

TECHNICAL MANUAL



ACR[®] TORQ-SET[®] Drive Systems

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



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ACR® TORQ-SET®

Drive System Technical Manual



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ACR[®] RIBBED TORQ-SET[®]

ANTI-CAM-OUT OFFSET CRUCIFORM DRIVE SYSTEM

RECESS AND GAGES

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DIMENSIONS OF

ACR[®] RIBBED TORQ-SET[®]

ANTI-CAM-OUT OFFSET CRUCIFORM RECESSES

REISSUED
DEC. 21, 1987

1/ECO 98
JULY 09 1992

2/ECO 148
JUNE 22 2012

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TITLE:

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RECESS DIMENSIONS

DRAWN:
S. GUARINO

DATE:
10/15/80

DRAWING NUMBER

PSC-2000

CHECKED:
J .O'BRIEN/ J. GRADY

DATE:
11/04/80

SHEET 1 OF 11

PHILLIPS II[®] PHILLIPS[®] POZIDRIV[®] ACR[®] POZISQUARE[®] PHILLIPS SQUARE-DRIV[®] TORQ-SET[®] TRI-WING[®] MORTORQ[®]
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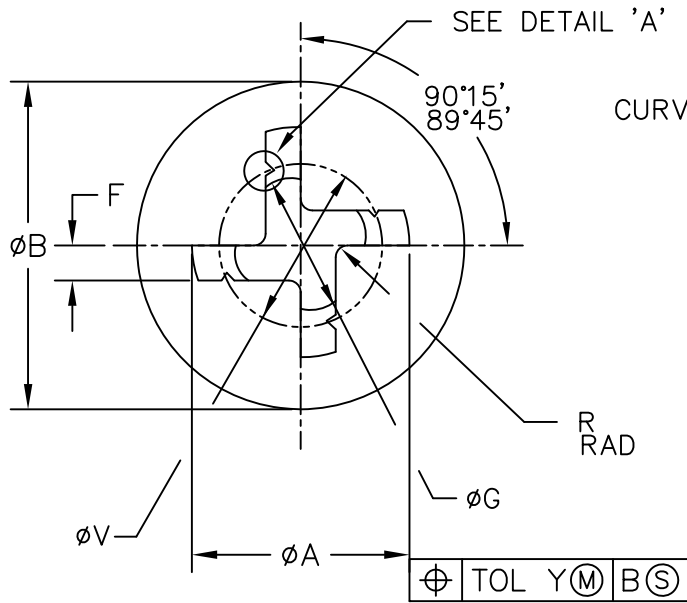
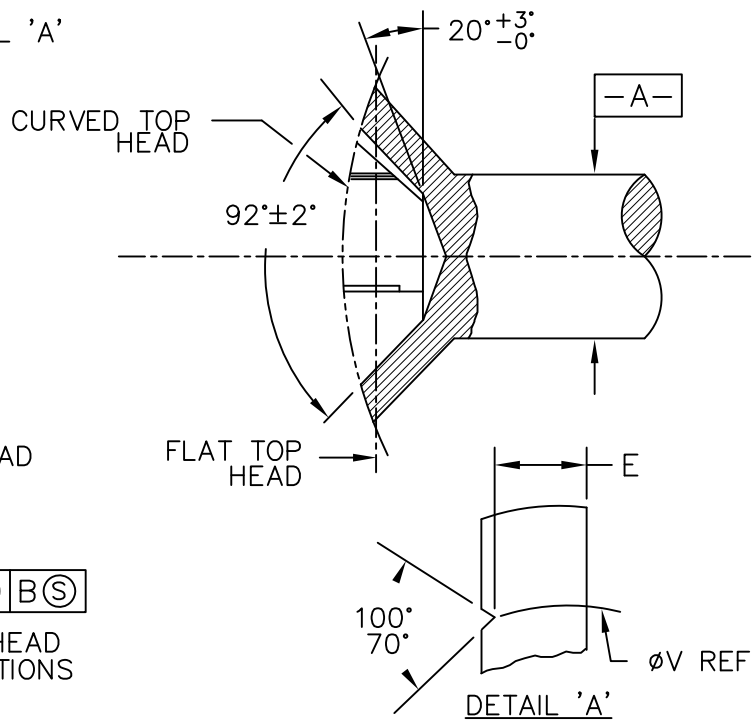


FIGURE 1
RECESS DIMENSIONS
ALL HEAD CONFIGURATIONS

FOR ALL HEAD
CONFIGURATIONS



RECESS SIZE	TABLE 1 RECESS DIMENSIONS										
	E		F		ØG		R RAD		ØV		ØY
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	
0					.037	.033			.049	.037	.012
1	.0165	.0155	.018	.017	.044	.040	.010	.000	.059	.047	
2					.052	.048			.068	.056	
3	.0185	.0175	.021	.019	.059	.055			.078	.066	
4	.0195	.0185	.023	.020	.067	.063	.018	.008	.087	.075	
5	.0225	.0215	.026	.023	.075	.071			.097	.085	
6	.0255	.0245	.029	.026	.082	.078	.030	.016	.106	.094	
8	.0305	.0295	.034	.031	.096	.092			.125	.113	
10	.0355	.0345	.039	.036	.111	.107	.040	.023	.144	.132	
1/4	.0475	.0465	.051	.048	.147	.143			.188	.176	.016
5/16	.0605	.0595	.064	.061	.184	.180	.052	.031	.244	.232	
3/8	.0725	.0715	.076	.073	.220	.216			.292	.280	
7/16	.0855	.0845	.089	.086	.256	.252	.072	.048	.340	.328	
1/2	.0975	.0965	.102	.098	.292	.288	.089	.062	.388	.376	
9/16	.1095	.1085	.115	.111	.328	.324			.435	.423	.024
5/8	.1215	.1205	.127	.123	.365	.361	.108	.078	.483	.471	
3/4	.1450	.1440	.152	.148	.437	.433			.579	.567	
7/8	.1700	.1690	.177	.173	.510	.506			.675	.663	
1.00	.1950	.1940	.202	.198	.582	.578	.149	.109	.770	.758	

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TITLE:

ACR® RIBBED TORQ-SET® RECESS DIMENSIONS

DRAWN:
S. GUARINO

DATE:
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CHECKED:
J. O'BRIEN/J. GRADY

DATE:
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PSC-2000

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2/ECO 98
JULY 09, 1992

3/ECO 147
JAN. 27, 2012

4/ECO 148
JUNE 22, 2012

5/ECO 161
JULY 21, 2015

FIGURE 2
100° FLUSH HEADS

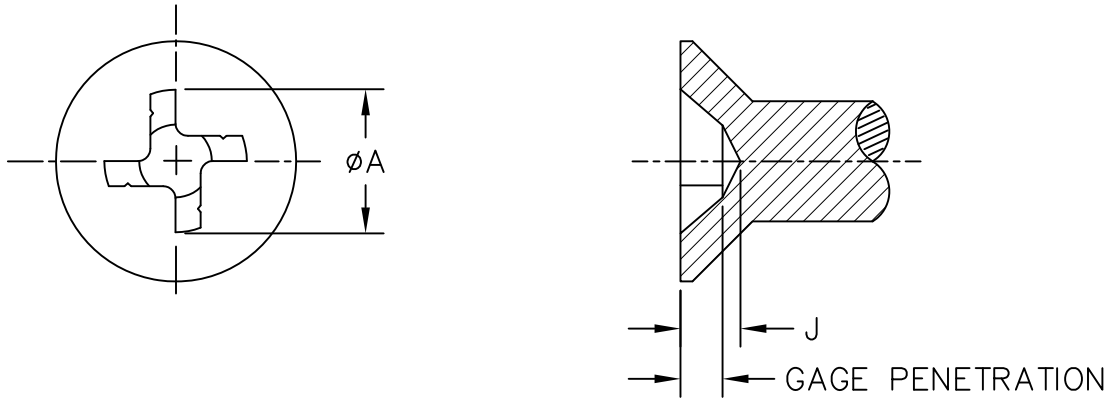


TABLE 2

THREAD SIZE		RECESS SIZE	ϕA		J		RECESS GAGE PENETRATION	
TENSION HEAD	SHEAR HEAD		MAX	MIN	MAX	MIN	MAX	MIN
.0600-80		0	.082	.072	.031	.021	.0225	.0145
.0730-64		1	.098	.088	.037	.027	.0270	.0185
.0860-56		2	.115	.105	.043	.033	.0315	.0225
.0990-56		3	.132	.122	.049	.039	.0365	.0270
.1120-40		4	.148	.138	.055	.045	.0405	.0305
.1380-32	.1640-32	6	.182	.172	.066	.056	.0500	.0395
.1640-32	.1900-32	8	.215	.205	.078	.068	.0595	.0480
.1900-32	.2500-28	10	.248	.238	.090	.080	.0685	.0560
.2500-28	.3125-24	1/4	.325	.315	.118	.108	.0890	.0750
.3125-24	.3750-24	5/16	.357	.347	.122	.112	.0860	.0700
.3750-24	.4375-20	3/8	.427	.417	.145	.135	.1030	.0850
.4375-20	.5000-20	7/16	.498	.488	.169	.159	.1205	.1005
.5000-20	.5625-18	1/2	.568	.558	.193	.183	.1375	.1155
.5625-18	.6250-18	9/16	.638	.628	.217	.207	.1545	.1305
.6250-18	.7500-16	5/8	.708	.698	.241	.231	.1710	.1450
.7500-16	.8750-14	3/4	.849	.839	.288	.278	.2060	.1760
.8750-14	1.0000-12	7/8	.989	.979	.336	.326	.2395	.2055
1.000-12	—	1.00	1.130	1.120	.383	.373	.2740	.2360

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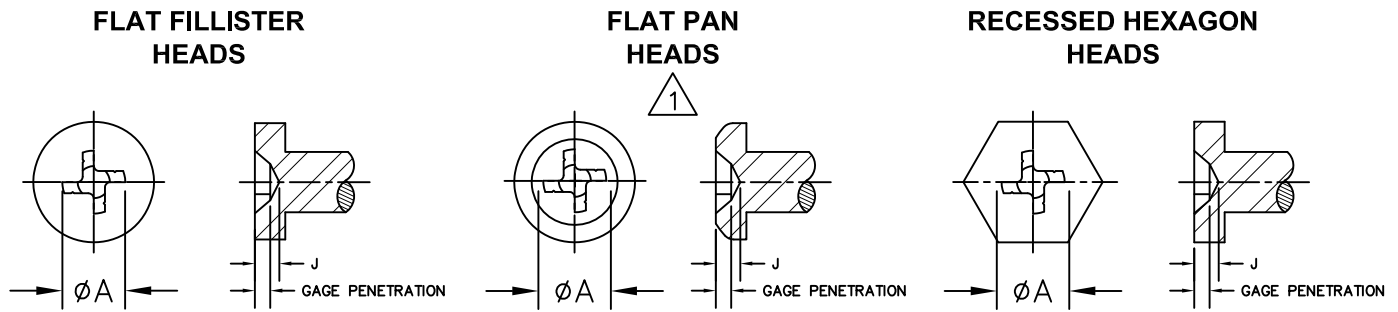
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FIGURE 3



- △ NOTES:
1. PREFERRED PAN HEAD DESIGN, SEE NASM1515, REQT 106 FOR ENVELOPE DIMENSIONS.

TABLE 3

THREAD SIZE	RECESS SIZE	ϕA		J		RECESS GAGE PENETRATION	
		MAX	MIN	MAX	MIN	MAX	MIN
.0600-80	0	.087	.077	.033	.023	.0250	.0170
.0730-64	1	.104	.094	.039	.029	.0300	.0215
.0860-56	2	.122	.112	.046	.036	.0350	.0260
.0990-56	3	.140	.130	.053	.043	.0405	.0310
.1120-40	4	.157	.147	.059	.049	.0450	.0350
.1380-32	6	.193	.183	.072	.062	.0555	.0450
.1640-32	8	.228	.218	.085	.075	.0660	.0545
.1900-32	10	.263	.253	.098	.088	.0760	.0635
.2500-28	1/4	.345	.335	.128	.118	.0990	.0850
.3125-24	5/16	.382	.372	.134	.124	.0985	.0825
.3750-24	3/8	.457	.447	.161	.151	.1180	.1000
.4375-20	7/16	.498	.488	.169	.159	.1205	.1005
.5000-20	1/2	.568	.558	.193	.183	.1375	.1155
.5625-18	9/16	.638	.628	.217	.207	.1545	.1305
.6250-18	5/8	.708	.698	.241	.231	.1710	.1450
.7500-16	3/4	.849	.839	.288	.278	.2060	.1760
.8750-14	7/8	.989	.979	.336	.326	.2395	.2055
1.000-12	1.00	1.130	1.120	.383	.373	.2740	.2360

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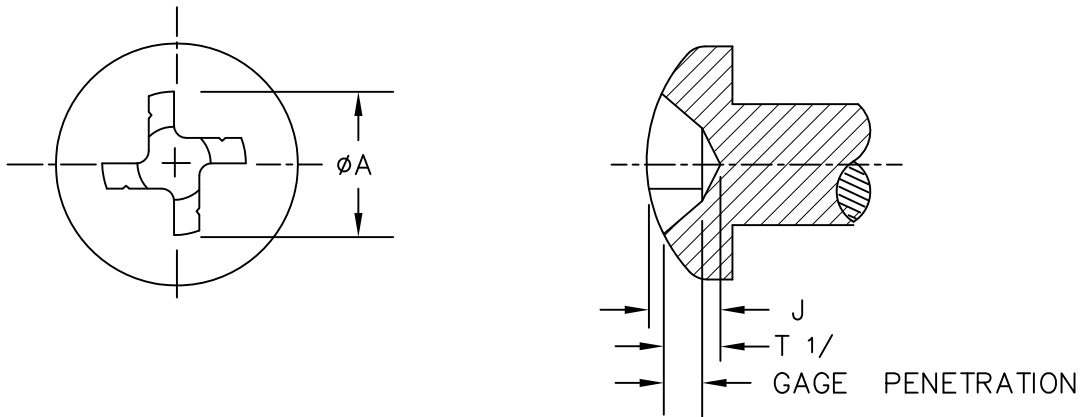
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FIGURE 5
PAN HEAD
(CURVED & DOUBLE RADIUS)



THREAD SIZE	RECESS SIZE	ϕA		J 2/		T 1/	RECESS GAGE PENETRATION	
		MAX	MIN	MAX	MIN		MAX	MIN
.0600-80	0	.073	.063	.032	.022	.026-.016	.0180	.0100
.0730-64	1	.087	.077	.039	.029	.031-.021	.0215	.0130
.0860-56	2	.102	.092	.045	.035	.036-.026	.0250	.0160
.0990-56	3	.116	.106	.052	.042	.041-.031	.0285	.0190
.1120-40	4	.131	.121	.058	.048	.046-.036	.0320	.0220
.1380-32	6	.160	.150	.070	.060	.055-.045	.0390	.0285
.1640-32	8	.190	.180	.083	.073	.065-.055	.0470	.0355
.1900-32	10	.219	.209	.096	.086	.075-.065	.0540	.0415
.2500-28	1/4	.286	.276	.126	.116	.098-.088	.0695	.0555
.3125-24	5/16	.357	.347	.153	.143	.122-.112	.0860	.0700
.3750-24	3/8	.427	.417	.181	.171	.145-.135	.1030	.0850
.4375-20	7/16	.498	.488	.209	.199	.169-.159	.1205	.1005
.5000-20	1/2	.568	.558	.236	.226	.193-.183	.1375	.1155
.5625-18	9/16	.638	.628	.270	.260	.217-.207	.1545	.1305
.6250-18	5/8	.708	.698	.303	.293	.241-.231	.1710	.1450
.7500-16	3/4	.849	.839	.370	.360	.288-.278	.2060	.1760

REISSUED
DEC. 21, 1987

1/ECO 76
OCT. 15, 1991

2/ECO 77
OCT. 15, 1991

3/ECO 98
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4/ECO 148
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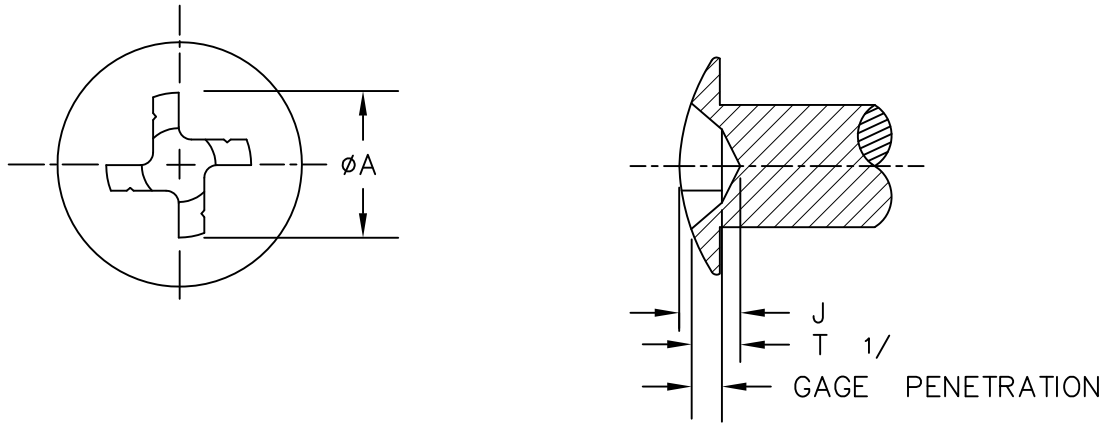
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PSC-2000

SHEET 6 OF 11

FIGURE 6
BRAZIER HEAD



THREAD SIZE	RECESS SIZE	ØA		J		T 1/	RECESS GAGE PENETRATION	
		MAX	MIN	MAX	MIN		MAX	MIN
.1380-32	6	.160	.150	.072	.062	.055-.045	.0390	.0285
.1640-32	8	.190	.180	.085	.075	.065-.055	.0470	.0355
.1900-32	10	.219	.209	.098	.088	.075-.065	.0540	.0415
.2500-28	1/4	.286	.276	.130	.120	.098-.088	.0695	.0555
.3125-24	5/16	.357	.347	.164	.154	.122-.112	.0860	.0700
.3750-24	3/8	.427	.417	.197	.187	.145-.135	.1030	.0850
.4375-20	7/16	.498	.488	.230	.220	.169-.159	.1205	.1005
.5000-20	1/2	.568	.558	.263	.253	.193-.183	.1375	.1155
.5625-18	9/16	.638	.628	.296	.286	.217-.207	.1545	.1305
.6250-18	5/8	.708	.698	.329	.319	.241-.231	.1710	.1450

