUS ONE COMPLETE THREAD.

COATED SCREWS - ALUMINUM COATING PER NAS4006.

CODE: FIRST DASH NUMBER INDICATES DIAMETER.  
SECOND DASH NUMBER INDICATES LENGTH IN .0625 INCREMENTS. SEE TABLE III FOR TABULATIONS OF LENGTH DIMENSIONS. INTERMEDIATE OR LONGER LENGTHS MAY BE SPECIFIED BY USE OF WHOLE DASH NUMBERS ONLY. BASIC PART NUMBER = NON SELF-LOCKING SCREW.  
ADD "A" AFTER DIAMETER DASH NUMBER FOR ALUMINUM COATED SCREWS. MAY BE USED WITH "L" OR "P" CODE.  
ADD "H" AFTER DIAMETER DASH NUMBER FOR DRILLED HEAD SCREWS.  
ADD "L" AFTER DIAMETER DASH NUMBER FOR SELF-LOCKING SCREWS, OPTIONAL CONFIGURATION.  
ADD "U" AFTER DIAMETER DASH NUMBER FOR UNPLATED SCREWS.  
ADD "P" AFTER DIAMETER DASH NUMBER FOR SELF-LOCKING SCREWS, PATCH TYPE.  
WHEN MULTIPLE LETTER CODES ARE USED, SEQUENCE MUST BE IN ALPHABETICAL ORDER.

EXAMPLE OF PART NUMBER:

PSC735-3-10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, PLATED.  
PSC735-3A10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, ALUMINUM COATED.  
PSC735-3H10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, DRILLED HEAD, PLATED.  
PSC735-3L10 = SCREW, .1900 THREAD, .625 LENGTH, SELF-LOCKING, OPTIONAL CONFIGURATION, PLATED.  
PSC735-3LU10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, OPTIONAL CONFIGURATION, UNPLATED.  
PSC735-3PU10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, PATCH TYPE, UNPLATED.

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TITLE: SCREW, FLAT FILLISTER HD, FULL THREAD, ACR® RIBBED PHILLIPS® RECESS, A286 CRES, SELF-LOCK & NON-LOCK

DRAWN: S. GUARINO	DATE: 09-11-79	DRAWING NUMBER <b>PSC-735</b>
CHECKED: G. LaMONICA	DATE: 12-16-05	

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326

REVISION 1/CAD DWG. 08-06-04  
2/DWG. UPDATE 12-16-05  
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4/DWG. UPDATE 12-16-05  
5/14-14

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## NOTES:

- (1) DIAMETER OF UNTHREADED PORTION OF SHANK SHALL NOT BE LESS THAN MINIMUM PITCH DIAMETER NOR MORE THAN MAXIMUM MAJOR DIAMETER OF THREAD.
- (2) SCREWS LESS THAN 2 DIAMETERS IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF BEARING SURFACE OF HEAD AND INCOMPLETE THREADS MAY EXTEND UP TO BEARING SURFACE.  
SCREWS 2 DIAMETERS THRU 2 INCHES IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF TANGENCY OF "R" AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.  
SCREWS LONGER THAN 2 INCHES - COMPLETE THREADS SHALL EXTEND A MINIMUM OF 1.75 INCHES FROM END OF SCREWS AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.  
INCOMPLETE THREADS - SEE NAS4003.
- (3) BEARING SURFACE SQUARENESS: WITHIN .003 FIM OF SHANK DIAMETER.
- (4) CONCENTRICITY: OUTSIDE DIAMETER "A" TO THREAD PITCH DIAMETER WITHIN .008 FIM.
- (5) PROTRUSION OF LOCKING ELEMENTS SHALL BE CONTROLLED SO THAT IT WILL PASS FREELY OR WITH FINGER PRESSURE THROUGH A RING GAGE WITH DIAMETER OF .010 (+.001, -.000) GREATER THAN MAXIMUM MAJOR DIAMETER OF SCREW THREAD.
- (6) "X" MINIMUM (5 THREAD PITCHES) = REGION OF MINIMUM ENGAGEMENT WITH FEMALE THREAD REQUIRED TO MEET MIL-DTL-18240 REQUIREMENTS. LOCKING ELEMENT WITHIN "X" REGION MUST DEVELOP REQUIRED TORQUE WHEN TESTED PER MIL-DTL-18240.
- (7) FOR EASE OF STARTING, LOCKING ELEMENT SHALL NOT BE EFFECTIVE IN "Y" AREA (3 THREAD PITCHES).
- (8) LOCKWIRE HOLES MAY OR MAY NOT BREAK THRU INTO RECESS FOR ALL SIZES DEPENDING UPON LOCATION USED. PENETRATION THRU TOP OR BASE OF HEAD IS NOT PERMITTED. ADEQUATE EDGE DISTANCE MUST BE PROVIDED TO PREVENT BREAKOUT ON THE PERIPHERY OF THE HEAD. RECESS MUST BE FREE OF BURRS OR SLIVERS THAT INTERFERE WITH DRIVER ENGAGEMENT.
- (9) MINIMUM TORQUE VALUES (LBF-IN) WHICH RECESS MUST DEVELOP IN REMOVAL DIRECTION WITH APPROPRIATE DRIVERS PER PSC-1201 THROUGH PSC-1204 AND 5 POUND MAXIMUM END LOAD. PARTS ARE ACCEPTABLE IF RAISED METAL AT EDGE OF RECESS DOES NOT EXCEED TABULATED VALUES.
- (10) "A", ALUMINUM COATED, "H", DRILLED HEAD, AND "U", UNPLATED CODES NEED NOT APPEAR ON THE HEAD OF THE BOLT.
- (11) MAGNETIC PERMEABILITY SHALL BE LESS THAN 2.0 (AIR = 1.0) FOR FIELD STRENGTH H = 200 OERSTEDS USING A MAGNETIC PERMEABILITY INDICATOR PER ASTM A342/A 342, TEST METHOD 3.
- (10) DIMENSIONS TO BE MET AFTER PLATING.
- (11) DIMENSIONS ARE IN INCHES.

## SURFACE TEXTURE:

BEARING SURFACE OF THE HEAD, THREAD FLANKS AND THREAD ROOT 32 MICROINCHES RA;  
ALL OTHER SURFACES 125 MICROINCHES RA PER ASME B46.1.

## PROCUREMENT SPECIFICATION:

NAS4003, EXCEPT AS NOTED. COLD WORK OF HEAD TO SHANK FILLET IS NOT REQUIRED.  
LOCKING ELEMENT FOR SELF-LOCKING SCREWS: PER NASM15981 AND MIL-DTL-18240. ANY TYPE OF CONFIGURATION IS OPTIONAL WHEN "L" CODE IS SPECIFIED. PATCH TYPE LOCKING ELEMENT (WITH NO METAL REMOVED) IS REQUIRED WHEN "P" CODE IS SPECIFIED. LOCKING ELEMENT MUST BE SUPPLIED BY A QUALIFIED SOURCE LISTED IN QPL18240 OR APPROVED FOR LISTING IN QPL18240. SHIPPING NOTICE SHOULD IDENTIFY THE SUPPLIER OF SCREW AND LOCKING ELEMENT SEPARATELY. RECESS TORQUE VALUES SHALL NOT APPLY.

PREPARED FOR ROLLS-ROYCE TO REPLACE NAS5400-5406.

REVISION	1/CAD DWG. 08-06-04	2/DWG. UPDATE 12-16-05	3/ DWG. UPDATE 10-10-13	4/ UPDATE 5-14-14
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TITLE: **SCREW, FLAT FILLISTER HD, FULL THREAD, ACR® RIBBED PHILLIPS® RECESS, A286 CRES, SELF-LOCK & NON-LOCK**

DRAWN: S. GUARINO	DATE: 09-11-79	DRAWING NUMBER <b>PSC-735</b>
CHECKED: G. LaMONICA	DATE: 12-16-05	
SHEET 3 OF 4		
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ®  
HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

# ROLLS-ROYCE APPROVED SOURCES OF ACR<sup>®</sup> PHILLIPS<sup>®</sup> PSC-735 BOLTS

(ADDITIONAL SOURCES FOR OTHER END USERS AVAILABLE FROM PHILLIPS SCREW COMPANY UPON REQUEST)

APPROVED SOURCES OF SUPPLY	ADDRESS	IDENTITY CODE	
A F FASTENERS, LTD	UNIT 14-15 GLOSSOP BROOK BUSINESS PARK GLOSSOP DERBYSHIRE SK13 7AJ ENGLAND	J	
AHG ATELIERS DE LA HAUTE-GARONNE	26 ROUTE DE LASBORDES BP73103 31131 FLOURENS CEDEX FRANCE	4H	
PILGRIM SCREW CORPORATION	120 SPRAGUE STREET PROVIDENCE, RI 02907	A	
SPS TECHNOLOGIES, LTD  T. J. BROOKS DIV.	191 BARKBY ROAD TROON INDUSRIAL AREA LEICESTER LE4 9HX ENGLAND	TBJ	
BLANC AERO INDUSTRIES	15 RUE LASSON 75012 PARIS FRANCE	P	
HEARTLAND PRECISION FASTENERS	301 PRAIRIE VILLAGE DRIVE NEW CENTURY KANSAS 66031	HC	
MAC FASTENERS	1110 ENTERPRISE STREET OTTAWA KANSAS 66067	O1DO	
LINREAD AIRCRAFT PRODUCTS DIVISION	P. O. BOX 28 CROSSGATE ROAD PARK FARM REDDITCH WORCESTERSHIRE B98 7TD ENGLAND	L	

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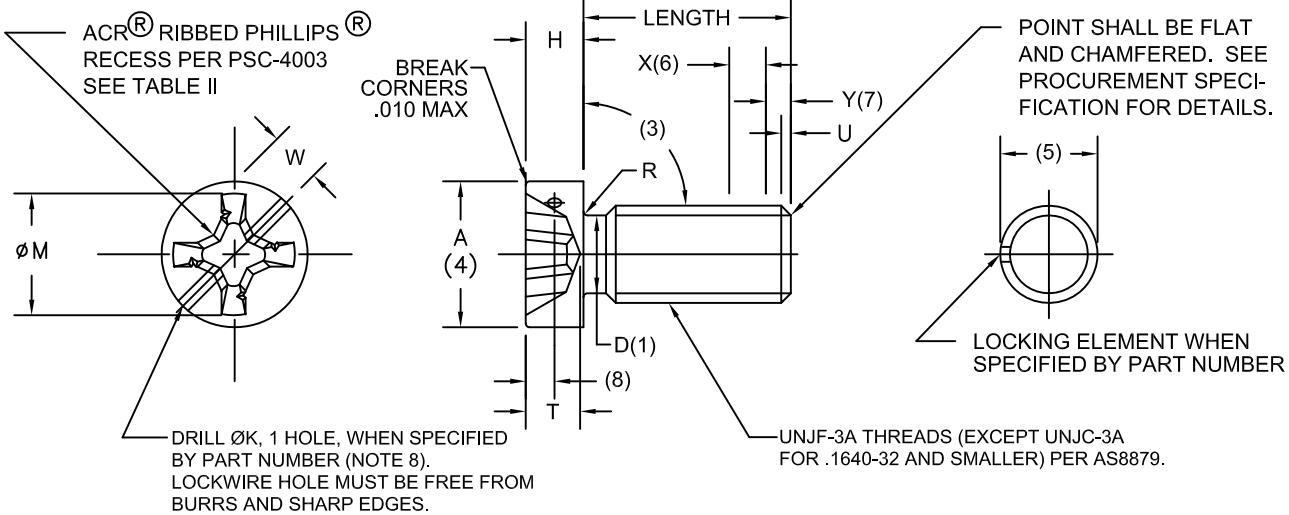
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TITLE: SCREW, FLAT FILLISTER HD, FULL THREAD, ACR<sup>®</sup> RIBBED PHILLIPS<sup>®</sup> RECESS, A286 CRES, SELF-LOCK AND NONLOCK

DRAWN: L. Dougan	DATE: 05-20-13	DRAWING NUMBER
CHECKED: G. DILLING	DATE: 05-15-13	PSC-735
SHEET 4 OF 4		
PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 USA PHONE: 774-396-6190 FAX: 508-966-2326		

PHILLIPS II<sup>®</sup> PHILLIPS<sup>®</sup> POZIDRIV<sup>®</sup> ACR<sup>®</sup> POZISQUARE<sup>®</sup> PHILLIPS SQUARE-DRIV<sup>®</sup> TORQ-SET<sup>®</sup> TRI-WING<sup>®</sup> MORTORQ<sup>®</sup>  
HEXSTIX<sup>®</sup> POZILOCK<sup>®</sup> ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

REVISIONS  
10/10/13  
4/ UPDATE  
5-14-14



HEAD MARKING SHALL BE RAISED OR DEPRESSED (.010 MAX) AND ARRANGED AS FOLLOWS:

- MARK WITH BASIC PART NUMBER ("PSC" OPTIONAL) EXCEPT MARK .1120-40 SIZE WITH "4", .1380-32 SIZE WITH "6", .1640-32 SIZE WITH "8", AND OPTIONAL .1900-32 SIZE WITH "10". THESE SIZES ALSO TO BE MARKED "C" FOR A286.
- MARK WITH MANUFACTURER'S SYMBOL OR TRADEMARK (SYMBOL LOCATION OPTIONAL IN ANY SECTOR ) LENGTH DASH NUMBER AND "L" OR "P" WHEN APPLICABLE.  
"L" IDENTIFIES SCREWS WITH OPTIONAL LOCKING ELEMENT.  
"P" IDENTIFIES SCREWS WITH PATCH TYPE LOCKING ELEMENT ONLY.
- MARK WITH RECESS DASH NUMBER, ENCIRCLED. RECESS NUMBER SHOULD BE APPROXIMATELY 25% LARGER THAN OTHER NUMERALS IN HEAD MARKING.

TABLE I DIMENSIONS

Ø DASH NUMBER	THREAD SIZE	NOTE 4 ØA	NOTE 1 ØD	H	ØK	RADIUS R	MAX. U	MAX. W	NOTE 6 X	NOTE 7 Y	RECESS SIZE
-04	.1120-40	.183 .178	.1120 .0939	.069 .059	.010 .005 .042 .034 .020 .010 .068 .060	.031 .193 .228 .263 .345 .382 .457	.031	.157	.125	.075	1
-06	.1380-32	.226 .221	.1380 .1156	.086 .074			.193				2
-08	.1640-32	.270 .265	.1640 .1415	.102 .088			.039	.228	.156	.094	2
-3	.1900-32	.313 .306	.1900 .1674	.118 .103				.263			2
-4	.2500-28	.375 .367	.2500 .2243	.150 .133			.045	.345	.179	.107	3
-5	.3125-24	.438 .429	.3125 .2827	.183 .162				.382			4S
-6	.3750-24	.563 .552	.3750 .3450	.215 .191			.052		.208	.125	4L

REVISION 1/ CAD DWG. 08-06-04 2/ DWG. UPDATE 12-16-05 3/ DWG. UPDATE 05-01-13 4/ UPDATE 05-14-14

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TITLE: SCREW, FLAT FILLISTER HD, FULL THREAD, ACR® RIBBED PHILLIPS® RECESS, TITANIUM, SELF-LOCK & NON-LOCK

DRAWN: S. GUARINO	DATE: 09-07-79	DRAWING NUMBER <b>PSC-736</b>
CHECKED: G. LaMONICA	DATE: 12-16-05	SHEET 1 OF 3
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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TABLE II - RECESS DIMENSIONS

Ø DASH NUMBER	THREAD SIZE	RECESS SIZE	ØM	T	GAGE PENETRATION		TORQUE IN-LBS MIN(9)	RAISED METAL MAX(9)
					MAX.	MIN.		
-04	.1120-40	1	.117 .104	.078 .062	.071	.055	13	.005
-06	.1380-32	2	.164 .151	.096 .073	.085	.062	25	.005
-08	.1640-32	2	.174 .161	.106 .083	.095	.072	35	.005
-3	.1900-32	2	.189 .176	.121 .098	.110	.087	50	.005
-4	.2500-28	3	.268 .255	.156 .133	.139	.116	125	.005
-5	.3125-24	4S	.334 .321	.186 .164	.166	.144	230	.005
-6	.3750-24	4L	.364 .251	.216 .194	.196	.174	300	.006

TABLE III

	DASH NUMBER FOR PREFERRED LENGTH																							
	DASH NO.	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	20	22	24	26	28	30	32	34 TO 96
LENGTH		.19	.25	.31	.38	.44	.50	.56	.62	.69	.75	.81	.88	.94	1.00	1.12	1.25	1.38	1.50	1.62	1.75	1.88	2.00	2.12 TO 6.00
LENGTH TOL.		+.00 -.03												+.00 -.06						+.00 -.09				

MATERIAL: 6AL-4V TITANIUM ALLOY PER AMS 4928 OR AMS 4967.  
LOCKING ELEMENT- PLASTIC PER MIL-DTL-18240 AND QPL-18240.

HEAT TREAT: 160 AND 180 KSI ULTIMATE TENSILE.

FINISH: UNPLATED SCREWS - NONE

PLATED SCREWS - CADMIUM PLATE PER QQ-P-416, TYPE II, CLASS 2, EXCEPT A NICKEL STRIKE MAY BE USED PRIOR TO CADMIUM PLATING. PARTS PLATED TO CLASS 3 MAY BE USED UNTIL STOCK IS DEPLETED. EMBRITTLEMENT TEST PER QQ-P-416 DOES NOT APPLY. CADMIUM PLATED 6AL-4V TITANIUM ALLOY SCREWS SHALL BE IDENTIFIED WITH RED DYE OR PAINT ON THE THREAD END. MAXIMUM COVERAGE MAY INCLUDE THE CHAMFER PLUS ONE INCOMPLETE THREAD.

COATED SCREWS - ALUMINUM COATING PER NAS4006.

CODE: FIRST DASH NUMBER INDICATES DIAMETER.  
SECOND DASH NUMBER INDICATES LENGTH IN .0625 INCREMENTS. SEE TABLE III FOR TABULATIONS OF LENGTH DIMENSIONS. INTERMEDIATE OR LONGER LENGTHS MAY BE SPECIFIED BY USE OF WHOLE DASH NUMBERS ONLY. BASIC PART NUMBER = NON SELF-LOCKING SCREW.  
ADD "A" AFTER DIAMETER DASH NUMBER FOR ALUMINUM COATED SCREWS. MAY BE USED WITH "L" OR "P" CODE.  
ADD "H" AFTER DIAMETER DASH NUMBER FOR DRILLED HEAD SCREWS.  
ADD "L" AFTER DIAMETER DASH NUMBER FOR SELF-LOCKING SCREWS, OPTIONAL CONFIGURATION.  
ADD "U" AFTER DIAMETER DASH NUMBER FOR UNPLATED SCREWS.  
ADD "P" AFTER DIAMETER DASH NUMBER FOR SELF-LOCKING SCREWS, PATCH TYPE.  
WHEN MULTIPLE LETTER CODES ARE USED, SEQUENCE MUST BE IN ALPHABETICAL ORDER.

EXAMPLE OF PART NUMBER:

PSC736-3-10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, PLATED.  
PSC736-3A10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, ALUMINUM COATED.  
PSC736-3H10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, DRILLED HEAD, PLATED.  
PSC736-3L10 = SCREW, .1900 THREAD, .625 LENGTH, SELF-LOCKING, OPTIONAL CONFIGURATION, PLATED.  
PSC736-3LU10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, OPTIONAL CONFIGURATION, UNPLATED.  
PSC736-3PU10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, PATCH TYPE, UNPLATED.

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TITLE: SCREW, FLAT FILLISTER HD, FULL THREAD, ACR® RIBBED PHILLIPS® RECESS, TITANIUM, SELF-LOCK & NON-LOCK

DRAWN: S. GUARINO	DATE: 09-07-79	DRAWING NUMBER <b>PSC-736</b>
CHECKED: G. LAMONICA	DATE: 12-16-05	

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326

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REVISION 1/CAD DWG. 08-06-04 2/DWG. UPDATE 12-16-05 3/DWG. UPDATE 05-01-13 4/DWG. UPDATE 05-14-14

NOTES:

- (1) DIAMETER OF UNTHREADED PORTION OF SHANK SHALL NOT BE LESS THAN MINIMUM PITCH DIAMETER NOR MORE THAN MAXIMUM MAJOR DIAMETER OF THREAD.
- (2) SCREWS LESS THAN 2 DIAMETERS IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF BEARING SURFACE OF HEAD AND INCOMPLETE THREADS MAY EXTEND UP TO BEARING SURFACE.  
SCREWS 2 DIAMETERS THRU 2 INCHES IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF TANGENCY OF "R" AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.  
SCREWS LONGER THAN 2 INCHES - COMPLETE THREADS SHALL EXTEND A MINIMUM OF 1.75 INCHES FROM END OF SCREWS AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.  
INCOMPLETE THREADS - SEE NAS4004.
- (3) BEARING SURFACE SQUARENESS: WITHIN .003 FIM OF SHANK DIAMETER.
- (4) CONCENTRICITY: OUTSIDE DIAMETER "A" TO THREAD PITCH DIAMETER WITHIN .008 FIM.
- (5) PROTRUSION OF LOCKING ELEMENTS SHALL BE CONTROLLED SO THAT IT WILL PASS FREELY OR WITH FINGER PRESSURE THROUGH A RING GAGE WITH DIAMETER OF .010 (+.001, -.000) GREATER THAN MAXIMUM MAJOR DIAMETER OF SCREW THREAD.
- (6) "X" MINIMUM (5 THREAD PITCHES) = REGION OF MINIMUM ENGAGEMENT WITH FEMALE THREAD REQUIRED TO MEET MIL-DTL-18240 REQUIREMENTS. LOCKING ELEMENT WITHIN "X" REGION MUST DEVELOP REQUIRED TORQUE WHEN TESTED PER MIL-DTL-18240.
- (7) FOR EASE OF STARTING, LOCKING ELEMENT SHALL NOT BE EFFECTIVE IN "Y" AREA (3 THREAD PITCHES).
- (8) LOCKWIRE HOLES MAY OR MAY NOT BREAK THRU INTO RECESS FOR ALL SIZES DEPENDING UPON LOCATION USED. PENETRATION THRU TOP OR BASE OF HEAD IS NOT PERMITTED. ADEQUATE EDGE DISTANCE MUST BE PROVIDED TO PREVENT BREAKOUT ON THE PERIPHERY OF THE HEAD. RECESS MUST BE FREE OF BURRS OR SLIVERS THAT INTERFERE WITH DRIVER ENGAGEMENT.
- (9) MINIMUM TORQUE VALUES (LBF-IN) WHICH RECESS MUST DEVELOP IN REMOVAL DIRECTION WITH APPROPRIATE DRIVERS PER PSC-1201 THROUGH PSC-1204 AND 5 POUND MAXIMUM END LOAD. PARTS ARE ACCEPTABLE IF RAISED METAL AT EDGE OF RECESS DOES NOT EXCEED TABULATED VALUES.
- (10) "A", ALUMINUM COATED, "H", DRILLED HEAD, AND "U", UNPLATED CODES NEED NOT APPEAR ON THE HEAD OF THE BOLT.
- (11) DIMENSIONS TO BE MET AFTER PLATING.
- (12) DIMENSIONS ARE IN INCHES.

SURFACE TEXTURE:

BEARING SURFACE OF THE HEAD, THREAD FLANKS AND THREAD ROOT 32 MICROINCHES RA;  
ALL OTHER SURFACES 125 MICROINCHES RA PER ASME B46.1.

PROCUREMENT SPECIFICATION:

NAS4004, EXCEPT AS NOTED. COLD WORK OF HEAD TO SHANK FILLET IS NOT REQUIRED.  
LOCKING ELEMENT FOR SELF-LOCKING SCREWS: PER NASM15981 AND MIL-DTL-18240. ANY TYPE OF CONFIGURATION IS OPTIONAL WHEN "L" CODE IS SPECIFIED. PATCH TYPE LOCKING ELEMENT (WITH NO METAL REMOVED) IS REQUIRED WHEN "P" CODE IS SPECIFIED. LOCKING ELEMENT MUST BE SUPPLIED BY A QUALIFIED SOURCE LISTED IN QPL18240 OR APPROVED FOR LISTING IN QPL18240. SHIPPING NOTICE SHOULD IDENTIFY THE SUPPLIER OF SCREW AND LOCKING ELEMENT SEPARATELY.

PREPARED FOR ROLLS-ROYCE TO REPLACE NAS5500-5506.

REVISION	1/CAD DWG 08-06-04	2/DWG, UPDATE 12-16-05	3/DWG, UPDATE 05-01-13	4/ UPDATE 05-14-14
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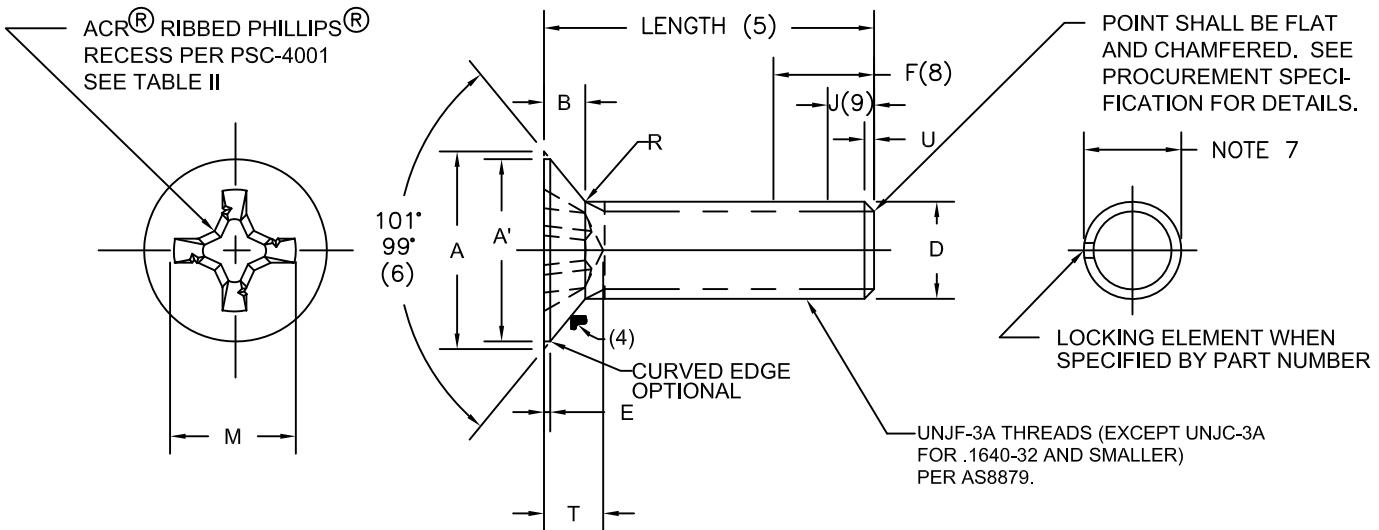
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TITLE: **SCREW, FLAT FILLISTER HD, FULL THREAD, ACR® RIBBED PHILLIPS® RECESS, TITANIUM, SELF-LOCK & NON-LOCK**

DRAWN: S. GUARINO	DATE: 09-07-79	DRAWING NUMBER <b>PSC-736</b>
CHECKED: G. LaMONICA	DATE: 12-16-05	SHEET 3 OF 3
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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HEAD MARKING SHALL BE DEPRESSED (.010 MAX) AND ARRANGED AS FOLLOWS:

- MARK WITH BASIC PART NUMBER ("PSC" OPTIONAL) EXCEPT MARK .1120-40 SIZE WITH "4", .1380-32 SIZE WITH "6", .1640-32 SIZE WITH "8", AND OPTIONAL .1900-32 SIZE WITH "10".
- MARK WITH MANUFACTURER'S SYMBOL OR TRADEMARK (SYMBOL LOCATION OPTIONAL IN ANY SECTOR), LENGTH DASH NUMBER AND "L" OR "P" WHEN APPLICABLE.  
"L" IDENTIFIES SCREWS WITH OPTIONAL LOCKING ELEMENT.  
"P" IDENTIFIES SCREWS WITH PATCH TYPE LOCKING ELEMENT ONLY.
- MARK WITH RECESS DASH NUMBER, ENCIRCLED. RECESS NUMBER SHOULD BE APPROXIMATELY 25% LARGER THAN OTHER NUMERALS IN HEAD MARKING.