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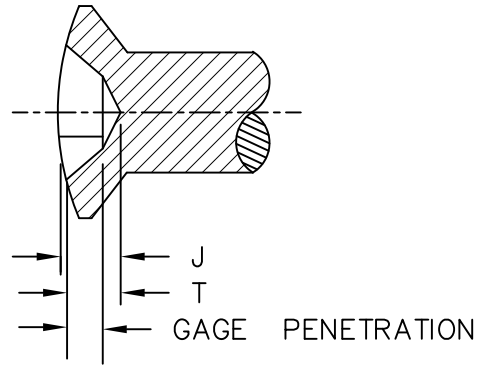
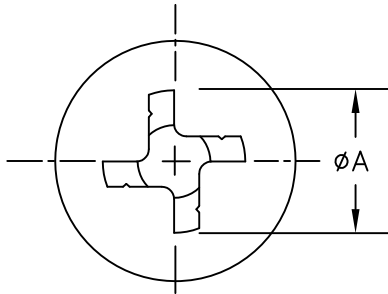
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11/04/80

SHEET 7 OF 11

FIGURE 7
100° REDUCED FULL CONTOUR
CROWN HEAD



3/

3/

PART NO.	THREAD SIZE	RECESS SIZE	ϕA		J		T		RECESS GAGE PENETRATION	
			MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
NAS 2852	.1640-32	6	.190	.180	.074	.064	.070	.060	.0555	.0445
NAS 2853	.1900-32	8	.223	.213	.087	.077	.082	.072	.0650	.0530
NAS 2854	.2500-28	10	.262	.252	.102	.092	.097	.087	.0770	.0645
NAS 2855	.3125-24	1/4	.342	.332	.133	.123	.125	.115	.1000	.0855
NAS 2856	.3750-24	5/16	.379	.369	.140	.130	.132	.122	.0980	.0815
NAS 2857	.4375-20	3/8	.451	.441	.166	.156	.157	.147	.1160	.0975
NAS 2858	.5000-20	7/16	.525	.515	.194	.184	.182	.172	.1350	.1145
NAS 2859	.5625-18	1/2	.598	.588	.221	.211	.207	.197	.1540	.1315
NAS 2860	.6250-18	9/16	.671	.661	.248	.238	.232	.222	.1725	.1480
NA0124-050	MJ5	8	.221	.211	.084	.074	.081	.071	.0635	.0515
NA0124-060	MJ6	10	.256	.246	.097	.087	.094	.084	.0735	.0610
NA0124-080	MJ8	1/4	.335	.325	.125	.115	.122	.112	.0950	.0805
NA0124-100	MJ10	5/16	.369	.359	.130	.120	.127	.117	.0925	.0760
NA0124-120	MJ12	3/8	.439	.429	.154	.144	.151	.141	.1095	.0910

REISSUED
 DEC. 21, 1987

1/ECO 76
 OCT. 15, 1991

2/ECO 77
 OCT. 15, 1991

3/ECO 98
 JULY 09, 1992

4/ECO 148
 JUNE 22 2012

5/ECO 160
 SEPT 30 2014

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TITLE:

ACR® RIBBED TORQ-SET®
RECESS DIMENSIONS

DRAWN:
 S. GUARINO

DATE:
 10/15/80

DRAWING NUMBER

CHECKED:
 J. O'BRIEN/J. GRADY

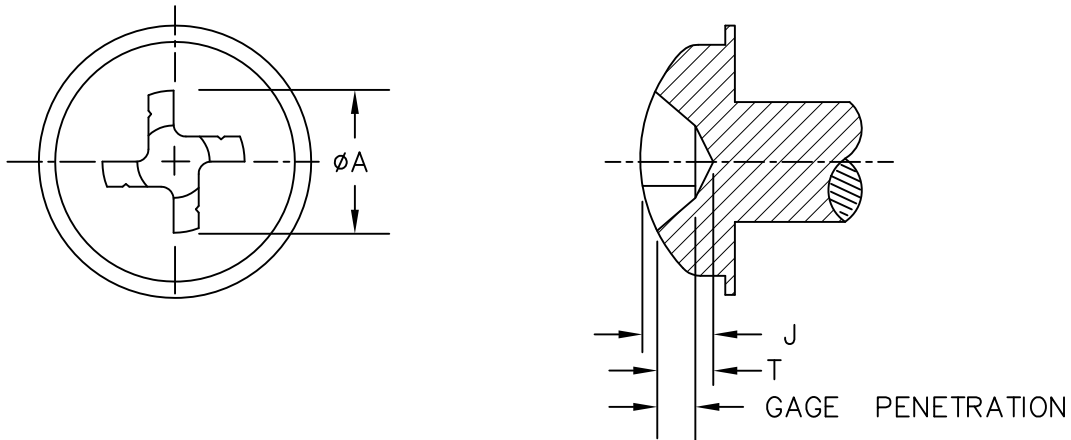
DATE:
 11/04/80

PSC-2000

SHEET 8 OF 11

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 8
WASHER HEAD



THREAD SIZE	RECESS SIZE	ϕA		J		T		RECESS GAGE PENETRATION	
		MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
.1900-32	10	.219	.209	.090	.080	.075	.065	.0540	.0415

NEW ISSUE
JUNE 05, 1992
2/ECO 148
JUNE 22 2012
3/ECO 160
SEPT 30 2014

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TITLE:

ACR® RIBBED TORQ-SET®
RECESS DIMENSIONS

DRAWN:
S. GURAINO

DATE:
10/15/80

DRAWING NUMBER

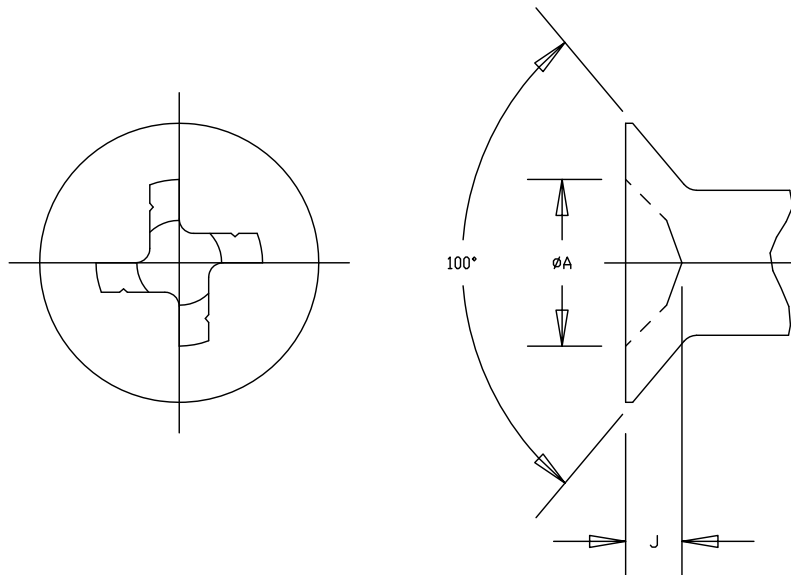
CHECKED:
J. O'BRIEN/J. GRADY

DATE:
11/04/80

PSC-2000

SHEET 9 OF 11

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



100° METRIC FLUSH HEAD

THREAD SIZE	RECESS SIZE	DIMENSIONS					
		ØA		J		RECESS GAGE PENETRATION	
		MAX	MIN	MAX	MIN	MAX	MIN
M1.6	0	2.08	1.83	0.79	0.53	0.572	0.368
M2	1	2.49	2.24	0.94	0.69	0.688	0.470
M2.5	3	3.35	3.10	1.24	0.99	0.927	0.686
M3	4	3.76	3.51	1.40	1.14	1.029	0.775
M3.5	6	4.62	4.37	1.68	1.42	1.270	1.003
M4	8	5.46	5.21	1.98	1.73	1.511	1.219
M5	10	6.30	6.05	2.29	2.03	1.740	1.422
M6	1/4	8.26	8.00	3.00	2.74	2.261	1.905
M7	1/4	8.26	8.00	3.00	2.74	2.261	1.905
M8	5/16	9.07	8.81	3.10	2.84	2.184	1.778
M10	3/8	10.85	10.59	3.68	3.43	2.616	2.159
M12	1/2	14.43	14.17	4.90	4.65	3.493	2.934

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TITLE:

ACR[®] RIBBED TORQ-SET[®] METRIC 100° FLUSH HEAD

DRAWN

G.DILLING

DATE

4/23/12

DRAWING NUMBER

PSC-2000
SHEET 10 OF 11

CHECKED:

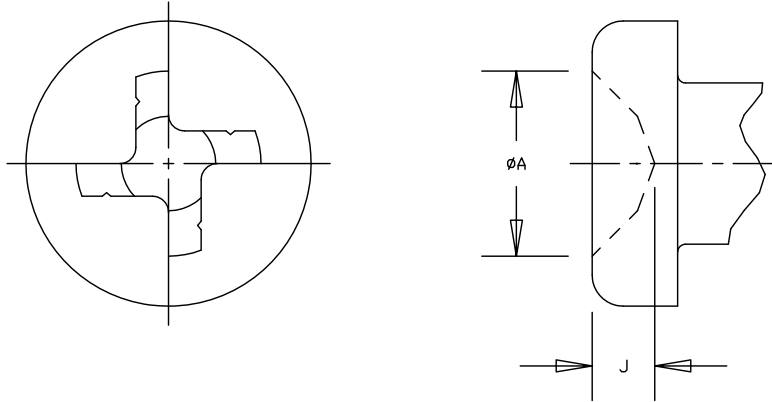
G.DILLING

DATE

4/23/12

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[®]
AND POZILOCK[®] ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



METRIC FLAT PAN HEAD

SCREW SIZE	RECESS SIZE	DIMENSIONS					
		ØA		J		RECESS GAGE PENETRATION	
		MAX	MIN	MAX	MIN	MAX	MIN
M1.6	0	2.21	1.96	0.84	0.58	0.635	0.432
M2	1	2.64	2.39	0.99	0.74	0.762	0.546
M2.5	3	3.56	3.30	1.35	1.09	1.029	0.787
M3	4	3.99	3.73	1.50	1.24	1.143	0.889
M3.5	6	4.90	4.65	1.83	1.57	1.410	1.143
M4	8	5.79	5.54	2.16	1.91	1.676	1.384
M5	10	6.68	6.43	2.49	2.24	1.930	1.613
M6	1/4	8.76	8.51	3.25	3.00	2.515	2.159
M7	1/4	8.76	8.51	3.25	3.00	2.515	2.159
M8	5/16	9.70	9.45	3.40	3.15	2.502	2.096
M10	3/8	11.61	11.35	4.09	3.84	2.997	2.540
M12	1/2	14.43	14.17	4.90	4.65	3.493	2.934

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TITLE:

**ACR® RIBBED TORQ-SET®
METRIC FLAT PAN HEAD**

DRAWN

G.DILLING

DATE

4/23/12

DRAWING NUMBER

PSC-2000

CHECKED:

G.DILLING

DATE

4/23/12

SHEET 11 OF 11

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ACR[®] RIBBED **TORQ-SET[®] RECESS** **GAGE POINTS**

REVISION
 1/ECO 23
 AUG. 12, 1980
 REISSUED
 DEC. 21, 1987

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TITLE:

GAGE POINTS

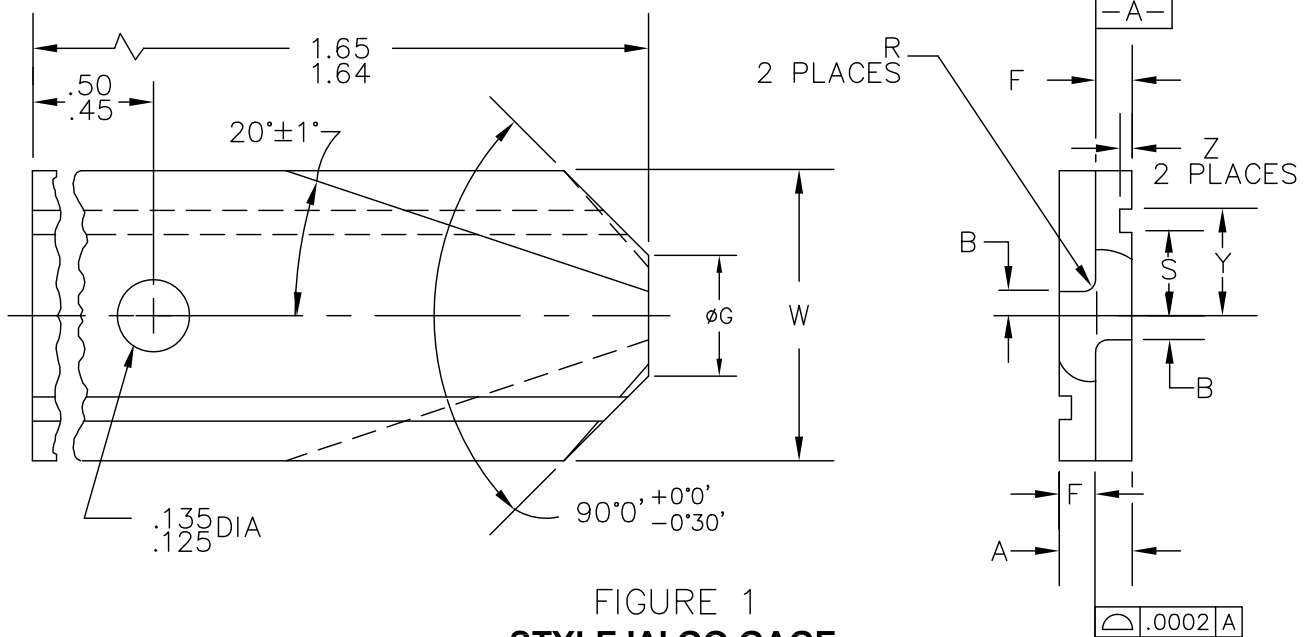
ACR[®] RIBBED TORQ-SET[®] RECESS

DRAWN: S. GUARINO	DATE: 11-30-79	DRAWING NUMBER PSC-2002
CHECKED: J. GRADY	DATE: AUG 87	

SHEET 1 OF 7

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



RECESS SIZE	A REF	B MAX.	F +.0001 -.0000	G ±.001 DIA.	R MAX. RAD.	S +.000 -.002	W ±.010	Y +.002 -.000	Z +.0010 -.0000
A0	.0319	.004	.0159	.038	.005	.008	.250	.023	.0020
A1	.0319		.0159	.045		.015		.030	
A2	.0319		.0159	.053		.020		.035	
A3	.0359		.0179	.060		.024		.039	
A4	.0399	.006	.0199	.068	.007	.029	.250	.044	.0040
A5	.0459		.0229	.076		.031		.051	
A6	.0519		.0259	.083		.034		.054	
A8	.0619		.0309	.097		.042		.062	
A10	.0719	.009	.0359	.112	.022	.050	.438	.070	.0040
A1/4	.0959		.0479	.148		.069		.089	
A5/16	.1219		.0609	.186		.091		.116	
A3/8	.1459		.0729	.222		.112		.137	
A7/16	.1719	.020	.0859	.258	.030	.132	.625	.157	.0045
A1/2	.1959		.0979	.294		.153		.178	
A9/16	.2219		.1109	.330		.171		.201	
A5/8	.2459		.1229	.367		.191		.221	
A3/4	.2959	.040	.1479	.438	.040	.233	.688	.263	.0055
A7/8	.3459		.1729	.511		.272		.307	
A1.00	.3959		.1979	.583		.312		.347	
							1.000		.0070

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TITLE:

GAGE POINTS

ACR® RIBBED TORQ-SET® RECESS

DRAWN:

S. GUARINO

CHECKED:

J. GRADY

DATE:

11-30-79

DATE:

AUG 87

DRAWING NUMBER

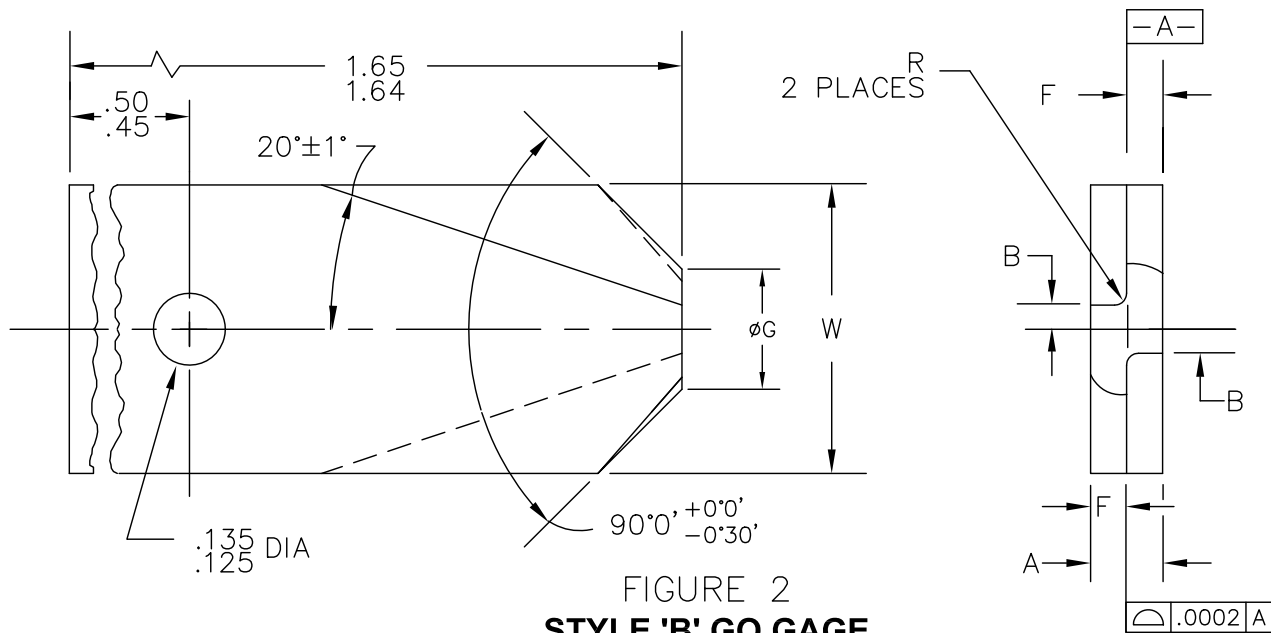
PSC-2002

SHEET 2 OF 7

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

ECO 83
DEC. 16, 1991
REISSUED
DEC. 21, 1987
ECO 59
FEB. 26, 1987
ECO 23
AUG. 12, 1980
REVISION



RECESS SIZE	A REF	B MAX.	F +.0000 -.0001	ØG ±.001	R MAX. RAD.	W ±.010
B0	.031	.004	.0155	.038	.005	.250
B1	.031		.0155	.045		
B2	.031		.0155	.053		
B3	.035		.0175	.060		
B4	.037	.006	.0185	.068	.007	.250
B5	.043		.0215	.076		
B6	.049		.0245	.083		
B8	.059		.0295	.097		
B10	.069	.009	.0345	.112	.015	.250
B1/4	.093		.0465	.148		
B5/16	.119		.0595	.186		
B3/8	.141		.0705	.222		
B7/16	.167	.014	.0835	.258	.022	.438
B1/2	.191		.0955	.294		
B9/16	.215		.1075	.330		
B5/8	.239		.1195	.367		
B3/4	.284	.020	.1420	.438	.030	.625
B7/8	.334		.1670	.511		
B1.00	.384		.1920	.583		
					.040	.688
					.040	1.000

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TITLE:

GAGE POINTS

ACR® RIBBED TORQ-SET® RECESS

DRAWN:

S. GUARINO

DATE:

11-30-79

DRAWING NUMBER

PSC-2002

CHECKED:

J. GRADY

DATE:

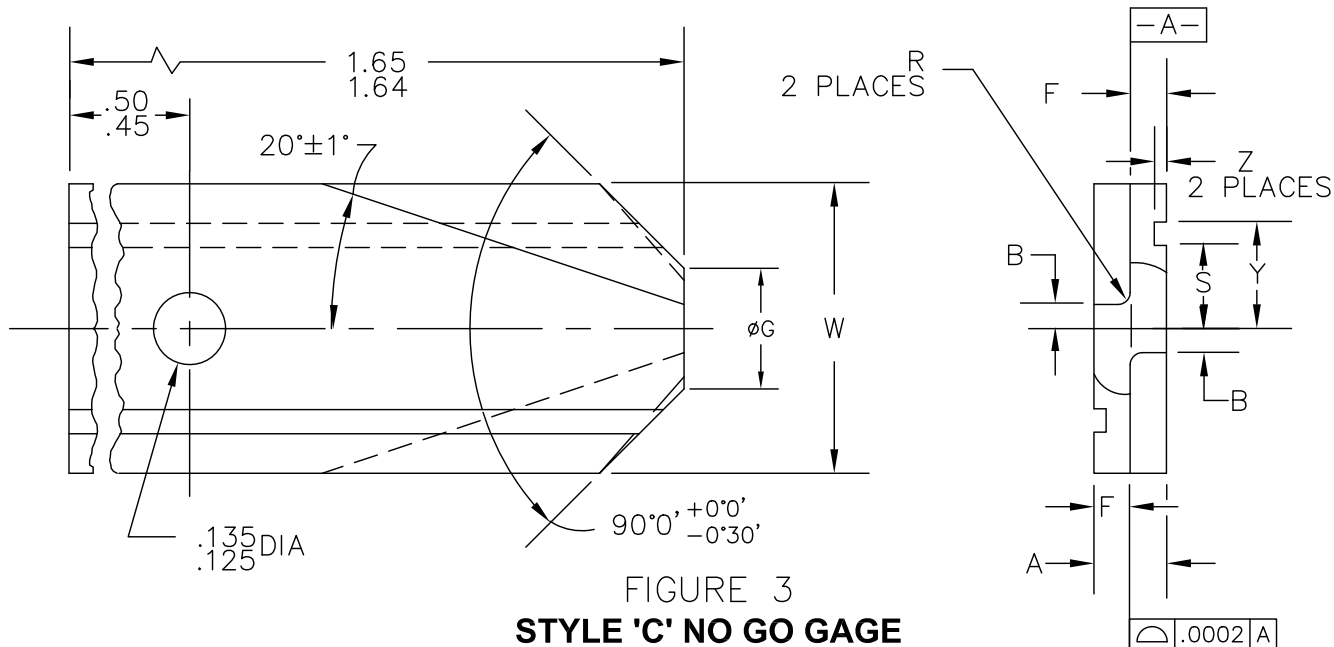
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SHEET 3 OF 7

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ECO 83
DEC. 16, 1991
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DEC. 21, 1987
ECO 59
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ECO 23
AUG. 12, 1980
REVISION



RECESS SIZE	A REF	B MAX.	F +.0001 -.0000	G ±.001 DIA.	R MAX. RAD.	S +.000 -.002	W ±.010	Y +.002 -.000	Z +.0010 -.0000
C0	.0361	.004	.0180	.065	.005	.008	.312	.023	.0020
C1	.0361		.0180	.077		.015		.030	
C2	.0361		.0180	.090		.020		.035	
C3	.0421		.0210	.104		.024		.039	
C4	.0461	.006	.0230	.120	.007	.029	.375	.044	.0040
C5	.0521		.0260	.134		.031		.051	
C6	.0581		.0290	.134		.034		.054	
C8	.0681		.0340	.159		.042		.062	
C10	.0781	.009	.0390	.171	.015	.050	.438	.070	
C1/4	.1021		.0510	.225		.069		.089	
C5/16	.1281		.0640	.282		.091		.116	
C3/8	.1521		.0760	.338		.112		.137	
C7/16	.1781	.014	.0890	.394	.022	.132	.625	.157	.0045
C1/2	.2041		.1020	.450		.153		.178	
C9/16	.2301		.1150	.506		.171		.201	
C5/8	.2541		.1270	.562		.191		.221	
C3/4	.3041	.020	.1520	.675	.030	.233	.750	.263	.0055
C7/8	.3541		.1770	.787		.272		.307	
C1.00	.4041		.2020	.900		.312		.347	
							1.250		.0070

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TITLE:

GAGE POINTS ACR® RIBBED TORQ-SET® RECESS

DRAWN:

S. GUARINO

DATE:

11-30-79

DRAWING NUMBER

PSC-2002

CHECKED:

J. GRADY

DATE:

AUG 87

SHEET 4 OF 7

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ECO 83
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DEC. 21, 1987
ECO 59
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ECO 23
AUG. 12, 1980
REVISION

NOTES:

1. REQUIREMENTS:

- A. DESCRIPTION: GAGE POINTS FOR INSPECTION OF ACR[®] RIBBED TORQ-SET[®] RECESSES.
- B. MATERIAL: M2 OR EQUIVALENT.
- C. HARDNESS: 60-63 Rc.
- D. SURFACE FINISH: GROUND SURFACES SHALL HAVE A MAXIMUM ROUGHNESS OF 32 MICROINCHES PER ASME B46.1.
- E. DESIGN AND CONSTRUCTION:
- (1) DIMENSIONS AND CONFIGURATION SHALL CONFORM TO FIGURE 1.
- F. 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.
- (B) CRACKS: POINTS 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.
- G. APPLICATION AND DESIGN CRITERIA.
- (1) INTENDED USE:
- (A) STYLE A GAGES MEASURE RECESS CAVITY AT MAXIMUM MATERIAL CONDITION.

REVISION
1/ECO 23
AUG. 12, 1980
REISSUED
DEC. 21, 1987
UPDATE
SEPT. 30, 2014

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TITLE:

GAGE POINTS
ACR[®] RIBBED TORQ-SET[®] RECESS

DRAWN:

S. GUARINO

DATE:

11-30-79

DRAWING NUMBER

PSC-2002

CHECKED:

J. GRADY

DATE:

AUG 87

SHEET 5 OF 7

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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[®] POZILOCK[®] ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

(B) STYLE B GAGES LIMIT INTERFERENCE BETWEEN RECESS RIB AND DRIVER.

(C) STYLE C GAGES LIMIT THE MINIMUM MATERIAL CONDITION OF THE RECESS.

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 AND APPLICABLE DASH NUMBER BY ETCHING OR ENGRAVING. 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 MATERIAL, 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 IV.

E. QUALITY CONFORMANCE INSPECTION: QUALITY CONFORMANCE INSPECTION SHALL CONSIST OF THE EXAMINATIONS AND TESTS LISTED IN TABLE V.

1/ 4. ONLY THE ITEM(S) DESCRIBED ON THIS DRAWING WHEN PROCURED FROM THE VENDOR(S) APPROVED BY PHILLIPS SCREW COMPANY MAY BE USED IN THE APPLICATION SPECIFIED HEREON. A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR APPROVAL BY PHILLIPS SCREW COMPANY.

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TITLE:

GAGE POINTS
ACR® RIBBED TORQ-SET® RECESS

DRAWN:
S. GUARINO

DATE:
11-30-79

DRAWING NUMBER

CHECKED:
J. GRADY

DATE:
AUG 87

PSC-2002

SHEET 6 OF 7

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TABLE IV

100 PERCENT SCREENING INSPECTION	
TESTING SEQUENCE	CONDITIONS AND REQUIREMENTS
<u>DIMENSIONS:</u> F (BOTH WINGS) COPLANAR SURFACES B (BOTH WINGS) OUTER WING ANGLE G 20° ANGLE (BOTH WINGS) S (BOTH WINGS) Y (BOTH WINGS)	INSPECT USING GAGE TEST BENCH
MARKINGS	VISUAL

TABLE V

QUALITY CONFORMANCE INSPECTION		
MIL-STD-1916 VERIFICATION LEVEL	EXAMINATION OR TEST	CONDITIONS AND REQUIREMENTS
I	DIMENSIONS W R HOLE SIZE HOLE LOCATION	STANDARD INSPECTION EQUIPMENT
I	MATERIAL FINISH	

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ACR[®] RIBBED TORQ-SET[®] RECESS **PENETRATION** **GAGE ASSEMBLY**

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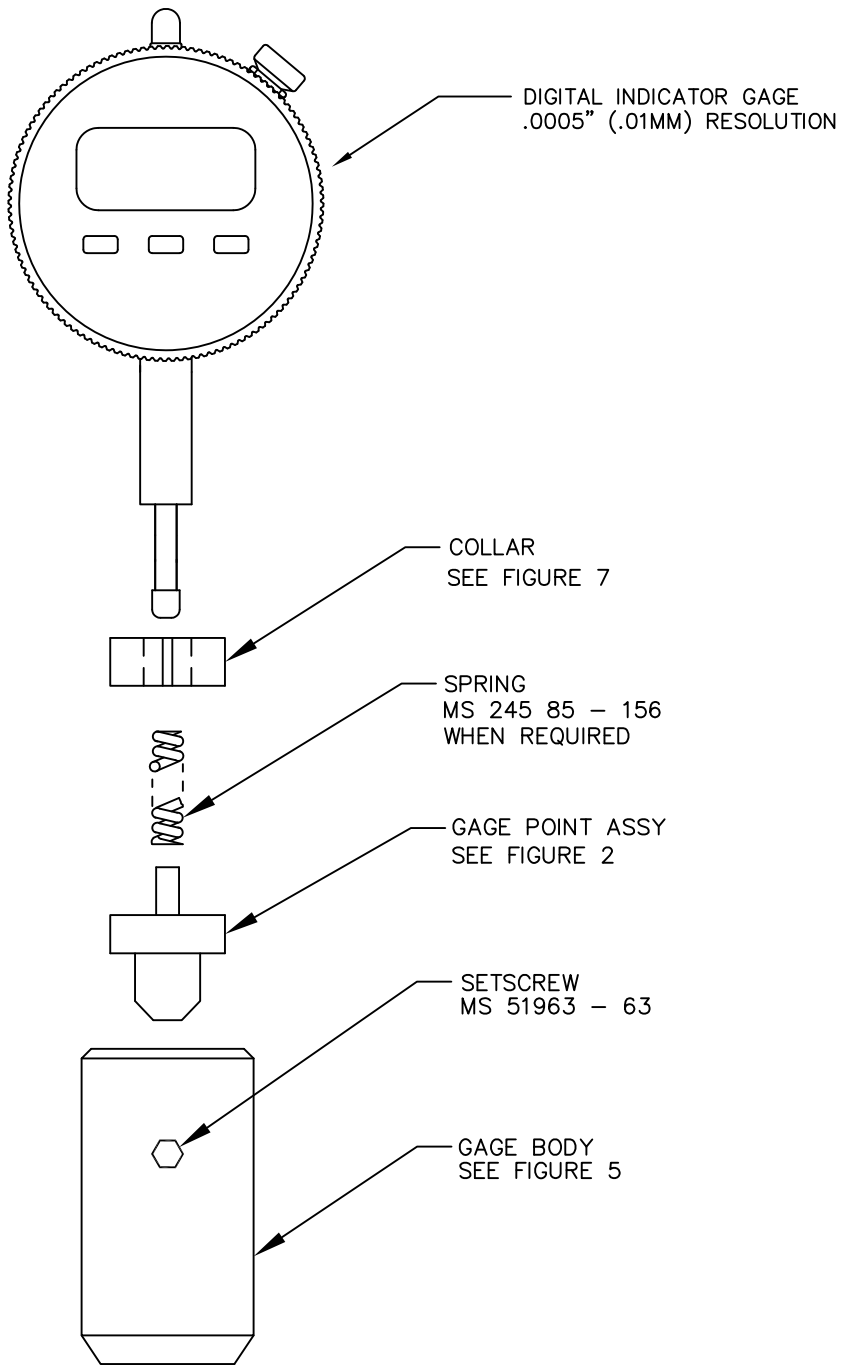
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FIGURE 1
GAGE ASSEMBLY



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CON'T ON PAGE 4

RECESS.

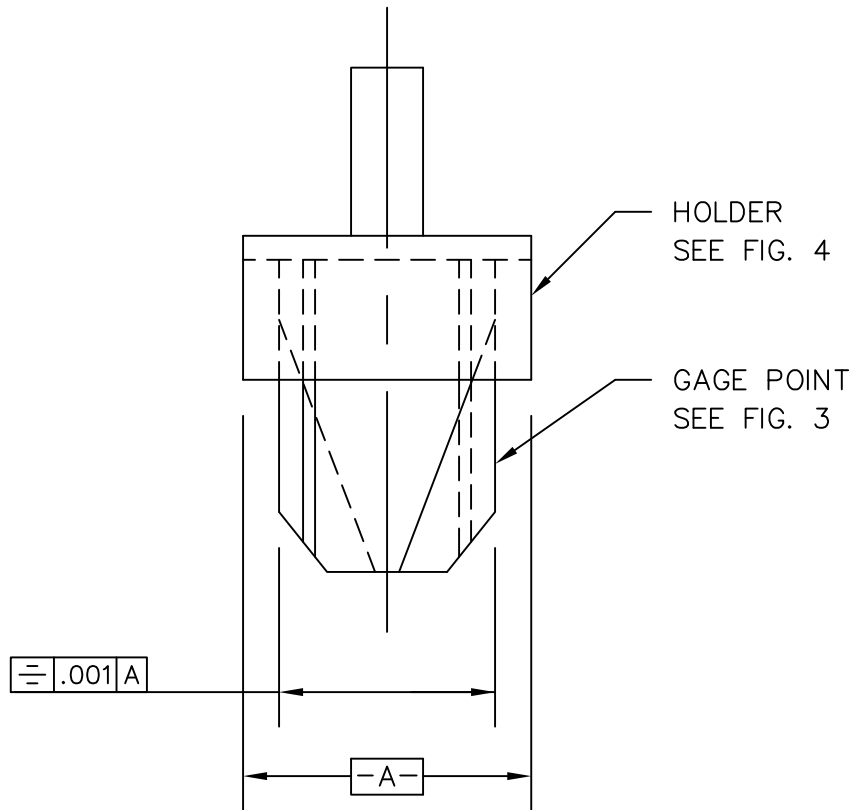
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FIGURE 2
GAGE POINT ASSEMBLY



NOTES:

BOND GAGE POINT INTO HOLDER USING SUPER GLUE[®]
OR EQUIVALENT. REMOVE ALL EXCESS ADHESIVE
FROM EXPOSED HOLDER SURFACE.

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FIGURE 3
GAGE POINT

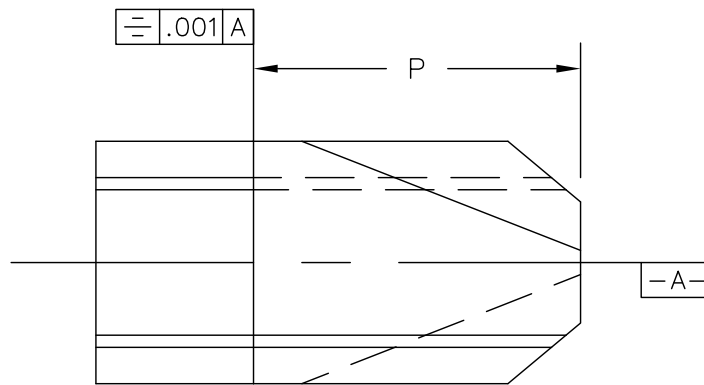


TABLE I

DASH NUMBER	$\pm .005$ P	MAKE FROM
P 0	.510	PSC-2002-A0
↑ 1		A1
2		A2
3		A3
4		A4
6		A6
8		A8
10		A10
1/4	.800	A1/4
5/16		A5/16
3/8		A3/8
7/16		A7/16
1/2		A1/2
9/16		A9/16
5/8		A5/16
3/4	.850	A3/4
↓ 7/8		A7/8
P 1.00		PSC-2002 A1.00

NOTES:

1. MAKE FROM PSC-2002 STYLE "A" GAGE. SEE TABLE I
2. CUT TO LENGTH

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FIGURE 4
GAGE HOLDER

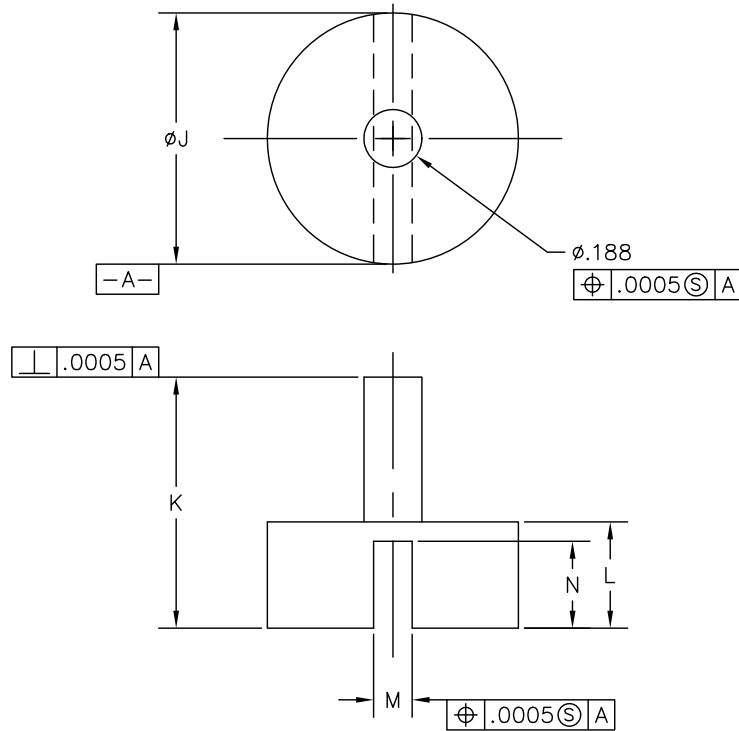


TABLE II

DASH NUMBER	J	±.016 K	±.016 L	±.001 M	±.016 N
H0	.3740—.3745	.844	.500	.034	.188
H1				.034	
H2				.034	
H0				.038	
H4				.042	
H6				.054	
H8				.064	
H10				.074	
H1/4	.7490—.7495	.719	.375	.098	.312
H5/16				.124	
H3/8				.148	
H7/16				.174	
H1/2				.198	
H9/16				.224	
H5/8				.248	
H3/4	1.1240—1.1245	.625		.298	
H7/8				.348	
H1.00				.398	