TABLE I DIMENSIONS

Ø DASH NUMBER	THREAD SIZE	(3) MAX. ØA	(3) ABSOLUTE MIN. ØA'	(3) MAX. B	MAX. ØD	MAX. E	NOTE 8 F	(9) J	RADIUS R	MAX. U	RECESS SIZE
-04	.1120-40	.226	.193	.044	.112	.010	.125	.075	.012 .002	.031	1
	.1380-32	.280	.246	.061	.138	.010	.156	.094		.039	2
-08	.1640-32	.331	.296	.072	.164	.012		.020 .010			
	.1900-32	.381	.338	.082	.190	.015	.208	.125		.045	3
-4	.2500-28	.508	.456	.111	.250	.018	.178	.107	.025 .010	.052	4S
-5	.3125-24	.635	.575	.138	.312	.021					
-6	.3750-24	.763	.692	.166	.375	.025	.208	.125	.030 .015	.052	4S

REVISION 1/CAD DWG. 2/UPDATE 3/UPDATE  
04-26-04 05-01-13 05-14-14

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TITLE: SCREW, 100° HEAD, FULL THREAD  
ACR® RIBBED PHILLIPS® RECESS, ALLOY STEEL, SELF-LOCKING AND NONLOCKING

DRAWN: S. GUARINO	DATE: 09-18-79	DRAWING NUMBER <b>PSC-737</b>
CHECKED: G. LaMONICA	DATE: 04-26-04	SHEET 1 OF 3
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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TABLE II - RECESS DIMENSIONS

Ø DASH NUMBER	THREAD SIZE	RECESS SIZE	ØM	T	GAGE PENETRATION		TORQUE IN-LBS MIN(10)	RAISED METAL MAX(10)
					MAX.	MIN.		
-04	.1120-40	1	.117 .104	.078 .062	.071	.055	13	.005
-06	.1380-32	2	.154 .141	.086 .063	.075	.052	25	.005
-08	.1640-32	2	.169 .156	.101 .078	.090	.067	35	.005
-3	.1900-32	2	.184 .171	.116 .093	.105	.082	50	.005
-4	.2500-28	3	.247 .234	.135 .112	.118	.095	125	.005
-5	.3125-24	4S	.317 .304	.168 .146	.148	.126	230	.005
-6	.3750-24	4S	.341 .328	.193 .171	.173	.151	300	.006

TABLE III

	DASH NUMBER FOR PREFERRED LENGTH																								
	(2)	(2)	(2)	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	20	22	24	26	28	30	32
DASH NO.	.19	.25	.31	.38	.44	.50	.56	.62	.69	.75	.81	.88	.94	1.00	1.12	1.25	1.38	1.50	1.62	1.75	1.88	2.00	2.12 TO 6.00		
LENGTH	+.00	-.03																						+.00	-.09
LENGTH TOL.																									

MATERIAL: ALLOY STEEL 4340 (UNS G43406) PER AMS6415 OR AMS6484  
OR 8740 (UNS G87400) PER AMS6322, AMS6325 OR AMS6327.  
LOCKING ELEMENT- PLASTIC PER MIL-DTL-18240 AND QPL-18240.

HEAT TREAT: 160 KSI TO 180 KSI ULTIMATE TENSILE.

FINISH: CADMIUM PLATE PER QQ-P-416, TYPE II, CLASS 2. EMBRITTLEMENT REQUIREMENTS PER NAS4002.  
CODE "B" - CADMIUM PLATE PER QQ-P-416 TYPE II, CLASS 2 WITH DULL BLACK CHROMATE TREATMENT.

CODE: BASIC PART NUMBER = NON-LOCKING, PLATED SCREW. SEE TABLE II AND III.  
FIRST DASH NUMBER INDICATES DIAMETER. SEE TABLE I.  
SECOND DASH NUMBER INDICATES LENGTH IN .0625 INCREMENTS (ROUNDED TO TWO DECIMAL PLACES). SEE  
TABLE III FOR TABULATIONS OF LENGTH DIMENSIONS. USE OF .25 INCH INCREMENTS IS RECOMMENDED FOR  
SCREWS OVER 3 INCHES LONG. INTERMEDIATE OR LONGER LENGTHS MAY BE SPECIFIED BY USE OF WHOLE  
DASH NUMBER ONLY.  
ADD "B" AFTER DIAMETER DASH NUMBER FOR BLACK COLORED SCREWS. MAY BE USED WITH "L" OR  
"P" CODE.  
ADD "L" AFTER DIAMETER DASH NUMBER FOR SELF-LOCKING SCREWS, OPTIONAL CONFIGURATION. DO NOT  
USE WITH "P" CODE.  
ADD "P" AFTER DIAMETER DASH NUMBER FOR SELF-LOCKING SCREWS WITH PATCH TYPE LOCKING ELEMENT.  
DO NOT USE WITH "L" CODE.  
WHEN MULTIPLE LETTER CODES ARE USED, SEQUENCE MUST BE IN ALPHABETICAL ORDER.

EXAMPLE OF PART NUMBER:

PSC737-3-10 = SCREW, .1900-32 THREAD, .62 LENGTH, NON-LOCKING, PLATED.  
PSC737-3B10 = SCREW, .1900-32 THREAD, .62 LENGTH, NON-LOCKING, PLATED PLUS BLACK COLOR.  
PSC737-3L10 = SCREW, .1900-32 THREAD, .62 LENGTH, SELF-LOCKING, OPTIONAL CONFIGURATION, PLATED.  
PSC737-3P10 = SCREW, .1900-32 THREAD, .62 LENGTH, SELF-LOCKING, PATCH TYPE, PLATED.

REVISION 1/CAD DWG. 04-26-04 2/UPDATE 05-01-13 3/UPDATE 05-14-14

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TITLE: SCREW, 100° HEAD, FULL THREAD  
ACR® RIBBED PHILLIPS® RECESS, ALLOY  
STEEL, SELF-LOCKING AND NONLOCKING

DRAWN:  
S. GUARINO

DATE:

09-18-79

DRAWING NUMBER  
**PSC-737**

CHECKED:  
G. LaMONICA

DATE:

04-26-04

SHEET 2 OF 3

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326

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HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

NOTES:

- (1) DIAMETER OF UNTHREADED PORTION OF SHANK SHALL NOT BE LESS THAN MINIMUM PITCH DIAMETER NOR MORE THAN MAXIMUM MAJOR DIAMETER OF THREAD.
- (2) DASH 3 LENGTH IS NOT PRACTICAL FOR SIZE .1900-32 AND LARGER. DASH 4 IS NOT PRACTICAL FOR SIZE .2500-28 AND LARGER. DASH 5 LENGTH IS NOT PRACTICAL FOR SIZES .3125-24 AND .3750-24.
- (3) DIMENSIONS A, A', AND B ARE INCLUDED FOR ENGINEERING REFERENCE ONLY AND ARE NOT TO BE USED FOR INSPECTION. VALUES A, A', AND B ARE CALCULATED LIMITS RESULTING FROM TOLERANCES ON W, H, E, AND HEAD ANGLE.
- (4) DIMENSIONS FOR H GAGE PROTRUSION SHALL BE INSPECTED PER NAS9800.
- (5) SCREWS LESS THAN 2 DIAMETERS IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF BEARING SURFACE OF HEAD AND INCOMPLETE THREADS MAY EXTEND UP TO BEARING SURFACE.  
SCREWS 2 DIAMETERS THRU 2 INCHES IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF TANGENCY OF "R" AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.  
SCREWS LONGER THAN 2 INCHES - COMPLETE THREADS SHALL EXTEND A MINIMUM OF 1.75 INCHES FROM END OF SCREW AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.

INCOMPLETE THREADS - SEE NAS4002.

- (6) CONCENTRICITY: CONICAL SURFACE OF HEAD TO THREAD PITCH DIAMETER WITHIN .005 FIM.
- (7) PROTRUSION OF LOCKING ELEMENTS SHALL BE CONTROLLED SO THAT IT WILL PASS FREELY OR WITH FINGER PRESSURE THROUGH A RING GAGE WITH DIAMETER OF .010 (.001, -.000) GREATER THAN MAXIMUM MAJOR DIAMETER OF SCREW THREAD.
- (8) "F" MINIMUM (5 THREAD PITCHES) = REGION OF MINIMUM ENGAGEMENT WITH FEMALE THREAD REQUIRED TO MEET MIL-DTL-18240 REQUIREMENTS. LOCKING ELEMENT WITHIN "F" REGION MUST DEVELOP REQUIRED TORQUE WHEN TESTED PER MIL-DTL-18240.
- (9) FOR EASE OF STARTING, LOCKING ELEMENT SHALL NOT BE EFFECTIVE IN "J" AREA (3 THREAD PITCHES).
- (10) MINIMUM TORQUE VALUES (LBF-IN) WHICH RECESS MUST DEVELOP IN REMOVAL DIRECTION WITH APPROPRIATE DRIVERS PER PSC-1201 THROUGH PSC-1204 AND 5 POUND MAXIMUM END LOAD. PARTS ARE ACCEPTABLE IF RAISED METAL AT EDGE OF RECESS DOES NOT EXCEED TABULATED VALUES.
- (11) DIMENSIONS TO BE MET AFTER PLATING OR COATING.
- (12) DIMENSIONS ARE IN INCHES.

SURFACE TEXTURE:

HEAD TO SHANK FILLET; THREAD FLANKS AND THREAD ROOT 32 MICROINCHES RA;  
CONICAL SURFACE OF THE HEAD 63 MICROINCHES RA;  
OTHER SURFACES 125 MICROINCHES RA PER ASME B46.1.

PROCUREMENT SPECIFICATION:

NAS4002, EXCEPT AS NOTED. COLD WORKING OF HEAD TO SHANK FILLET IS NOT REQUIRED.  
LOCKING ELEMENT FOR SELF-LOCKING SCREWS: PER NASM15981 AND MIL-DTL-18240. ANY TYPE OF CONFIGURATION, INCLUDING PATCH TYPE, IS OPTIONAL WHEN "L" CODE IS SPECIFIED. PATCH TYPE LOCKING ELEMENT (WITH NO METAL REMOVED) IS REQUIRED WHEN "P" CODE IS SPECIFIED. LOCKING ELEMENT MUST BE SUPPLIED BY A QUALIFIED SOURCE LISTED IN QPL18240. SHIPPING NOTICE SHOULD IDENTIFY THE SUPPLIER OF SCREW AND LOCKING ELEMENT SEPARATELY.

PREPARED FOR ROLLS-ROYCE TO REPLACE NAS5600-5606.

REVISION	1/ CAD DWG. 04-26-04	2/ UPDATE 05-01-13	3/ UPDATE 05-14-14
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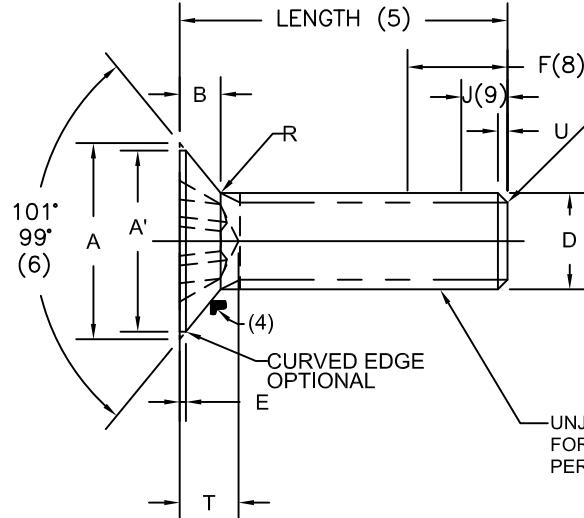
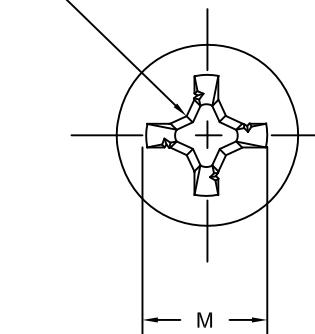
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TITLE: **SCREW, 100° HEAD, FULL THREAD  
ACR® RIBBED PHILLIPS® RECESS, ALLOY  
STEEL, SELF-LOCKING AND NONLOCKING**

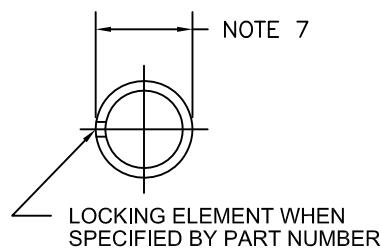
DRAWN: S. GUARINO	DATE: 09-18-79	DRAWING NUMBER <b>PSC-737</b>
CHECKED: G. LAMONICA	DATE: 04-26-04	
SHEET 3 OF 3		
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ACR® RIBBED PHILLIPS®  
RECESS PER PSC-4001  
SEE TABLE II



POINT SHALL BE FLAT AND CHAMFERED. SEE PROCUREMENT SPECIFICATION FOR DETAILS.



UNJF-3A THREADS (EXCEPT UNJC-3A)  
FOR .1640-32 AND SMALLER)  
PER AS8879.

HEAD MARKING SHALL BE DEPRESSED (.010 MAX) AND ARRANGED AS FOLLOWS:

- MARK WITH BASIC PART NUMBER ("PSC" OPTIONAL) EXCEPT MARK .1120-40 SIZE WITH "4", .1380-32 SIZE WITH "6", .1640-32 SIZE WITH "8", AND OPTIONAL .1900-32 SIZE WITH "10". THESE SIZES ALSO TO BE MARKED "C" FOR A286.
- MARK WITH MANUFACTURER'S SYMBOL OR TRADEMARK (SYMBOL LOCATION OPTIONAL IN ANY SECTOR ) LENGTH DASH NUMBER AND "L" OR "P" WHEN APPLICABLE. (SEE NOTE 11)  
"L" IDENTIFIES SCREWS WITH OPTIONAL LOCKING ELEMENT.  
"P" IDENTIFIES SCREWS WITH PATCH TYPE LOCKING ELEMENT ONLY.
- MARK WITH RECESS DASH NUMBER, ENCIRCLED. RECESS NUMBER SHOULD BE APPROXIMATELY 25% LARGER THAN OTHER NUMERALS IN HEAD MARKING.

TABLE I DIMENSIONS

Ø DASH NUMBER	THREAD SIZE	(3) MAX. ØA	(3) ABSOLUTE MIN. ØA'	(3) MAX. B	MAX. ØD	MAX. E	(8) F	(9) J	RADIUS R	MAX. U	RECESS SIZE
-04	.1120-40	.226	.193	.044	.112	.010	.125	.075	.012 .002	.031	1
-06	.1380-32	.280	.246	.061	.138	.010					
-08	.1640-32	.331	.296	.072	.164	.012	.156	.094	.020 .010	.039	2
-3	.1900-32	.381	.338	.082	.190	.015					
-4	.2500-28	.508	.456	.111	.250	.018	.178	.107		.045	3
-5	.3125-24	.635	.575	.138	.312	.021			.025 .010		
-6	.3750-24	.763	.692	.166	.375	.025	.208	.125	.030 .015	.052	4S

REVISIONS 1/CAD DWG. 04-22-04 2/REVISION 03-25-13 3/REVISION 05-14-14

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TITLE: SCREW, 100° HEAD, FULL THREAD  
ACR® RIBBED PHILLIPS® RECESS, A286 CRES  
SELF-LOCKING AND NONLOCKING

DRAWN:  
S. GUARINO

DATE:  
09-14-79

DRAWING NUMBER

PSC-738

CHECKED:  
G. LaMONICA

DATE:  
04-22-04

SHEET 1 OF 4

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326

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TABLE II - RECESS DIMENSIONS

Ø DASH NUMBER	THREAD SIZE	RECESS SIZE	ØM	T	GAGE PENETRATION		TORQUE IN-LBS MIN(10)	RAISED METAL MAX(10)	TENSILE STRENGTH LBS.
					MAX.	MIN.			
-04	.1120-40	1	.117 .104	.078 .062	.071	.055	13	.005	830
-06	.1380-32	2	.154 .141	.086 .063	.075	.052	25	.005	1,260
-08	.1640-32	2	.169 .156	.101 .078	.090	.067	35	.005	1,950
-3	.1900-32	2	.184 .171	.116 .093	.105	.082	50	.005	2,860
-4	.2500-28	3	.247 .234	.135 .112	.118	.095	125	.005	5,820
-5	.3125-24	4S	.317 .304	.168 .146	.148	.126	230	.005	9,260
-6	.3750-24	4S	.341 .328	.193 .171	.173	.151	300	.006	14,000

TABLE III

	DASH NUMBER FOR PREFERRED LENGTH																								
	(2)	(2)	(2)	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	20	22	24	26	28	30	32
DASH NO.	.19	.25	.31	.38	.44	.50	.56	.62	.69	.75	.81	.88	.94	1.00	1.12	1.25	1.38	1.50	1.62	1.75	1.88	2.00	2.12 TO 6.00		
LENGTH	+.00	-.03																							
LENGTH TOL.	+.00 -.03															+.00 -.06					+.00 -.09				

MATERIAL: A286 CORROSION RESISTANT STEEL WITH COMPOSITION PER AMS 5731, AMS 5737 OR AMS 5853.  
LOCKING ELEMENT- PLASTIC PER MIL-DTL-18240 AND QPL-18240.

HEAT TREAT: 160 KSI MINIMUM ULTIMATE TENSILE.

FINISH: UNPLATED SCREWS - PASSIVATE TO MEET REQUIREMENTS OF NAS4003.

PLATED SCREWS - CADMIUM PLATE PER QQ-P-416, TYPE II, CLASS 2. EMBRITTLEMENT TEST PER QQ-P-416 DOES NOT APPLY. CADMIUM PLATED A286 CRES SCREWS SHALL BE IDENTIFIED WITH GREEN DYE OR PAINT ON THE THREAD END. MAXIMUM COVERAGE MAY INCLUDE THE CHAMFER PLUS ONE COMPLETE THREAD.

COATED SCREWS - ALUMINUM COATING PER NAS4006.

CODE: BASIC PART NUMBER = NON-LOCKING, PLATED SCREW. SEE TABLE II AND III.

FIRST DASH NUMBER INDICATES DIAMETER. SEE TABLE II.  
SECOND DASH NUMBER INDICATES LENGTH IN .0625 INCREMENTS (ROUNDED TO TWO DECIMAL PLACES). SEE TABLE III FOR TABULATIONS OF LENGTH DIMENSIONS. USE OF .25 INCH INCREMENTS IS RECOMMENDED FOR SCREWS OVER 3 INCHES LONG. INTERMEDIATE OR LONGER LENGTHS MAY BE SPECIFIED BY USE OF WHOLE DASH NUMBER ONLY.

ADD "A" AFTER DIAMETER DASH NUMBER FOR ALUMINUM COATED SCREWS. MAY BE USED WITH "L" OR "P" CODE.

ADD "L" AFTER DIAMETER DASH NUMBER FOR SELF-LOCKING SCREWS, OPTIONAL CONFIGURATION. DO NOT USE WITH "P" CODE.

ADD "U" AFTER DIAMETER DASH NUMBER FOR UNPLATED SCREWS. MAY BE USED WITH "L" OR "P" CODE.

ADD "P" AFTER DIAMETER DASH NUMBER FOR SELF-LOCKING SCREWS WITH PATCH TYPE LOCKING ELEMENT. DO NOT USE WITH "L" CODE.

WHEN MULTIPLE LETTER CODES ARE USED, SEQUENCE MUST BE IN ALPHABETICAL ORDER.

REVISIONS 1/CAD DWG. 04-22-04 2/REVISION 03-25/13 3/REVISION 05-14-14

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TITLE: **SCREW, 100° HEAD, FULL THREAD  
ACR® RIBBED PHILLIPS® RECESS, A286 CRES  
SELF-LOCKING AND NONLOCKING**

DRAWN:  
S. GUARINO

DATE:  
09-14-79

DRAWING NUMBER  
**PSC-738**

CHECKED:  
G. LaMONICA

DATE:  
04-22-04

SHEET 2 OF 4

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
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HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

EXAMPLE OF PART NUMBER:

PSC738-3-10 = SCREW, .1900-32 THREAD, .62 LENGTH, NON-LOCKING, PLATED.  
 PSC738-3A10 = SCREW, .1900-32 THREAD, .62 LENGTH, NON-LOCKING, ALUMINUM COATED.  
 PSC738-3L10 = SCREW, .1900-32 THREAD, .62 LENGTH, SELF-LOCKING, OPTIONAL CONFIGURATION, PLATED.  
 PSC738-3LU10 = SCREW, .1900-32 THREAD, .62 LENGTH, SELF-LOCKING, OPTIONAL CONFIGURATION, UNPLATED.  
 PSC738-3PU10 = SCREW, .1900-32 THREAD, .62 LENGTH, SELF-LOCKING, PATCH TYPE, UNPLATED.

NOTES:

- (1) DIAMETER OF UNTHREADED PORTION OF SCREW SHALL NOT BE LESS THAN MINIMUM PITCH DIAMETER NOR MORE THAN MAXIMUM MAJOR DIAMETER OF THREAD.
- (2) DASH 3 LENGTH IS NOT PRACTICAL FOR SIZE .1900-32 AND LARGER, DASH 4 IS NOT PRACTICAL FOR SIZE .2500-28 AND LARGER. DASH 5 LENGTH IS NOT PRACTICAL FOR SIZES .3125-24 AND .3750-24.
- (3) DIMENSIONS A, A', AND B ARE INCLUDED FOR ENGINEERING REFERENCE ONLY AND ARE NOT TO BE USED FOR INSPECTION. VALUES A, A', AND B ARE CALCULATED LIMITS RESULTING FROM TOLERANCES ON W, H, E, AND HEAD ANGLE.
- (4) DIMENSIONS FOR H GAGE PROTRUSION SHALL BE INSPECTED PER NAS9800.
- (5) SCREWS LESS THAN 2 DIAMETERS IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF BEARING SURFACE OF HEAD AND INCOMPLETE THREADS MAY EXTEND UP TO BEARING SURFACE.  
SCREWS 2 DIAMETERS THRU 2 INCHES IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF TANGENCY OF "R" AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.  
SCREWS LONGER THAN 2 INCHES - COMPLETE THREADS SHALL EXTEND A MINIMUM OF 1.75 INCHES FROM END OF SCREW AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.  
INCOMPLETE THREADS - SEE NAS4003.
- (6) CONCENTRICITY: CONICAL SURFACE OF HEAD TO THREAD PITCH DIAMETER WITHIN .005 FIM.
- (7) PROTRUSION OF LOCKING ELEMENTS SHALL BE CONTROLLED SO THAT IT WILL PASS FREELY OR WITH FINGER PRESSURE THROUGH A RING GAGE WITH DIAMETER OF .010 (+.001, -.000) GREATER THAN MAXIMUM MAJOR DIAMETER OF SCREW THREAD.
- (8) "F" MINIMUM (5 THREAD PITCHES) = REGION OF MINIMUM ENGAGEMENT WITH FEMALE THREAD REQUIRED TO MEET MIL-DTL-18240 REQUIREMENTS. LOCKING ELEMENT WITHIN "F" REGION MUST DEVELOP REQUIRED TORQUE WHEN TESTED PER MIL-DTL-18240.
- (9) FOR EASE OF STARTING, LOCKING ELEMENT SHALL NOT BE EFFECTIVE IN "J" AREA (3 THREAD PITCHES).
- (10) MINIMUM TORQUE VALUES (TABLE II) WHICH RECESS MUST DEVELOP IN REMOVAL DIRECTION WITH APPROPRIATE DRIVERS PER PSC-1201 THROUGH PSC-1204 AND 5 POUND MAXIMUM END LOAD. PARTS ARE ACCEPTABLE IF RAISED METAL AT EDGE OF RECESS DOES NOT EXCEED TABULATED VALUES.
- (11) "A", ALUMINUM COATED, "H", DRILLED HEAD, AND "U", UNPLATED CODES NEED NOT APPEAR ON THE HEAD OF THE SCREW.
- (12) MAGNETIC PERMEABILITY SHALL BE LESS THAN 2.0 (AIR = 1.0) FOR FIELD STRENGTH H = 200 OERSTEDS USING A MAGNETIC PERMEABILITY INDICATOR PER ASTM A342/A 342M, TEST METHOD 3.
- (13) DIMENSIONS TO BE MET AFTER PLATING.
- (14) DIMENSIONS ARE IN INCHES.

SURFACE TEXTURE:

BEARING SURFACE OF THE HEAD, THREAD FLANKS AND THREAD ROOT 32 MICROINCHES RA;  
 ALL OTHER SURFACES 125 MICROINCHES RA PER ASME B46.1.

PROCUREMENT SPECIFICATION:

NAS4003, EXCEPT AS NOTED, COLD WORKING OF HEAD TO SHANK FILLET IS NOT REQUIRED.  
 LOCKING ELEMENT FOR SELF-LOCKING SCREWS: PER NASM15981 AND MIL-DTL-18240. ANY TYPE OF CONFIGURATION IS OPTIONAL WHEN "L" CODE IS SPECIFIED. PATCH TYPE LOCKING ELEMENT (WITH NO METAL REMOVED) IS REQUIRED WHEN "P" CODE IS SPECIFIED. LOCKING ELEMENT MUST BE SUPPLIED BY A QUALIFIED SOURCE LISTED IN QPL18240. SHIPPING NOTICE SHOULD IDENTIFY THE SUPPLIER OF SCREW AND LOCKING ELEMENT SEPARATELY.

PREPARED FOR ROLLS-ROYCE TO REPLACE NAS5700-5706.

TITLE: <b>SCREW, 100° HEAD, FULL THREAD ACR® RIBBED PHILLIPS® RECESS, A286 CRES SELF-LOCKING AND NONLOCKING</b>	
DRAWN: S. GUARINO	DATE: 09-14-79
CHECKED: G. LaMONICA	DATE: 04-22-04
DRAWING NUMBER <b>PSC-738</b>	
SHEET 3 OF 4	

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
 PHONE: 774-396-6190 FAX: 508-966-2326

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REVISIONS 1/CAD DWG. 2/REVISION 3/REVISION  
04-22-04 03-25-13 05-14-14

# ROLLS-ROYCE APPROVED SOURCES OF ACR<sup>®</sup> PHILLIPS<sup>®</sup> PSC-738 BOLTS

(ADDITIONAL SOURCES FOR OTHER END USERS AVAILABLE FROM PHILLIPS SCREW COMPANY UPON REQUEST)

APPROVED SOURCES OF SUPPLY	ADDRESS	IDENTITY CODE
A F FASTENERS, LTD	UNIT 14-15 GLOSSOP BROOK BUSINESS PARK GLOSSOP DERBYSHIRE SK13 7AJ ENGLAND	J
AHG ATELIERS DE LA HAUTE-GARONNE	26 ROUTE DE LASBORDES BP73103 31131 FLOURENS CEDEX FRANCE	4
PILGRIM SCREW CORPORATION	120 SPRAGUE STREET PROVIDENCE, RI 02907	A
SPS TECHNOLOGIES, LTD  T. J. BROOKS DIV.	191 BARKBY ROAD TROON INDUSRIAL AREA LEICESTER LE4 9HX ENGLAND	TBJ
BLANC AERO INDUSTRIES	15 RUE LASSON 75012 PARIS FRANCE	P
HEARTLAND PRECISION FASTENERS	301 PRAIRIE VILLAGE DRIVE NEW CENTURY KANSAS 66031	3
MAC FASTENERS	1110 ENTERPRISE STREET OTTAWA KANSAS 66067	O1DO
LINREAD AIRCRAFT PRODUCTS DIVISION	P. O. BOX 28 CROSSGATE ROAD PARK FARM REDDITCH WORCESTERSHIRE B98 7TD ENGLAND	4

REVISIONS 03/25/13 2/ REVISION 07/30/13 3/ REVISION 05-14-14

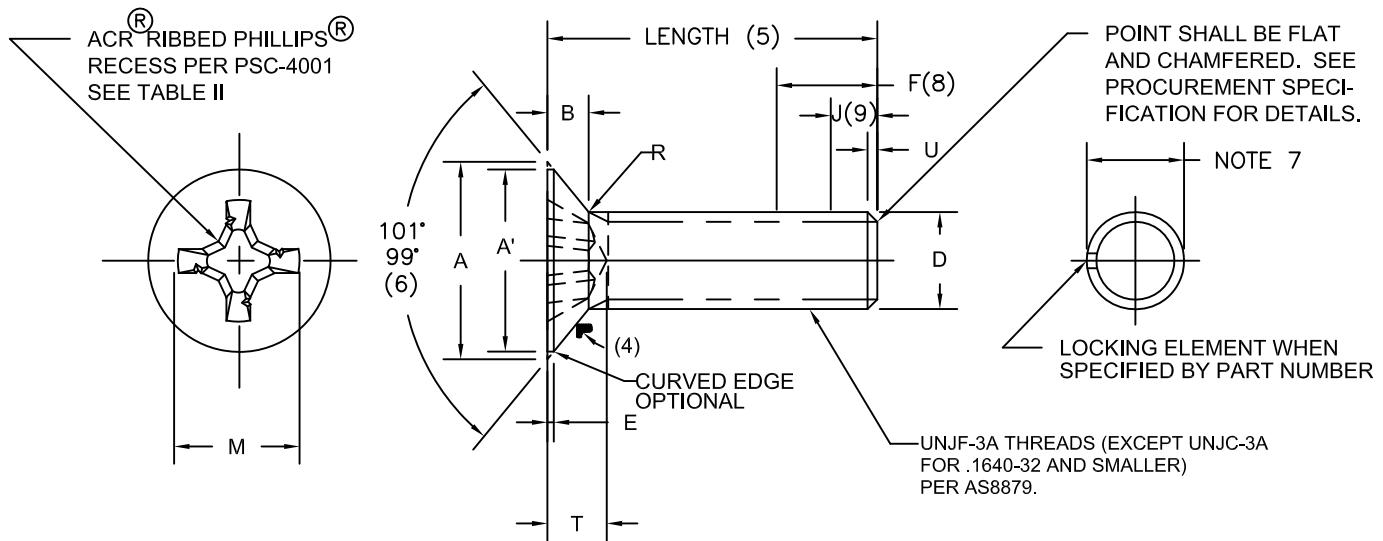
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TITLE: SCREW, 100° HEAD, FULL THREAD  
ACR<sup>®</sup> RIBBED PHILLIPS<sup>®</sup> RECESS, A286 CRES  
SELF-LOCKING AND NONLOCKING

DRAWN: S. GUARINO	DATE: 09-14-79	DRAWING NUMBER <b>PSC-738</b>
CHECKED: G. LaMONICA	DATE: 04-22-04	SHEET 4 OF 4
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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HEXSTIX<sup>®</sup> POZILOCK<sup>®</sup> ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



HEAD MARKING SHALL BE DEPRESSED (.010 MAX) AND ARRANGED AS FOLLOWS:

- MARK WITH BASIC PART NUMBER ("PSC" OPTIONAL) EXCEPT MARK .1120-40 SIZE WITH "4", .1380-32 SIZE WITH "6", .1640-32 SIZE WITH "8", AND OPTIONAL .1900-32 SIZE WITH "10". THESE SIZES ALSO TO BE MARKED "V" FOR TITANIUM.
- MARK WITH MANUFACTURER'S SYMBOL OR TRADEMARK (SYMBOL LOCATION OPTIONAL IN ANY SECTOR) LENGTH DASH NUMBER AND "L" OR "P" WHEN APPLICABLE. (SEE NOTE 11)  
"L" IDENTIFIES SCREWS WITH OPTIONAL LOCKING ELEMENT.  
"P" IDENTIFIES SCREWS WITH PATCH TYPE LOCKING ELEMENT ONLY.
- MARK WITH RECESS DASH NUMBER, ENCIRCLED. RECESS NUMBER SHOULD BE APPROXIMATELY 25% LARGER THAN OTHER NUMERALS IN HEAD MARKING.

TABLE I DIMENSIONS

Ø DASH NUMBER	THREAD SIZE	NOTE 3 MAX. ØA	NOTE 3 ABSOLUTE MIN. ØA'	NOTE 3 MAX. B	MAX. ØD	MAX. E	NOTE 8 F	NOTE 9 J	RADIUS R	MAX. U	RECESS SIZE
-04	.1120-40	.226	.193	.044	.112	.010	.125	.075	.012 .002	.031	1
-06	.1380-32	.280	.246	.061	.138	.010					
-08	.1640-32	.331	.296	.072	.164	.012	.156	.094	.020 .010	.039	2
-3	.1900-32	.381	.338	.082	.190	.015					
-4	.2500-28	.508	.456	.111	.250	.018	.178	.107		.045	3
-5	.3125-24	.635	.575	.138	.312	.021			.025 .010		
-6	.3750-24	.763	.692	.166	.375	.025			.030 .015	.052	4S

REVISION 1/CAD DWG. 08-05-04 2/UPDATE 05-01-13 3/UPDATE 05-23-14

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TITLE: SCREW, 100° HEAD, FULL THREAD  
ACR® RIBBED PHILLIPS® RECESS  
6AL-4V TITANIUM ALLOY

DRAWN: S. GUARINO DATE: 09-14-79 DRAWING NUMBER

**PSC-739**

CHECKED: G. LaMONICA DATE: 08-05-04 SHEET 1 OF 3

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326

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TABLE II - RECESS DIMENSIONS

Ø DASH NUMBER	THREAD SIZE	RECESS SIZE	ØM	T	GAGE PENETRATION		TORQUE IN-LBS MIN(10)	RAISED METAL MAX(10)
					MAX.	MIN.		
-04	.1120-40	1	.117 .104	.078 .062	.071	.055	13	.005
-06	.1380-32	2	.154 .141	.086 .063	.075	.052	25	.005
-08	.1640-32	2	.169 .156	.101 .078	.090	.067	35	.005
-3	.1900-32	2	.184 .171	.116 .093	.105	.082	50	.005
-4	.2500-28	3	.247 .234	.135 .112	.118	.095	125	.005
-5	.3125-24	4S	.317 .304	.168 .146	.148	.126	230	.005
-6	.3750-24	4S	.341 .328	.193 .171	.173	.151	300	.006

TABLE III

DASH NO.	DASH NUMBER FOR PREFERRED LENGTH																							
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	20	22	24	26	28	30	32	34 TO 96	
LENGTH	.19	.25	.31	.38	.44	.50	.56	.62	.69	.75	.81	.88	.94	1.00	1.12	1.25	1.38	1.50	1.62	1.75	1.88	2.00	2.12 TO 6.00	
LENGTH TOL.	+.00 -.03															+.00 -.06					+.00 -.09			

MATERIAL: 6AL-4V TITANIUM ALLOY(UNS R56400) PER AMS 4928 OR AMS 4967.  
LOCKING ELEMENT- PLASTIC PER MIL-DTL-18240 AND QPL-18240.

HEAT TREAT: 160 AND 180 KSI ULTIMATE TENSILE.

FINISH: UNPLATED SCREWS - NONE

PLATED SCREWS - CADMIUM PLATE PER QQ-P-416, TYPE II, CLASS 2, EXCEPT A NICKEL STRIKE MAY BE USED PRIOR TO CADMIUM PLATING. PARTS PLATED TO CLASS 3 MAY BE USED UNTIL STOCK IS DEPLETED. CADMIUM PLATED 6AL-4V TITANIUM ALLOY SCREWS SHALL BE IDENTIFIED WITH RED DYE OR PAINT ON THE THREAD END. MAXIMUM COVERAGE MAY INCLUDE THE CHAMFER PLUS ONE INCOMPLETE THREAD.

COATED SCREWS - ALUMINUM COATING PER NAS4006.

CODE: BASIC PART NUMBER = NON-LOCKING, PLATED SCREW. SEE TABLE II AND III.  
FIRST DASH NUMBER INDICATES DIAMETER. SEE TABLE II.

SECOND DASH NUMBER INDICATES LENGTH IN .0625 INCREMENTS (ROUNDED TO TWO DECIMAL PLACES). SEE TABLE III FOR TABULATIONS OF LENGTH DIMENSIONS. USE OF .25 INCH INCREMENTS IS RECOMMENDED FOR SCREWS OVER 3 INCHES LONG. INTERMEDIATE OR LONGER LENGTHS MAY BE SPECIFIED BY USE OF WHOLE DASH NUMBER ONLY.

ADD "A" AFTER DIAMETER DASH NUMBER FOR ALUMINUM COATED SCREWS. MAY BE USED WITH "L" OR "P" CODE.

ADD "L" AFTER DIAMETER DASH NUMBER FOR SELF-LOCKING SCREWS, OPTIONAL CONFIGURATION. DO NOT USE WITH "P" CODE.

ADD "U" AFTER DIAMETER DASH NUMBER FOR UNPLATED SCREWS. MAY BE USED WITH "L" OR "P" CODE.

ADD "P" AFTER DIAMETER DASH NUMBER FOR SELF-LOCKING SCREWS, PATCH TYPE LOCKING ELEMENT. DO NOT USE WITH "L" CODE.

WHEN MULTIPLE LETTER CODES ARE USED, SEQUENCE MUST BE IN ALPHABETICAL ORDER.

REVISION 1/ CAD DWG. 08-05-04 2/ UPDATE 05-01-13 3/ UPDATE 05-23-14

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TITLE: SCREW, 100° HEAD, FULL THREAD  
ACR® RIBBED PHILLIPS® RECESS  
6AL-4V TITANIUM ALLOY

DRAWN: S. GUARINO DATE: 09-14-79 DRAWING NUMBER

CHECKED: G. LaMONICA DATE: 08-05-04 SHEET 2 OF 3

PSC-739

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
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EXAMPLE OF PART NUMBER:

PSC739-3-10 = SCREW, .1900-32 THREAD, .62 LENGTH, NON-LOCKING, PLATED.  
 PSC739-3A10 = SCREW, .1900-32 THREAD, .62 LENGTH, NON-LOCKING, ALUMINUM COATED.  
 PSC739-3L10 = SCREW, .1900-32 THREAD, .62 LENGTH, SELF-LOCKING, OPTIONAL CONFIGURATION, PLATED.  
 PSC739-3LU10 = SCREW, .1900-32 THREAD, .62 LENGTH, SELF-LOCKING, OPTIONAL CONFIGURATION, UNPLATED.  
 PSC739-3PU10 = SCREW, .1900-32 THREAD, .62 LENGTH, SELF-LOCKING, PATCH TYPE, UNPLATED.

NOTES:

- (1) DIAMETER OF UNTHEADED PORTION OF SHANK SHALL NOT BE LESS THAN MINIMUM PITCH DIAMETER NOR MORE THAN MAXIMUM MAJOR DIAMETER OF THREAD.
- (2) DASH 3 LENGTH IS NOT PRACTICAL FOR SIZE .1900-32 AND LARGER. DASH 4 IS NOT PRACTICAL FOR SIZE .2500-28 AND LARGER. DASH 5 LENGTH IS NOT PRACTICAL FOR SIZES .3125-24 AND .3750-24.
- (3) DIMENSIONS A, A', AND B ARE INCLUDED FOR ENGINEERING REFERENCE ONLY AND ARE NOT TO BE USED FOR INSPECTION. VALUES A, A', AND B ARE CALCULATED LIMITS RESULTING FROM TOLERANCES ON W, H, E, AND HEAD ANGLE.
- (4) DIMENSIONS FOR H GAGE PROTRUSION SHALL BE INSPECTED PER NAS9800.
- (5) SCREWS LESS THAN 2 DIAMETERS IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF BEARING SURFACE OF HEAD AND INCOMPLETE THREADS MAY EXTEND UP TO BEARING SURFACE.  
 SCREWS 2 DIAMETERS THRU 2 INCHES IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF TANGENCY OF "R" AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.  
 SCREWS LONGER THAN 2 INCHES - COMPLETE THREADS SHALL EXTEND A MINIMUM OF 1.75 INCHES FROM END OF SCREW AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.
- INCOMPLETE THREADS - SEE NAS4004.**
- (6) CONCENTRICITY: CONICAL SURFACE OF HEAD TO THREAD PITCH DIAMETER WITHIN .005 FIM.
- (7) PROTRUSION OF LOCKING ELEMENTS SHALL BE CONTROLLED SO THAT IT WILL PASS FREELY OR WITH FINGER PRESSURE THROUGH A RING GAGE WITH DIAMETER OF .010 (.001, -.000) GREATER THAN MAXIMUM MAJOR DIAMETER OF SCREW THREAD.
- (8) "F" MINIMUM (5 THREAD PITCHES) = REGION OF MINIMUM ENGAGEMENT WITH FEMALE THREAD REQUIRED TO MEET MIL-DTL-18240 REQUIREMENTS. LOCKING ELEMENT WITHIN "F" REGION MUST DEVELOP REQUIRED TORQUE WHEN TESTED PER MIL-DTL-18240.
- (9) FOR EASE OF STARTING, LOCKING ELEMENT SHALL NOT BE EFFECTIVE IN "J" AREA (3 THREAD PITCHES).
- (10) MINIMUM TORQUE VALUES (LBF-IN) WHICH RECESS MUST DEVELOP IN REMOVAL DIRECTION WITH APPROPRIATE DRIVERS PER PSC-1201 THROUGH PSC-1204 AND 5 POUND MAXIMUM END LOAD. PARTS ARE ACCEPTABLE IF RAISED METAL AT EDGE OF RECESS DOES NOT EXCEED TABULATED VALUES.
- (11) "A", ALUMINUM COATED, "H", DRILLED HEAD, AND "U", UNPLATED CODES NEED NOT APPEAR ON THE HEAD OF THE SCREW.
- (12) DIMENSIONS TO BE MET AFTER PLATING OR COATING.
- (13) DIMENSIONS ARE IN INCHES.

SURFACE TEXTURE:

HEAD TO SHANK FILLET, THREAD FLANKS AND THREAD ROOT 32 MICROINCHES RA; CONICAL SURFACE TO HEAD 63 MICROINCHES RA, OTHER SURFACES 125 MICROINCHES RA PER ASME B46.1.

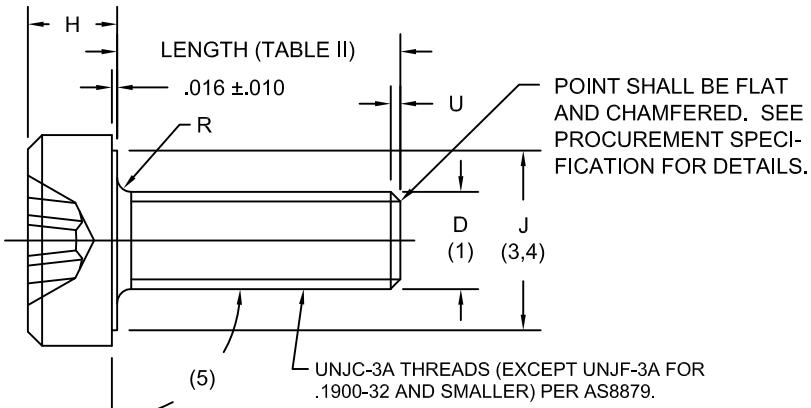
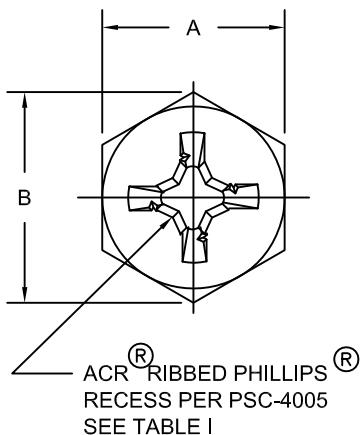
PROCUREMENT SPECIFICATION:

NAS4004, EXCEPT AS NOTED. COLD WORK OF HEAD TO SHANK FILLET IS NOT REQUIRED. LOCKING ELEMENT FOR SELF-LOCKING SCREWS; PER NASM15981 AND MIL-DTL-18240, ANY TYPE OF CONFIGURATION IS OPTIONAL WHEN "L" CODE IS SPECIFIED. PATCH TYPE LOCKING ELEMENT (WITH NO METAL REMOVED) IS REQUIRED WHEN "P" CODE IS SPECIFIED. LOCKING ELEMENT MUST BE SUPPLIED BY A QUALIFIED SOURCE LISTED IN QPL18240. SHIPPING NOTICE SHOULD IDENTIFY THE SUPPLIER OF SCREW AND LOCKING ELEMENT SEPARATELY.

PREPARED FOR ROLLS-ROYCE TO REPLACE NAS5800-5806.

REVISION 1/CAD DWG. 2/UPDATE 05-01-13 3/UPDATE 05-23-14

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	DRAWN: S. GUARINO	DATE: 09-14-79	DRAWING NUMBER <b>PSC-739</b>
	CHECKED: G. LAMONICA	DATE: 08-05-04	SHEET 3 OF 3
	PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		
<b>PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ</b> <small>HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY</small>			



HEAD MARKING SHALL BE RAISED OR DEPRESSED (.010 MAX) AND ARRANGED AS FOLLOWS:

- MARK WITH BASIC PART NUMBER ("PSC" OPTIONAL) EXCEPT MARK .1120-40 SIZE WITH "4", .1380-32 SIZE WITH "6", .1640-32 SIZE WITH "8", AND OPTIONAL .1900-32 SIZE WITH "10".
- MARK WITH LENGTH DASH NUMBER AND MARK WITH MANUFACTURER'S SYMBOL OR TRADEMARK (SYMBOL LOCATION OPTIONAL IN ANY SECTOR)
- MARK WITH RECESS DASH NUMBER, ENCIRCLED. RECESS NUMBER SHOULD BE APPROXIMATELY 25% LARGER THAN OTHER NUMERALS IN HEAD MARKING.

TABLE I DIMENSIONS

Ø DASH NUMBER	THREAD SIZE	HEX A	MIN. B	MAX. ØD	H	DIA. MIN. J	RADIUS R	DIA. MAX. U	RECESS TORQUE IN-LBS MIN.(6)	RAISED METAL MAX.(6)	RECESS SIZE
-04	.1120-40	.189/.181	.207	.112	.060/.049	.156	.010/.005	.031	13	.005	1
-06	.1380-32	.251/.243	.268	.138	.093/.080	.215	.010/.005	.039	25	.005	2
-08	.1640-32	.251/243	.268	.164	.110/.096	.215	.020/.010	.039	35	.005	
-3	.1900-32	.313/.305	.339	.190	.120/.105	.275	.020/.010	.039	50	.005	

TABLE II

DASH NO.	DASH NUMBER FOR PREFERRED LENGTH																						
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	20	22	24	26	28	30	32	34 TO 96
LENGTH	.19	.25	.31	.38	.44	.50	.56	.62	.69	.75	.81	.88	.94	1.00	1.12	1.25	1.38	1.50	1.62	1.75	1.88	2.00	2.12 TO 6.00
LENGTH TOL.	+.00 -.03												+.00 -.06						+.00 -.09				

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TITLE: SCREW, HEX HEAD, FULL THREAD  
ACR® RIBBED PHILLIPS® RECESS  
ALLOY STEEL, NON-LOCKING

DRAWN: S. GUARINO DATE: 09-14-79 DRAWING NUMBER

CHECKED: G. LaMONICA DATE: 08-09-04 SHEET 1 OF 2

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MATERIAL: ALLOY STEEL - 4340 (UNS G43406) PER AMS6415 OR ASS6484 OR 8740 (UNS G87400) PER AMS6322, AMS6325 OR AMS6327.

HEAT TREAT: 160 TO 180 KSI MINIMUM ULTIMATE TENSILE.

FINISH: PLATED SCREWS - CADMIUM PLATE PER QQ-P-416, TYPE II, CLASS 2. EMBRITTLEMENT REQUIREMENTS PER NAS4002.

CODE: BASIC PART NUMBER = NON SELF-LOCKING SCREW (SEE TABLE I). FIRST DASH NUMBER INDICATES DIAMETER. SECOND DASH NUMBER INDICATES LENGTH IN .0625 INCREMENTS. SEE TABLE II FOR TABULATIONS OF LENGTH DIMENSIONS. INTERMEDIATE OR LONGER LENGTHS MAY BE SPECIFIED BY USE OF WHOLE DASH NUMBERS ONLY.

EXAMPLE OF PART NUMBER:

PSC740-3-10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, PLATED.

NOTES:

- (1) DIAMETER OF UNTHREADED PORTION OF SHANK SHALL NOT BE LESS THAN MINIMUM PITCH DIAMETER NOR MORE THAN MAXIMUM MAJOR DIAMETER OF THREAD.
- (2) SCREWS LESS THAN 2 DIAMETERS IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF BEARING SURFACE OF HEAD AND INCOMPLETE THREADS MAY EXTEND UP TO BEARING SURFACE.  
SCREWS 2 DIAMETERS THRU 2 INCHES IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF TANGENCY OF "R" AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.  
SCREWS LONGER THAN 2 INCHES - COMPLETE THREADS SHALL EXTEND A MINIMUM OF 1.75 INCHES FROM END OF SCREWS AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.  
INCOMPLETE THREADS - SEE NAS4002.
- (3) CONCENTRICITY: 'J' DIAMETER TO THREAD PITCH DIAMETER WITHIN .005 FIM.
- (4) MAXIMUM 'J' DIAMETER SHALL NOT EXCEED ACTUAL 'A' DIMENSION.
- (5) BEARING SURFACE SQUARENESS: WITHIN .003 FIM OF SHANK DIAMETER.
- (6) MINIMUM TORQUE VALUES (LBF-IN) WHICH RECESS MUST DEVELOP IN REMOVAL DIRECTION WITH APPROPRIATE DRIVERS PER PSC-1201 THROUGH PSC-1204 AND 5 POUND MAXIMUM END LOAD. PARTS ARE ACCEPTABLE IF RAISED METAL AT EDGE OF RECESS DOES NOT EXCEED TABULATED VALUES.
- (7) DIMENSIONS TO BE MET AFTER PLATING.
- (8) DIMENSIONS ARE IN INCHES.

SURFACE TEXTURE:

HEAD TO SHANK FILLET, THREAD FLANKS AND THREAD ROOT 32 MICROINCHES RA;  
BEARING SURFACE OF HEAD 63 MICROINCHES RA; OTHER SURFACES 125 MICROINCHES RA PER ASME B46.1.

PROCUREMENT SPECIFICATION:

NAS4002, EXCEPT AS NOTED. COLD WORKING OF HEAD TO SHANK FILLET IS NOT REQUIRED.

PREPARED FOR ROLLS-ROYCE TO REPLACE NAS5900-5903

REVISION 1 / CAD DWG. 2 / UPDATE 3 / UPDATE  
08-09-04 05-01-13 05-22-14

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TITLE: **SCREW, HEX HEAD, FULL THREAD  
ACR® RIBBED PHILLIPS® RECESS  
ALLOY STEEL, NON-LOCKING**

DRAWN: S. GUARINO DATE: 09-14-79

CHECKED: G. LAMONICA DATE: 08-09-04

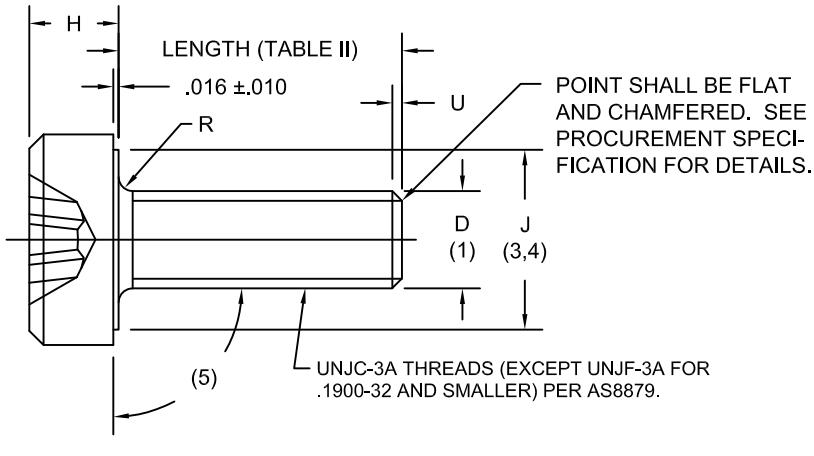
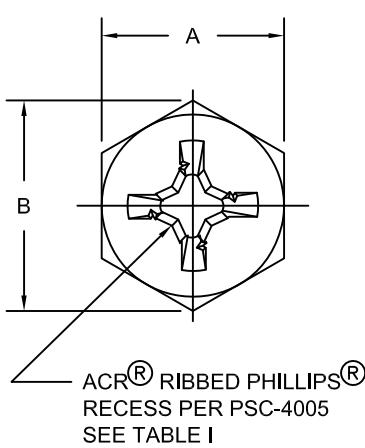
DRAWING NUMBER

**PSC-740**

SHEET 2 OF 2

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HEAD MARKING SHALL BE RAISED OR DEPRESSED (.010 MAX) AND ARRANGED AS FOLLOWS:

- MARK WITH BASIC PART NUMBER ("PSC" OPTIONAL) EXCEPT MARK .1120-40 SIZE WITH "4", .1380-32 SIZE WITH "6", .1640-32 SIZE WITH "8", AND OPTIONAL .1900-32 SIZE WITH "10". ALSO MARK 'C' FOR A286 CRES.
- MARK WITH LENGTH DASH NUMBER AND MARK WITH MANUFACTURER'S SYMBOL OR TRADEMARK (SYMBOL LOCATION OPTIONAL IN ANY SECTOR)
- MARK WITH RECESS DASH NUMBER, ENCIRCLED. RECESS NUMBER SHOULD BE APPROXIMATELY 25% LARGER THAN OTHER NUMERALS IN HEAD MARKING. (NOTE 9 )

TABLE I DIMENSIONS

Ø DASH NUMBER	THREAD SIZE	HEX A	MIN. B	MAX. ØD	H	DIA. MIN. J	RADIUS R	DIA. MAX. U	RECESS TORQUE IN-LBS MIN.(6)	RAISED METAL MAX.(6)	RECESS SIZE
-04	.1120-40	.189/.181	.207	.112	.060/.049	.156	.010/.005	.031	13	.005	1
-06	.1380-32	.251/.243	.268	.138	.093/.080	.215	.010/.005	.039	25	.005	2
-08	.1640-32	.251/243	.268	.164	.110/.096	.215	.020/.010	.039	35	.005	
-3	.1900-32	.313/.305	.339	.190	.120/.105	.275	.020/.010	.039	50	.005	

TABLE II

DASH NO.	DASH NUMBER FOR PREFERRED LENGTH																							
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	20	22	24	26	28	30	32	34 TO 96	
LENGTH	.19	.25	.31	.38	.44	.50	.56	.62	.69	.75	.81	.88	.94	1.00	1.12	1.25	1.38	1.50	1.62	1.75	1.88	2.00	2.12 TO 6.00	
LENGTH TOL.	+.00 -.03												+.00 -.06											

REVISION 1/ CAD DWG.  
08-09-04  
2/ UPDATE  
05-01-13  
3/ UPDATE  
05-22-14

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TITLE: SCREW, HEX HEAD, FULL THREAD  
ACR® RIBBED PHILLIPS® RECESS  
A286 CRES, NON-LOCKING

DRAWN: S. GUARINO DATE: 09-14-79  
CHECKED: G. LaMONICA DATE: 08-09-04

DRAWING NUMBER  
**PSC-741**  
SHEET 1 OF 2

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
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HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

MATERIAL: A286 CORROSION RESISTANT STEEL WITH COMPOSITION PER AMS 5731 OR AMS 5737

HEAT TREAT: 160 KSI MINIMUM ULTIMATE TENSILE.

FINISH: UNPLATED SCREWS - PASSIVATED TO MEET REQUIREMENTS OF NAS 4003.

PLATED SCREWS - CADMIUM PLATE PER QQ-P-416, TYPE II, CLASS 2. EMBRITTLEMENT TEST PER QQ-P-416 DOES NOT APPLY. PARTS PLATED TO CLASS 3 MAY BE USED UNTIL STOCK IS DEPLETED. CADMIUM PLATED A286 CRES SCREWS SHALL BE IDENTIFIED WITH GREEN DYE OR PAINT ON THE THREAD END. MAXIMUM COVERAGE MAY INCLUDE THE CHAMFER PLUS ONE INCOMPLETE THREAD.

COATED SCREWS - ALUMINUM COATING PER NAS4006.

CODE: BASIC PART NUMBER = NON SELF-LOCKING SCREW (SEE TABLE I).  
FIRST DASH NUMBER INDICATES DIAMETER.  
ADD "A" AFTER DIAMETER DASH NUMBER FOR ALUMINUM COATED SCREWS. MAY BE USED WITH "L" OR ADD "U" AFTER DIAMETER DASH NUMBER FOR UNPLATED SCREWS.  
SECOND DASH NUMBER INDICATES LENGTH IN .0625 INCREMENTS. SEE TABLE II FOR TABULATIONS OF LENGTH DIMENSIONS. INTERMEDIATE OR LONGER LENGTHS MAY BE SPECIFIED BY USE OF WHOLE DASH NUMBERS ONLY.

EXAMPLE OF PART NUMBER:

PSC741-3-10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, CADMIUM PLATED.  
PSC741-3A10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, ALUMINUM COATED.  
PSC741-3U10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, UNPLATED.

NOTES:

- (1) DIAMETER OF UNTHREADED PORTION OF SHANK SHALL NOT BE LESS THAN MINIMUM PITCH DIAMETER NOR MORE THAN MAXIMUM MAJOR DIAMETER OF THREAD.
- (2) SCREWS LESS THAN 2 DIAMETERS IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF BEARING SURFACE OF HEAD AND INCOMPLETE THREADS MAY EXTEND UP TO BEARING SURFACE.  
SCREWS 2 DIAMETERS THRU 2 INCHES IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF TANGENCY OF "R" AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.  
SCREWS LONGER THAN 2 INCHES - COMPLETE THREADS SHALL EXTEND A MINIMUM OF 1.75 INCHES FROM END OF SCREWS AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.  
INCOMPLETE THREADS - SEE NAS4003.
- (3) CONCENTRICITY: 'J' DIAMETER TO THREAD PITCH DIAMETER WITHIN .005 FIM.
- (4) MAXIMUM 'J' DIAMETER SHALL NOT EXCEED ACTUAL 'A' DIMENSION.
- (5) BEARING SURFACE SQUARENESS: WITHIN .003 FIM OF SHANK DIAMETER.
- (6) MINIMUM TORQUE VALUES (LBF-IN) WHICH RECESS MUST DEVELOP IN REMOVAL DIRECTION WITH APPROPRIATE DRIVERS PER PSC-1201 THROUGH PSC-1204 AND 5 POUND MAXIMUM END LOAD. PARTS ARE ACCEPTABLE IF RAISED METAL AT EDGE DOES NOT EXCEED TABULATED VALUES.
- (7) DIMENSIONS TO BE MET AFTER PLATING OR COATING.
- (8) DIMENSIONS ARE IN INCHES.
- (9) "A" = ALUMINUM COATED AND "U" = UNPLATED CODES NEED NOT APPEAR ON THE HEAD OF THE BOLT.
- (10) MAGNETIC PERMEABILITY SHALL BE LESS THAN 2.0 (AIR = 1.0) FOR FIELD STRENGTH H = 200 OERSTEDS USING A MAGNETIC PERMEABILITY INDICATOR PER ASTM A342/A 342, TEST METHOD 3.