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FIGURE 5
GAGE BODY

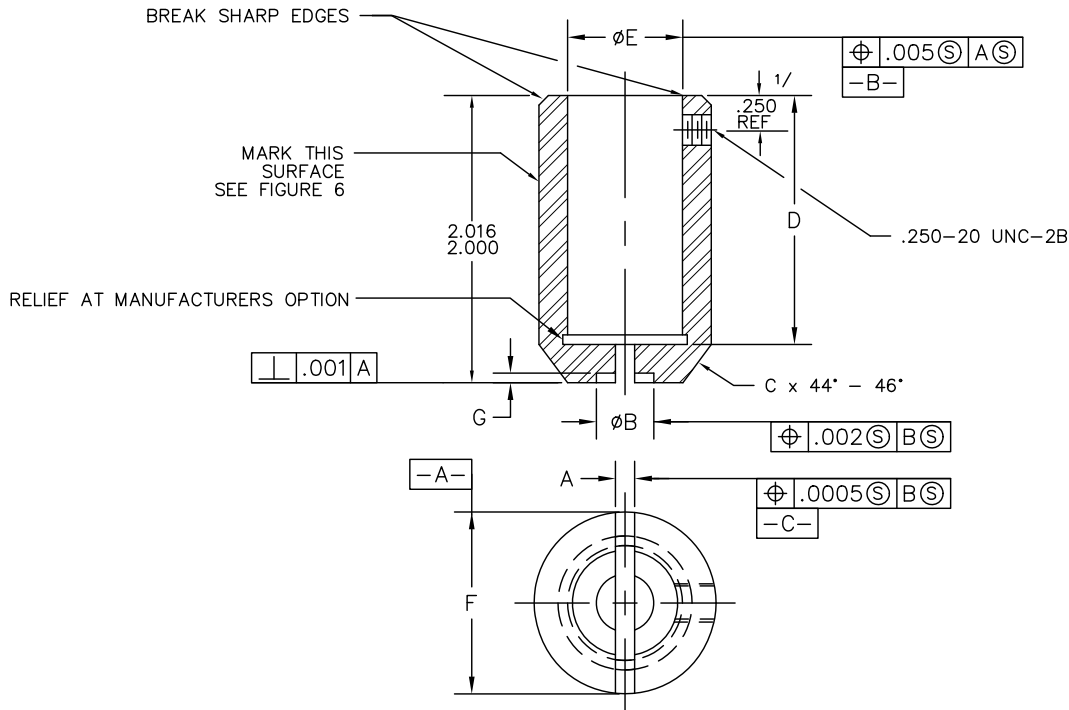


TABLE III

DASH NUMBER	$\begin{smallmatrix} +.002 \\ -.000 \end{smallmatrix}$ A	$\begin{smallmatrix} +.002 \\ -.000 \end{smallmatrix}$ ϕB	$\pm .016$ C	D	ϕE	$\pm .016$ ϕF	$\begin{smallmatrix} +.016 \\ -.000 \end{smallmatrix}$ G
B 0	.033	.073	.125	1.880-1.875	.376-.375	.875	.031
B 1		.087					
B 2		.102					
B 3		.116					
B 4		.131					
B 6		.160					
B 8		.190					
B10	.073	.219	.250	1.755-1.750	.751-.750	1.250	.062
B 1/4	.097	.286					
B 5/16	.123	.357					
B 3/8	.147	.427					
B 7/16	.173	.498					
B 1/2	.197	.568					
B 9/16	.223	.638					
B 5/8	.247	.708	.125	1.755-1.750	1.126-1.125	2.000	.109
B 3/4	.297	.849					
B 7/8	.347	.989					
B 1.00	.397	1.130	.062				

1/

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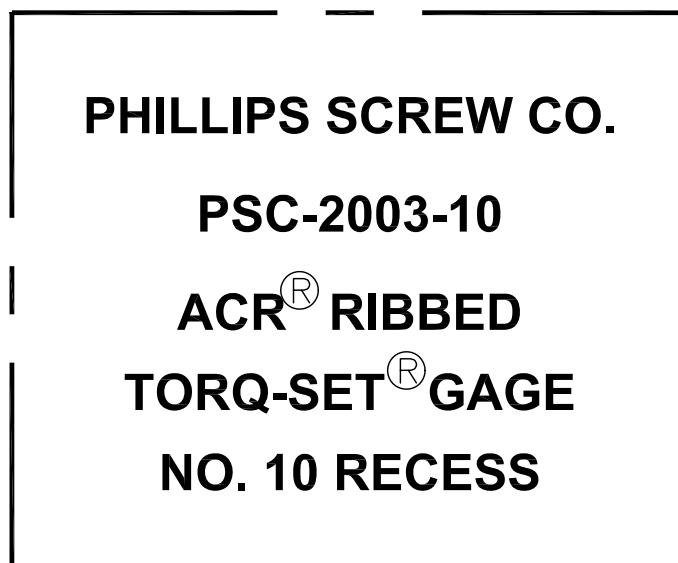
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FIGURE 6

SCALE 5/1



NOTE : USE APPROPRIATE DASH NUMBER AND RECESS NUMBER

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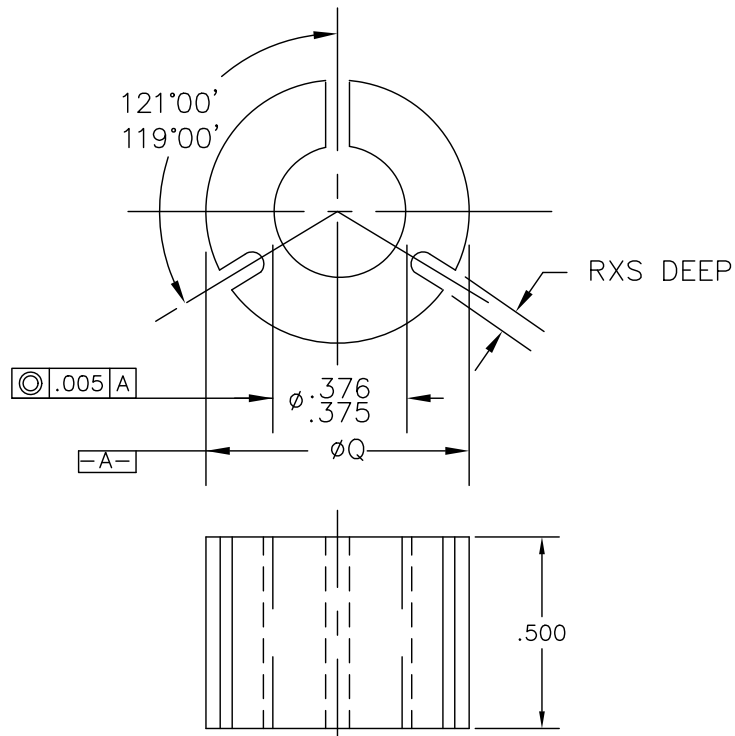
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FIGURE 7
COLLAR
- C AS SHOWN



DASH NO.	ϕQ	R	S
C 1/4 - 5/8	.7495 .7490	.062	.125
C 3/4 - 1	1.1245 1.1240	.125	.250

NOTE:
 UNLESS OTHERWISE SPECIFIED, TOLERANCES ARE $\pm .016$

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1. REQUIREMENTS:
 - A. DESCRIPTION: PENETRATION GAGE ASSEMBLY FOR INSPECTION OF ACR[®] RIBBED TORQ-SET[®] RECESSES.
 - B. MATERIALS:
 - (1) BODY: M2
 - (2) COLLAR: M2
 - (3) HOLDER: M2
 - C. HARDNESS:
 - (1) BODY: 60-63 Rc
 - (2) COLLAR: 60-63 Rc
 - (3) HOLDER: 60-63 Rc
 - D. DESIGN AND CONSTRUCTION:
 - (1) DIMENSIONS AND CONFIGURATION SHALL CONFORM TO FIGURES 1 THROUGH 7.
 - (2) ALL DIMENSIONS ARE INCHES.
 - (3) UNLESS OTHERWISE SPECIFIED, TOLERANCES ARE ± 0.016 .
 - E. PHYSICAL PROPERTIES:
 - (1) METALLURGICAL REQUIREMENTS:
 - (A) DISCONTINUITIES: BODIES, COLLARS, AND HOLDERS SHALL NOT CONTAIN DISCONTINUITIES SUCH AS LAPS, SEAMS, OR INCLUSIONS GREATER THAN 0.010 INCHES IN DEPTH.
 - (B) CRACKS: BODIES, COLLARS, AND HOLDERS 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.
 - F. INTENDED USE: SEE PSC 2004
 - 1/ 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: IDENTIFY AS SHOWN IN FIGURE 5 AND 6. ALL MARKINGS SHALL BE ETCHED OR ENGRAVED.
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 IV.
 - E. QUALITY CONFORMANCE INSPECTION: QUALITY CONFORMANCE INSPECTION SHALL CONSIST OF THE EXAMINATIONS AND TESTS LISTED IN TABLE V.
- 1/ 4. ONLY THE ITEM(S) DESCRIBED ON THE DRAWING WHEN PROCURED FROM THE VENDOR (S) APPROVED BY PHILLIPS SCREW COMPANY MAY BE USED 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 TORQ-SET[®] RECESS

DRAWN: S. GUARINO	DATE: DEC 79	DRAWING NUMBER PSC-2003 SHEET 11 OF 12
CHECKED: J. GRADY	DATE: AUG 87	

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TABLE IV

100 PERCENT SCREENING INSPECTION	
TESTING SEQUENCE	CONDITIONS AND REQUIREMENTS
<u>GAGE POINT ASSY</u> SYMMETRY	STANDARD INSPECTION EQUIPMENT
<u>GAGE POINT</u> "P" CORRECT SIZE	STANDARD INSPECTION EQUIPMENT CHECK "F" DIMENSION OF POINT USING DIAL INDICATING MICROMETER
<u>GAGE HOLDER</u> "J" "M"	STANDARD INSPECTION EQUIPMENT
<u>GAGE BODY</u> "A" "B" "E" "G"	GAGE TEST BENCH,
MARKING	VISUAL
COLLAR .375 - .376 DIA. Q DIA	STANDARD INSPECTION EQUIPMENT
<u>GAGE ASSEMBLIES</u> PRESENCE OF ALL PARTS	VISUAL
ADJUST ZERO SETTING	ADJUST USING FLAT SURFACE

TABLE V

QUALITY CONFORMANCE INSPECTION			
ITEM	MIL-STD-1916 VERIFICATION LEVEL	EXAMINATION OR TEST	CONDITIONS AND REQUIREMENTS
GAGE HOLDER	I	DIMENSIONS "K" "L" "N" CONCENTRICITY	STANDARD INSPECTION EQUIPMENT
	I	MATERIAL FINISH	
GAGE BODY	I	DIMENSIONS "C" "D" "F" BODY LENGTH TAPPED HOLE HOLE LOCATION	STANDARD INSPECTION EQUIPMENT
		MATERIAL FINISH	
COLLAR	I	DIMENSIONS LENGTH NOTCH SIZE NOTCH LOCATION	STANDARD INSPECTION EQUIPMENT
	I	MATERIAL FINISH	

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TITLE:

PENETRATION GAGE ASSEMBLY ACR[®] RIBBED TORQ-SET[®] RECESS

DRAWN:

S. GUARINO

DATE:

DEC 79

DRAWING NUMBER

PSC-2003

CHECKED:

J. GRADY

DATE:

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SHEET 12 OF 12

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ACR[®] RIBBED TORQ-SET[®] RECESS INSPECTION PROCEDURE

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TITLE: **TEST REQUIREMENT SPECIFICATION**
ACR[®] RIBBED TORQ-SET[®] RECESS

DRAWN:
S. GUARINO

DATE:
08/17/79

DRAWING NUMBER

PSC-2004

CHECKED:
J. O'BRIEN/J. GRADY

DATE:
03/31/80

SHEET 1 OF 8

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1. **SCOPE:** This specification defines the recess inspection requirements for qualification inspection, first article, and quality conformance inspection of ACR® Ribbed TORQ-SET® recesses.

2. **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-1916	Sampling Plan and Tables for Inspection by Attributes.
NASM1312, Test 25	Driving Recess Torque Quality Conformance Test.

DRAWINGS - Phillips Screw Company

PSC-2002	Gage Points, ACR® Ribbed TORQ-SET® Recess, Dimensions of
PSC-2003	Penetration Gage Assembly, ACR® Ribbed TORQ-SET® Recess
PSC-2201	Driver Bit, Insert and Power, Hexagon Grooved Shank, ACR® Ribbed TORQ-SET®

3 **EQUIPMENT REQUIRED:**

3.1. Quality Conformance Inspection:

- A. Penetration gages of appropriate size per PSC-2003.
- B. GO Gage of appropriate size per PSC-2002, Style B.
- C. NO-GO Gage of appropriate size per PSC-2002, Style C.
- D. Depth Gage
- E. Sturtevant Torque Test fixture of appropriate capacity or equivalent fixture with weights for 5 and 10 pound end load.
- F. Appropriate driver bits, 170-XX ACR® or equal.
- G. Calibrated torque wrench of appropriate capacity, with adapters as necessary.
- H. 10X loupe or equal.

3.2. Qualification Inspection: In addition to the equipment listed in 3.1, the following equipment is required:

- A. Toolmaker's Microscope with traversing stage accurate to 0.0001.
- B. Optical Comparator with magnification up to 50X minimum.
- C. Metallurgical specimen preparation equipment.

4. **TEST PROCEDURE:**

4.1. Qualification Inspection: Qualification Inspection shall be performed by Phillips Screw Company at initial product qualification and periodic inspections as required by the product and trademark licenses.

4.1.1. Sampling Plan:

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.

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TITLE:

**TEST REQUIREMENT SPECIFICATION
ACR® RIBBED TORQ-SET® RECESS**

DRAWN:
S. GUARINO

DATE:
08/17/79

DRAWING NUMBER

PSC-2004

CHECKED:
J. O'BRIEN/J. GRADY

DATE:
03/31/80

SHEET 2 OF 8

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- 4.1.1.2. Periodic Inspections: A minimum of 5 pieces of each recess size, and head style are required.
- 4.1.1.3. Defects: Any defect in any qualification test or inspection shall be cause for rejection, or loss of qualification status.
- 4.1.2. 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.
- 4.1.3. Gaging:
- 4.1.3.1. Penetration Gaging: Using the appropriate size grooved penetration gage assembly per PSC-2003:
- A. Check the zero adjustment against a known flat piece of steel stock;
 - B. Measure and record the gage penetration in each set of wings, being careful to fit the ribs in the recess into the grooves in the gage point. Two readings for each screw are required, both of which must be within acceptable limits per the applicable part standard. If no limits are established thereby, the limits of PSC 2000 shall apply.
 - C. Gage readings beyond the stated limits are cause for rejection.
- 4.1.3.2. Style B "GO" Plug Gaging: Using the appropriate size "GO" hand plug gage per PSC 2002, Style B,
- A. Using light finger pressure only, place the gage point into the recess, until resistance is felt.
 - B. Failure to bottom the gage on either its point or the outer wing angles shall be cause for rejection.
 - C. Repeat A and B for each set of wings of each recess.
- 4.1.3.3. "NO-GO" Plug Gaging: Using the appropriate size "NO-GO" hand plug gage per PSC 2002, Style C, determine that the recess wing apertures are below maximum size as follows:
- A. Using light finger pressure, attempt to penetrate the recess.
 - B. Gage entry into the recess beyond the head surface to recess radius is cause for rejection.
- 4.1.3.4. 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 product procurement document. If no limits are given thereby, the limits of PSC 2000 shall apply. Measurements out of tolerance shall be cause for rejection.
- 4.1.3.5. Failure Analysis: In the event that unacceptable gaging results are obtained, the rejected pieces shall be examined using a toolmaker's microscope or equivalent system. The following parameters may be checked as necessary:
- A. Wing Thickness
 - B. Recess Diameter
 - C. Rib Size
 - D. Rib Location
 - E. "G" Diameter
- If any question exists as to wing or rib vertical taper, a screw must be sectioned. The cutting plane shall be perpendicular to the installation wall of a recess wing and located outside the rib not more than 0.015.

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TITLE: **TEST REQUIREMENT SPECIFICATION**
ACR® RIBBED TORQ-SET® RECESS

DRAWN: S. GUARINO	DATE: 08/17/79	DRAWING NUMBER PSC-2004
CHECKED: J. O'BRIEN/J. GRADY	DATE: 03/31/80	SHEET 3 OF 8

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4.1.4. Torque Testing:

4.1.4.1. Minimum Torque Capability: NASM 1312-25 shall be used.
Torque values and deformation limits shall conform to the applicable procurement document.

4.1.4.2. Ultimate Torque Capability: NASM 1312-25 shall be used except as follows:

- A. Torque Direction: Removal
- B. End Load: 10.0 LBF \pm 0.5 LBF
- C. Torque to failure of the bit/recess interface and record the peak torque obtained.
- D. The failure mechanism observed should normally be bit breakage. If a cam-out failure occurs, the torque value obtained must be greater than the minimum driver bit failing torque values in TABLE I.
- E. Cam-out failures at a torque lower than bit failing torque shall be cause for lot rejection provided the bit was of correct hardness and that no debris was present in the recess during the test.
- F. This torque limit requirement shall not apply to fasteners having an ultimate tensile strength less than 160KSI.
- G. For tension head fasteners having an ultimate tensile strength below 160 KSI, the bit/recess interface shall not fail before torsional failure of the threaded area.
- H. For shear fasteners or other devices having reduced penetration limits, minimum failing torques must be established by the procurement document.