SURFACE TEXTURE:

HEAD TO SHANK FILLET, THREAD FLANKS AND THREAD ROOT 32 MICROINCHES RA; BEARING SURFACE OF HEAD 63 MICROINCHES RA; OTHER SURFACES 125 MICROINCHES RA PER ASME B46.1.

PROCUREMENT SPECIFICATION:

NAS4003, EXCEPT AS NOTED. COLD WORKING OF HEAD TO SHANK FILLET IS NOT REQUIRED.

PREPARED FOR ROLLS-ROYCE TO REPLACE NAS6000-6003

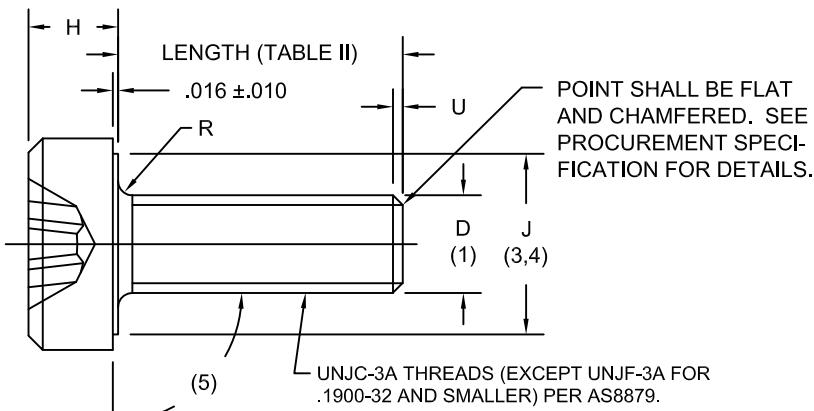
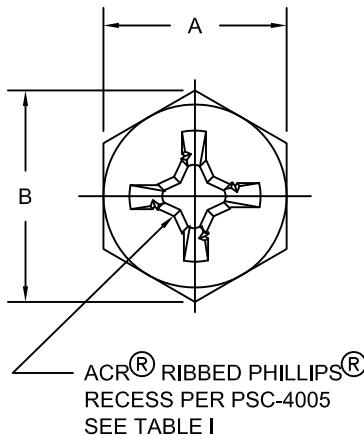
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TITLE: <b>SCREW, HEX HEAD, FULL THREAD ACR® RIBBED PHILLIPS® RECESS A286 CRES, NON-LOCKING</b>		DRAWING NUMBER <b>PSC-741</b>
DRAWN: S. GUARINO	DATE: 09-14-79	
CHECKED: G. LaMONICA	DATE: 08-09-04	SHEET 2 OF 2
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

        
PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ  
HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

REVISION 1/CAD DWG. 08-09-04 2/UPDATE 05-01-13 3/UPDATE 05-22-14



HEAD MARKING SHALL BE RAISED OR DEPRESSED (.010 MAX) AND ARRANGED AS FOLLOWS:

- MARK WITH BASIC PART NUMBER ("PSC" OPTIONAL) EXCEPT MARK .1120-40 SIZE WITH "4", .1380-32 SIZE WITH "6", .1640-32 SIZE WITH "8", AND OPTIONAL .1900-32 SIZE WITH "10". ALSO MARK 'V' FOR TITANIUM.
- MARK WITH LENGTH DASH NUMBER AND MARK WITH MANUFACTURER'S SYMBOL OR TRADEMARK (SYMBOL LOCATION OPTIONAL IN ANY SECTOR)
- MARK WITH RECESS DASH NUMBER, ENCIRCLED. RECESS NUMBER SHOULD BE APPROXIMATELY 25% LARGER THAN OTHER NUMERALS IN HEAD MARKING. (NOTE 9 )

TABLE I DIMENSIONS

Ø DASH NUMBER	THREAD SIZE	HEX A	MIN. B	MAX. ØD	H	DIA. MIN. J	RADIUS R	DIA. MAX. U	RECESS TORQUE IN-LBS MIN.(6)	RAISED METAL MAX.(6)	RECESS SIZE
-04	.1120-40	.189/.181	.207	.112	.060/.049	.156	.010/.005	.031	13	.005	1
-06	.1380-32	.251/.243	.268	.138	.093/.080	.215	.010/.005	.039	25	.005	2
-08	.1640-32	.251/243	.268	.164	.110/.096	.215	.020/.010	.039	35	.005	
-3	.1900-32	.313/.305	.339	.190	.120/.105	.275	.020/.010	.039	50	.005	

TABLE II

DASH NO.	DASH NUMBER FOR PREFERRED LENGTH																						
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	20	22	24	26	28	30	32	34 TO 96
LENGTH	.19	.25	.31	.38	.44	.50	.56	.62	.69	.75	.81	.88	.94	1.00	1.12	1.25	1.38	1.50	1.62	1.75	1.88	2.00	2.12 TO 6.00
LENGTH TOL.	+.00 -.03										+.00 -.06										+.00 -.09		

REVISION 1/ CAD DWG. 08-09-04  
2/ UPDATE 05-01-13  
3/ UPDATE 05-23-14

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TITLE: SCREW, HEX HEAD, FULL THREAD  
ACR® RIBBED PHILLIPS® RECESS  
6AL-4V TITANIUM ALLOY, NON-LOCKING

DRAWN: S. GUARINO	DATE: 09-13-79	DRAWING NUMBER <b>PSC-742</b>
CHECKED: G. LaMONICA	DATE: 08-09-04	
SHEET 1 OF 2		
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ  
HEXSTIX POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

MATERIAL: 6AL-4V TITANIUM ALLOY PER AMS 4928 OR AMS 4967.

HEAT TREAT: 160 TO 180 KSI ULTIMATE TENSILE.

FINISH: UNPLATED SCREWS - NONE

PLATED SCREWS - CADMIUM PLATE PER QQ-P-416, TYPE II, CLASS 2, EXCEPT A NICKEL STRIKE MAY BE USED PRIOR TO CADMIUM PLATING. PARTS PLATED TO CLASS 3 MAY BE USED UNTIL STOCK IS DEPLETED. CADMIUM PLATED 6AL-4V TITANIUM ALLOY SCREWS SHALL BE IDENTIFIED WITH RED DYE OR PAINT ON THE THREAD END. MAXIMUM COVERAGE MAY INCLUDE THE CHAMFER PLUS ONE INCOMPLETE THREAD.

COATED SCREWS - ALUMINUM COATING PER NAS4006.

CODE: BASIC PART NUMBER = NON SELF-LOCKING SCREW (SEE TABLE I). FIRST DASH NUMBER INDICATES DIAMETER.

ADD "A" AFTER DIAMETER DASH NUMBER FOR ALUMINUM COATED SCREWS.

ADD "U" AFTER DIAMETER DASH NUMBER FOR UNPLATED SCREWS.

SECOND DASH NUMBER INDICATES LENGTH IN .0625 INCREMENTS. SEE TABLE II FOR TABULATIONS OF LENGTH DIMENSIONS. INTERMEDIATE OR LONGER LENGTHS MAY BE SPECIFIED BY USE OF WHOLE DASH NUMBERS ONLY.

EXAMPLE OF PART NUMBER:

PSC742-3-10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, CADMIUM PLATED.

PSC742-3A10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, ALUMINUM COATED.

PSC742-3U10 = SCREW, .1900 THREAD, .625 LENGTH, NON-LOCKING, UNPLATED.

NOTES:

- (1) DIAMETER OF UNTHEADED PORTION OF SCREW SHALL NOT BE LESS THAN MINIMUM PITCH DIAMETER NOR MORE THAN MAXIMUM MAJOR DIAMETER OF THREAD.
- (2) SCREWS LESS THAN 2 DIAMETERS IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF BEARING SURFACE OF HEAD AND INCOMPLETE THREADS MAY EXTEND UP TO BEARING SURFACE.  
SCREWS 2 DIAMETERS THRU 2 INCHES IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF TANGENCY OF "R" AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.  
SCREWS LONGER THAN 2 INCHES - COMPLETE THREADS SHALL EXTEND A MINIMUM OF 1.75 INCHES FROM END OF SCREWS AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.  
INCOMPLETE THREADS - SEE NAS4004.
- (3) CONCENTRICITY: 'J' DIAMETER TO THREAD PITCH DIAMETER WITHIN .005 FIM.
- (4) MAXIMUM 'J' DIAMETER SHALL NOT EXCEED ACTUAL 'A' DIMENSION.
- (5) BEARING SURFACE SQUARENESS: WITHIN .003 FIM OF SHANK DIAMETER.
- (6) MINIMUM TORQUE VALUES (LBF-IN) WHICH RECESS MUST DEVELOP IN REMOVAL DIRECTION WITH APPROPRIATE DRIVERS PER PSC1201 THROUGH PSC-1204 AND 5 POUND MAXIMUM END LOAD. PARTS ARE ACCEPTABLE IF RAISED METAL AT EDGE DOES NOT EXCEED TABULATED VALUES.
- (7) DIMENSIONS TO BE MET AFTER PLATING.
- (8) DIMENSIONS ARE IN INCHES.
- (9) "A" = ALUMINUM COATED AND "U" = UNPLATED CODES NEED NOT APPEAR ON THE HEAD OF THE BOLT.

SURFACE TEXTURE:

HEAD TO SHANK FILLET, THREAD FLANKS AND THREAD ROOT 32 MICROINCHES RA;  
BEARING SURFACE OF HEAD 63 MICROINCHES RA; OTHER SURFACES 125 MICROINCHES RA PER ASME B46.1.

PROCUREMENT SPECIFICATION:

NAS4004, EXCEPT AS NOTED. COLD WORKING OF HEAD TO SHANK FILLET IS NOT REQUIRED.

PREPARED FOR ROLLS-ROYCE TO REPLACE NAS6100-6103

REVISION 1/CAD DWG. 2/UPDATE 3/UPDATE  
08-09-04 05-01-13 05-23-14

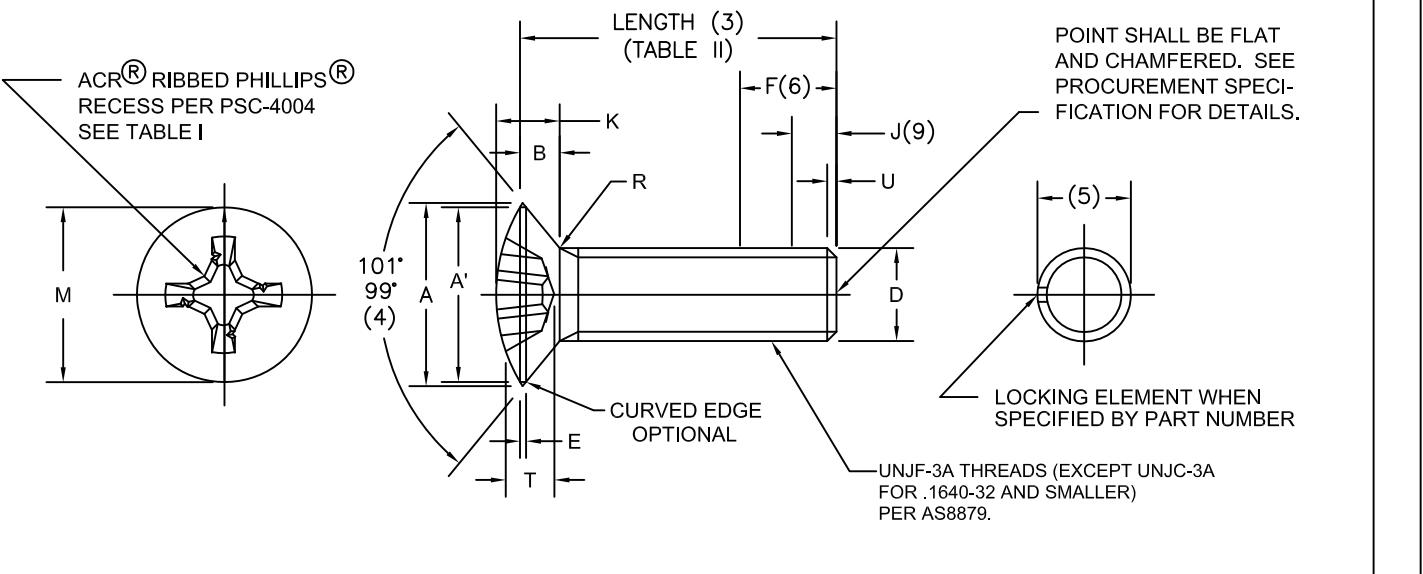
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TITLE: SCREW, HEX HEAD, FULL THREAD  
ACR® RIBBED PHILLIPS® RECESS  
6AL-4V TITANIUM ALLOY, NON-LOCKING

DRAWN: S. GUARINO	DATE: 09-13-79	DRAWING NUMBER <b>PSC-742</b>
CHECKED: G. LaMONICA	DATE: 08-09-04	
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ  
HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



HEAD MARKING SHALL BE DEPRESSED (.010 MAX) AND ARRANGED AS FOLLOWS:

- MARK WITH BASIC PART NUMBER ("PSC" OPTIONAL) EXCEPT MARK .1120-40 SIZE WITH "4", .1380-32 SIZE WITH "6", .1640-32 SIZE WITH "8", AND OPTIONAL .1900-32 SIZE WITH "10". THESE SIZES ALSO TO BE MARKED "C" FOR A286.
- MARK WITH MANUFACTURER'S SYMBOL OR TRADEMARK (SYMBOL LOCATION OPTIONAL IN ANY SECTOR ) LENGTH DASH NUMBER AND "L" OR "P" WHEN APPLICABLE. (SEE NOTE 9 ) "L" IDENTIFIES SCREWS WITH OPTIONAL LOCKING ELEMENT. "P" IDENTIFIES SCREWS WITH PATCH TYPE LOCKING ELEMENT ONLY.
- MARK WITH RECESS DASH NUMBER, ENCIRCLED. RECESS NUMBER SHOULD BE APPROXIMATELY 25% LARGER THAN OTHER NUMERALS IN HEAD MARKING.

TABLE I - DIMENSIONS

Ø DASH NUMBER	THREAD SIZE	NOTE 2 MAX. ØA	ABSOLUTE MIN. ØA'	NOTE 2 MAX. B	MAX. ØD	MAX. E	NOTE 6 F	NOTE 7 J	NOTE 2 MAX. K	RADIUS R	MAX. U	RECESS SIZE
-04	.1120-40	.226	.193	.044	.112	.010	.125	.075	.085	.012 .002	.031	1
-06	.1380-32	.280	.246	.061	.138	.010			.105			
-08	.1640-32	.331	.296	.072	.164	.012	.156	.094	.124		.039	2
-3	.1900-32	.381	.338	.082	.190	.015			.143	.020 .010		
-4	.2500-28	.508	.456	.111	.250	.018	.178	.107	.189		.045	3
-5	.3125-24	.635	.575	.138	.312	.021			.237	.025 .010		
-6	.3750-24	.763	.692	.166	.375	.025	.208	.125	.282	.030 .015	.052	4L

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TITLE: SCREW, 100° OVAL HD, FULL THREAD  
ACR® RIBBED PHILLIPS® RECESS, A286 CRES  
SELF-LOCKING AND NONLOCKING

DRAWN: S. GUARINO DATE: 09-11-79 DRAWING NUMBER

**PSC-743**

CHECKED: G. LaMONICA DATE: 04-22-04 SHEET 1 OF 3

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ  
HEXTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

TABLE II - RECESS DIMENSIONS

Ø DASH NUMBER	THREAD SIZE	RECESS SIZE	ØM	T	GAGE PENETRATION		TORQUE IN-LBS MIN (8)	RAISED METAL MAX (8)
					MAX.	MIN.		
-04	.1120-40	1	.125 .112	.083 .065	.076	.058	13	.005
-06	.1380-32	2	.178 .165	.105 .081	.094	.069	25	.005
-08	.1640-32	2	.192 .179	.119 .095	.108	.084	35	.005
-3	.1900-32	2	.209 .196	.137 .113	.126	.102	50	.005
-4	.2500-28	3	.290 .277	.172 .148	.155	.131	125	.005
-5	.3125-24	4L	.390 .377	.234 .210	.214	.190	230	.005
-6	.3750-24	4L	.410 .397	.255 .232	.235	.212	300	.006

TABLE III

	DASH NUMBER FOR PREFERRED LENGTH																						
DASH NO.	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	20	22	24	26	28	30	32	34 TO 96
LENGTH	.19	.25	.31	.38	.44	.50	.56	.62	.69	.75	.81	.88	.94	1.00	1.12	1.25	1.38	1.50	1.62	1.75	1.88	2.00	2.12 TO 6.00
LENGTH TOL.	+.00 -.03												+.00 -.06						+.00 -.09				

MATERIAL: A286 CORROSION RESISTANT STEEL WITH COMPOSITION PER AMS 5731 OR AMS 5737.  
LOCKING ELEMENT- PLASTIC PER MIL-DTL-18240 AND QPL-18240.

HEAT TREAT: 160 KSI MINIMUM ULTIMATE TENSILE.

FINISH: UNPLATED SCREWS - PASSIVATE TO MEET REQUIREMENTS OF NAS4003.

PLATED SCREWS - CADMIUM PLATE PER QQ-P-416, TYPE II, CLASS 2. PARTS PLATED TO CLASS 3 MAY BE USED UNTIL STOCK IS DEPLETED. EMBRITTLEMENT TEST PER QQ-P-416 DOES NOT APPLY. CADMIUM PLATED A286 CRES SCREWS SHALL BE IDENTIFIED WITH GREEN DYE OR PAINT ON THE THREAD END. MAXIMUM COVERAGE MAY INCLUDE THE CHAMFER PLUS ONE INCOMPLETE THREAD.

COATED SCREWS - ALUMINUM COATING PER NAS4006.

CODE: BASIC PART NUMBER = NON-LOCKING, PLATED SCREW. SEE TABLE II AND III.

FIRST DASH NUMBER INDICATES DIAMETER. SEE TABLE II.

SECOND DASH NUMBER INDICATES LENGTH IN .0625 INCREMENTS (ROUNDED TO TWO DECIMAL PLACES). SEE TABLE III FOR TABULATIONS OF LENGTH DIMENSIONS. USE OF .25 INCH INCREMENTS IS RECOMMENDED FOR SCREWS OVER 3 INCHES LONG. INTERMEDIATE OR LONGER LENGTHS MAY BE SPECIFIED BY USE OF WHOLE DASH NUMBER ONLY.

ADD "A" AFTER DIAMETER DASH NUMBER FOR ALUMINUM COATED SCREWS. MAY BE USED WITH "L" OR "P" CODE.

ADD "L" AFTER DIAMETER DASH NUMBER FOR SELF-LOCKING SCREWS WITH OPTIONAL LOCKING ELEMENT (INCLUDING PATCH TYPE); SEE PROCUREMENT SPECIFICATIONS. DO NOT USE WITH "P" CODE.

ADD "U" AFTER DIAMETER DASH NUMBER FOR UNPLATED SCREWS. MAY BE USED WITH "L" OR "P" CODE.

ADD "P" AFTER DIAMETER DASH NUMBER FOR SELF-LOCKING SCREWS WITH PATCH TYPE LOCKING ELEMENT ONLY; SEE PROCUREMENT SPECIFICATIONS. DO NOT USE WITH "L" CODE.

WHEN MULTIPLE LETTER CODES ARE USED, SEQUENCE MUST BE IN ALPHABETICAL ORDER.

REVISION 1/CAD DWG. 2/UPDATE 05-01-13 3/UPDATE 05-23-14

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TITLE: SCREW, 100° OVAL HD, FULL THREAD  
ACR® RIBBED PHILLIPS® RECESS, A286 CRES  
SELF-LOCKING AND NONLOCKING

DRAWN: S. GUARINO	DATE: 09-11-79	DRAWING NUMBER <b>PSC-743</b>
CHECKED: G. LaMONICA	DATE: 04-22-04	
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ®  
HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

EXAMPLE OF PART NUMBER:

PSC743-3-10 = SCREW, .1900-32 THREAD, .62 LENGTH, NON-LOCKING, PLATED.  
 PSC743-3A10 = SCREW, .1900-32 THREAD, .62 LENGTH, NON-LOCKING, ALUMINUM COATED.  
 PSC743-3L10 = SCREW, .1900-32 THREAD, .62 LENGTH, SELF-LOCKING, OPTIONAL CONFIGURATION, PLATED.  
 PSC743-3LU10 = SCREW, .1900-32 THREAD, .62 LENGTH, SELF-LOCKING, OPTIONAL CONFIGURATION, UNPLATED.  
 PSC743-3PU10 = SCREW, .1900-32 THREAD, .62 LENGTH, SELF-LOCKING, PATCH TYPE, UNPLATED.

NOTES:

- (1) DIAMETER OF UNTHEADED PORTION OF SHANK SHALL NOT BE LESS THAN MINIMUM PITCH DIAMETER NOR MORE THAN MAXIMUM MAJOR DIAMETER OF THREAD.
- (2) DIMENSION "A" APPLIES TO THE SHARP CORNER INTERSECTION OF 101°/99° CONE AND TOP OF HEAD (WITHOUT THE OVAL CROWN). DIMENSIONS B AND K ARE INCLUDED FOR ENGINEERING REFERENCE ONLY AND ARE NOT TO BE USED FOR INSPECTION.
- (3) SCREWS 2 INCHES LONG OR SHORTER - THREADS SHALL EXTEND TO WITHIN .03 OF POINT OF TANGENCY OF "R" BUT SHALL NOT ENTER "R" FILLET AREA.  
SCREWS LONGER THAN 2 INCHES - SHALL HAVE A MINIMUM COMPLETE THREAD LENGTH OF 1.75 INCHES. MAXIMUM THREAD LENGTH SHALL NOT ENTER "R" FILLET AREA.
- INCOMPLETE THREADS - SEE NAS4003.
- (4) CONCENTRICITY: CONICAL SURFACE OF HEAD TO THREAD PITCH DIAMETER WITHIN .005 FIM.
- (5) PROTRUSION OF LOCKING ELEMENTS SHALL BE CONTROLLED SO THAT IT WILL PASS FREELY OR WITH FINGER PRESSURE THROUGH A RING GAGE WITH DIAMETER OF .010 (.001, -.000) GREATER THAN MAXIMUM MAJOR DIAMETER OF SCREW THREAD.
- (6) "F" MINIMUM (5 THREAD PITCHES) = REGION OF MINIMUM ENGAGEMENT WITH FEMALE THREAD REQUIRED TO MEET MIL-DTL-18240 REQUIREMENTS. LOCKING ELEMENT WITHIN "F" REGION MUST DEVELOP REQUIRED TORQUE WHEN TESTED PER MIL-DTL-18240.
- (7) FOR EASE OF STARTING, LOCKING ELEMENT SHALL NOT BE EFFECTIVE IN "J" AREA (3 THREAD PITCHES).
- (8) MINIMUM TORQUE VALUES (LBF-IN) WHICH RECESS MUST DEVELOP IN REMOVAL DIRECTION WITH APPROPRIATE DRIVERS PER PSC-1201 THROUGH PSC-1204 AND 5 POUND MAXIMUM END LOAD. PARTS ARE ACCEPTABLE IF RAISED METAL AT EDGE OF RECESS DOES NOT EXCEED TABULATED VALUES.
- (9) "A" = ALUMINUM COATED AND "U" = UNPLATED CODES NEED NOT APPEAR ON THE HEAD OF THE BOLT.
- (10) MAGNETIC PERMEABILITY SHALL BE LESS THAN 2.0 (AIR = 1.0) FOR FIELD STRENGTH H = 200 OERSTEDS USING A MAGNETIC PERMEABILITY INDICATOR PER ASTM A342/A 342M, TEST METHOD 3..
- (11) DIMENSIONS TO BE MET AFTER PLATING.
- (12) DIMENSIONS ARE IN INCHES.

SURFACE TEXTURE:

HEAD TO SHANK FILLET, THREAD FLANKS AND THREAD ROOT 32 MICROINCHES RA;  
 CONICAL SURFACE OF HEAD 63 MICROINCHES RA; OTHER SURFACES 125 MICROINCHES RA PER ASME B46.1.

PROCUREMENT SPECIFICATION:

NAS4003, EXCEPT AS NOTED. COLD WORK OF HEAD TO SHANK FILLET IS NOT REQUIRED.  
 LOCKING ELEMENT FOR SELF-LOCKING SCREWS: PER NASM15981 AND MIL-DTL-18240. ANY TYPE OF CONFIGURATION IS OPTIONAL WHEN "L" CODE IS SPECIFIED. PATCH TYPE LOCKING ELEMENT (WITH NO METAL REMOVED) IS REQUIRED WHEN "P" CODE IS SPECIFIED. LOCKING ELEMENT MUST BE SUPPLIED BY A QUALIFIED SOURCE LISTED IN QPL18240 OR APPROVED FOR LISTING IN QPL18240. SHIPPING NOTICE SHOULD IDENTIFY THE SUPPLIER OF SCREW AND LOCKING ELEMENT SEPARATELY.

PREPARED FOR ROLLS-ROYCE TO REPLACE NAS6500-6506.

REVISION 1/CAD DWG. 2/UPDATE 3/UPDATE  
08-09-04 05-01-13 05-23-14

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	DRAWN: S. GUARINO	DATE: 09-11-79	DRAWING NUMBER <b>PSC-743</b>
	CHECKED: G. LaMONICA	DATE: 04-22-04	SHEET 3 OF 3
	PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		
<b>PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ</b> <small>HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY</small>			

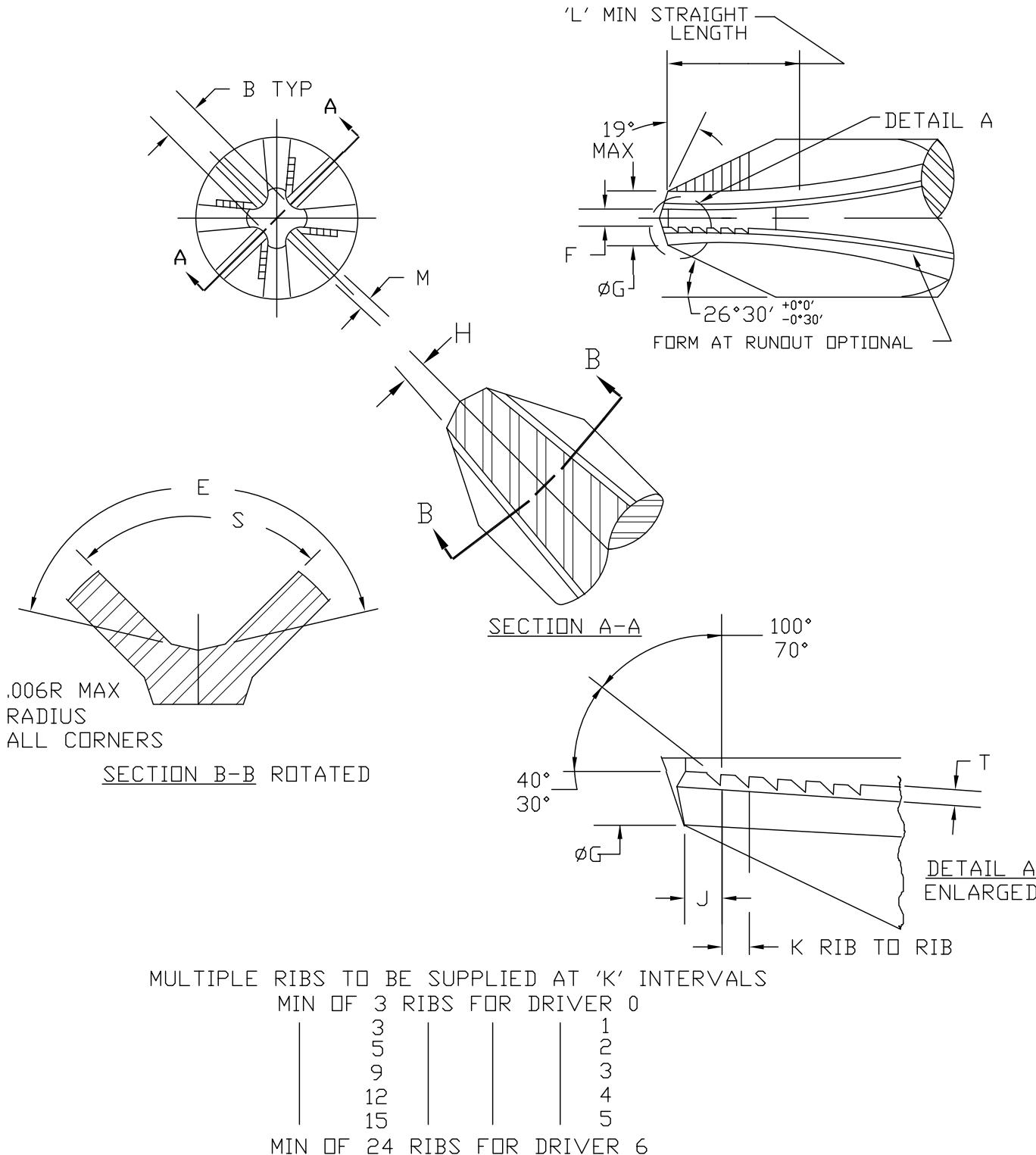
# ACR® RIBBED PHILLIPS® ENGINEERING MANUAL

May 1, 2013  
Update

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**FIGURE 1**



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TITLE:

**DRIVER POINT DIMENSIONS  
ACR® RIBBED PHILLIPS® RECESS**

DRAWN:

S. BRENNAN

CHECKED:

J. GRADY

DATE:

MARCH 1985

DATE:

OCT 1987

DRAWING NUMBER

**PSC-1001**

SHEET 1 OF 2

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HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

SEPT. 11, 1988 REVISED MAY 1, 2013

**TABLE I**

DRIVER SIZE	B ±.0010	E <sup>+0° 30'</sup> -0° 0'	F OVER RIB	G ±.001	H <sup>+0° 0'</sup> -0° 30'	J MAX	K	L MIN	M ±.001	S <sup>+0° 30'</sup> -0° 0'	T
0	.0230	.0109 RAD .0082	.010- .012	.032	7° 0'	.015	.010- .017	.125	.0114- .0151		.001- .002
1	.0394	138° 0'	.018- .021	.050	7° 0'		.025	.125	.0202		
2	.0606	140° 0'	.023- .025	.090	5° 45'		.015- .022	.188	.0434		.002- .004
3	.0983	146° 0'	.029- .031	.150	5° 45'	.045		.281	.0826	92° 0'	
4	.1407	153° 0'	.041- .044	.200	7° 0'			.344	.1078		
5	.2310	162° 46'	.060- .063	.311	7° 0'		.050	.531	.1730		
6	.2805	157° 57'	.086- .089	.374	7° 0'			.026- .033	.875	.1950	.004- .006

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TITLE:

**DRIVER POINT DIMENSIONS**  
**ACR® RIBBED PHILLIPS® RECESS**

DRAWN:

S. BRENNAN

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1985

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**PSC-1001**

SHEET 2 OF 2

CHECKED:

J. GRADY

DATE:

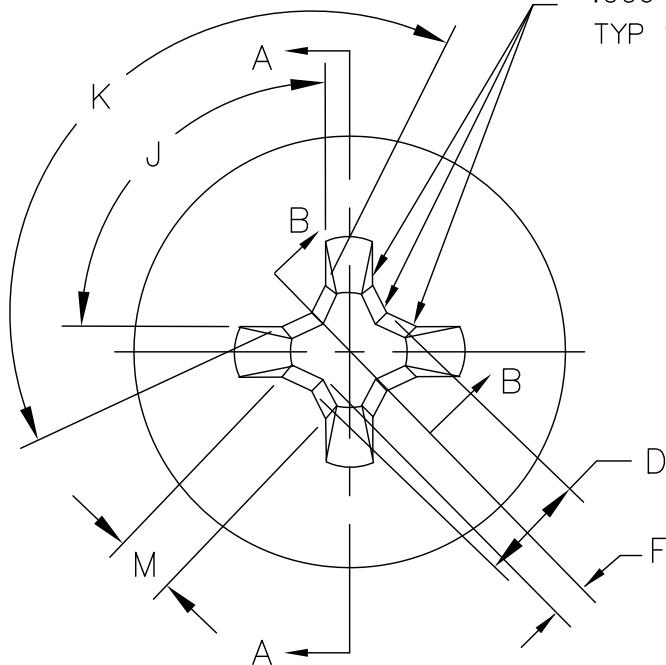
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1987

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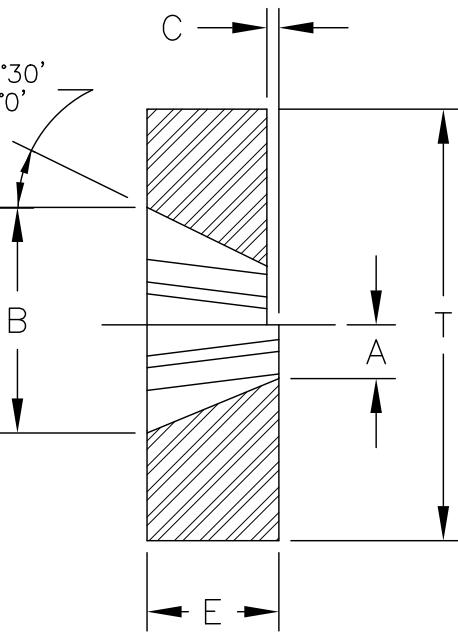
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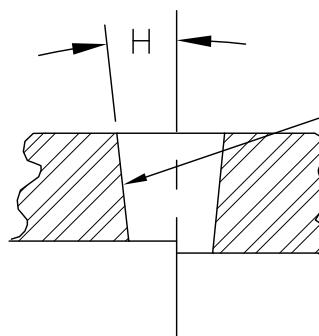


.006 R MAX  
TYP 12 PLACES

$26^\circ 30' +0^\circ 30'$   
 $-0^\circ 0'$



SECTION A-A



SECTION B-B

**TABLE I**

DASH NUMBER	A ±.0002	B REF	C ±.001	D REF	E +.000 -.015	F +.0004 -.0000	H +0° 15' -0° 0'	J +0° 0' -0° 15'	K +0° 0' -0° 15'	M ±.001	T ±.020
0	.0165	.123	.010	.046	.094	.0112	7° 0'	92° 0'	.0075 <sub>.0101 RAD</sub>	—	1.250
1	.0255	.176	.010	.070	.125	.0194	7° 0'	92° 0'	138° 0'	.017	1.250
2	.0455	.278	.010	.098	.188	.0303	5° 45'	92° 0'	140° 0'	.032	1.250
3	.0755	.432	.010	.156	.281	.0496	5° 45'	92° 0'	146° 0'	.079	1.250
4	.1005	.544	.010	.227	.344	.0711	7° 0'	92° 0'	153° 0'	.095	1.250
5	.1560	.748	.010	.340	.438	.1166	7° 0'	92° 0'	162° 46'	.160	1.250
6	.1875	.998	.015	.437	.625	.1408	7° 0'	92° 0'	159° 57'	.183	1.500

1/ ECO 9 2/ ECO 21  
FEB. 21, 1980 SEPT. 11, 1988 REVISION  
MAY 1, 2013

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TITLE:

## RING GAGE ACR® RIBBED PHILLIPS® DRIVER BITS

DRAWN:  
S. GUARINO

CHECKED:  
J. GRADY

DATE:  
11/27/1979

DATE:  
10/01/1987

DRAWING NUMBER

**PSC-1005**

SHEET 1 OF 3

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
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HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

**NOTES:**

## 1. REQUIREMENTS:

- A. Description: Driver Point Inspection Gage for ACR® Ribbed Phillips® substituted.
  - B. Material: AISI D2 Reference, material of better formability may be substituted.
  - C. Hardness: 58–62 Rc.
  - D. Design and Construction:
    - (1) Dimensions and configuration shall conform to Figure 1.
    - (2) All dimensions are in inches.
  - E. Application and design criteria:
    - (1) Intended Use: Inspection of ACR® Ribbed Phillips® Driver Point
    - (2) Design and usage limitations: Not to be used for any torque testing.
  - F. Workmanship: Hanging burrs and slivers which might become dislodged under usage shall be removed. Parts shall be clean and free from surface contamination.
2. MARKING: Identify top surface with this drawing number and applicable dash number. Serial numbers shall be assigned and etched onto the parts only after all inspections are complete and the parts accepted.
3. QUALITY ASSURANCE PROVISIONS: Quality Assurance Provisions shall be as specified herein.
- A. Lot Verification Records: Inspection and control records shall be maintained by Phillips Screw Company and shall be available for review by the user for a minimum period of five years.
  - B. Responsibility for Inspection: Unless otherwise specified in the contract or order, Phillips Screw Company is responsible for the performance of all inspection requirements as specified herein.
  - C. Change of Product: Any change of product as regards materials, finishes, design, construction, or methods of manufacture shall require review and approval of Phillips Screw Company prior to incorporation.
  - D. Screening Inspection: 100 percent screening inspection shall consist of the examinations and tests listed in Table II.
  - E. Quality Conformance Inspection: Quality conformance inspection shall consist of the examinations and tests listed in Table III.
4. Only the item(s) described on this drawing when procured from the vendor(s) listed hereon is approved by Phillips Screw Company for use in the application specified hereon. A substitute item shall not be used without prior approval by Phillips Screw Company.

1/ ECO 9 FEB. 21, 1980	2/ ECO 21 SEPT. 11, 1988	REVISION MAY 1, 2013
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TITLE:

**RING GAGE****ACR® RIBBED PHILLIPS® DRIVER BITS**

DRAWN:

S. GUARINO

DATE:

11/27/1979

DRAWING NUMBER

**PSC-1005**

CHECKED:

J. GRADY

DATE:

10/01/1987

SHEET 2 OF 3

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HEXSTIX<sup>®</sup> POZILOCK<sup>®</sup> ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

TABLE II	
100 PERCENT SCREENING INSPECTION	
TESTING SEQUENCE	CONDITIONS AND REQUIREMENTS
Dimensions: ANGLE H	
A	
ANGLE K	MILLING ANGLE GAGE PSC 1011
ANGLE J	STANDARD INSPECTION EQUIPMENT
F	
C	
M	

TABLE III			
QUALITY CONFORMANCE INSPECTION			
MIL-STD-105		EXAMINATION OR TEST	CONDITIONS AND REQUIREMENTS
LEVEL	AQL		
II	2.5	DIMENSION E	STANDARD INSPECTION EQUIPMENT
		MATERIAL	
		MARKING	

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TITLE:

## RING GAGE ACR® RIBBED PHILLIPS® DRIVER BITS

DRAWN:  
S. GUARINO

DATE:  
11/27/1979

DRAWING NUMBER

**PSC-1005**

SHEET 3 OF 3

CHECKED:  
J. GRADY

DATE:  
10/01/1987

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PHILLIPS II ® PHILLIPS ® POZIDRIV ® ACR ® POZISQUARE ® PHILLIPS SQUARE-DRIV ® TORQ-SET ® TRI-WING ® MORTORQ ®  
HEXSTIX ® POZILOCK ® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

1/ ECO 9 FEB. 21, 1980	2/ ECO 21 SEPT. 11, 1988	3/ ECO 144 SEPT. 16, 2011	REVISION MAY 1, 2013
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1. SCOPE: This specification provides a detailed procedure for or either qualification inspection or referee inspection of ACR® Ribbed Phillips® driver bits and screwdrivers, as performed by Phillips Screw Company.
- 1.1. First Article: First article inspection shall be performed at the discretion of driver bit manufacturer. The procedure delineated herein for qualification testing may be used.
- 1.2. Quality Conformance Inspection: Quality Conformance Inspection shall conform to either MIL-B-9946, NAS7101, or PSC-1200 as applicable.
2. Referenced Documents: The following documents form a part of this specified to the extent specified herein:

**STANDARDS:**

MIL-STD-105 Sampling Plan and Tables for Inspection by Attributes.

**SPECIFICATIONS:**

MIL-B-9946 Bits, Screwdriver, General Specification for

NAS7101 Bit, Screwdriver, Phillips Specification for

DRAWINGS – Phillips Screw Company

PSC-746 Modification to Sturtevant torque test fixtures TTF-1/4 and TTF-1/2 for end load control

PSC-1005 Gage, driver point inspection, ACR® Ribbed Phillips®

PSC-1008 Fixture, Driver torque test, ACR® Ribbed Phillips®

3. EQUIPMENT REQUIRED:

- A. Sturtevant torque test fixture TTF-1/4 (for bits of number 2 size or smaller) or TTF 1/2 (for bits larger than number 2), or equal.
- B. Torque Test Blocks of appropriate size per PSC-1008.
- C. Adapter PSC-1008-A if Sturtevant fixtures are used.
- D. Gage Test Bench, or a toolmakers microscope with adequate fixturing.
- E. Electronic Micrometer, Federal Products Co. Model 230, or equal.
- F. Driver point inspection gages of appropriate size per PSC-1005.

4. TEST PROCEDURES:

- 4.1. Qualification Inspection: Qualification Inspection shall be performed by Phillips Screw Company at initial product qualification and at periodic inspection as required by the Product and Trademark Licenses.

- 4.1.1. Initial Qualification: A minimum of 50 pieces of each bit size and style produced are required.

- 4.1.1.2 Periodic Inspection: A minimum of 5 pieces of each bit size and style produced are required.

- 4.1.2. Defects: Any defect in any qualification test or inspection shall be cause for qualification rejection, or loss of qualification status.

REVISION SEPT. 11, 1988 | REVISION MAY 1, 2013

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**INSPECTION PROCEDURE  
ACR® RIBBED PHILLIPS®  
DRIVER BITS**

DRAWN S. GREGORY	DATE 9-22-94	DRAWING NUMBER <b>PSC-1006</b>
CHECKED: J. GRADY	DATE 18MAR80	
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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#### 4.1.3. Dimensional Inspection:

4.1.3.1. Mounting and Alignment: Mount the bit or driver into a suitable holding fixture, capable of adjustment to provide true alignment of the bit or driver shank. Verify alignment and adjust as necessary using contact gage probes. Rotate the bit or driver to bring the milling angle grooves to the 12, 3, 6, and 9 o'clock positions. Verify with a differential gage tracking in the milling angle groove. Adjust until the reading is at its lowest point as the bit is moved perpendicular to its axis. Traverse parallel to the bit axis at least one-half of the "L" dimension and repeat. While the reading will increase, the null point should remain. If not, adjust bit or driver rotation so that the lowest or null reading lies in the same vertical plane as the bit or driver axis. Establish a reference rotational datum.

#### 4.1.3.2. Measure milling angles ( $4 \nabla H$ ):

- A. Using a contact differential micrometer, with a sensitivity of 0.0001 or better, establish a zero point with the contact probe at the lowest point in the milling angle at the 12 o'clock position and as close to the point cone as practical.
- B. Traverse the bit or gage parallel to the bit axis for at least 80 percent of the minimum straight cut length, measuring both the differential and the distance traversed.
- C. Determine one milling angle as follows:

$$H = \arctan \left( \frac{\text{Differential}}{\text{Traverse}} \right)$$

- D. Rotate the bit 180 degrees, plus or minus 30 arc seconds and repeat steps A through C.
- E. Average the milling angles obtained and record.
- F. Rotate the bit 90 degrees, plus or minus 30 arc seconds. Repeat steps A through E for the milling angles now located in the 12 o'clock and 6 o'clock positions.

#### 4.1.3.3. Measure Throat of Point (Dimension B):

- A. Using an optical sight of at least 40X, with the sight parallel to the bit axis, align the sight crosshairs with the intersection of the milling angle and the point cone at the 12 o'clock position and establish a datum point.
- B. Traverse either the bit or the sighting system across the bit point and measure and record the location of the corresponding point at the 6 o'clock position with respect to the datum set in A above.
- C. Repeat A and B above for the intersections located at the 3 and 9 o'clock positions.

#### 4.1.3.4. Measure Point Cone Diameter (Diameter G):

- A. Position the bit axis perpendicular to the optical sight axis.
- B. Rotate the bit about its axis, placing the wings in the 3, 6, 9, and 12 o'clock positions.
- C. Locate the true or theoretical intersections of the outer wing angle and the point cone at the 12 o'clock position and establish a datum.
- D. Traverse the bit or sight, as applicable, and locate the corresponding point at the 6 o'clock position and record dimension "G".
- E. Rotate the bit 90 degrees, and repeat C and D above.
- F. Average the two readings obtained.

4.1.3.5. Measure Wing Thickness (Dimension F):

- A. With the bit axis perpendicular to the optical sight axis, and the vertical crosshair aligned with the "G" plane, measure the wing thickness at the "G" plane, including the rib height.
- B. Rotate the bit 90 degrees and repeat until all four wings are measured.
- C. Average the four readings obtained.

4.1.3.6. Measure Point Cone Angle and Outer Wing Angle  
( 19° MAX and 26° 30' )

- A. With the bit axis perpendicular to the optical sight axis, measure the point cone and outer wing angles.
- B. Average each set of four readings obtained.

4.1.3.7. Measure Rib Height and Placement:

- A. With the bit axis perpendicular to the optical sight axis, and the bit wings at the 3, 6, 9, and 12 o'clock positions, align the sight crosshair with the removal wing wall surface and establish a datum.
- B. Traverse the sight or bit, as applicable, until the same crosshair is aligned along the crest of the ribs and record the rib height.
- C. Bring the opposite crosshair into alignment with the bit "G" plane and establish a datum.
- D. Traverse parallel to the bit axis until the first rib is aligned with the crosshair and record the "J" dimension. Establish a new datum.
- E. Traverse parallel to the bit axis from rib to rib, measuring the "K" dimension.
- F. Repeat A through E for each of the remaining bit wings.

4.1.4. Gaging: Using a driver bit gage of the appropriate size per PSC-1005 (NAS7101), insert each bit into the gage and ascertain that the driver "G" plane lies between the two plane surfaces on the back of the gage.

4.1.5. Torque Testing: The performance tests of MIL-B-9946 shall be used.

- A. Fixture: Sturtevant Torque Test Fixture TTF-1/4 or TTF 1/2 as applicable.
- B. Test Block: PSC-1008 test blocks of appropriate size.
- C. Axial Load: The Sturtevant fixture shall be tightened not more than necessary to remove all looseness and play in the adapters. If dead weight loads are used in a fixture modified per PSC-746, 40 pounds load shall be used.
- D. Sampling Plan: AQL 2.5, Inspection Level s-2, MIL-STD-105.

**CHECK LIST FOR INSPECTION  
OF ACR<sup>®</sup> RIBBED PHILLIPS<sup>®</sup>  
DRIVER BITS**

Part No.: \_\_\_\_\_  
Description: \_\_\_\_\_  
\_\_\_\_\_

Report No.: \_\_\_\_\_  
Sheet: \_\_\_\_\_ of \_\_\_\_\_  
Date: \_\_\_\_\_  
Inspector: \_\_\_\_\_

Mfr: \_\_\_\_\_  
Lot No. \_\_\_\_\_  
Hardness Range: \_\_\_\_\_

**MEASUREMENTS**

**SPECIFICATIONS**

Sample Size		
Marking		
Visual Inspection		
Gage Fit.		
'B' Throat of Point		
'F' Wing Thickness		
'G' Point Cone Diameter		
'H' Milling Angle		
'J' Distance from 'G' to 1st Rib		
'K' Distance Rib to Rib		
Rib Height		
Point Cone Angle		
Outer Wing Angle		
Ultimate Torsional Strength		
Torsional Fatigue Strength		
Hardness – Rc		

DISPOSITION: Accept \_\_\_\_\_  
Reject \_\_\_\_\_

COMMENTS:

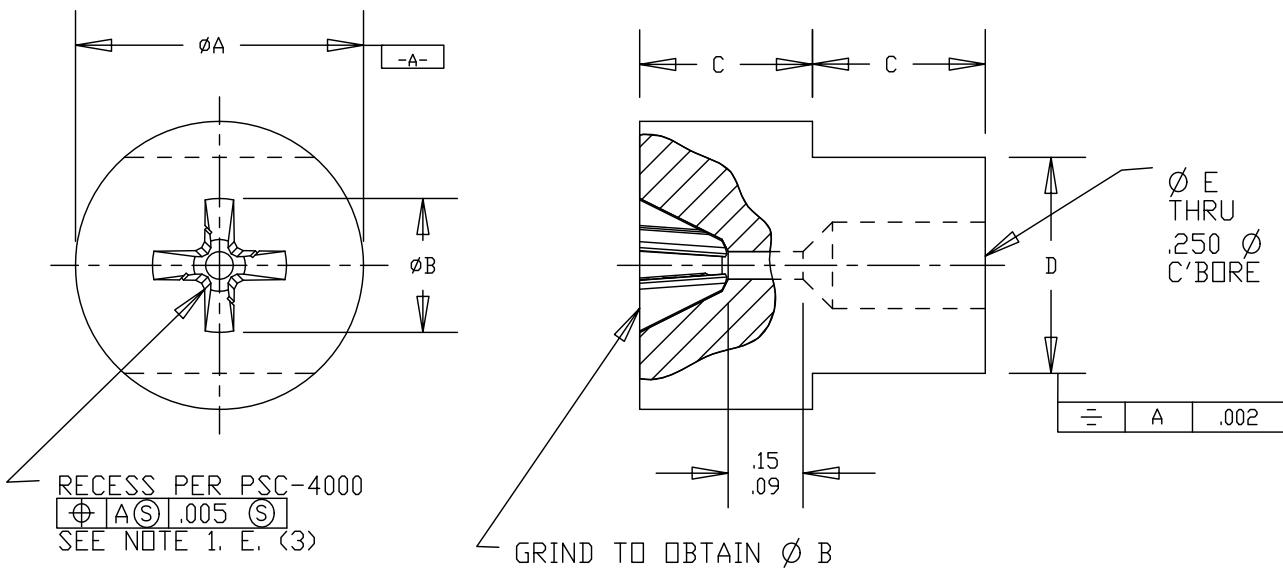


FIGURE 1

TABLE

DASH NUMBER	0	1	2	3	4	5	6
RECESS SIZE	0	1	2	3	4	5	6
$\phi$ A MIN	.688	.688	.688	1.125	1.125	1.125	1.750
$\phi$ B $\pm .002$	.090	.142	.233	.386	.486	.670	.856
C MIN	.375	.375	.375	.750	.750	.750	.750
D $\pm .002$ -.003	.500	.500	.500	.750	.750	.750	.750
$\phi$ E $\pm .002$	.021	.033	.052	.089	.125	.221	.266 THROUGH
GAGE PENETRATION	.066 .062	.105 .101	.162 .156	.266 .260	.326 .320	.416 .410	.552 .546

REVISION REV: 9/11/88 REV: 10/20/11 REV: 5/1/13

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TITLE:

## TORQUE TEST BLOCKS FOR ACR® RIBBED PHILLIPS® BITS

DRAWN

S. GUARINO

DATE

12/27/79

DRAWING NUMBER

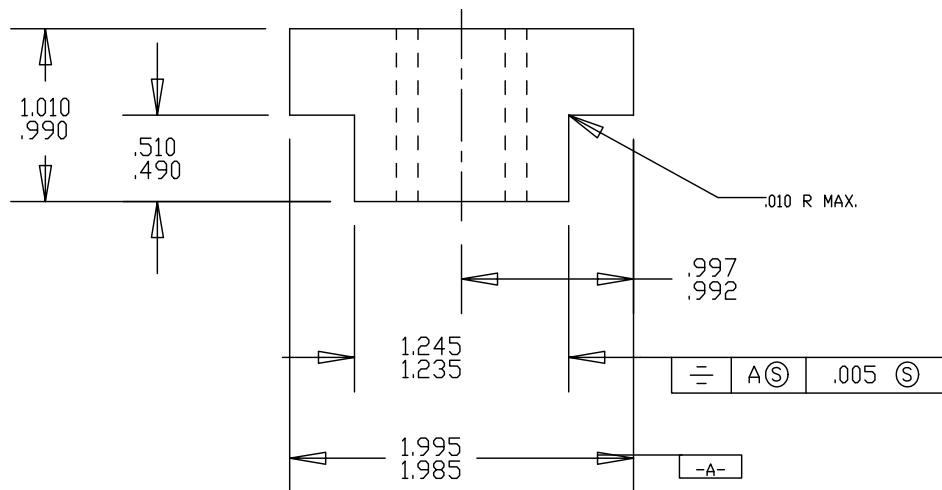
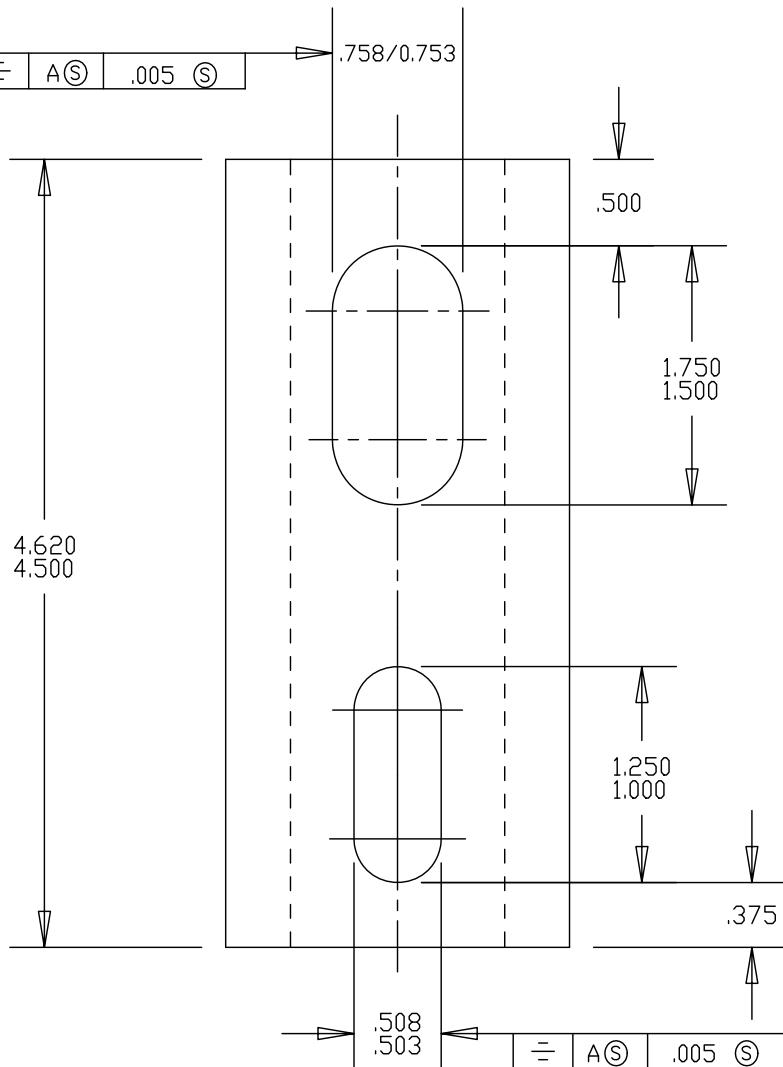
**PSC-1008**

SHEET 1 OF 5

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PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II ® PHILLIPS POZIDRIV ® ACR ® POZISQUARE ® PHILLIPS SQUARE-DRIV ® TORQ-SET ® TRI-WING ® MORTORQ ® HEXSTIX ®  
AND POZILOCK ® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

**FIGURE 2**  
**- A**  
**ADAPTER**



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TITLE: **TORQUE TEST BLOCKS FOR  
 ACR® RIBBED PHILLIPS® BITS**

DRAWN S. GUARINO DATE 12/27/79

DRAWING NUMBER

**PSC-1008**

CHECKED J. GRADY DATE 9/11/88

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**NOTES:**

## 1. REQUIREMENTS:

A. DESCRIPTION: TORQUE TEST FIXTURE FOR ACR<sup>®</sup> RIBBED PHILLIPS<sup>®</sup> DRIVERS.

## B. MATERIALS:

- (1) TEST BLOCKS: TOOL STEEL
- (2) ADAPTERS: ALLOY STEEL

## C. HARDNESS:

- (1) TEST BLOCKS: 61-63 Rc
- (2) ADAPTERS: 36-40 Rc

## D. FINISHES: NONE

## E. DESIGN AND CONSTRUCTION:

- (1) DIMENSIONS AND CONFIGURATION SHALL CONFORM TO FIGURE 1 OR 2 AS APPLICABLE.
- (2) ALL DIMENSIONS ARE IN INCHES.
- (3) ACR RIB FEATURE OF RECESS SHALL NOT BE SUPPLIED.

## F. MANUFACTURING REQUIREMENTS:

- (1) TEST BLOCKS: GRIND TOP SURFACE TO PRODUCE "B" DIAMETER. DO NOT BREAK OR RADIUS RECESS TO TOP SURFACE INTERSECTION.

## G. PHYSICAL PROPERTIES:

- (1) METALLURGICAL PROPERTIES:
  - (A) DISCONTINUITIES: FIXTURE SHALL NOT CONTAIN DISCONTINUITIES SUCH AS LAPS, SEAMS OR INCLUSIONS GREATER THAN 0.010 INCHES IN DEPTH.
  - (B) CRACKS: FIXTURES AND ADAPTERS SHALL BE FREE FROM CRACKS IN ANY LOCATION OR DIRECTION. A CRACK IS DEFINED AS A CLEAN CRYSTALLINE BREAK PASSING THROUGH THE GRAIN OR GRAIN BOUNDARY WITHOUT THE INCLUSION OF FOREIGN ELEMENT.