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 a least 10 power, visually inspect the recess for:

- A. Presence of a 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 size grooved penetration gage per PSC-2003.

- A. Check the zero adjustment against a known flat piece of steel stock;
- B. Measure and record the gage penetration in each set of wings, being careful to fit the ribs in the recess into the grooves in the gage point. Two readings for each screw are required, both of which must be within acceptable limits per the applicable part standard. If no limits are established thereby, the limits of PSC 2000 shall apply.
- C. Gage readings beyond the stated limits are cause for rejection.

4.2.2.2. Style B "GO" Plug Gaging: Using the appropriate size "GO" hand plug gage per PSC 2002, Style B,

- A. Using light finger pressure only, place the gage point into the recess, until resistance is felt.
- B. Failure to bottom the gage on either its point or the outer wing angles shall be cause for rejection.
- C. Repeat A and B for each set of wings of each recess.

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TITLE:

TEST REQUIREMENT SPECIFICATION
ACR® RIBBED TORQ-SET® RECESS

DRAWN:
S. GUARINO

DATE:
08/17/79

DRAWING NUMBER

PSC-2004

CHECKED:
J. O'BRIEN/J. GRADY

DATE:
03/31/80

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- 4.2.2.3. Style C "NO-GO" Plug Gaging: Using the appropriate size "NO-GO" hand plug gage per PSC 2002, Style C, determine that the recess wing apertures are below maximum size as follows:
- Using light finger pressure, attempt to penetrate the recess.
 - Gage entry into the recess beyond the head surface to recess radius is cause for rejection.
- 4.2.2.4. 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 product procurement document. If no limits are given thereby, the limits of PSC 2000 shall apply. Measurements out of tolerance shall be cause for rejection.
- 4.3. Quality Conformance Inspection: The following procedure is suggested for 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 Verification Level I in accordance with MIL-STD-1916.
- 4.3.1.1. Sampling for Torque Testing: Verification Level I, in accordance with MIL-STD-1916.
- 4.3.2. Visual Inspection: Using a magnifying device of at least 10 power, visually inspect the recess for:
- Presence of rib on all four removal walls.
 - Definition of rib and recess formation. All surface intersections should exhibit clean radii.
- 4.3.3. Gaging:
- 4.3.3.1. Penetration Gaging: Using the appropriate size grooved penetration gage per PSC-2003:
- Check the zero adjustment against a known flat piece of steel stock;
 - Measure and record the gage penetration in each set of wings, being careful to fit the ribs in the recess into the grooves in the gage point. Two readings for each screw are required, both of which must be within acceptable limits per the applicable part standard. If no limits are established thereby, the limits of PSC 2000 shall apply.
 - Gage readings beyond the stated limits are cause for rejection.
- 4.3.3.2. Style B "GO" Plug Gaging: Using the appropriate size "GO" hand plug gage per PSC 2002, Style B,
- Using light finger pressure only, place the gage point into the recess, until resistance is felt.
 - Failure to bottom the gage on either its point or the outer wings angles shall be cause for rejection.
 - Repeat A and B for each set of wings of each recess.
- 4.3.3.3. "NO-GO" Plug Gaging: Using the appropriate size "NO-GO" hand plug gage per PSC 2002, Style C, determine that the recess wing apertures are below maximum size as follows:
- Using light finger pressure, attempt to penetrate the recess.
 - Gage entry beyond the head surface to recess radius is cause for rejection.

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TITLE: **TEST REQUIREMENT SPECIFICATION
ACR® RIBBED TORQ-SET® RECESS**

DRAWN: S. GUARINO	DATE: 08/17/79	DRAWING NUMBER PSC-2004 SHEET 5 OF 8
CHECKED: J. O'BRIEN/J. GRADY	DATE: 03/31/80	

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- 4.3.3.4. 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 product procurement document. If no limits are given thereby, the limits of PSC 2000 shall apply. Measurements out of tolerance shall be cause for rejection.
- 4.3.4. Torque Testing:
- 4.3.4.1. Minimum Torque Capability: NASM 1312-25 shall be used. Torque values and deformation limits shall conform to the applicable procurement document.
- 4.3.4.2. Ultimate Torque Capability: NASM 1312-25 shall be used except as follows:
- A. Torque Direction: Removal
 - B. End Load: 10.0 LBF \pm 0.5 LBF
 - C. Torque to failure of the bit/recess interface and record the peak torque obtained.
 - D. The failure mechanism observed should normally be bit breakage. If a cam-out failure occurs, the torque value obtained must be greater than the minimum driver bit failing torque of MIL-B-9946. These values are repeated in TABLE 1.
 - E. Cam-out failure at a torque lower than bit failing torque shall be cause for lot rejection, provided the bit was of correct hardness and that no debris was present in the recess during the test.
 - F. This torque limit requirement shall not apply to fasteners having an ultimate tensile strength less than 160 KSI.
 - G. For tension head fasteners having an ultimate tensile strength below 160 KSI, the bit recess interface shall not fail before torsional failure of the threaded area.
 - H. For shear fasteners or other devices having reduced penetration limits, minimum failing torque must be established by the procurement document.
5. **TEST REPORTS:** The form on page 8 may be used to summarize test and inspection findings.

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TITLE: **TEST REQUIREMENT SPECIFICATION**
ACR® RIBBED TORQ-SET® RECESS

DRAWN: S. GUARINO	DATE: 08/17/79	DRAWING NUMBER PSC-2004 SHEET 6 OF 8
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TABLE 1	
ULTIMATE RECESS STRENGTH 160 KSI and Higher Screws Removal Direction	
Recess Size	Min. Torque (LBF – in)
4	13
6	30
8	50
10	60
1/4	140
5/16	220
3/8	520
7/16	750
1/2	900

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TITLE: **TEST REQUIREMENT SPECIFICATION**
ACR® RIBBED TORQ-SET® RECESS

DRAWN: S. GUARINO	DATE: 08/17/79	DRAWING NUMBER PSC-2004 SHEET 7 OF 8
CHECKED: J. O'BRIEN/J. GRADY	DATE: 03/31/80	

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

CHECK LIST FOR INSPECTION
OF ACR® RIBBED
TORQ-SET® SCREWS

Report No. : _____

Sheet _____ of _____

Date _____

Inspector _____

Part No.: _____

Mfr: _____

Description: _____

Lot No. _____

_____ Strength Level: _____

MEASUREMENTS

SPECIFICATION

Sample Size		
Head Marking		
Recess Appearance		
Penetration Gage		
Style B GO Gage		
Style C NO-GO Gage		
Recess Depth		
Min. Torque— C.W.		
Deformation C.C.W.		
Ultimate Torque — C.C.W.	(LBF — in)	
Hardness — Rc		

DISPOSITION : Accept _____

Reject _____

REASON: _____

COMMENTS: _____

1/ECO 25
AUG. 12, 1980
REISSUED
DEC. 21, 1987

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TITLE:

TEST REQUIREMENT SPECIFICATION
ACR® RIBBED TORQ-SET® RECESS

DRAWN:
S. GUARINO

DATE:
08/17/79

DRAWING NUMBER

PSC-2004

CHECKED:
J. O'BRIEN/J. GRADY

DATE:
03/31/80

SHEET 8 OF 8

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09/30/14

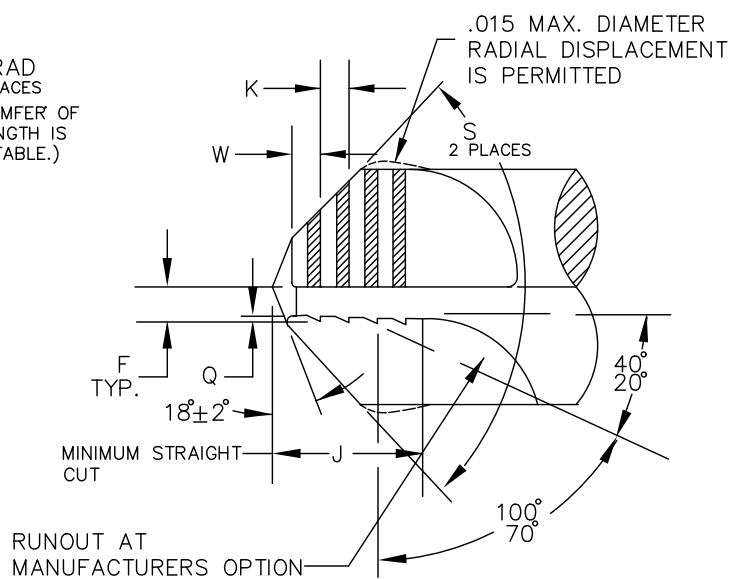
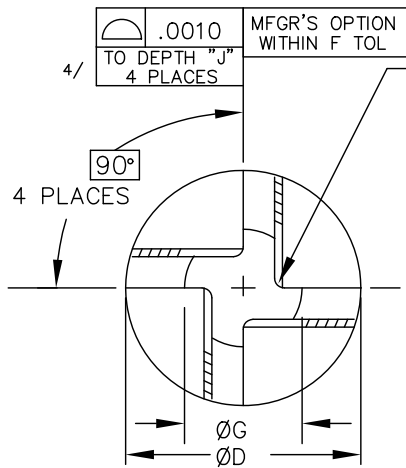
ACR[®] Ribbed TORQ-SET[®]

Engineering Manual

Drivers and Gages

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Insert Type	PSC-2203	1 of 1	11/09/93



DRIVER SIZE	ØD	F OVER RIB	ØG	J MIN.	R RAD	S	W MAX.	K RIB TO RIB	MIN. NO. OF RIBS	
0	.185 .180	.0155 .0140	.039—.037	.047	.005 .000	93°30' 92°30'	.009	.017 .010	3	
1			.046—.044						4	
2			.054—.052	.063			.012			
3		.0175—.0160	.061—.059							
4		.0185—.0170	.069—.067	.078	.010—.007					
5										
6			.0245—.0230	.084—.082	.094	.016 .013	94°30' 92°30'	.015	.022 .015	5
8	.247	.0295—.0280	.098—.096							
10	.242	.0345—.0330	.113—.111	.109	.023 .020	91°30' 90°30'	.030	.028 .021		
1/4	.434 .429	.0465—.0435	.149—.147	.125	.028 .023		.035			
5/16		.0595—.0565	.187—.185	.141						
3/8		.0705—.0675	.223—.221	.172				.040—.035	.040	
7/16	.0835—.0805	.259—.257								
1/2	.622 .617	.0945—.0915	.295—.293	.203	.055—.050		.045	.033 .026	7	
9/16		.1055—.1020	.331—.329	.218	.068 .063					
5/8		.1175—.1140	.368—.366	.250						
3/4	.860—.880	.1410—.1375	.440—.438	.312		.060				9
7/8	1.010 .990	.1660—.1625	.513—.511	.375						
1.00	1.260 1.240	.1910—.1875	.585—.583	.406	.099—.094			10		

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TITLE:

DIMENSIONS ACR® RIBBED TORQ-SET® DRIVER POINT

DRAWN:
S. GUARINO

DATE:
11/10/80

DRAWING NUMBER

PSC-2001

CHECKED:
J. GRADY

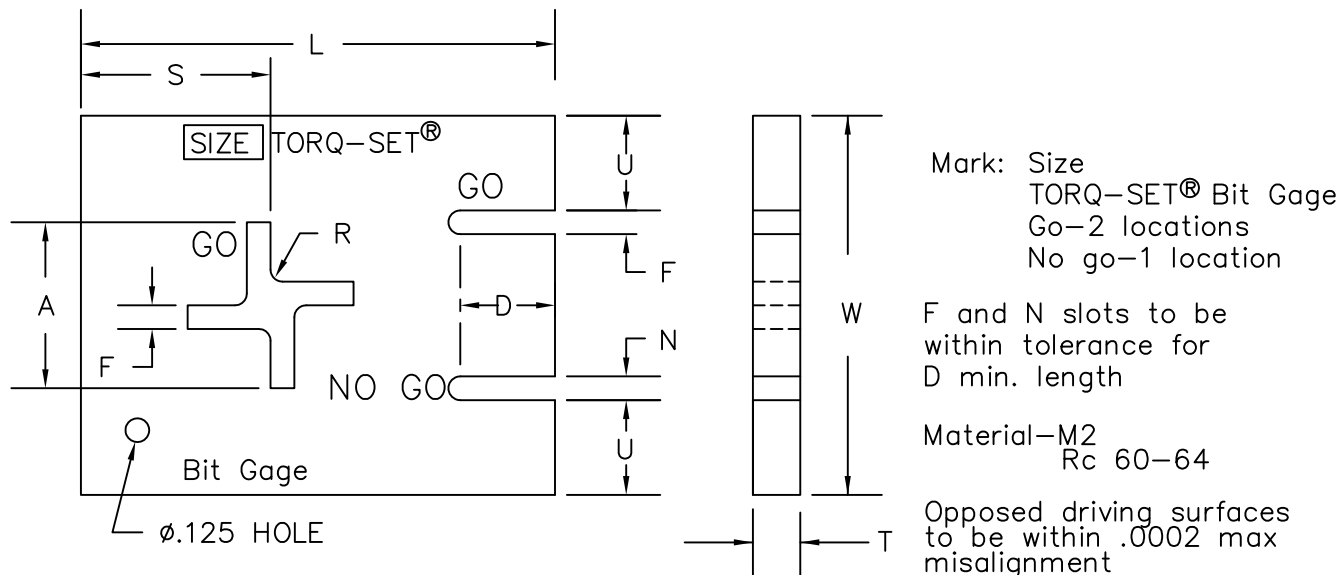
DATE:
09/28/94

SHEET 1 OF 1

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REVISION 1/ ECO 59 FEB 27 87 2/ ECO 75 OCT 15, 1991 3/ ECO 93 MAY 15 92 4/ ECO 115 SEPT 27 1994 5/ ECO 145 OCT 14, 2011



Size	L Ref	W Ref	T ±.010	D Min	A ±.005	F +.0002 -.0000	N +.0000 -.0002	R ±.001	S Ref	U Ref
0	1.25	1.00	.125	.078	.082	.0155	.0140	.007	.50	.25
1					.099	.0155	.0140	.007		
2					.117	.0155	.0140	.007		
3					.135	.0175	.0160	.007		
4				.094	.152	.0185	.0170	.012		
5					.170	.0215	.0200	.012		
6					.188	.0245	.0230	.018		
8					.223	.0295	.0280	.018		
10				.125	.258	.0345	.0330	.025		
1/4					.340	.0465	.0435	.025		
5/16					.377	.0595	.0565	.030		
3/8					.452	.0705	.0675	.030		
7/16	1.75	1.25	.250	.219	.493	.0835	.0805	.042	.75	.31
1/2					.563	.0945	.0915	.057		
9/16					.633	.1055	.1020	.070		
5/8					.703	.1175	.1140	.070		
3/4	2.50	2.00	.375	.375	.844	.1410	.1375	.070	1.00	.50
7/8					.984	.1660	.1625	.070		
1					1.125	.1910	.1875	.101		

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TITLE: **POINT GAGE FOR TORQ-SET® & ACR® RIBBED TORQ-SET® DRIVER**

DRAWN:
J. GRADY

DATE:
03/02/87

DRAWING NUMBER
PSC-776

CHECKED:
G. LaMONICA

DATE:
02/26/05

SHEET 1 OF 1

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REVISION
FEB. 24, 1989
UPDATE
SEPT. 30, 2014

ACR[®] RIBBED TORQ-SET[®] **DRIVER BIT** **INSPECTION PROCEDURE**

REISSUED
 DEC. 21, 1987
 REVISION

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TITLE:

INSPECTION PROCEDURE
ACR[®] RIBBED TORQ-SET[®] DRIVER BIT

DRAWN:
 J. O'BRIEN

DATE:
 08/14/80

DRAWING NUMBER

PSC-2006

CHECKED:
 J. GRADY

DATE:
 11/14/87

SHEET 1 OF 4

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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[®] POZILOCK[®] ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

1. **SCOPE:** This specification provides a detailed procedure for either qualification inspection or referee inspection of ACR® Ribbed TORQ-SET® 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 PSC-2200.
2. **Referenced Documents:** The following documents form a part of this specification to the extent specified herein:

STANDARDS:
MIL-STD-1916 Sampling Plan and Tables for Inspection by Attributes.

SPECIFICATIONS:
PSC-2200 Bits, Screwdriver, General Specification

DRAWINGS – Phillips Screw Company:
PSC-776 Point Gage, ACR® Ribbed TORQ-SET® Driver
PSC-2008 Fixture, Driver Torque Test, ACR® Ribbed TORQ-SET®
3. **EQUIPMENT REQUIRED:**
 - A. Sturtevant torque test fixture TTF-1/4 (for bits of number 10 size or smaller), or TTF-1/2 (for bits larger than number 10),
 - B. Torque Test Blocks of appropriate size per PSC-2008.
 - C. Adapter PSC-1008-A if Sturtevant fixtures are used.
 - D. Gage Test Bench, Klinger Scientific Number 79646, or a toolmaker's microscope with similar fixturing.
 - E. Electronic Micrometer, Federal Products Co. Model 230, or equal.
 - F. Driver point inspection gages of appropriate size per PSC-776
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 driver bit point size to be qualified 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.
 - 4.1.3. **Dimensional Inspection:** (using Klinger Gage Test Bench)
 - 4.1.3.1 **Mounting and Alignment:** Mount the driver bit 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 probes. Rotate the bit to bring the installation driving wing walls to the 12, 3, 6 and 9 o'clock positions. Verify with a differential gage tracking on one wing wall, both perpendicular and parallel to the bit axis. Establish both rotational and positional datums.
 - 4.1.3.2. **Coplanar Position of Drive Walls:**
 - A. Rotate the bit 180° plus or minus 30" arc seconds.
 - B. Measure position of drive wing wall against the datum established in 4.1.3.1. above.
 - C. Adjust bit location as required to bring wing walls to the true center of rotation. Adjust the positional datum as required.
 - D. The minimum positional variation obtained is the planar variation. Record the minimum obtained.
 - E. Repeat for the second opposed pair of wings.