## H. INTENDED USE:

- (1) FIXTURES: TORQUE TESTING OF PHILLIPS<sup>®</sup> DRIVER BITS PER MIL-B-9946 OR PSC-1006
- (2) ADAPTERS ADAPT FIXTURES TO EITHER STURTEVANT TTF-1/4 OR TTF-1/2 TESTING FIXTURES.

J. WORKMANSHIP: HANDING BURRS AND SLIVERS WHICH MIGHT BECOME DISLODGED UNDER USAGE SHALL BE REMOVED. PARTS SHALL BE CLEAN AND FREE FROM SURFACES CONTAMINATION.

REVISION REV: 9/11/88 REV: 3/23/89 REV: 5/1/13

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TITLE:

**TORQUE TEST BLOCKS FOR  
ACR<sup>®</sup> RIBBED PHILLIPS<sup>®</sup> BITS**

DRAWN	S. GUARINO	DATE 12/27/79	DRAWING NUMBER
CHECKED	J. GRADY	DATE 9/11/88	PSC-1008
PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326			SHEET 3 OF 5

PHILLIPS II<sup>®</sup> PHILLIPS<sup>®</sup> POZIDRIV<sup>®</sup> ACR<sup>®</sup> POZISQUARE<sup>®</sup> PHILLIPS SQUARE-DRIV<sup>®</sup> TORQ-SET<sup>®</sup> TRI-WING<sup>®</sup> MORTORQ<sup>®</sup> HEXSTIX<sup>®</sup> AND POZILOCK<sup>®</sup> ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

2. MARKING: IDENTIFY WITH THIS DRAWING NUMBER AND APPLICABLE DASH NUMBER, LOCATED ON THE SURFACE. ALL MARKING MAY BE ETCHED, ENGRAVED, OR STAMPED.
3. QUALITY ASSURANCE PROVISIONS: QUALITY ASSURANCE PROVISIONS SHALL BE AS SPECIFIED HEREIN.
  - A. LOT VERIFICATION RECORDS: INSPECTION AND CONTROL RECORDS SHALL BE MAINTAINED BY THE SUPPLIER AND SHALL BE AVAILABLE FOR REVIEW BY THE USER FOR A MINIMUM PERIOD OF TWO YEARS.
  - B. RESPONSIBILITY FOR INSPECTION: UNLESS OTHERWISE SPECIFIED IN THE CONTRACT OR ORDER, THE SUPPLIER IS RESPONSIBLE FOR THE PERFORMANCE OF ALL INSPECTION REQUIREMENTS AS SPECIFIED HEREIN.
  - C. CHANGE OF PRODUCT: ANY CHANGE OF PRODUCT AS REGARDS MATERIALS, FINISHES, DESIGN, CONSTRUCTION, OR METHODS OF MANUFACTURE SHALL REQUIRE REVIEW AND APPROVAL OF PHILLIPS SCREW COMPANY PRIOR TO INCORPORATION.
  - D. SCREENING INSPECTION: 100 PERCENT SCREENING INSPECTION SHALL CONSIST OF THE EXAMINATIONS AND TEST LISTED IN TABLE II.
  - E. QUALITY CONFORMANCE INSPECTION: QUALITY CONFORMANCE INSPECTION SHALL CONSIST OF THE EXAMINATIONS AND TEST LISTED IN TABLE III.
4. ONLY THE ITEM(S) DESCRIBED ON THIS DRAWING WHEN PROCURED FROM THE VENDOR(S) LISTED HEREON IS APPROVED BY PHILLIPS SCREW COMPANY FOR USE IN THE APPLICATION SPECIFIED HEREON. A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR APPROVAL BY PHILLIPS SCREW COMPANY.

TABLE II		
ITEM	100 PERCENT SCREENING INSPECTION	
	TESTING SEQUENCE	CONDITIONS AND REQUIREMENTS
TEST BLOCKS	DIMENSIONS: ØB SYMMETRY D RECESS RECESS LOCATION HARDNESS	TOOLMAKERS MICROSCOPE  INSPECT PER PSC 1004 STANDARD INSPECTION EQUIPMENT ROCKWELL HARDNESS TESTER OR EQUAL
ADAPTERS	DIMENSIONS: SLOT WIDTHS SLOT LENGTHS BODY WIDTHS	STANDARD INSPECTION EQUIPMENT

REVISION REV: 9/11/88 REV: 5/1/13

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TITLE: **TORQUE TEST BLOCKS FOR  
ACR® RIBBED PHILLIPS® BITS**

DRAWN S. GUARINO	DATE 12/27/79	DRAWING NUMBER <b>PSC-1008</b>
CHECKED J. GRADY	DATE 9/11/88	SHEET 4 OF 5
PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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TABLE III				
QUALITY CONFORMANCE INSPECTION				
ITEM	MIL-STD-105		EXAMINATION OR TEST	CONDITIONS AND REQUIREMENTS
	LEVEL	AQL		
TEST BLOCKS	II	2.5	DIMENSIONS: $\phi A$ C .250 C'BORE MATERIAL:	STANDARD INSPECTION EQUIPMENT
ADAPTERS	II	2.5	DIMENSIONS: LENGTH HEIGHT MATERIAL: HARDNESS:	

AUTHORIZED SOURCE(S) OF SUPPLY		
DASH NUMBER	SUPPLIER DATA	
	PART NUMBER	NAME AND ADDRESS
-0 THRU -6  -A	---	WRENTHAM TOOL GROUP 155 FARM STREET BELLINGHAM, MA 02019

REVISION REV: 9/11/88 REV: 10/20/11 REV: 5/1/13

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DRAWN	DATE	DRAWING NUMBER										
S. GUARINO	12/27/79	<b>PSC-1008</b>										
CHECKED: J. GRADY	DATE 9/11/88											

- SCOPE: This specification covers the requirements for hand and power drivers for installing and removing fasteners having an ACR® Ribbed Phillips® recess per PSC-1000 (NAS7100).
  - 1.1 Drivers covered by this specifications shall conform to PSC-1201 thru PSC-1204.
  2. REFERENCED DOCUMENTS: The following documents, of the latest issue in effect at time of purchase, form a part of this specification to the extent specified herein:
- SPECIFICATIONS  
Federal
- |                              |   |
|------------------------------|---|
| QQ-T-570                     | Tool Steel, Alloy   |
| GGG-W-641                    | Wrench, Socket; (and Sockets, Handles, and attachments for Socket Wrenches; Hand) |
| MIL-H-15424                  | Hand Tools, Packaging of  |
| STANDARDS<br>Military        |   |
| MIL-STD-105                  | Sampling Procedures and Tables for Inspection by Attributes.                      |
| National Aerospace Standards |   |

NAS 7100 Recess, Phillips®, Dimensions of Recess and Gages Gages.

NAS 8500 THRU 8506 Bit, Screwdriver Phillips® Recess American National Standards Institute (ANSI)

ANSI B46.1 Surface Texture (Surface Roughness, Waviness, and Lay)

ANSI B107.4 Driving and Spindle Ends for Portable Hand, Air, and Electric tools.

American Society for Testing and Materials (ASTM)

ASTM E18 Method of Test for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials.

DRAWINGS

Phillips Screw Company

PSC-1000 Dimensions of ACR® ribbed Phillips® Recess

PSC-1001 Dimensions of ACR® ribbed Phillips® Driver Point

PSC-1005 Point Gage, ACR® ribbed Phillips® Driver Bits

PSC-1006 Inspection Procedure, ACR® Ribbed Phillips® Driver Bits

PSC-1201 Driver Bit, Hexagon Grooved Shank, ACR® Ribbed Phillips®

PSC-1202 Driver Bit, Extended Point, Hexagon Grooved Shank, ACR® Ribbed Phillips®

PSC-1203 Driver Bit, Square Drive, ACR® Ribbed Phillips®

PSC-1204 Driver Bit, Notched Hexagon Shank, ACR® Ribbed Phillips®

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**PROCUREMENT SPECIFICATION  
ACR® RIBBED PHILLIPS®  
DRIVERS AND DRIVER BITS**

DRAWN J. O'BRIEN	DATE 7JAN80	DRAWING NUMBER <b>PSC-1200</b>
CHECKED: J. GRADY	DATE 18JAN80	SHEET 1 OF 4

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
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HEXSTIX POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

REVISION SEPT. 11, 1988  
REVISION MAR. 23, 1989  
REVISION MAY 1, 2013

3. REQUIREMENTS:

- 3.1 Materials: Tool Steel, Type S-2, per QQ-T-570, or equal.
- 3.2 Hardness: Applicable hardness range shall be specified in the part number of the driver. Drivers shall be through hardened to the level specified herein and shall be given a case hardness via carburization or cyaniding treatment to a depth of 0.003 to 0.005 inches.
- 3.2.1 'X' Hardness: Rockwell C-62 to C-66 for special use and long wear.
- 3.2.2 'I' Hardness: Rockwell C-59 to C-63 for applications where some impact loading is expected such as light duty electric or small air motor driven usage.
- 3.2.3 'R' Hardness: Rockwell C-55 to C-59 for impact wrench applications.
- 3.3 Finish: Bits shall be coated with a light film of oil or other preservative to retard corrosion.
- 3.4 Dimensions: Dimensions shall conform to the applicable drawing and the following:  
(A) Driver points shall conform to PSC-1001.  
(B) Hexagon spindle ends when required for bits shall conform to ANSI B107.4.  
(C) Female square drivers when required shall conform to GGG-W-641.
- 3.4.1 Surface Finish: Driver point surfaces shall have a roughness not exceeding 125 microinches per ANSI B46.1.
- 3.5 Mechanical Properties:
- 3.5.1 Ultimate Torsional Strength: When Tested per PSC-1006, drivers shall meet the minimum strength requirements of Table I without breakage or permanent deformation.
- 3.5.2 Torsional Fatigue Strength: When tested per PSC-1006, drivers shall withstand 50 application cycles of the torsional fatigue load specified in Table I. One cycle consists of torque first applied in the clockwise direction, then in the counterclockwise direction.

TABLE I

Driver Size	Min. Ultimate Torsional Strength (LBF-in)	Torsional Fatigue Load (LBF-in) ±10 percent
0	—	—
1	25	10
2	100	40
3	250	100
4	675	270
5	4050	1620
6	—	—

- 3.6 Physical Properties:
- 3.6.1 Discontinuities: Driver bits shall be free from discontinuities such as laps, seams, or inclusions greater in depth than 2 percent of the material thickness at the discontinuity location.
- 3.6.2 Cracks: Driver bits shall be free from cracks in any location or direction. A crack is defined as a clean crystalline break passing through the grain or grain boundary without inclusion of foreign elements.
- 3.7 Marking: Driver bits shall be marked by etching, stamping, or engraving onto each bit, the following minimum information:
- Manufacturer's name, symbol, or code.
  - Recess or driver size.
  - The legend "ACR".
  - Hardness range code.
- In addition, if desired, the manufacturer's or Phillips Screw Co. part number may be marked when space permits. Marking may use more than one hex flat as required.
- 3.8 Workmanship: Hanging burrs and slivers which might become dislodged in service shall be removed.
4. QUALITY ASSURANCE PROVISIONS:
- 4.1 Responsibility for Inspection: Unless otherwise specified in the contract or order, the manufacturer is responsible for the performance of all quality conformance inspection requirements as specified herein.
- 4.2 Lot Verification Records: Inspection and control records shall be maintained by the manufacturer for review by the user for a minimum period of two years.
- 4.3 Change of Product: After initial qualification approval, any change of product as regards materials, design, construction, or methods of manufacture shall require review and approval of Phillips Screw Company and may require new qualification testing prior to incorporation into production lots.
- 4.4 Qualification Testing: Qualification testing shall be performed per PSC-1006.
- 4.5 Quality Conformance Inspection: Quality conformance inspection shall consist of the examinations and tests listed in Table II.
5. PREPARATION FOR DELIVERY
- 5.1 Preservation, Packaging and Packing: The drivers shall be cleaned, preserved, packaged, packed and marked for shipment in accordance with the provisions of Specification MIL-H-15424. Levels of preservation, packaging and packing shall be as specified in the contract or order.
- 5.2 Inspection of Preparation for Delivery: The preservation, packaging and marking shall be examined to determine conformance with the requirements of paragraph 5.1 of this specification as required by the referenced specification.
6. NOTES:
- 6.1 Patent Coverage: United States Patent 4,187,892 covers the ACR® Rib feature on the driver. Foreign Patents have also been issued.
- 6.2 Authorized Sources: The product defined herein and on associated detail drawings is subject to Product and Trademark Licenses issued by PhilLips Screw Company.
- 6.3 Intended Use: Screwdriver bits for driving fasteners having ACR® Ribbed Phillips® recesses.
- 6.3.1 "X" Hardness Bits: General usage bits – provide best wear and best absolute torque performance.
- 6.3.2 "I" Hardness Bits: Specifically for applications where light impact loading is anticipated.
- 6.3.3 "R" Hardness Bits: Softer bits for use with impact drivers. Some loss in torque performance will be experienced when used in fastener recesses.

<b>TABLE II</b>			
<b>QUALITY CONFORMANCE INSPECTION</b>			
MIL-STD-105		Examination or Test	Conditions and Requirements
Level	AQL		
II	1.0	Point Dimensions	Inspect using appropriate gage per PSC-1005
II	1.0	Drive End Dimensions	Standard Inspection Equipment or Gages
S-2	2.5	Torsional Fatigue	Test per PSC-1006
S-2	2.5	Ultimate Torsional Strength	Using the same parts that passed Torque Fatigue, test per PSC-1006
S-2	2.5	Hardness 	Grind parallel flats perpendicular to bit axis, measure hardness at point end per ASTM E18
S-2	2.5	Marking	Visual
S-2	2.5	Surface Finish	Visual Inspection per ANSI B46.1
S-2	2.5	Physical Properties	Visual Examination at a minimum of 6x Magnification
II	4.0	Workmanship	Visual Examination



Destructive test – test pieces shall not be delivered

## **MARKING REQUIREMENTS FOR ACR<sup>®</sup> RIBBED FASTENER DRIVE SYSTEM BITS**

For uniform identification and protection, please make arrangements to have your production of ACR<sup>®</sup> ribbed drive system bits marked as follows:

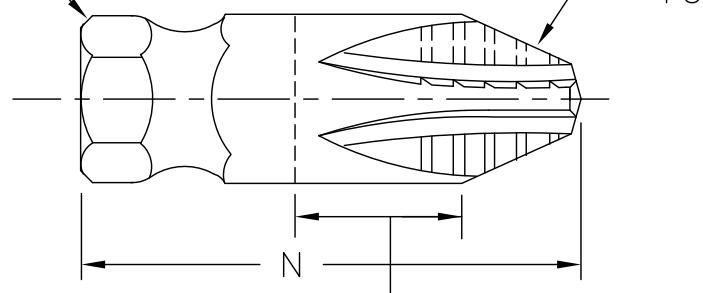
<u>Fastener Drive System Bit Type</u>	<u>Marking Requirement</u>
TORQ-SET <sup>®</sup> bit with ribs on all four removal wing walls.	ACR <sup>®</sup> R or ACR R
TRI-WING <sup>®</sup> bit with ribs on all three removal wing walls.	ACR <sup>®</sup> R or ACR R
PHILLIPS <sup>®</sup> bit with ribs on all four removal wing walls.	ACR <sup>®</sup> R or ACR R
PHILLIPS <sup>®</sup> bit with ribs on all four driving wing walls.	ACR <sup>®</sup> D or ACR D
PHILLIPS <sup>®</sup> bit with ribs on four driving wing walls. and four removal wing walls.	ACR <sup>®</sup> or ACR

Note that a trademark symbol (®) or a space is provided after "ACR" so that it will stand alone for beneficial Trademark protection. These markings will be in addition to your own company identification and part number normally carried on these products, and may require that you mark more than one hex flat.

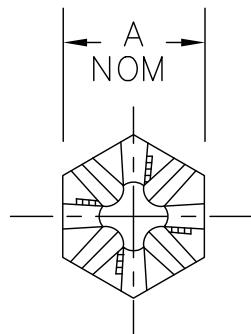
Supplement to PSC 1200 Paragraph 3.7 and PSC 2200 Paragraph 3.7.

MALE HEX SPINDLE PER  
ANSI B107.4 'A' NOMINAL  
HEX SIZE PER TABLE 1

FIGURE 1



POINT PER  
PSC-1001



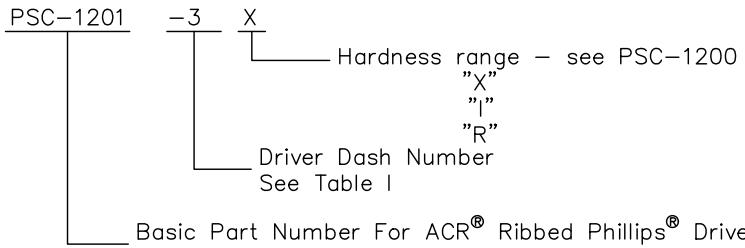
SHAPE IN THIS REGION OPTIONAL  
PROVIDING SPINDLE DIMENSIONS AND  
POINT DIMENSIONS CONFORM.

TABLE I

DASH NUMBER	RECESS SIZE	A NOMINAL	N ±.120
1	0	.250	1.000
2	1	.250	1.000
3	2	.250	1.000
4	2	.312	1.250
5	3	.250	1.000
6	3	.312	1.250
7	3	.438	1.250
8	4	.250	1.000
9	4	.312	1.250
10	4	.438	1.250
11	4	.625	1.250
12	5	.625	2.250
13	6	.750	3.000

NOTES:

- Driver bits procured to this drawing shall conform to the requirements of PSC-1200.
- Hardness range shall be in accordance with PSC-1200 and as specified by the part number. If no range is specified, "X" hardness bits shall be supplied.
- Part Numbering System



Basic Part Number For ACR® Ribbed Phillips® Drivers  
Having Grooved Hexagon Shanks.

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TITLE: **ACR® RIBBED PHILLIPS®**

**DRIVER BIT, HEXAGON GROOVED SHANK**

DRAWN: S. GUARINO DATE: 01/18/80

DRAWING NUMBER

**PSC-1201**

SHEET 1 OF 1

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ  
HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

REISSUED SEPT. 11, 1988 REVISED MAY 1, 2013

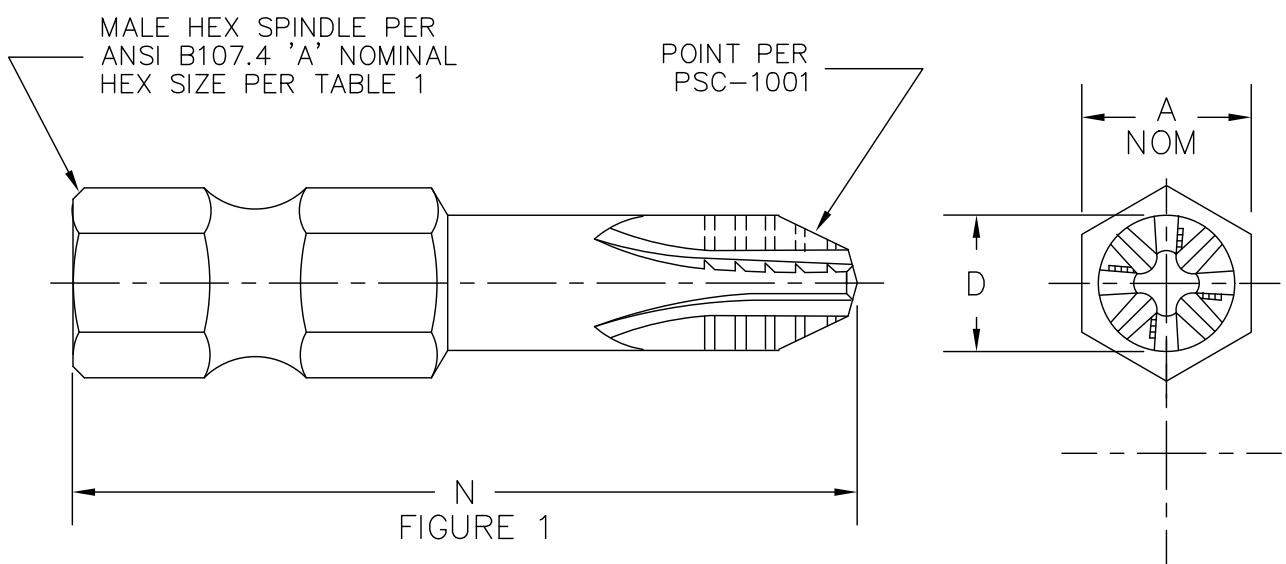
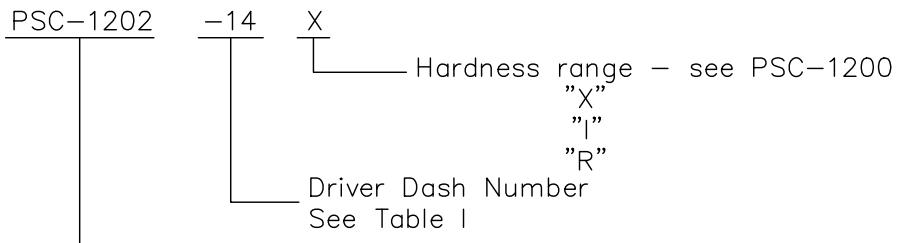


TABLE I

RECESS SIZE	A NOMINAL	D +.000 -.004	$N \pm .12$			
			1.88	2.75	3.50	6.00
			DASH NUMBER			
0	.250	.125	1	11	21	31
1	.250	.125	2	12	22	32
1	.250	.188	3	13	23	33
2	.250	.188	4	14	24	34
2	.250	.250	5	15	25	35
3	.438	.438	6	16	26	36
4	.438	.438	7	17	27	37
4	.625	.625	8	18	28	38

NOTES:

- Driver bits procured to this drawing shall conform to the requirements of PSC-1200.
- Hardness range shall be in accordance with PSC-1200 and as specified by the part number. If no range is specified, "x" hardness bits shall be supplied.
- Part Numbering System



Basic Part Number For ACR® Ribbed Phillips® Drivers  
Having Extended Points and Grooved Hexagon Shanks.

REVISED  
SEPT. 11, 1988      MAY, 1 2013

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**DRIVER BIT, EXTENDED POINT,  
HEXAGON GROOVED SHANK,  
ACR® RIBBED PHILLIPS® POINT**

DRAWN S. GUARINO	DATE 1/15/80	DRAWING NUMBER <b>PSC-1202</b>
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CHECKED: J. GRADY	DATE MAR 88	SHEET 1 OF 1
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HEXTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

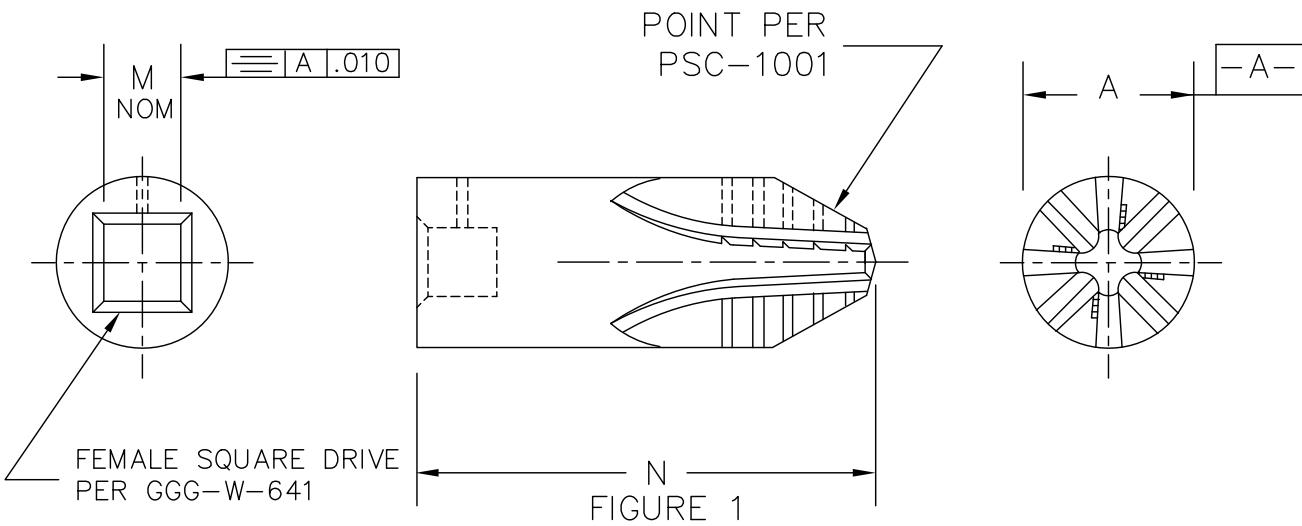
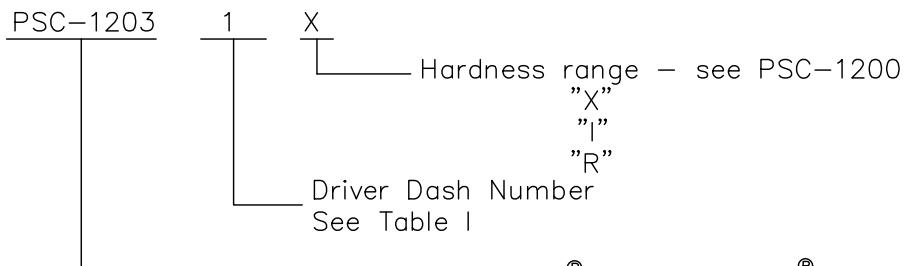


TABLE I

DASH NUMBER	RECESS SIZE	A +.000 -.004	N ±.12	M NOMINAL
1	4	.750	1.50	.375
2	4	.875	1.75	.500
3	5	.875	2.00	.500
4	6	1.250	2.25	.625

NOTES:

- Driver bits procured to this drawing shall conform to the requirements of PSC-1200.
- Hardness range shall be in accordance with PSC-1200 and as specified by the part number. If no range is specified, "X" hardness bits shall be supplied.
- Part Numbering System



Basic Part Number For ACR® Ribbed Phillips® Drivers  
Having A Square Drive

Rev. SEPT. 11, 1988      Rev. MAY 1, 2013

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## DRIVER BIT, SQUARE DRIVE ACR® RIBBED PHILLIPS® POINT

DRAWN S. GUARINO	DATE 1/16/79	DRAWING NUMBER <b>PSC-1203</b>
CHECKED: J. GRADY	DATE MAR 88	SHEET 1 OF 1
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

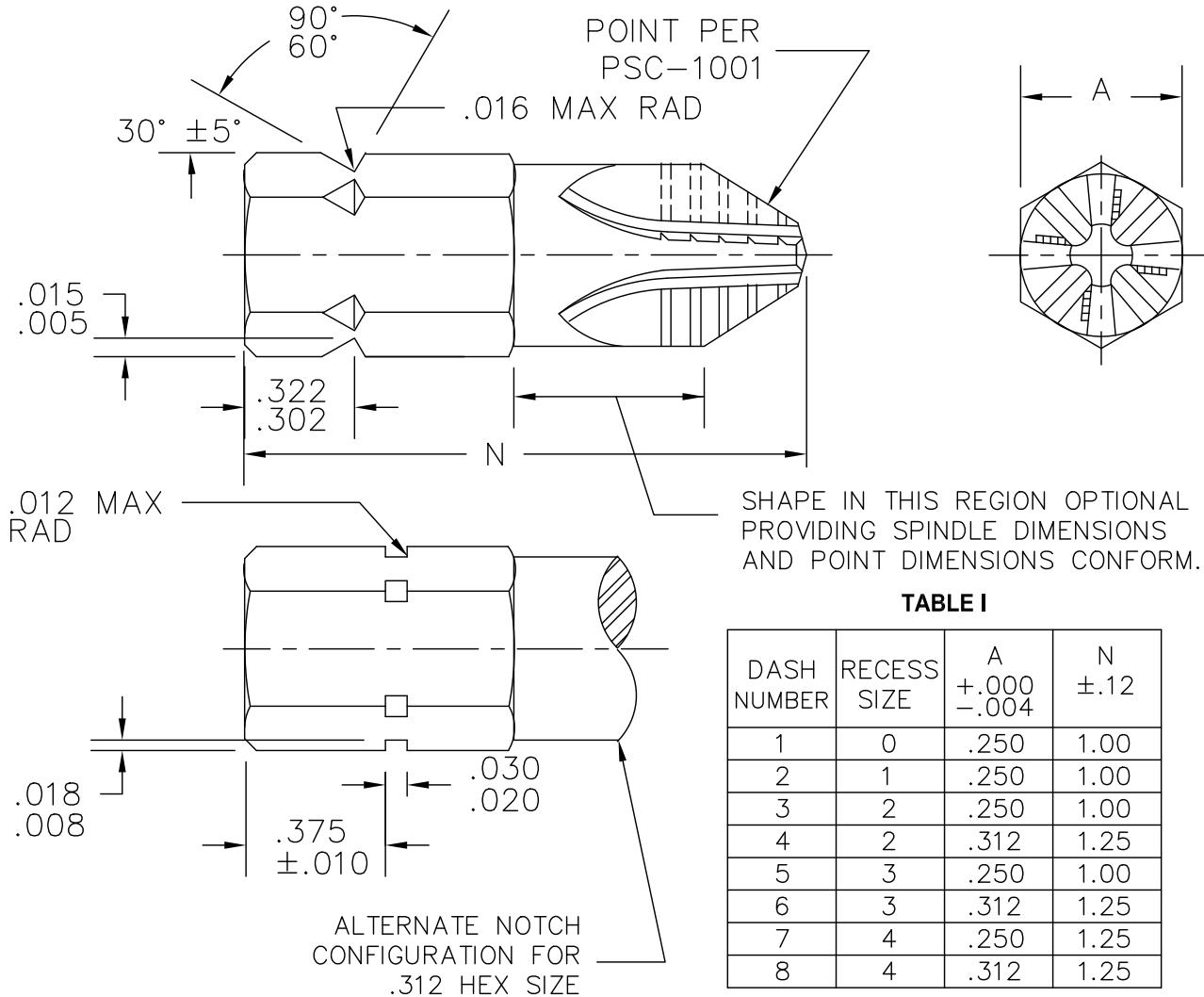
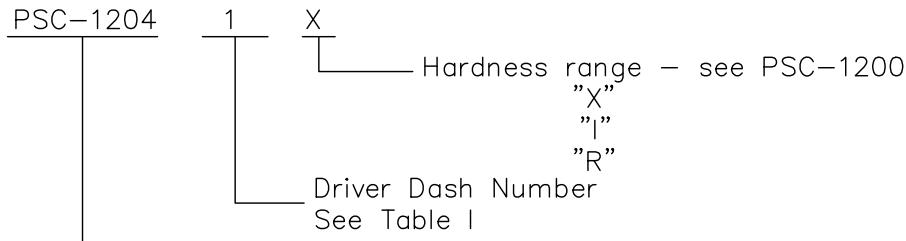


TABLE I

DASH NUMBER	RECESS SIZE	A +.000 -.004	N ±.12
1	0	.250	1.00
2	1	.250	1.00
3	2	.250	1.00
4	2	.312	1.25
5	3	.250	1.00
6	3	.312	1.25
7	4	.250	1.25
8	4	.312	1.25

NOTES:

- Driver bits procured to this drawing shall conform to the requirements of PSC-1200.
- Hardness range shall be in accordance with PSC-1200 and as specified by the part number. If no range is specified, "X" hardness bits shall be supplied.
- Part Numbering System



Basic Part Number For ACR® Ribbed Phillips® Drivers  
 Having Notched Hexagon Shanks.

SEPT. 11, 1988    MAY 1, 2013

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**DRIVER BIT, NOTCHED  
 HEXAGON SHANK  
 ACR® RIBBED PHILLIPS® POINT**

DRAWN S. GUARINO	DATE 1/18/80	DRAWING NUMBER <b>PSC-1204</b>
CHECKED: J. GRADY	DATE MAR 88	SHEET 1 OF 1

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 HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

**ACR® RIBBED PHILLIPS®**  
**ENGINEERING MANUAL**

May 1, 2013  
Update

**PUNCHES**  
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			3 of 6      09/11/88
			4 of 6      09/11/88
			5 of 6      05/01/13
			6 of 6      05/01/13
B.	Punch Point Dimensions	PSC-4100	1 of 2      05/01/13
			2 of 2      05/01/13
C.	Punch Detail Drawings		
	100° Flat Head	PSC-1101	1 of 1      05/01/13
	Pan Head	PSC-1102	1 of 1      05/01/13
	Flat Fillister Head	PSC-1103	1 of 1      05/01/13
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	Pan Head Double Radius	PSC-1106	1 of 1      05/01/13
	Washer Head	PSC-1107	1 of 1      05/01/13
	Brazier Head	PSC-1108	1 of 1      05/01/13

1. **SCOPE:** This specification provides a detailed procedure for inspection of ACR® Ribbed PHILLIPS® Punches. This procedure will be used by Phillips Screw Company as a referee method.
2. **REFERENCED DOCUMENTS:** The following documents form a part of this specification:

PSC-4100 Basic Punch Point Dimensions  
 PSC-1101 – PSC -1108 Punch Drawings, as applicable.

3. **TEST EQUIPMENT REQUIRED:**
  - A. Toolmakers microscope with suitable special fixturing.
  - B. Vernier Calipers
  - C. Dial Indicator with small diameter, sharp, contact point.

4. **TEST PROCEDURE:**

- 4.1 **Mounting and Alignment:** Mount the punch into a suitable holding fixture, capable of adjustment to provide true alignment of the punch body. Verify alignment and adjust as necessary using contact gage probe.

- A. Set differential micrometer against uppermost curve of punch body. Adjust to provide zero differential both while revolving the punch and while traversing parallel to the punch axis.
- B. Rotate the punch to bring the milling angle grooves to the 12, 3, 6, 9 o'clock positions. Verify position with a differential gage tracking in the milling angle groove. Adjust until the reading is at its lowest point as the punch is moved perpendicular to the punch axis. Traverse parallel to the punch axis at least 1/2 of the nib length and repeat. While the reading will increase, the null point should remain. If not, adjust punch rotation so that the lowest or null reading lies in the same vertical plane as the punch axis.

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## INSPECTION PROCEDURE **ACR® RIBBED PHILLIPS® PUNCHES**

DRAWN S. GUARINDO	DATE 11-20-79	DRAWING NUMBER <b>PSC-1009</b>
CHECKED: J. GRADY	DATE OCT 1987	SHEET 1 OF 6
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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#### 4.2 Measure Milling Angles ( $\angle H$ ):

- A. Using a contact differential micrometer with a sensitivity of 0.0001 or better, establish a zero point with the contact probe at the lowest point in the milling angle at the 12 o'clock position and as close to the point cone as practical.
- B. Traverse the punch parallel to the punch axis for at least 60 percent of the punch nib length, measuring both the differential and the distance traversed.
- C. Determine one milling angle as follows:

$$H = \arctan \left\langle \frac{\text{differential}}{\text{traverse}} \right\rangle$$

#### ALTERNATIVE PROCEDURE FOR A, B, AND C

If the punch holding fixture has rotational capabilities such that the punch may be rotated in the vertical plane to bring the milling angle to the horizontal position, this rotation may be used to provide a constant zero differential reading with the gage during the traversing operation, and the milling angle read directly from the rotaging stage.

- D. Rotate the punch 180 degrees, plus or minus 30 arc seconds and repeat steps A through C.
- E. Average the milling angles obtained and record.
- F. Rotate the punch 90 degrees plus or minus 30 arc seconds. Repeat steps A through E for the milling angle grooves now located in the 12 and 9 o'clock positions.

#### 4.3 Measure Throat of Punch (Dimension B):

- A. Using an optical sight of at least 40x, with the sight parallel to the punch axis, align the sight reticle crosshairs with the intersection of the milling angle groove and the point cone at the 12 o'clock position, and establish a datum point.
- B. Traverse either the punch or sighting system across the punch nib and measure and record the location of the corresponding point at the 6 o'clock position with respect to the datum set in A above.
- C. Repeat A and B above for the intersections located at the 3 and 9 o'clock positions.

4.4 Measure Wing Thickness at the "G" Plane (Dimension F):

- A. Align the punch axis with the optical sight axis.
- B. Rotate the punch, bringing the wings into the 3, 6, 9, and 12 o'clock position.
- C. Align a crosshair with one side of a nib wing, at the intersection of "G", and establish a datum.
- D. Traverse the punch or sight, as applicable, across the wing width to the corresponding point on the opposite surface and measure "F" at the "G" location.
- E. Repeat C and D for the three remaining wings.

4.5 Rib Groove Location: (Diameter W)

- A. Align the punch axis with the optical sight axis.
- B. Rotate the punch, bringing the bottom of a rib groove into line with the sight crosshairs, and establish a datum.
- C. Traverse the punch or sight, as applicable, in one axis only, bringing the bottom of the groove in the opposite wing to the crosshairs; measure and record the diameter traversed.
- D. Repeat B and C for the two remaining grooves.

4.6 Rib Groove Depth: (Dimension T)

- A. Align the punch axis with the optical sight axis.
- B. Locate the punch so that the wing surface lies on a crosshair while the other crosshair approximately bisects the groove and establish a datum.
- C. Traverse the sight or punch, as applicable, until the crosshair which is parallel to the surface lies at the bottom of the rib groove. Measure and record the rib groove depth.

4.7 Head Cavity Diameter (Dimension N): (Curved Top Heads Only)

- A. Align the punch axis with the optical sight axis.
- B. Align a crosshair of the sight with the edge of the head cavity and establish a datum.
- C. Traverse the punch or optical sight, as applicable, to the corresponding point at the opposite periphery and measure the diameter.

- D. Rotate the punch 90 degrees and repeat, or repeat using the perpendicular crosshairs.
- E. Average the two readings and record.

4.8 Measure Point Cone Diameter ( $\emptyset G$ ):

- A. Position the punch axis perpendicular to the optical sight axis.
- B. Rotate the punch about its axis, placing the wings in the 3, 6, 9, and 12 o'clock positions.
- C. Locate the true or theoretical intersection of the outer wing surface and the point cone at the 12o'clock position and establish a datum.
- D. Traverse the sight or the punch, as applicable and locate the corresponding point at the 6 o'clock position and record dimension "G".
- E. Rotate the punch 90 degrees, and repeat C and D.
- F. Average the two readings obtained.

4.9 Measure Point Cone Angle ( $\angle Z$ ) and Outer Wing Angle ( $\angle D$ ):

- A. With the punch axis perpendicular to the optical sight axis, measure point cone and outer wing angles.
- B. Average each set of four readings obtained.

4.10 Measurements of Punch Nib Length (Dimension J):

4.10.1 Flat Head Punches:

- A. Align the optical sight axis perpendicular to the punch axis.
- B. Locate the appropriate crosshair at the tip of the punch nib and establish a datum.
- C. Traverse the sight or punch, as applicable, until the face of the punch is aligned with the same crosshair and measure the "J" dimension.

4.10.2 Curved Top Head Punches:

- A. Align the optical sight axis perpendicular to the punch axis.

- B. Locate the appropriate crosshair at the tip of the punch nib and establish a datum.
- C. Traverse the sight or punch, as applicable, until the crosshair is aligned with the face of the punch near the edge of the head cavity and record the distance traversed.
- D. Add head cavity depth (Dimension M) obtained in 4.11 below.

4.11 Head Cavity Depth (Dimension M \* Curved Top Heads Only)

- A. Using a dial indicator with a sensitivity of .001 or better, equipped with a small diameter, sharp, contact point, establish a zero point at the face of the punch near the edge of the head cavity.
- B. Measure to the deepest portion of the head cavity between any two adjacent wings and use in 4.10.2 D above.
- C. Since the specified cavity depth (M), is a theoretical dimension occurring on the cavity radius (O) furthest removed from the face of the punch, the dimension recorded in B will be less than the true "M" by about .002 to .005. A precise method of calculating this correction factor will be supplied upon request.

4.12 Punch Diameter, Length, and Notch:

- A. Remove the punch from the holding fixture.
- B. Using standard vernier calipers, measure and record punch diameter, length, and notch size.

4.13 Implied Validation of Milling Cutter Angles:

If " $\emptyset G$ ", "B", the point cone angle, and the outer wing angle are correct, then angle E and the 92° milling cutter form, may be considered to be correct if "F", the wing width at "G", is also within acceptable limits.

**CHECK LIST FOR INSPECTION  
OF ACR<sup>®</sup> RIBBED PHILLIPS<sup>®</sup> PUNCHES**

Report No.: \_\_\_\_\_

Sheet: \_\_\_\_\_ of \_\_\_\_\_

Date: \_\_\_\_\_

Inspector: \_\_\_\_\_

Part No.: \_\_\_\_\_

Mfr: \_\_\_\_\_

Description: \_\_\_\_\_

Lot No.: \_\_\_\_\_

**MEASUREMENTS**

**SPECIFICATIONS**

Sample Size		
Head Marking		
Milling Angle "H" (4.2)		
Throat "B" (4.3)		
Wing Thickness "F" (4.4)		
Groove Location "W" (4.5)		
Groove Depth "T" (4.6)		
Head Cavity Dia.* "N" (4.7)		
Point Cone Dia. "G" (4.8)		
Point Cone Angle (4.9)		28° - 27°
Outer Wing Angle (4.9)		26° 45' - 26° 30'
Punch Nib Length "J" (4.10)		
Head Cavity Depth "M" * (4.11)		
Punch Dia. (4.12)		
Punch Diameter (4.12)		
Notch (4.12)		

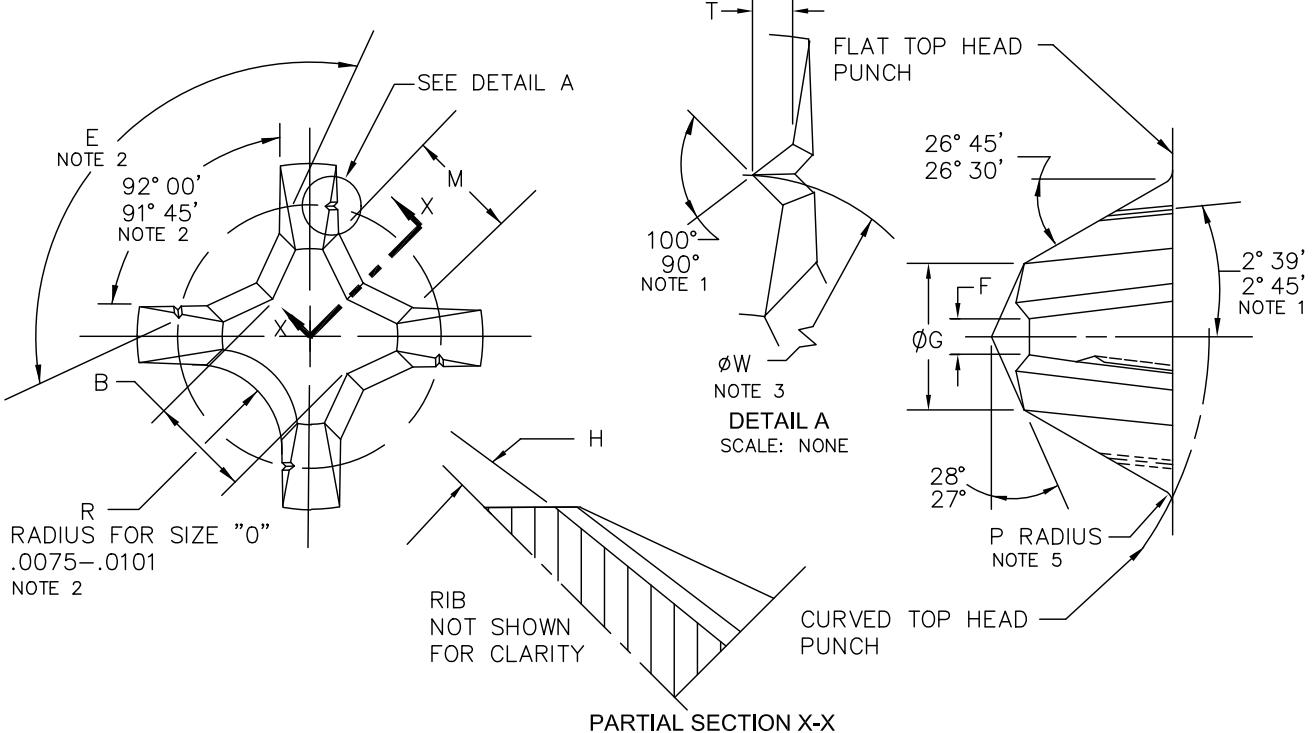
\* = Curved Top Heads Only

DISPOSITION: Accept \_\_\_\_\_

Reject \_\_\_\_\_

COMMENTS:

REVISION SEPT. 11, 1988 MAY 1, 2013



RECESS SIZE	B	E +0° 00' -0° 15'	F	ØG +.002 -.000	H +0° 15' -0° 00'	M	P ±.002	ØW +.003 -.000	T
0	.0260 .0240	—	.012 .014	.032	7° 00'	.0104 .0140	.010	.042	.001 .002
1	.0380 .0370	138° 00'	.018 .020	.050	7° 00'	.016 .018	.020	.066	.002 .003
2	.0588 .0568	140° 00'	.026 .029	.090	5° 45'	.031 .033	.025	.115	.003 .004
3	.0960 .0940	146° 00'	.029 .032	.150	5° 45'	.078 .080	.030	.169	.003 .004
4S	.1380 .1360	153° 00'	.047 .050	.200	7° 00'	.094 .096	.035	.236	.003 .004
4L	.1380 .1360	153° 00'	.047 .050	.200	7° 00'	.094 .096	.035	.272	.003 .004
5	.2280 .2260	162° 46'	.067 .070	.311	7° 00'	.159 .161	.040	.405	.004 .006
6	.2770 .2750	157° 57'	.097 .101	.374	7° 00'	.176 .178	.055	.508	.004 .006

NOTES:

1. GROOVES OF 90° TO 100° FORM ARE TO BE INCLINED 2° 39' TO 2° 45' TO THE CENTERLINE AXIS OF THE PUNCH IN THE PLANES OF THE WING SIDE WALLS.
2. INCLUDED WING ANGLE AND ANGLE "E" OR RADIUS "R" ARE TO BE MEASURED NORMAL TO ANGLE "H."
3. GROOVE LOCATION DETERMINED BY "W" DIAMETER, NOT LATERAL DISTANCE FROM CENTER.  
ØW IS MEASURED FROM WHERE THE BOTTOM OF THE RIB GROOVE BREAKS THROUGH THE OUTER WING SURFACE.
4. PUNCH NUMBERS WILL INDICATE SLANT RIBS BY SUBSTITUTING AN "S" IN PLACE OF THE DASH. (EXAMPLE: AN ACR® PUNCH WITH THE CODE PSC1101-1 WOULD BECOME PSC1101S1 FOR A SLANT RIBBED PUNCH.)
5. RADIUS "P" SHOWN IS FOR PUNCHES ONLY AND OCCURS ALONG THE ENTIRE PERIPHERAL EDGE OF THE UPPER PORTION OF THE POINT.
6. THIS PRODUCT IS COVERED BY U.S. PATENT NUMBERS 5,203,742 AND 5,120,173.
7. DEBUR ALL ACR® GROOVES.

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## ACR® RIBBED PHILLIPS® PUNCH DIMENSIONS

DRAWN S. GREGORY	DATE 3-9-94	DRAWING NUMBER <b>PSC-4100</b>
CHECKED: G. LAMONICA	DATE 7-30-97	SHEET 1 OF 2
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

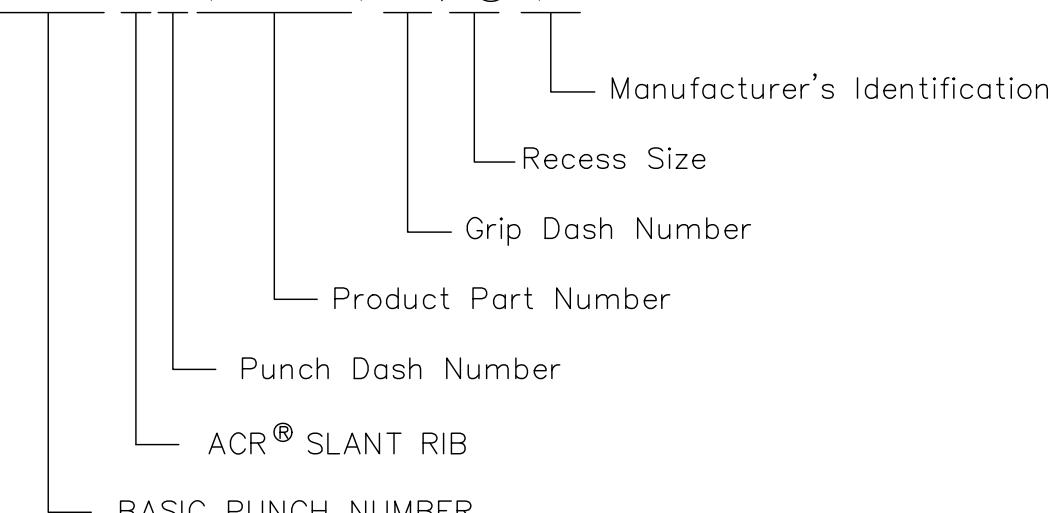
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REVISION 1/ REDRAWN 7-30-97 UPDATE 5-01-13

## PUNCH NUMBERING & MARKING NOTES

- A. Punch numbering system consists of basic punch drawing number (ie., PSC-1XXX), ACR® slant rib designation (ie., S), proper dash number (ie., -7), a slash (/), grip dash number for head marking (ie., -4), a slash (/), recess size for head marking (ie., 3), a slash (/), and the manufacturer's identification for head marking (ie., xx). See drawing NAS1347 and the applicable product drawing.

Example: PSC-1101S-7 /NASxxxx/ -4/ ③ /xx



PSC-1101	100° FLAT HEAD
PSC-1102	PAN HEAD
PSC-1103	FLAT FILLISTER HEAD
PSC-1101	100° OVAL HEAD
PSC-1105	TRIMMED HEX HEAD
PSC-1106	PAN HEAD DOUBLE RADIUS
PSC-1107	WASHER HEAD
PSC-1108	BRAZIER HEAD

- B. Mark punches with this drawing number, applicable dash number, the legend "ACR® PHILLIPS®", and the serial number of the hob used in manufacture. All marking shall be etched, stamped, or engraved.

- C. All punches shall be certified by the punch manufacturer.  
In case of conflict, referee inspection shall be performed in accordance with test requirement specification PSC-1009.

REVISION  
5-01-13

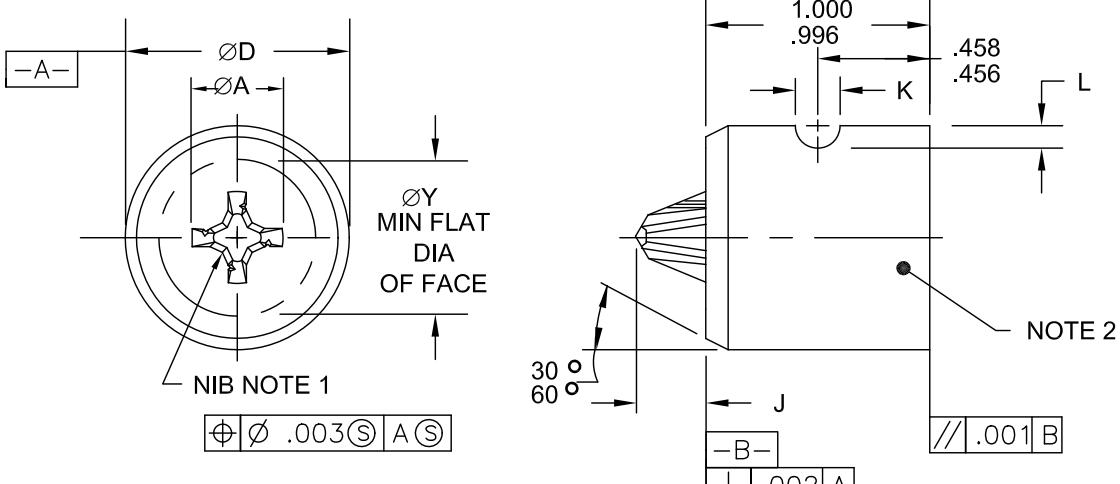
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### **ACR® RIBBED PHILLIPS® PUNCH DIMENSIONS**

DRAWN R. CHERLIN	DATE 7-30-97	DRAWING NUMBER <b>PSC-4100</b>
CHECKED: G. LAMONICA	DATE 7-30-97	SHEET 2 OF 2
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ®  
HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



WITHIN  $\varnothing Y$  SURFACE

DASH NUMBER	FORMER CODE NO. REF. ONLY	SCREW SIZE		RECESS SIZE TENSION HEAD	$\varnothing A$ +.006 -.000	$\varnothing D$ ±.0005	J +.006 -.000	K +.001 -.000	L +.000 -.001	$\varnothing Y$ MIN	PUNCH PENETRATION	
		TENSION HEAD	REDUCED HEAD								MAX	MIN
1	00-19	.0600	-	0	.052	.4375	.029	.125	.062	.119	.028	.024
17	00-4	.0730	-	0	.060	.4375	.037	.125	.062	.146	.036	.032
2	10-80	.0860	-	1	.087	.4375	.050	.125	.062	.172	.049	.045
18	10-1	.0990	-	1	.094	.4375	.057	.125	.062	.199	.056	.052
3	10-54	.1120	-	1	.109	.4375	.072	.125	.062	.312	.071	.067
4	20-1	.1380	.1640	2	.146	.4375	.080	.125	.062	.305	.075	.069
5	20-135	.1640	.1900	2	.161	.5625	.095	.212	.106	.375	.090	.084
6	20-136	.1900	.2500	2	.176	.5625	.110	.212	.106	.438	.105	.099
7	30-93	.2500	.3125	3	.239	.8750	.129	.212	.106	.594	.118	.112
8	40-79	.3125	.3750	4S	.309	1.0000	.162	.212	.106	.750	.148	.142
9	40-106	.3750	.4375	4S	.333	1.0000	.187	.212	.106	.844	.173	.167
10	40-24	.4375	.5000	4L	.356	1.2500	.210	.212	.106	1.250	.196	.190
11	40-2	.5000	.5625	4L	.385	1.2500	.239	.212	.106	1.062	.225	.219
12	40-3	.5625	.6250	4L	.416	1.2500	.270	.212	.106	1.188	.256	.250
13	50-11	.6250	.7500	5	.503	1.5000	.275	.212	.106	1.375	.248	.242
14	50-3	.7500	.8750	5	.564	2.0000	.336	-	-	1.625	.309	.303
15	60-85	.8750	1.000	6	.737	2.0000	.463	-	-	1.813	.433	.427
16	60-100	1.0000	-	6	.800	2.5000	.527	-	-	2.125	.497	.491

NOTES:

1. REFER TO DRAWING PSC-4100 SHEET 1 FOR PUNCH POINT DIMENSIONS NOT SHOWN.
2. REFER TO DRAWING PSC-4100 SHEET 2 FOR PUNCH NUMBERING AND MARKING NOTES.

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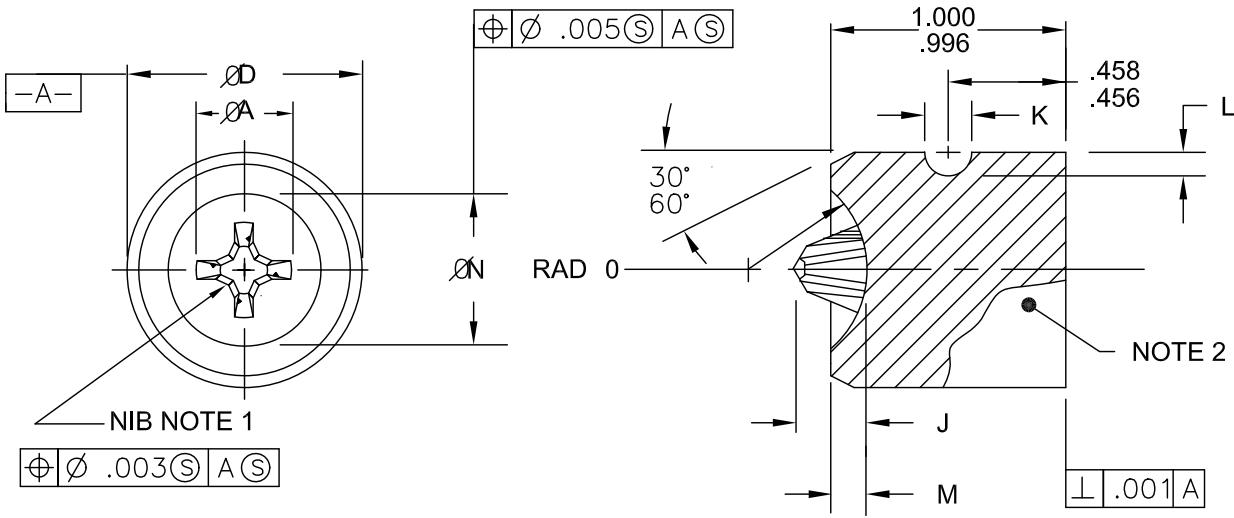
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### PUNCH, 100° FLUSH HEAD ACR® RIBBED PHILLIPS® RECESS

DRAWN S. GUARINO	DATE 1-7-80	DRAWING NUMBER <b>PSC-1101</b>
CHECKED: G. LAMONICA	DATE 7-30-97	SHEET 1 OF 1
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

PHILLIPS II®, PHILLIPS®, POZIDRIV®, ACR®, POZISQUARE®, PHILLIPS SQUARE-DRIV®, TORQ-SET®, TRI-WING®, MORTORQ®, HEXSTIX®, POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

REVISION 12-13-83 ECO #42 1/ REISSUED 9-11-88 2/ ECO #90 3/ REDRAWN 1-30-92 7-30-97 4/ UPDATE 5-01-13



DASH NUMBER	FORMER CODE NO. REF. ONLY	SCREW SIZE	RECESS SIZE	$\emptyset A$ +.006 -.000	$\emptyset D$ ±.0005	J +.006 -.000	K +.001 -.000	L +.000 -.001	M +.002 -.000	$\emptyset N$ +.005 -.000	PUNCH PENETRATION		
											MAX	MIN	
1	00-14	.0600	0	.059	.4375	.040	.125	.062	.028	.131	.091	.032	.028
17	00-15	.0730	0	.066	.4375	.048	.125	.062	.034	.160	.111	.040	.036
2	10-13	.0860	1	.096	.4375	.068	.125	.062	.040	.190	.132	.052	.048
18	10-14	.0990	1	.104	.4375	.077	.125	.062	.045	.215	.150	.061	.057
3	10-15	.1120	1	.114	.4375	.087	.125	.062	.049	.241	.173	.071	.067
4	20-21	.1380	2	.158	.4375	.108	.125	.062	.055	.280	.207	.080	.074
5	20-23	.1640	2	.174	.5625	.124	.212	.106	.072	.346	.244	.096	.090
6	20-25	.1900	2	.191	.5625	.142	.212	.106	.087	.409	.284	.114	.108
7	30-22	.2500	3	.273	.8750	.189	.212	.106	.105	.519	.373	.144	.138
8	40-9	.3125	4S	.342	1.0000	.224	.212	.106	.118	.665	.527	.173	.167
9	40-26	.3750	4L	.381	1.2500	.263	.212	.106	.133	.788	.652	.213	.207
10	40-27	.4375	4L	.405	1.2500	.285	.212	.106	.147	.913	.782	.238	.232
11	40-28	.5000	4L	.426	1.5000	.305	.212	.106	.161	1.038	.917	.260	.254
12	40-281	.5625	4L	.458	1.5000	.340	.212	.106	.177	1.112	.960	.292	.286
13	50-15	.6250	5	.573	1.5000	.388	.212	.106	.199	1.195	.995	.311	.305
14	50-6	.7500	5	.620	2.0000	.436	-	-	.290	1.500	1.115	.357	.351
15		.8750	6	NOT DEFINED									
16		1.0000	6	NOT DEFINED									

NOTES:

1. REFER TO DRAWING PSC-4100 SHEET 1 FOR PUNCH POINT DIMENSIONS NOT SHOWN.
2. REFER TO DRAWING PSC-4100 SHEET 2 FOR PUNCH NUMBERING AND MARKING NOTES.