REVISION
DEC. 21, 1987
REISSUED
AUG. 5, 2013
ECO #154
UPDATE
SEPT. 30, 2014

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TITLE:

INSPECTION PROCEDURE ACR® RIBBED TORQ-SET® DRIVER BIT

DRAWN:
J. O'BRIEN

DATE:
08/14/80

DRAWING NUMBER

PSC-2006

CHECKED:
J. GRADY

DATE:
11/14/87

SHEET 2 OF 4

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- 4.1.3.3. **Wing Thickness (Dimension F):**
A. With the installation wing walls centered per 4.1.3.2 above, measure and record the position of the opposite removal wing wall, using a differential micrometer of 0.0001 sensitivity or better.
NOTE: This measurement must be maximized over the rib crests.
B. Repeat for each wing.
- 4.1.3A (alternate procedure)
- 4.1.3A.1 **Specimen preparation:** Grind perpendicular to the bit axis within 0.001 to 0.010 of the 'G' diameter plane. Lap the surface obtained to a surface finish of 16 micro inches or better.
- 4.1.3A.2 **Coplanar Position of Drive Walls:** Using an optical comparator having surface reflection capability, an X,Y,Z table with position measurement to an 0.0001 inch, and at least 30X magnification, and suitable holding fixtures, align the bit and measure and record the planar variation of each set of installation wing walls.
- 4.1.3A.3 **Wing Thickness (Dimension F):** Using a dial indicating micrometer or caliper having a sensitivity of 0.0001 or better, measure the wing thickness. Repeat for each wing.
NOTE: The placement of the caliper jaws or vernier anvils is critical. The thickness must be measured within the "J" dimension and outside the radius between wings.
- 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 Point Cone Angle And Outer Wing Angle (18°±2° and ∠S):**
A. With the bit axis perpendicular to the optical sight axis, measure the point cone and the outer wing angles.
B. Average each set of four readings obtained.
- 4.1.3.6. **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 "W" 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 the driver bit gage of the appropriate size per PSC-776, ascertain that each bit will enter the gage.
- 4.1.5. **Torque Testing:** See PSC-2200-3(5):
A. Fixture: Sturtevant Torque Test Fixture TTF-1/4 or 1/2 as required.
B. Test Block: PSC-2008 test blocks of appropriate size.
C. Axial Load: Sturtevant fixture shall be tightened not more than necessary to remove all looseness and play in the adapters.
D. Sampling Plan Verification Level I per MIL-STD-1916.

REVISION
REISSUED DEC. 21, 1987
REISSUED JUL. 10, 2013
ECO # 154 AUG. 5, 2013,
UPDATE SEPT. 30, 2014

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TITLE:

INSPECTION PROCEDURE ACR® RIBBED TORQ-SET® DRIVER BIT

DRAWN:
J. O'BRIEN

DATE:
08/14/80

DRAWING NUMBER

CHECKED:
J. GRADY

DATE:
11/14/87

PSC-2006

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

**CHECK LIST FOR INSPECTION
OF ACR®RIBBED TORQ-SET®
DRIVER BITS**

Report No. : _____

Sheet _____ of _____

Date _____

Inspector _____

Part No.: _____ Mfr: _____

Description: _____ Lot No. _____

	MEASUREMENT	SPECIFICATION
Sample Size		
Marking		
Visual Inspection		
Gage Fit		MUST 'GO'
Wing Alignment		.001 MAX
'F' Wing Thickness		
'G' Point Cone Diameter		
'W' Distance from 'G' to 1st Rib		
'K' Distance Rib to Rib		
Rib Height		.002 – .004
Point Cone Angle		18° ± 2°
Outer Wing Angle 'S'		
Ultimate Torsional Strength		
Torsional Fatigue Strength		
Hardness – Rc		

DISPOSITION : Accept _____

Reject _____

REASON: _____

COMMENTS:

REISSUED
DEC. 21, 1987
REVISION

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TITLE:

**INSPECTION PROCEDURE
ACR®RIBBED TORQ-SET® DRIVER BIT**

DRAWN:
J. O'BRIEN

DATE:
08/14/80

DRAWING NUMBER

PSC-2006

CHECKED:
J. GRADY

DATE:
11/14/87

SHEET 4 OF 4

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ACR[®] RIBBED TORQ-SET[®]

DRIVER TORQUE TEST FIXTURE

REISSUED
DEC. 21, 1987

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TITLE:

**FIXTURE, TORQUE TEST
ACR[®] RIBBED TORQ-SET[®] DRIVER**

DRAWN:
S. GUARINO

DATE:
11/11/80

DRAWING NUMBER

PSC-2008

CHECKED:
J. GRADY

DATE:
08/14/87

SHEET 1 OF 5

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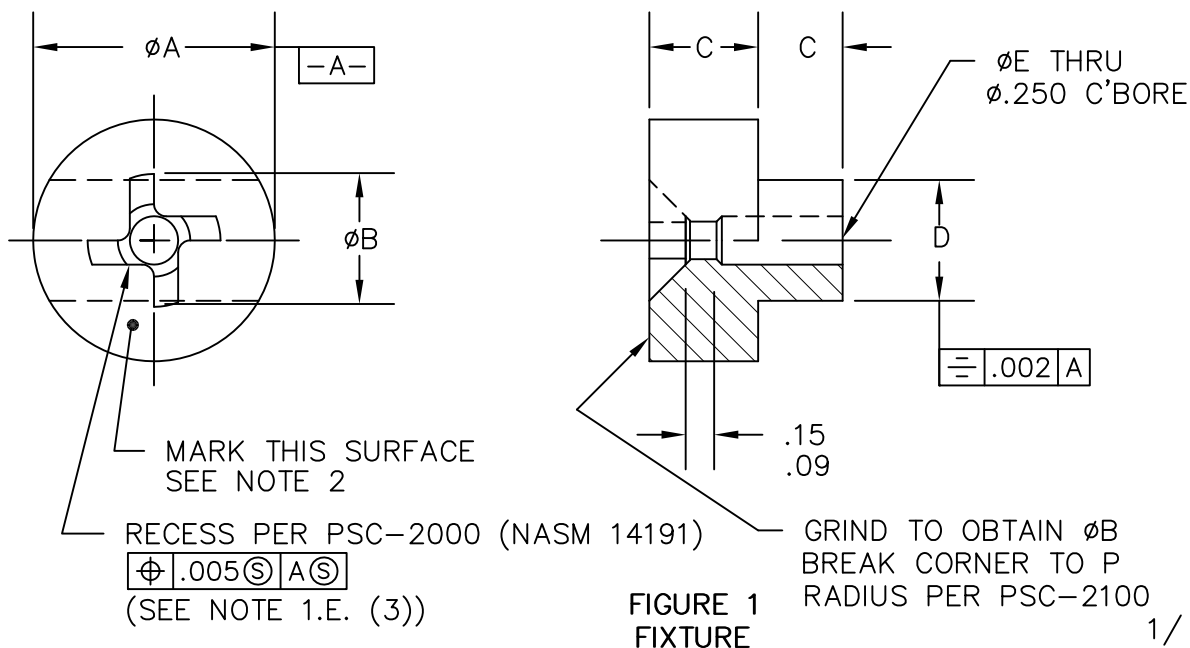


TABLE 1

DASH NO.	RECESS SIZE	ϕA MIN	ϕB +.005 -.000	C MIN	D +.002 -.003	ϕE $\pm .002$
00	0	.688	.082	.375	.500	.031
01	1		.099			.037
02	2		.117			.043
03	3		.135			.052
04	4		.152			.055
05	5		.170			.067
06	6		.188			.073
08	8		.223			.089
10	10		.258			.104
25	1/4	1.125	.340	.750	.750	.140
31	5/16		.377			.177
37	3/8		.452			.213
43	7/16		.493			.250
50	1/2		.563			.281
56	9/16		.633			.316
62	5/8		.703			.358
75	3/4	2.000	.844			.422
87	7/8		.984			.500
100	1.00		1.125			.562

1/

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TITLE:

FIXTURE, TORQUE TEST **ACR[®] RIBBED TORQ-SET[®] DRIVER**

DRAWN:
S. GUARINO

DATE:
11/11/80

DRAWING NUMBER

PSC-2008

CHECKED:
J. GRADY

DATE:
08/14/87

SHEET 2 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[®]
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REVISION
 REISSUED
 1/ECO 99
 DEC. 21, 1987
 JULY 30, 1992

NOTES:

1. REQUIREMENTS:

A. DESCRIPTION: Torque Test Fixture for ACR[®] RIBBED TORQ-SET[®] Drivers.

B. MATERIALS: Tool Steel

C. HARDNESS: 61–63 Rc

D. FINISH: None

E. DESIGN AND CONSTRUCTION:

- (1) Dimensions and configuration shall conform to figure 1.
- (2) All dimensions are in inches.
- (3) ACR[®] Rib feature of recess shall not be supplied.

F. MANUFACTURING REQUIREMENTS:

- (1) Fixtures: Grind top surface to produce "B" diameter. Then 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 elements.

H. INTENDED USE:

- (1) Fixture: Torque Testing of Driver Bits per PSC–2006.
- (2) Adapters: Use fixture with adapter, PSC–1008–A, for use in Sturtevant TTF–1/4 or TTF–1/2 testing fixtures.

J. WORKMANSHIP: Hanging burrs and slivers which might become dislodged under usage shall be removed. Parts shall be clean and free from surface contamination.

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DEC. 21, 1987
1/ECO 99
JULY 30, 1992
UPDATE
SEPT 30, 2014

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TITLE:

**FIXTURE, TORQUE TEST
ACR[®] RIBBED TORQ-SET[®] DRIVER**

DRAWN:
S. GUARINO

DATE:
11/11/80

DRAWING NUMBER

PSC-2008

CHECKED:
J. GRADY

DATE:
08/14/87

SHEET 3 OF 5

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
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2. **MARKING:** Identify with this drawing number and applicable dash number, located on the top surface. All marking shall be etched or engraved.
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 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
Fixtures	<u>Dimensions</u> ØB Symmetry D Recess Recess Location Hardness	Toolmakers Microscope Inspect Per PSC-2004 Standard Inspection Equipment Rockwell Hardness Tester or Equal

1/ECO 81
DEC. 04, 1991

 REISSUED
DEC. 21, 1987

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TITLE:

FIXTURE, TORQUE TEST
ACR® RIBBED TORQ-SET® DRIVER

DRAWN:
S. GUARINO

DATE:
11/11/80

DRAWING NUMBER

PSC-2008

CHECKED:
J. GRADY

DATE:
08/14/87

SHEET 4 OF 5

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TABLE III

QUALITY CONFORMANCE INSPECTION

ITEM	MIL-STD-1916	EXAMINATION OR TEST	CONDITIONS AND REQUIREMENTS
	VERIFICATION LEVEL		
Fixtures	I	<u>Dimensions</u> ϕA C .250 C'BORE <u>Material</u>	Standard Inspection Equipment

AUTHORIZED SOURCE(S) OF SUPPLY

DASH NUMBER	SUPPLIER DATA	
	PART NUMBER	NAME AND ADDRESS
-00 THRU -100	—	Wrentham Tool Group 155 Farm Street Bellingham, MA 02019

REVISION
REISSUED
DEC. 21, 1987
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SEPT 30, 2014

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TITLE:

FIXTURE, TORQUE TEST
ACR[®] RIBBED TORQ-SET[®] DRIVER

DRAWN:
S. GUARINO

DATE:
11/11/80

DRAWING NUMBER

PSC-2008
CHECKED:
J. GRADY

DATE:
08/14/87

SHEET 5 OF 5

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PROCUREMENT SPECIFICATION

FOR DRIVERS AND

DRIVER BITS

ACR[®] RIBBED TORQ-SET[®]

REISSUED
DEC. 21, 1987

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TITLE: **DRIVERS AND DRIVER BITS,
ACR[®] RIBBED TORQ-SET[®]
PROCUREMENT SPECIFICATION**

DRAWN:
J. O'BRIEN

DATE:
08/18/80

DRAWING NUMBER

PSC-2200

CHECKED:
J. GRADY

DATE:
08/14/87

SHEET 1 OF 7

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1. **SCOPE:** This specification covers the requirements for hand and power drivers for installing and removing fasteners having an ACR® RIBBED TORQ-SET® recess per PSC-2000.
- 1.1. Drivers covered by this specification shall conform to PSC-2201 thru PSC-2249.
2. **REFERENCE 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:

STANDARDS

Military

MIL-STD-1916

American Society of Mechanical Engineering (ASME)

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

ASME 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.

ASTM A 681 Tool Steel, Alloy

DRAWINGS

Phillips Screw Company

PSC-2000 Recess Dimensions-ACR® RIBBED TORQ-SET® Recess

PSC-2001 Dimensions-ACR® RIBBED TORQ-SET® Driver Point

PSC-776 Point Gage, ACR® RIBBED TORQ-SET® Driver

PSC-2006 Test Requirement Specification ACR® RIBBED TORQ-SET® Drivers and Driver Bits

PSC-2201 Driver Bit, Power, Hexagon Grooved Shank, ACR® RIBBED TORQ-SET®

PSC-2202 Driver Bit, Power, Extended Point, Hexagon Grooved Shank, ACR® RIBBED TORQ-SET®

PSC-2203 Driver Bit, Insert, Hexagon Shank, for hand screwdrivers, ACR® RIBBED TORQ-SET®

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ISSUED
DEC. 21, 1987

ECO # 154
AUG 8, 2013

UPDATE
SEPT 30, 2014

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TITLE:

DRIVERS AND DRIVER BITS, ACR® RIBBED TORQ-SET® PROCUREMENT SPECIFICATION

DRAWN:
J. O'BRIEN

DATE:
08/18/80

DRAWING NUMBER

PSC-2200

CHECKED:
J. GRADY

DATE:
08/14/87

SHEET 2 OF 7

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

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3. **REQUIREMENTS:**
 - 3.1. **Materials:** Tool steel, Type S-2, per ASTM A 681, or equal.
 - 3.2. **Hardness:** Drivers shall be through hardened to the level specified herein.
 - 3.2.1. Driver sizes 0 through 1/4 : Rockwell C – 58 to 61
 - 3.2.2. Driver sizes 5/16 and larger : Rockwell C – 56 to 60
 - 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 conform to PSC-2001.
 - (B) Hexagon spindle ends when required for bits shall conform to ASME B107.4.
 - 3.4.1. **Surface Finish:** Driver point surfaces shall have a roughness not exceeding 125 microinches per ASME B46.1.
 - 3.5. **Mechanical Properties:**
 - 3.5.1. **Ultimate Torsional Strength:** When tested per PSC-2006, 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-2006, drivers shall withstand 50 applications of the torsional fatigue load specified in Table I, in both the clockwise and counterclockwise directions, without breakage or permanent deformation.
 - 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:
 - A. Manufacturer's name, symbol, or code.
 - B. Recess or driver size.
 - C. The legend "ACR" (See PSC-2200 Sheet 7 of 7).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. Marking on the round shank is also permissible.
 - D. See supplement at end of PSC-2200 for additional requirements.
 - 3.8. **Workmanship:** Hanging burrs and slivers which might become dislodged in service shall be removed.
4. **QUALITY ASSURANCE PROVISION:**
 - 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 of two years.

REVISION
REISSUED
DEC. 21, 1987
1/ECO 106
JUNE 6, 1993
UPDATE
SEPT 30, 2014

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TITLE:

DRAWN:
J. O'BRIEN

DATE:
08/18/80

DRAWING NUMBER

PSC-2200

CHECKED:
J. GRADY

DATE:
08/14/87

SHEET 3 OF 7

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- 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-2006.
- 4.5. **Quality Conformance Inspection:** Quality conformance Inspection shall consist of the examinations and tests listed in Table II.
5. **NOTES:**
- 5.1. **Authorized Sources:** The product defined herein and on associated detail drawings is subject to product and trademark licenses issued by Phillips Screw Company.
- 6.2. **Intended Use:** Screwdriver bits for driving fasteners having ACR® Ribbed TORQ-SET® recesses.

REVISION

REISSUED
DEC. 21, 1987

ECO #145
OCT 14, 2011

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SEPT 30, 2014

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TITLE: **DRIVERS AND DRIVER BITS,
ACR® RIBBED TORQ-SET®
PROCUREMENT SPECIFICATION**




DRAWN: J. O'BRIEN	DATE: 08/18/80	DRAWING NUMBER PSC-2200 SHEET 4 OF 7
CHECKED: J. GRADY	DATE: 08/14/87	

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TABLE 1			
Driver Size	Min. Ultimate Torsional Strength (LBF-in)		Torsional Fatigue Load (LBF-in) ±10 percent
	Power Bits Per Dwgs. PSC-2201 & PSC-2202	Insert Bits Per Dwg. PSC-2203	
0 1 2 3 4	 ↓ 	 ↓ 	 ↓ 
6 8 10 1/4	35 65 100 250	35 65 100 200	14 26 40 100
5/16 3/8 7/16 1/2 9/16	 500  675 1375 2125 3000	350  ↓	200 270 550 850 1200
5/8 3/4 7/8 1.00	4050  ↓ 	↓ 	1620  ↓ 

NOTES:

-  Not defined at this time.
 No insert bits in these sizes.
 Strength of shank at groove area is about 350 lbf-in minimum for 1/4 inch hex shank.

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TITLE:

**DRIVERS AND DRIVER BITS,
ACR® RIBBED TORQ-SET®
PROCUREMENT SPECIFICATION**

DRAWN:
J. O'BRIEN

DATE:
08/18/80

DRAWING NUMBER

PSC-2200

CHECKED:
G. LaMONICA

DATE:
01/24/00

SHEET 5 OF 7

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REVISION
DEC. 21, 1987
1/ REDRAWN
01-24-00

TABLE II		
QUALITY CONFORMANCE INSPECTION		
MIL-STD-1916	Examination or Test	Conditions and Requirements
VERIFICATION LEVEL		
I	Point Dimensions	Inspect using appropriate size gage PSC-776.
I	Drive End Dimensions	Standard Inspection Equipment or Gages.
I	Torsional Fatigue $\triangle 1$	Test per PSC-2006.
I	Ultimate Torsional Strength $\triangle 1$	Using the same parts that passed Torque Fatigue, test per PSC-2006.
I	Hardness $\triangle 1$	Grind parallel flats perpendicular to bit axis, measure hardness at point end per ASTM E18.
I	Marking	Visual
I	Surface Finish	Visual Inspection per ASME B46.1
I	Physical Properties	Standard laboratory equipment as required
I	Workmanship	Visual Examination

$\triangle 1$ Destructive test – test pieces shall not be delivered.

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ECO # 154
AUG 5, 2013
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SEPT 30, 2014

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TITLE:

**DRIVERS AND DRIVER BITS,
ACR® RIBBED TORQ-SET®
PROCUREMENT SPECIFICATION**

DRAWN:
J. O'BRIEN

DATE:
08/18/80

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CHECKED:
J. GRADY

DATE:
08/14/87

SHEET 6 OF 7

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

MARKING REQUIREMENTS FOR ACR® RIBBED FASTENER DRIVE SYSTEM BITS

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

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

REVISION
SEPT. 11, 1988

UPDATED
9-23-11

REVISION
SEPT 30, 2014

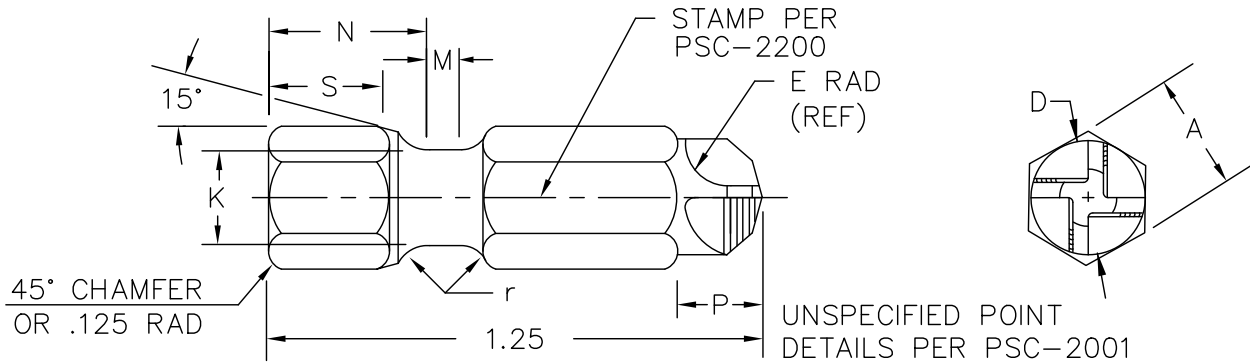
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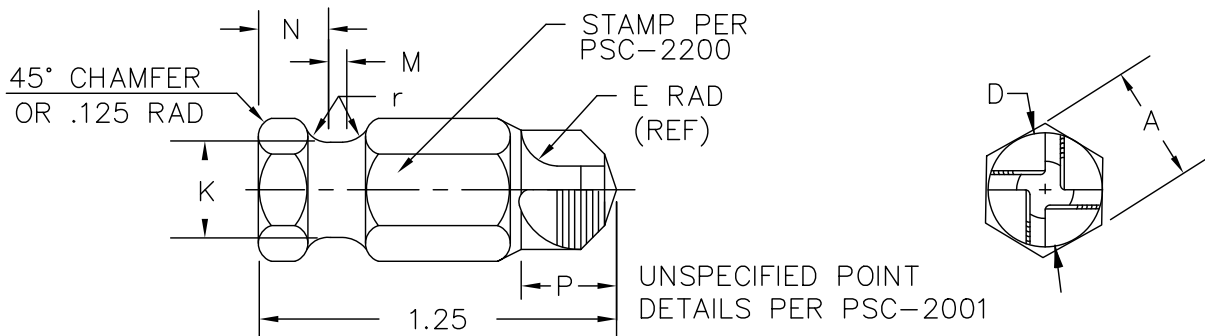
PROCUREMENT SPECIFICATION ACR® RIBBED TORQ-SET® DRIVERS AND DRIVER BITS

DRAWN J. O'BRIEN	DATE 08/18/80	DRAWING NUMBER PSC-2200
CHECKED: J. GRADY	DATE 08/14/87	SHEET 7 OF 7
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



DASH NO. (SIZE)	FORMER CODE NO. REF ONLY	A +.000 -.004	E	K	M	N	r	D	P MIN	S REF	45° CHAM	MIN ULTIMATE TORQUE (LBF IN)
0	170 - 0	.250	.125	.188	.062	.375	.094	.185 .180	.188	.250	TO .203 DIA	
1	170 - 1								.203			
2	170 - 2								.219			
3	170 - 3							.247 .242	.250			
4	170 - 4											35
6	170 - 6											65
8	170 - 8											100
10	170 - 10											
8A	170 - 8A	.3125	.125	.250	.062	.406	.094	.309 .304	.250	.281	TO .266 DIA	65
10A	170 - 10A											100



DASH NO. (SIZE)	FORMER CODE NO. REF ONLY	A +.000 -.004	E	K	M	N	r	D	P MIN	45° CHAM	MIN ULTIMATE TORQUE (LBF IN)
1/4	170 - 1/4	.4375	.188	.344	.047	.250	.109	.434 .429	.312	TO .391 DIA	250
5/16	170 - 5/16								.375		500
3/8	170 - 3/8							.437			675
7/16	170 - 7/16										1375

SEE SHEET 3

REISSUED
DEC. 21, 1987

REVISION

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TITLE: **DRIVER BIT, POWER HEXAGON GROOVED
SHANK ACR® RIBBED TORQ-SET®**

DRAWN:
S.D. BRENNAN

DATE:
08/26/85

DRAWING NUMBER

PSC-2201

CHECKED:
J. GRADY

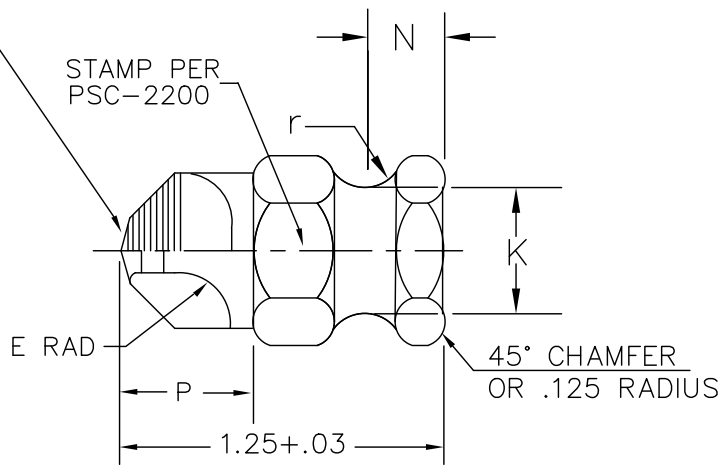
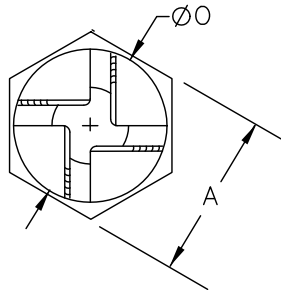
DATE:
05/14/86

SHEET 1 OF 3

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

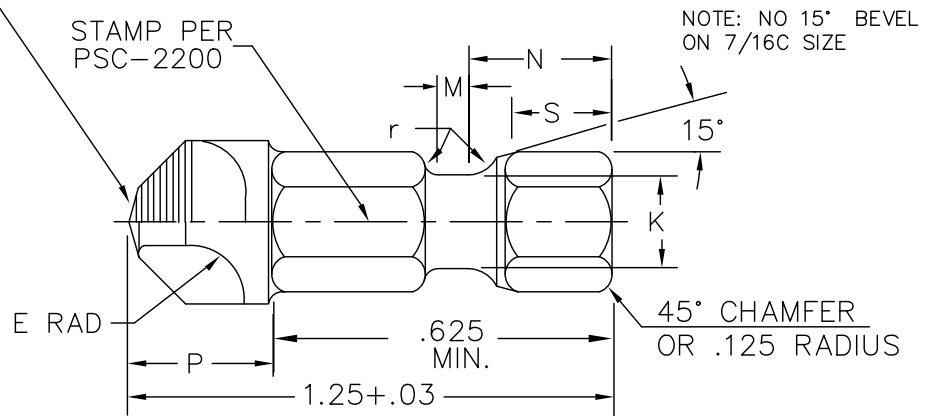
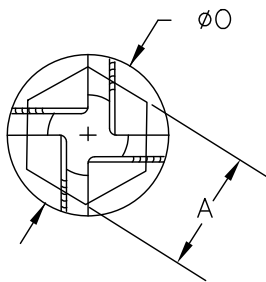
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UNSPECIFIED POINT
DETAILS PER PSC-2001



SIZE	PHILLIPS PART NUMBER	NATIONAL STOCK NUMBER	A +.000 -.004	E REF.	K REF.	N REF.	r REF.	Ø0	P MIN	45° CHAM
1/2	170-2201-ATS1/2									
9/16	170-2201-ATS9/16		.625	.250	.531	.344	.172	.622 .617	.500	TO .609 DIA
5/8	170-2201-ATS5/8									

UNSPECIFIED POINT
DETAILS PER PSC-2001



SIZE	PHILLIPS PART NUMBER	NATIONAL STOCK NUMBER	A +.000 -.004	E REF.	K REF.	M REF.	N REF.	r REF.	Ø0	P MIN	S REF.	45° CHAM
1/4A	170A-2201-ATS1/4								.437 .429	.312		TO .266 DIA
5/16A	170A-2201-ATS5/16	5130-00-133-3453	.3125		.250		.406		.504 .496	.375	.281	
3/8A	170A-2201-ATS3/8			.188		.062		.094	.437 .429	.312		TO .203 DIA
1/4B	170B-2201-ATS1/4				.188		.375		.504 .496	.375	.250	
5/16B	170B-2201-ATS5/16	5130-00-676-8679	.250		.188							
3/8B	170B-2201-ATS3/8				.188							
7/16C	170C-2201-ATS7/16		.4375	.250	.344	.047	.250	.109		.437	.110	.391 DIA.

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TITLE: **DRIVER BIT, POWER HEXAGON GROOVED
SHANK ACR® RIBBED TORQ-SET®**

DRAWN:
S.D. BRENNAN

DATE:
08/26/85

DRAWING NUMBER

PSC-2201

CHECKED:
J. GRADY

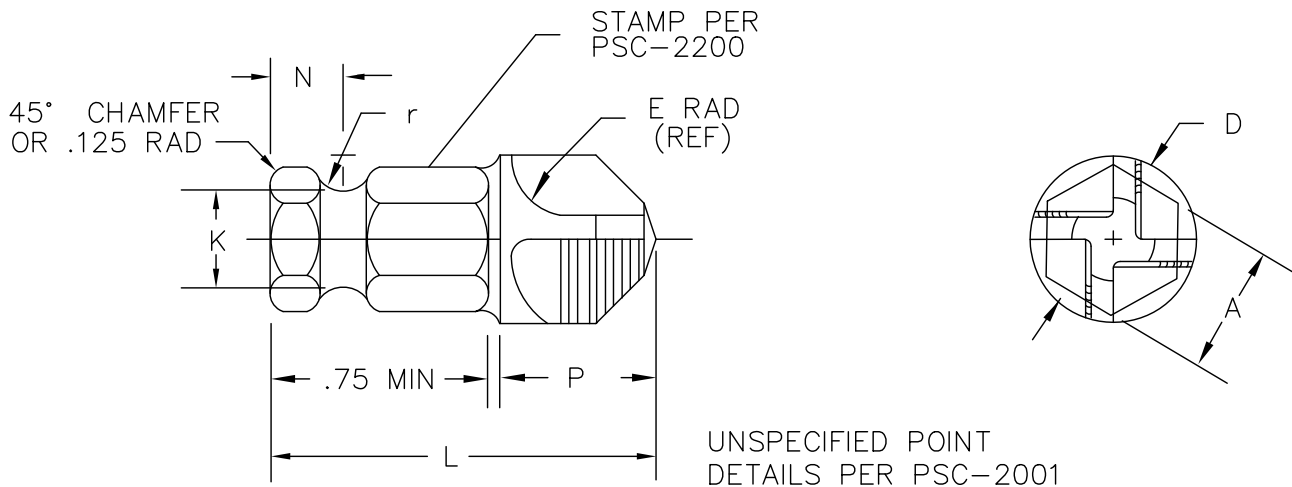
DATE:
05/14/86

SHEET 2 OF 3

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

REISSUED
DEC. 21, 1987
REVISION



DASH NO. (SIZE)	FORMER CODE NO. REF ONLY	A +.000 -.004	L ±.030	E	K	N	r	D	P MIN	45° CHAMFER	MIN ULTIMATE TORQUE (LBF IN)
5/8	170 5/8D	.625	1.250	.250	.531	.344	.172	.754 .746	.531	TO .609 DIA	4050
3/4	EX 433	.750	1.750	.312	.656			.885 .865	.688	TO .734 DIA	_____
7/8			2.000	.375				1.010 .990	.812		_____
1.00			2.250	.500				1.260 1.240	1.000		_____

NOTES:

1. ITEMS MARKED WITH (I) MAY BE USED AS INSERT BITS WITH 1/4 OR 5/16 HEX HAND DRIVER ADAPTORS AS APPLICABLE. EXCEPT FOR OVERALL LENGTH AND DETAILS OF RETAINING GROOVE, THEY ARE DIMENSIONALLY IDENTICAL AND FUNCTIONALLY INTERCHANGABLE WITH PSC-2203.
2. STRENGTH OF SHANK AT GROOVE AREA ABOUT 350LBF-IN MINIMUM FOR 1/4 HEX.
3. DRIVER BITS PROCURED TO THIS DRAWING SHALL CONFORM TO THE REQUIREMENTS OF PSC-2200.

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TITLE: **DRIVER BIT, POWER HEXAGON GROOVED
SHANK ACR® RIBBED TORQ-SET®**

DRAWN:
S.D. BRENNAN

DATE:
08/26/85

DRAWING NUMBER

PSC-2201

CHECKED:
J. GRADY

DATE:
05/14/86

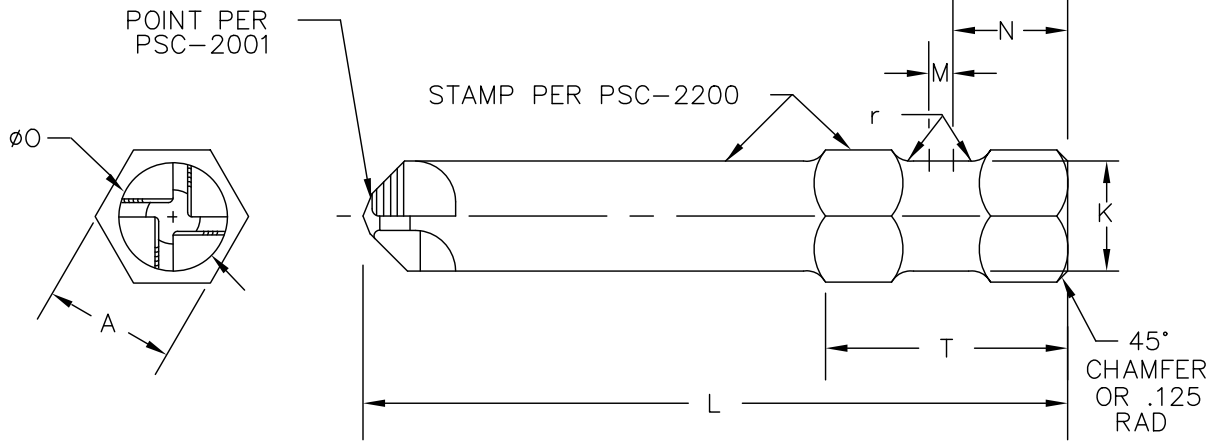
SHEET 3 OF 3

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

REISSUED
DEC. 21, 1987

REVISION



SIZE	PHILLIPS PART NUMBER	NATIONAL STOCK NUMBER	A +.000 -.004	ØO REF.	T ±.06	K REF.	M REF.	N REF.	r REF.	45° CHAMFER	L ±.12
2	265-2202-ATS2		.250	.140	.75	.188	.062	.344	.094	TO .203 DIA	3.50
3	265-2202- ATS3		.250	.156							
4	265-2202- ATS4		.250								
6	265-2202- ATS6	5130-00- 674-9211	.250	.188							
8	265-2202- ATS8	5130-00- 674-9212	.250	.250							
10	265-2202- ATS10	5130-00- 674-9213	.250								
1/4	265-2202- ATS1/4		.437	.344	1.12	.344	.047	.250	.109	TO .391 DIA	
5/16	265-2202- ATS5/16		.437	.375							
3/8	265-2202- ATS3/8		.437	.437							
7/16	265-2202- ATS7/16		.437								
2	265A-2202-ATS2		.250	.140	.75	.188	.062	.344	.094	TO .203 DIA	6.00
3	265A-2202-ATS3		.250	.156							
4	265A-2202-ATS4		.250								
6	265A-2202-ATS6		.250	.188							
8	265A-2202-ATS8		.250	.250							
10	265A-2202-ATS10		.250								
1/4	265A-2202-ATS1/4		.437	.344	1.12	.344	.047	.250	.109	TO .391 DIA	
5/16	265A-2202-ATS5/16		.437	.375							
3/8	265A-2202-ATS3/8		.437	.437							
7/16	265A-2202-ATS7/16		.437								

REVISION
NOV. 8, 1993

NOTE: DRIVER BITS PROCURED TO THIS DRAWING SHALL CONFORM TO THE REQUIREMENTS OF PSC-2200.