REVISION 9-11-88  
REISSUED 1/23-89  
3/23-89  
DATE 7-30-97  
REDRAWN 7-30-97  
UPDATE 5-01-13

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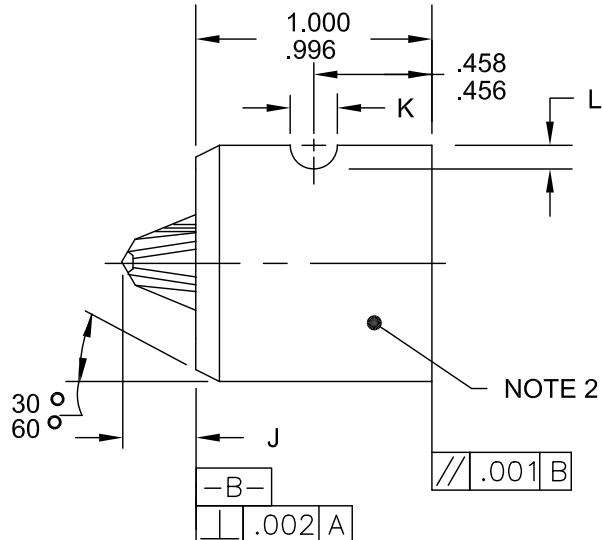
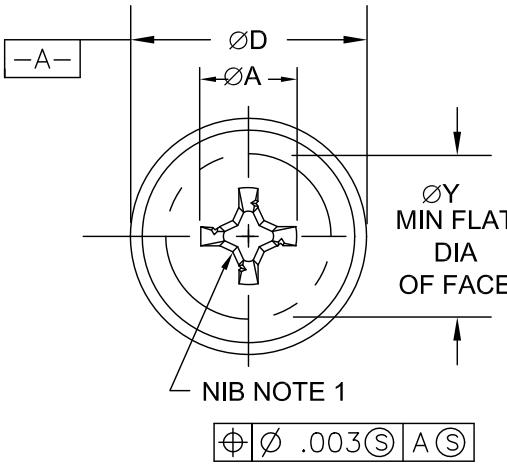
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## PUNCH, PAN HEAD SINGLE RADIUS ACR® RIBBED PHILLIPS® RECESS

DRAWN S. GUARINO	DATE 1-7-80	DRAWING NUMBER <b>PSC-1102</b>
CHECKED: G. LAMONICA	DATE 7-30-97	SHEET 1 OF 1

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ®  
HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



DASH NUMBER	ALTERNATE PUNCH NUMBER	FORMER CODE NO. REF.	SCREW SIZE	RECESS SIZE	$\phi A$ +.006 -.000	$\phi D$ $\pm .0005$	J +.006 -.000	K +.001 -.000	L +.000 -.001	$\phi Y$ MIN	PUNCH PENETRATION	
											MAX	MIN
1	PSC-1101S17	00-4	.0600	0	.060	.4375	.037	.125	.062	.146	.036	.032
17	-	00-5	.0730	0	.068	.4375	.045	.125	.062	.146	.044	.040
2	PSC-1101S18	10-1	.0860	1	.094	.4375	.057	.125	.062	.199	.056	.052
18	-	10-2	.0990	1	.099	.4375	.062	.125	.062	.199	.061	.057
3	PSC-1101S3	10-54	.1120	1	.109	.4375	.072	.125	.062	.312	.071	.067
4	-	20-134	.1380	2	.156	.4375	.090	.125	.062	.312	.085	.079
5	-	20-2	.1640	2	.166	.5625	.100	.212	.106	.332	.095	.089
6	-	20-3	.1900	2	.181	.5625	.115	.212	.106	.385	.110	.104
7	-	30-2	.2500	3	.260	.8750	.150	.212	.106	.544	.139	.133
8	-	40-64	.3125	4S	.326	1.0000	.180	.212	.106	.750	.166	.160
9	-	40-4	.3750	4L	.356	1.0000	.210	.212	.106	.762	.196	.190
10	PSC-1101S11	40-2	.4375	4L	.385	1.2500	.239	.212	.106	1.062	.225	.219
11	-	40-5	.5000	4L	.401	1.2500	.255	.212	.106	.875	.241	.235
12	-	40-141	.5625	4L	.440	1.5000	.294	.212	.106	1.250	.280	.274
13	PSC-1101S14	50-3	.6250	5	.564	2.0000	.336	-	-	1.625	.309	.303
14	-	50-4	.7500	5	.627	2.0000	.400	-	-	1.500	.373	.367
15	PSC-1101S15		.8750	6	.737	2.0000	.463	-	-	1.813	.433	.427
16	PSC-1101S16		1.0000	6	.800	2.5000	.527	-	-	2.125	.497	.491

#### NOTES:

- REFER TO DRAWING PSC-4100 SHEET 1 FOR PUNCH POINT DIMENSIONS NOT SHOWN.
- REFER TO DRAWING PSC-4100 SHEET 2 FOR PUNCH NUMBERING AND MARKING NOTES.

REVISION 1/ REISSUED 2/ REDRAWN 3/ UPDATE  
9-11-88 7-30-97 5-01-13

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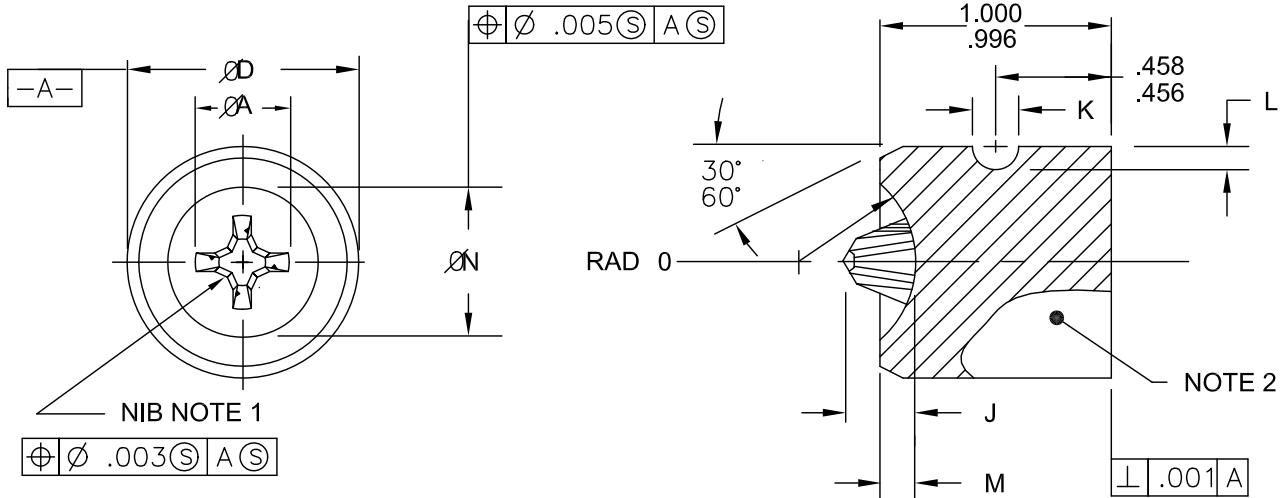
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#### PUNCH, FLAT FILLISTER HEAD ACR® RIBBED PHILLIPS® RECESS

DRAWN S. GUARINO	DATE 1-7-80	DRAWING NUMBER <b>PSC-1103</b>
CHECKED: G. LAMONICA	DATE 7-30-97	SHEET 1 OF 1

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ  
HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



DASH NUMBER	FORMER CODE NO. REF. ONLY	SCREW SIZE	RECESS SIZE	$\text{ØA}$ +.006 -.000	$\text{ØD}$ $\pm .0005$	J +.006 -.000	K +.001 -.000	L +.000 -.001	M +.002 -.000	$\text{ØN}$ +.005 -.000	O +.005 -.000	PUNCH PENETRATION	
												MAX	MIN
2	10-82	.0860	1	.093	.4375	.062	.125	.062	.020	.168	.186	.051	.047
18	10-83	.0990	1	.102	.4375	.072	.125	.062	.024	.195	.210	.061	.057
3	10-84	.1120	1	.117	.4375	.087	.125	.062	.026	.221	.248	.076	.072
4	20-8	.1380	2	.170	.4375	.116	.125	.062	.033	.274	.301	.094	.088
5	20-12	.1640	2	.184	.5625	.130	.212	.106	.040	.326	.352	.108	.102
6	20-13	.1900	2	.201	.5625	.148	.212	.106	.046	.379	.413	.126	.120
7	30-12	.2500	3	.282	.8750	.191	.212	.106	.062	.500	.535	.156	.150
8	40-13	.3125	4L	.382	1.0000	.263	.212	.106	.078	.627	.669	.214	.208
9	40-10	.3750	4L	.402	1.2500	.282	.212	.106	.096	.752	.784	.235	.229

#### NOTES:

- REFER TO DRAWING PSC-4100 SHEET 1 FOR PUNCH POINT DIMENSIONS NOT SHOWN.
- REFER TO DRAWING PSC-4100 SHEET 2 FOR PUNCH NUMBERING AND MARKING NOTES.

REVISION	1/ REISSUED 9-11-88	2/ REDRAWN 7-30-97	3/ UPDATE 5-01-13
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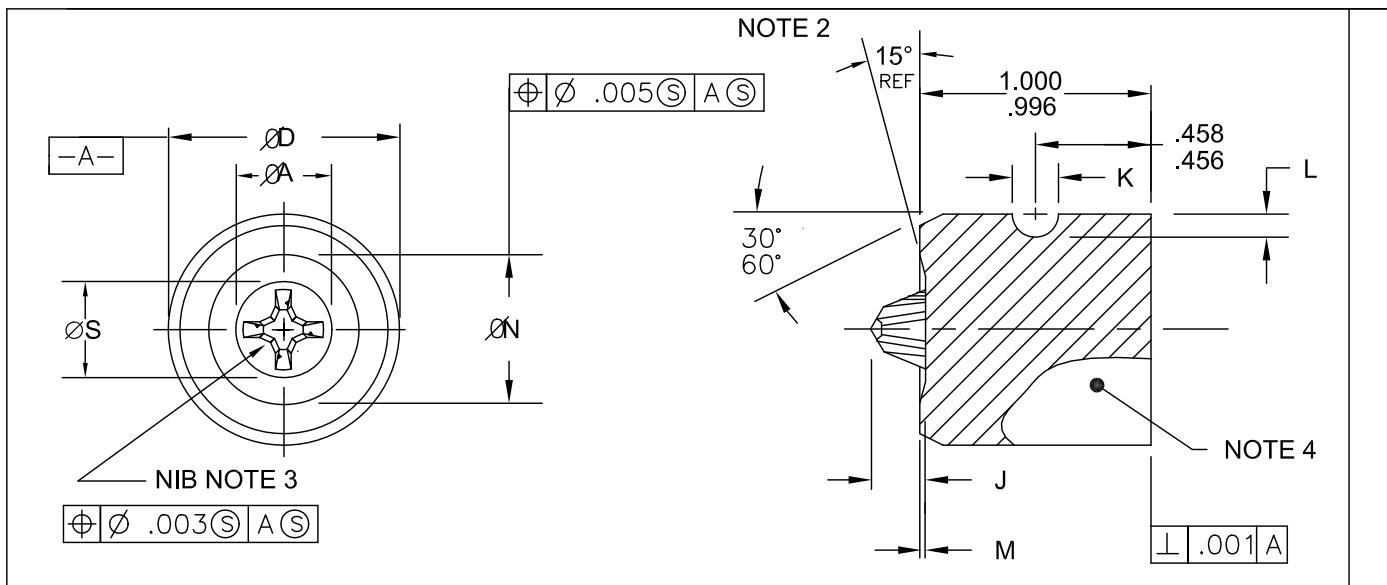
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#### PUNCH, 100° OVAL HEAD ACR® RIBBED PHILLIPS® RECESS

DRAWN S. GUARINO	DATE 1-7-80	DRAWING NUMBER <b>PSC-1104</b>
CHECKED: G. LAMONICA	DATE 7-30-97	SHEET 1 OF 1
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ®  
HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



DASH NUMBER	FORMER CODE NO. REF. NOTE 2	SCREW SIZE	HEX SIZE	RECESS SIZE	$\varnothing A$ +.006 -.000	$\varnothing D$ ±.0005	J +.006 -.000	K +.001 -.000	L +.000 -.001	M +.002 -.000	$\varnothing N$ +.005 -.000	$\varnothing S$ +.005 -.000	PUNCH PENETRATION	
													MAX	MIN
3	10-157	.1120	3/16	1	.116	.4375	.079	.125	.062	.008	.248	.188	.078	.074
4	20-137	.1380	1/4	2	.141	.4375	.075	.125	.062	.013	.330	.230	.070	.064
5	20-474	.1640	1/4	2	.181	.5625	.115	.212	.106	.013	.330	.230	.110	.104
6	20-147	.1900	5/16	2	.196	.5625	.130	.212	.106	.017	.418	.288	.125	.119
6A		.1900	3/8	2	.196	.8750	.130	.212	.106	.018	.492	.360	.125	.119
7	30-58	.2500	3/8	3	.275	1.0000	.165	.212	.106	.018	.492	.360	.154	.148
7A		.2500	7/16	3	.275	1.0000	.165	.212	.106	.023	.576	.407	.154	.148
8	40-65	.3125	1/2	4L	.356	1.0000	.210	.212	.106	.025	.662	.472	.196	.190
8A		.3125	7/16	4L	.356	1.0000	.210	.212	.106	.023	.576	.407	.196	.190
9		.3750	1/2	4L	.385	1.0000	.239	.212	.106	.025	.662	.472	.225	.219
9A	40-66	.3750	9/16	4L	.385	1.2500	.239	.212	.106	.029	.738	.518	.225	.219
10	40-67	.4375	5/8	4L	.401	1.5000	.255	.212	.106	.033	.818	.575	.241	.235
10A		.4375	11/16	4L	.401	1.5000	.255	.212	.106	.035	.901	.638	.241	.235
11	40-68	.5000	3/4	4L	.416	1.5000	.270	.212	.106	.041	.996	.690	.256	.250

NOTES:

1. PARTS MADE FROM THESE PUNCHES ARE NOT DESIGNED TO WITHSTAND TENSILE LOADS BASED ON FED-STD-H28 TENSILE STRESS AREAS.
2. THESE PUNCHES HAVE A 15° CHAMFER. THE FORMER REFERENCED PUNCHES HAVE A 30° CHAMFER.
3. REFER TO DRAWING PSC-4100 SHEET 1 FOR PUNCH POINT DIMENSIONS NOT SHOWN.
4. REFER TO DRAWING PSC-4100 SHEET 2 FOR PUNCH NUMBERING AND MARKING NOTES.

REVISION	REISSUED 9-11-88	1/ REISSUED 3-23-89	2/ REDRAWN 7-30-97	3/ UPDATE 5-01-13
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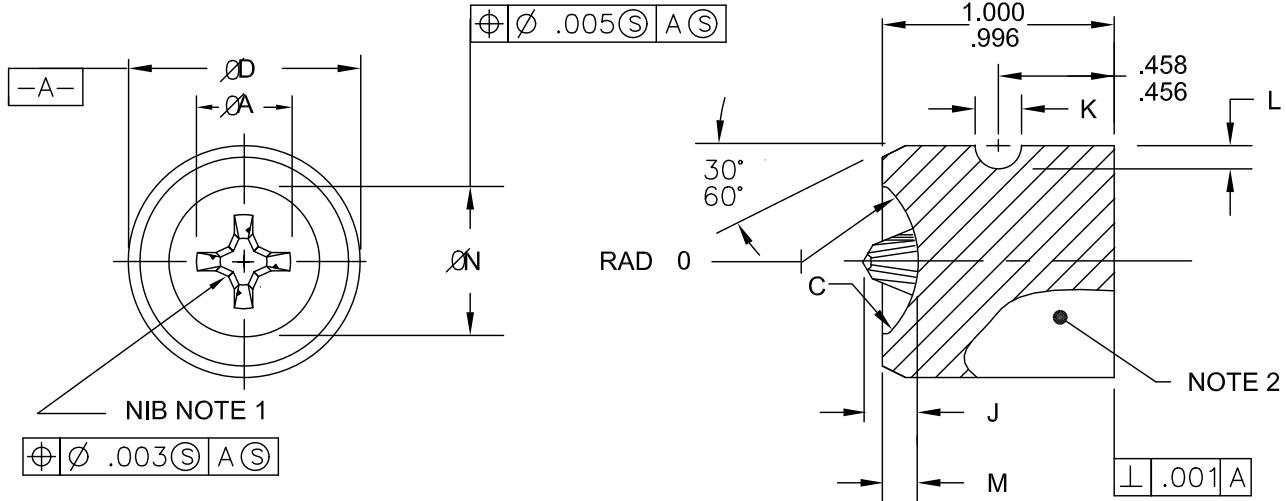
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## PUNCH, TRIMMED HEXAGON HEAD ACR® RIBBED PHILLIPS® RECESS

DRAWN S. GUARINO	DATE 1-8-80	DRAWING NUMBER <b>PSC-1105</b>
CHECKED: G. LAMONICA	DATE 7-30-97	SHEET 1 OF 1
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ  
HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



DASH NUMBER	FORMER CODE NO. REF. ONLY	SCREW SIZE	RECESS SIZE	$\varnothing A$ +.006 -.000	$\varnothing D$ $\pm .0005$	J +.006 -.000	K +.001 -.000	L +.000 -.001	M +.002 -.000	$\varnothing N$ +.005 -.000	O +.005 -.000	C $\pm .005$	PUNCH PENETRATION	
													MAX	MIN
2	10-173	.0860	1	.096	.4375	.068	.125	.062	.040	.157	.132	.032	.052	.048
3	10-174	.1120	1	.114	.4375	.087	.125	.062	.053	.209	.173	.032	.071	.067
4	20-658	.1380	2	.158	.4375	.108	.125	.062	.065	.260	.207	.041	.080	.074
5	20-659	.1640	2	.174	.5625	.124	.212	.106	.077	.312	.244	.043	.096	.090
6	20-660	.1900	2	.191	.5625	.142	.212	.106	.089	.358	.284	.047	.114	.108
7	30-286	.2500	3	.273	.8750	.189	.212	.106	.118	.477	.373	.062	.144	.138
8	40-304	.3125	4S	.342	1.0000	.224	.212	.106	.147	.600	.527	.095	.173	.167
9	40-319	.3750	4L	.381	1.2500	.263	.212	.106	.177	.725	.652	.118	.213	.207
10	40-320	.4375	4L	.405	1.2500	.285	.212	.106	.207	.848	.782	.160	.238	.232
11	40-321	.5000	4L	.426	1.5000	.305	.212	.106	.235	.972	.917	.190	.260	.254

NOTES:

1. REFER TO DRAWING PSC-4100 SHEET 1 FOR PUNCH POINT DIMENSIONS NOT SHOWN.
2. REFER TO DRAWING PSC-4100 SHEET 2 FOR PUNCH NUMBERING AND MARKING NOTES.

REVISION 9-11-88 2/ REISSUED 7-30-97 3/ REDRAWN 5-01-13 5/ UPDATE

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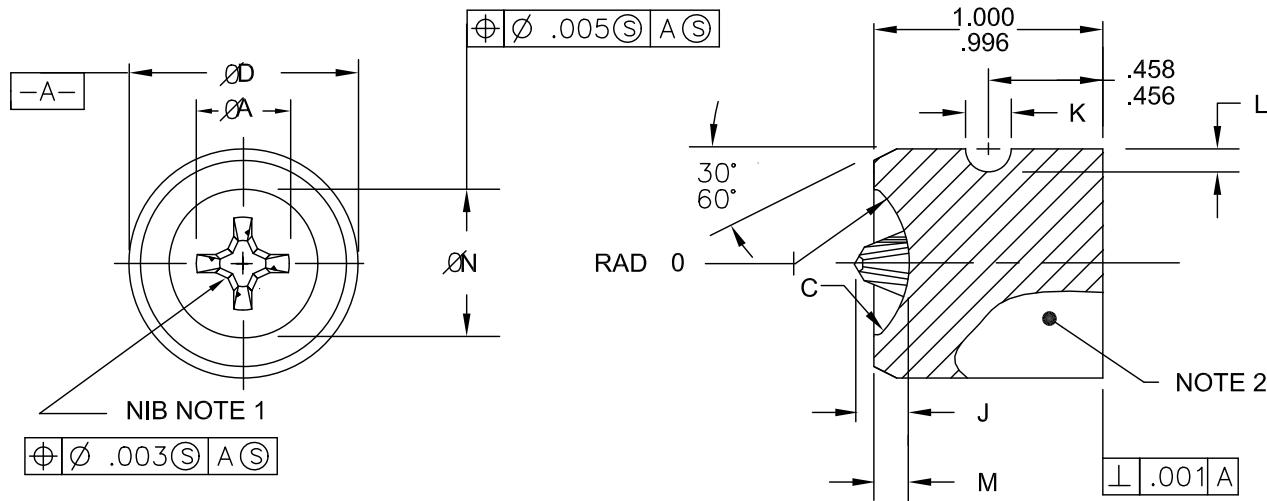
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## PUNCH, PAN HEAD, DOUBLE RADIUS ACR® RIBBED PHILLIPS® RECESS

DRAWN S. O. BRENNAN	DATE 11-27-84	DRAWING NUMBER <b>PSC-1106</b>
CHECKED: G. LAMONICA	DATE 7-30-97	SHEET 1 OF 1

PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.  
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ  
HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



DASH NUMBER	SCREW SIZE	RECESS SIZE	$\emptyset A$ +.006 -.000	$\emptyset D$ ±.0005	J +.006 -.000	K +.001 -.000	L +.000 -.001	M +.002 -.000	$\emptyset N$ +.005 -.000	O +.005 -.000	C ±.005	PUNCH PENETRATION	
												MAX	MIN
5	.1640	2	.161	.5625	.106	.212	.106	.054	.294	.305	.080	.085	.079
6	.1900	2	.176	.5625	.120	.212	.106	.061	.353	.400	.080	.101	.095
7	.2500	3	.245	.8750	.151	.212	.106	.081	.488	.470	.100	.118	.112

NOTES:

1. REFER TO DRAWING PSC-4100 SHEET 1 FOR PUNCH POINT DIMENSIONS NOT SHOWN.
2. REFER TO DRAWING PSC-4100 SHEET 2 FOR PUNCH NUMBERING AND MARKING NOTES.

REVISION 9-11-88 1/ REISSUED 2/ REDRAWN 3/ UPDATE 7-30-97 5-01-13

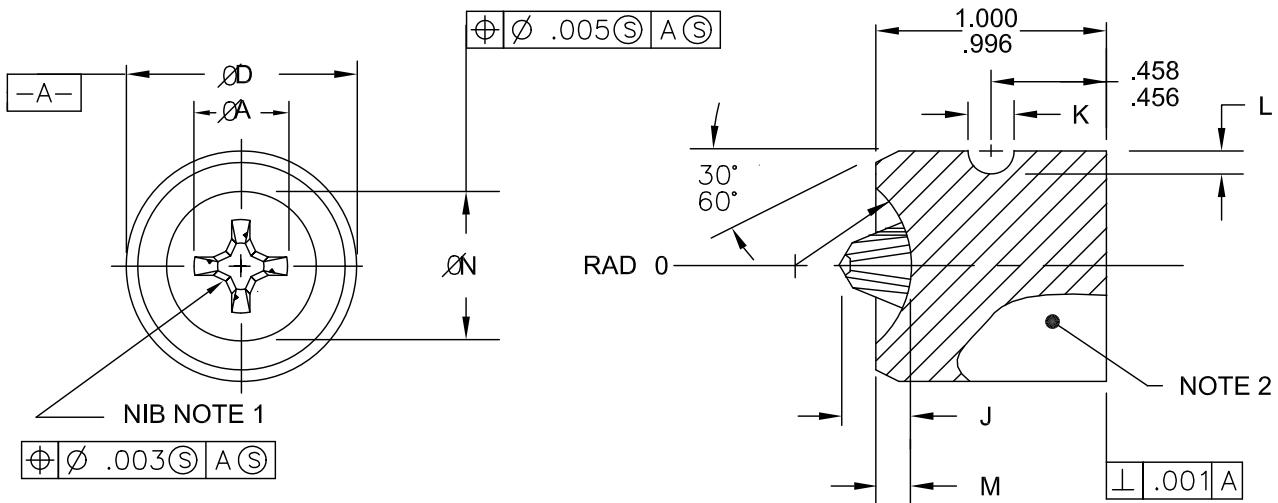
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## PUNCH, WASHER HEAD, DOUBLE RADIUS ACR® RIBBED PHILLIPS® RECESS

DRAWN S. O. BRENNAN	DATE 11-21-84	DRAWING NUMBER <b>PSC-1107</b>
CHECKED: G. LAMONICA	DATE 7-30-97	SHEET 1 OF 1
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ  
HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



DASH NUMBER	FORMER CODE NO. REF. ONLY	SCREW SIZE	RECESS SIZE	$\varnothing A$ +.006 -.000	$\varnothing D$ ±.0005	J +.006 -.000	K +.001 -.000	L +.000 -.001	M +.002 -.000	$\varnothing N$ +.005 -.000	0 +.005 -.000	PUNCH PENETRATION	
												MAX	MIN
4	20-125	.1380	2	.147	.5625	.095	.212	.106	.062	.286	.196	.068	.062
5	20-126	.1640	2	.160	.5625	.108	.212	.106	.076	.341	.230	.082	.076
6	20-127	.1900	2	.173	.5625	.122	.212	.106	.088	.394	.264	.096	.090
7	30-88	.2500	3	.246	.8750	.161	.212	.106	.121	.501	.320	.116	.110
8	40-134	.3125	4S	.323	1.0000	.212	.212	.106	.137	.593	.390	.151	.145
9	40-136	.3750	4L	.353	1.2500	.242	.212	.106	.162	.700	.460	.182	.176
10	40-225	.4375	4L	.380	1.2500	.269	.212	.106	.177	.790	.530	.210	.204
11	40-227	.5000	4L	.406	1.5000	.295	.212	.106	.200	.895	.600	.237	.231
12	40-211	.5625	4L	.439	1.5000	.330	.212	.106	.225	1.000	.669	.270	.264

REVISION 1/ REDRAWN 2/ UPDATE  
7-30-97 5-01-13

NOTES:

- REFER TO DRAWING PSC-4100 SHEET 1 FOR PUNCH POINT DIMENSIONS NOT SHOWN.
- REFER TO DRAWING PSC-4100 SHEET 2 FOR PUNCH NUMBERING AND MARKING NOTES.

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### PUNCH, BRAZIER HEAD ACR® RIBBED PHILLIPS® RECESS

DRAWN J. GRADY	DATE 1-17-92	DRAWING NUMBER <b>PSC-1108</b>
CHECKED: G. LAMONICA	DATE 7-30-97	SHEET 1 OF 1
PHILLIPS SCREW CO., 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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