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TITLE: **ACR® RIBBED TORQ-SET®**
DRIVER BIT, POWER, EXTENDED POINT

DRAWN:
S. GREGORY

DATE:
11/08/93

DRAWING NUMBER

PSC-2202

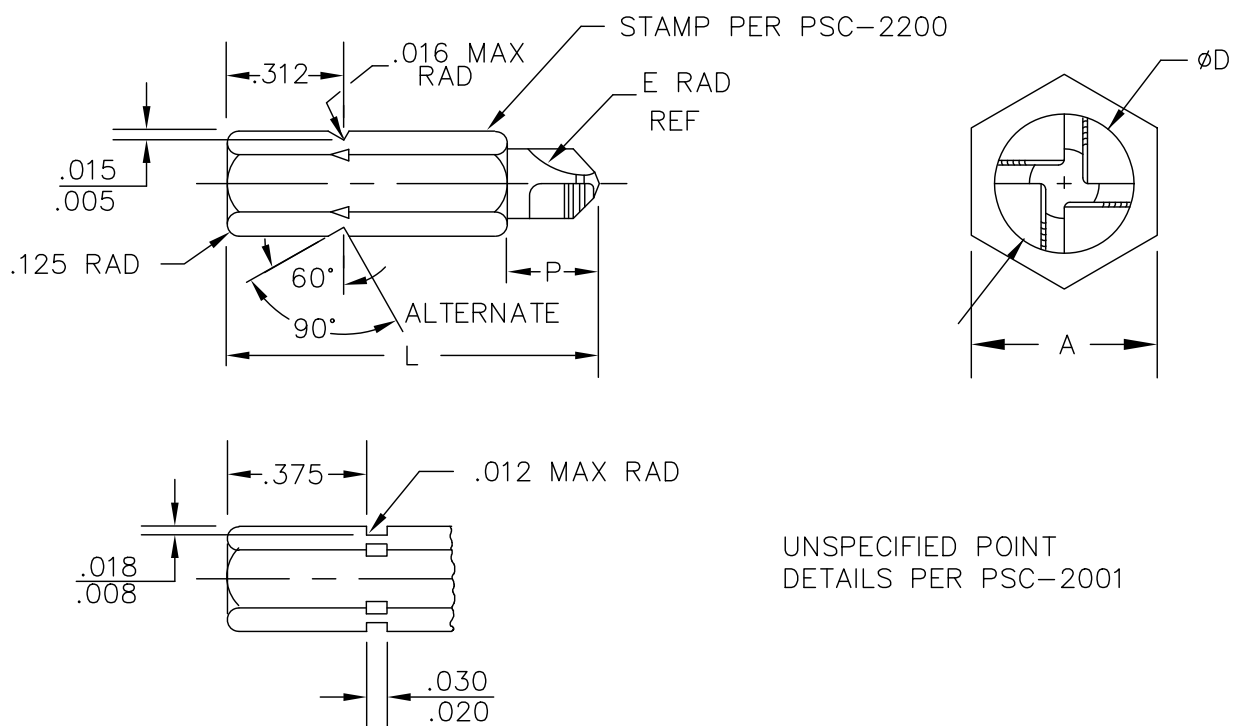
CHECKED:

DATE:

SHEET 1 OF 1

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



DASH NO SIZE	FORMER CODE NO REF ONLY	L	A +.000 −.004	øD	E	P MIN	.125 RAD	MIN ULTIMATE TORQUE (LBF-IN)
0	212-0	1.000	.250	.185 .180	.125	.188	TO .203 DIA	
1	212-1							
2	212-2					.203		
3	212-3							
4	212-4			.219				
6	212-6							
8	212-8			.250				
10	212-10							
8A	212-8A	1.250	.312	.309 .304	.312	TO .266 DIA	35	
10A	212-10A						65	
1/4A	212-1/4A						100	
5/16A	212-5/16A							

NOTE:

1. Driver bits procured to this drawing shell conform to the requirements of PSC-2200.

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TITLE:

**DRIVER BIT, INSERT, HEX SHANK
FOR HAND SCREWDRIVERS
ACR® RIBBED TORQ-SET®**

DRAWN:
S.O. BRENNAN

DATE:
10/25/85

DRAWING NUMBER

PSC-2203

CHECKED:
J. GRADY

DATE:
10/25/85

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
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REISSUED
DEC. 21, 1987

REVISION

ACR[®] Ribbed TORQ-SET[®]

Engineering Manual

Punches

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		<u>SHEET</u>	<u>DATE</u>
A. Punch Inspection Procedure	PSC-2009	1 of 4 2 of 4 3 of 4 4 of 4	12/21/87 12/21/87 12/21/87 12/21/87
B. Punch Point Dimensions	PSC-2100	1 of 1	02/24/89
C. Punch Detail Specifications			
100° Flush Head	PSC-2101	1 of 3 2 of 3 3 of 3	06/22/12 06/06/12 06/22/12
Pan Head, Curved Top	PSC-2102	1 of 2 2 of 2	10/31/89 10/14/11
Flat Flange and 82° Flush Head	PSC-2103	1 of 2 2 of 2	10/31/89 10/14/11
Trimmed Hexagon Head	PSC-2105	1 of 3 2 of 3 3 of 3	10/31/89 11/22/91 10/14/11
Flat Pan Head	PSC-2106	1 of 3 2 of 3 3 of 3	10/31/89 12/21/87 10/14/11
Pan Head, Double Radius	PSC-2107	1 of 2 2 of 2	07/30/92 10/14/11
100° Reduced Flat Top Dome Head	PSC-2109	1 of 2 2 of 2	10/31/89 10/14/11
Washer Head	PSC-2110	1 of 2 2 of 2	06/05/92 10/14/11
Brazier Head	PSC-2122	1 of 2 2 of 2	08/05/15 10/14/11
100° Reduced Crown Head	PSC-2123	1 of 3 2 of 3 3 of 3	08/05/15 06/24/93 10/14/11

ACR[®] RIBBED TORQ-SET[®] **FASTENER SYSTEM** **PUNCH** **INSPECTION PROCEDURE**

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TITLE: **TEST REQUIREMENT SPECIFICATION**
ACR[®] RIBBED TORQ-SET[®] RECESS
HEADING PUNCHES

DRAWN:
 J. O'BRIEN

DATE:
 11/07/80

DRAWING NUMBER

PSC-2009

CHECKED:
 J. GRADY

DATE:
 11/10/80

SHEET 1 OF 4

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

1. **SCOPE:** This specification provides a detailed procedure for inspection of ACR® Ribbed Torq-Set® Recess Heading Punches, as used by Phillips Screw Company for initial qualification and periodic inspection as required by product and trademark licenses. This procedure will also be used as a referee method.
2. **REFERENCED DOCUMENTS:** The following documents form a part of this specification to the extent specified herein:
PSC-2100 Punch Point, Basic Constant Dimensions
PSC-2101 through 2199 Punch Detail Drawings, as applicable.
3. **EQUIPMENT REQUIRED:**
 - A. Vernier Calipers, graduated to 0.001 inch
 - B. Arbor press or vise for making lead impressions.
 - C. Recess Penetration gage of appropriate size per PSC-2003.
 - D. Recess hand gages of appropriate size per PSC-2002. Styles B and C.
 - E. Dial Indicating depth gage with needle tip.
 - F. Toolmakers Microscope with suitable fixturing.
 - G. Dial Indicating Micrometer, graduated to 0.0001 inch.
 - H. Gage blocks.
 - J. Rockwell hardness tester.
4. **TEST PROCEDURE**
 - 4.1 **Body Dimensions:** Using vernier calipers, measure and record the external punch body dimensions, S, K, L, .458-.456 notch location. Measure and record ØD using dial indicating micrometer after setting micrometer with appropriate gage blocks.
 - 4.2 **Lead Impression:** Prepare a lead impression of the punch point using a vise or other manual arbor press. Inspect the recess and head formation obtained as follows:
 - A. Head Marking: Visually check marking for content and clarity.
 - B. Head Contour (curved type only): Using an optical comparator, inspect the head radius of curvature, dimension "O", and the head height, dimension "M".
 - C. Recess Inspection: Using recess gages per PSC-2002, styles B and C, gage the recess formed in the lead.
Note: Due to the soft, malleable nature of the lead, caution must be used with style B gage to avoid stripping the rib from the impressions. Measure and record the recess penetration using a gage per PSC-2003. Measure and record the recess depth.
 - 4.3 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.
 - 4.4 **Location of Punch Nib:** With the punch body centered, rotate the punch, observing relative motion of the punch nib. Measure and record the maximum eccentricity observed.
 - 4.5 **Head Cavity Location** (Curved Tops only): Keeping the punch body centered, measure and record the maximum eccentricity of the head cavity diameter.
 - 4.6 **Cavity Diameter** (Curved Tops only): With the punch axis aligned with the optical sight axis, measure and record the head cavity diameter, ØN.
 - 4.7 **Wing Alignment** Adjust centering of the punch as required to bring the punch nib to the center of rotation of the support fixture. Align the drive wing surfaces at the 12, 3, 6 and 9 o'clock positions. Measure and record the drive wing wall positional alignment using either optical or contact measurement.

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DEC. 21, 1987

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TITLE: **TEST REQUIREMENT SPECIFICATION
ACR® RIBBED TORQ-SET® RECESS
HEADING PUNCHES**

DRAWN:
J. O'BRIEN

DATE:
11/07/80

DRAWING NUMBER

CHECKED:
J. GRADY

DATE:
11/10/80

PSC-2009

SHEET 2 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

- 4.8. **Wing Thickness** (Dimension "F", PSC-2100): With the wings remaining aligned, measure and record the wing thickness at the "G" plane intersection, using optical measurement. At low magnification power, lower the focal plane towards the base of the punch nib, and examine the punch for evidence of excessive wing wall taper, particularly the removal wing walls. The entire wing thickness, exclusive of its radiused runout to the head surface, must lie within the stated "F" limits.
- 4.9 **Net Wing Thickness** (Dimension "E", PSC-2100): Adjust the optical sight axis and focal plane to the runout of one rib groove onto the outer wing angle. Measure and record the actual metal to metal thickness, dimension "E" for each of the four wings.
- 4.10. **Inner Corner Radius** (Dimension "R", PSC-2100): Using a concentric circle reticle with the optical system, measure and record the corner radii in each of the four wing corners.
- 4.11. **Groove Location** (Diameter "V", PSC-2100): Rotate the punch, bringing the apexes of opposed groove pairs in line with the sight crosshairs. Measure and record the apex to apex distance.
- 4.12. **Point Cone Diameter** (Diameter "G", PSC-2100): Rotate the punch, bringing the wings back to the 3, 6, 9, and 12 o'clock positions. Position the punch axis perpendicular to the optical sight axis. Locate the true or theoretical intersection of the outer wing surface and the point cone at the 12 o'clock position. Traverse the sight or punch to the corresponding point at the 6 o'clock position and record dimension "G". Rotate the punch about its axis and repeat the measurement for the other pair of wings. Average the two readings thus obtained.
- 4.13. **Punch Nib Diameter (Diameter "A"):**
- 4.13.1. **Flat Head Punches:** Align the optical sight axis perpendicular to the punch axis, with the wings in the 3, 6, 9, and 12 o'clock positions. Locate the true intersection of the outer wing angle with the punch face on the 12 o'clock wing and establish a datum. Traverse either the punch or the optical sight axis, as applicable, to the corresponding point on the 6 o'clock wing and record the distance traversed (Diameter "A"). Rotate the punch 90° about its axis and repeat the measurement. Average the two readings obtained.
- 4.13.2. **Curved Top Head Punches:** From the perpendicular position, rotate the punch nib towards the optical sight axis until the nib intersection with the punch cavity contour may be observed at the 6 and 12 o'clock positions. Then proceed in the same manner as for flat top punches.
- 4.14. **Punch Marking:** Visually examine and record the punch marking, including the hob serial number, or lot number.
- 4.15. **Punch Hardness:** Measure the core hardness of one sample using a specimen, the rear face of which has been ground back 0.010 minimum using coolant, using a standard Rockwell Hardness Tester.

REISSUED
DEC. 21, 1987

REVISION

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TITLE:

**TEST REQUIREMENT SPECIFICATION
ACR® RIBBED TORQ-SET® RECESS
HEADING PUNCHES**

DRAWN:
J. O'BRIEN

DATE:
11/07/80

DRAWING NUMBER

PSC-2009

CHECKED:
J. GRADY

DATE:
11/10/80

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

**CHECK LIST FOR INSPECTION
OF ACR® RIBBED TORQ-SET® PUNCHES**

Report No. _____

Sheet: _____ of _____

Date: _____

Punch No: _____

Inspector: _____

Description: _____

Mfr.: _____

Lot No. or Hob No. _____

		Measurements	Specifications
Sample Size			
Punch Diameter "ØD"	(4.1)		
Punch Length "S"	(4.1)		
Notch Size "K", "L"	(4.1)		
Notch Location	(4.1)		.458-.456
Head Marking	(4.2.A)		
Head Contour * "O"	(4.2.B)		
Head Contour * "M"	(4.2.B)		
Recess Gaging Penetration	(4.2.C)		
Recess Gaging, Depth Gage	(4.2.C)		
Recess Gaging Style B	(4.2.C)		GO
Recess Gaging Style C	(4.2.C)		NOT GO
Nib Location	(4.4)		.001 MAX
Cavity Location *	(4.5)		.005 MAX
Cavity Diameter "ØN"	(4.6)		
Wing Alignment	(4.7)		.0010 MAX
Wing Thickness "F, PSC-2100"	(4.8)		
Net Wing Thickness, "E, PSC-2100"	(4.9)		
Corner Radii "R,PSC-2100"	(4.10)		
Groove Location "ØV, PSC-2100"	(4.11)		
Point Cone Dia, "ØG, PSC-2100"	(4.12)		
Punch Nib Dia. "ØA"	(4.13)		
Punch Marking	(4.14)		
Hardness	(4.15)		

* Curved Top Heads Only

Accept _____ Disposition: Stock _____ Return to Mfr. _____ Scrap _____

Reject _____ Reason _____

Comments:

REISSUED
DEC. 21, 1987

REVISION

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TITLE:

**TEST REQUIREMENT SPECIFICATION
ACR® RIBBED TORQ-SET® RECESS
HEADING PUNCHES**

DRAWN:
J. O'BRIEN

DATE:
11/07/80

DRAWING NUMBER

PSC-2009

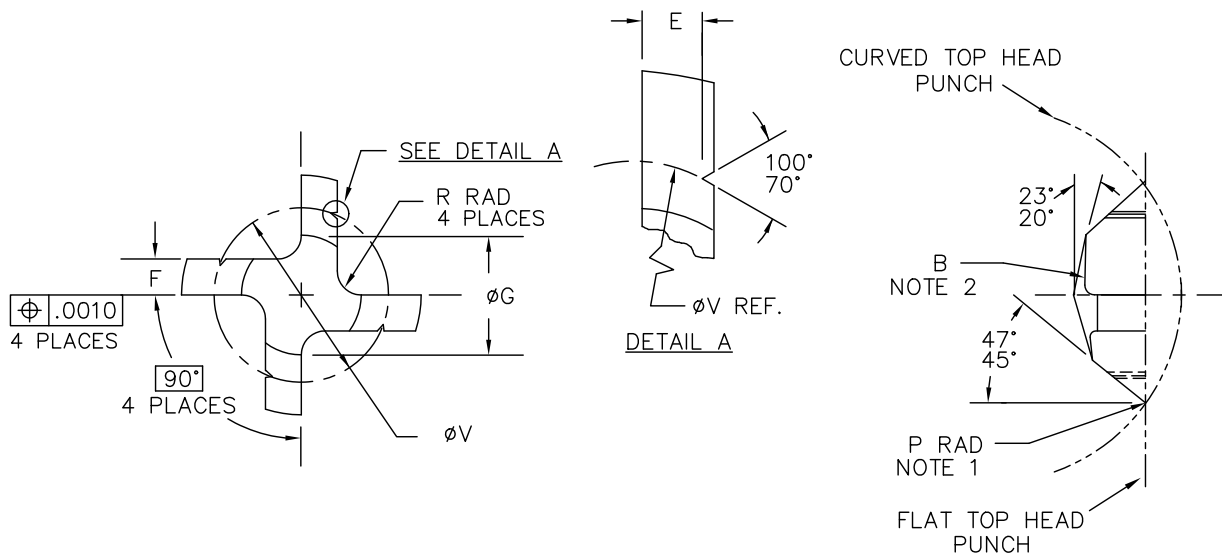
CHECKED:
J. GRADY

DATE:
11/10/80

SHEET 4 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



RECESS SIZE	B ±.002 NOTE 2	E +.0010 −.0000	F	ØG ±.001	P	R +.005 −.000	ØV +.000 −.002
0	.003	.0155	.018 .017	.035	.005 .003	—	.044
1		.0155		.042		—	.054
2		.0155		.050		—	.063
3		.0175		.020— .021		.057	—
4	.004	.0185	.021— .023	.065		.008	.082
5	.004	.0215	.024— .026	.073		.008	.092
6	.005	.0245	.027— .029	.080	.008 .005	.016	.101
8		.0295	.032— .034	.094			.120
10		.0345	.037— .039	.109		.023	.139
1/4	.007	.0465	.049— .051	.145			.183
5/16	.010	.0595	.062— .064	.182	.010 .005	.031	.239
3/8		.0715	.074— .076	.218			.287
7/16	.012	.0845	.087— .089	.254	.012 .005	.048	.335
1/2	.014	.0965	.099— .102	.290		.062	.383
9/16	.016	.1085	.112— .115	.326	.014 .005	.078	.430
5/8	.018	.1205	.124— .127	.363			.478
3/4	.020	.1440	.149— .152	.435	.018 .008		.574
7/8		.1690	.174— .177	.508			.670
1.00		.1940	.199— .202	.580	.010— .020		.109

NOTES:

- Radius shown is for punches only and occurs along the entire peripheral edge of the upper portion of the point.
- The sharp intersection defined by the 20 – 23° point cone and the corner radius "R" shall be rounded to radius "B" as tabulated.

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TITLE:

**PUNCH POINT
BASIC CONSTANT DIMENSIONS
ACR® RIBBED TORQ-SET® RECESS**

DRAWN:
S.O. BRENNAN

DATE:
03/01/85

DRAWING NUMBER

PSC-2100

CHECKED:
J. GRADY

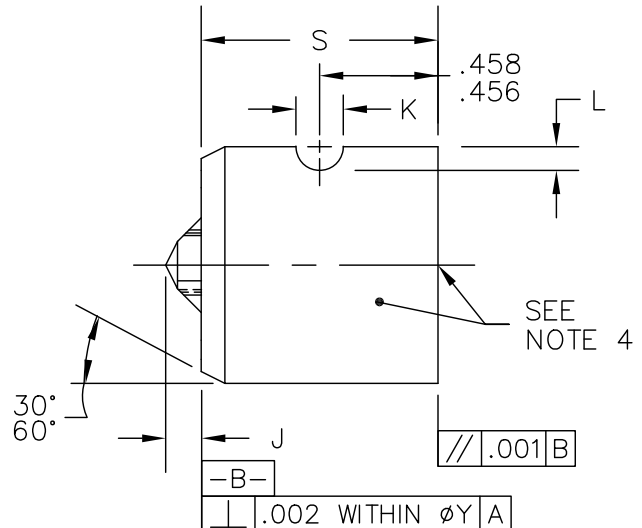
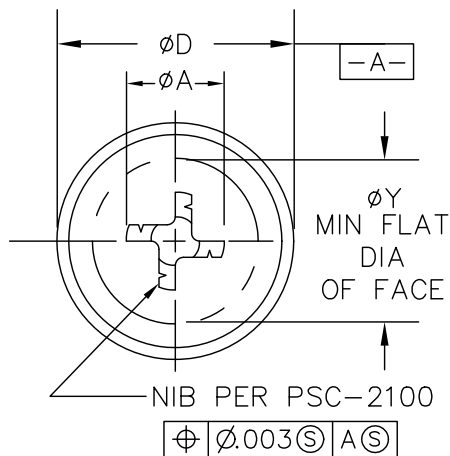
DATE:
03/01/85

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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REVISION
DEC. 21, 1987
FEB. 24, 1989
OCT 14, 2011
ECO# 145



DASH NUMBER	FORMER CODE NO REF ONLY	SCREW SIZE		RECESS SIZE	A ±.002	D ±.0005	G ±.001	J REF	K +.001 -.000	L +.000 -.001	S +.000 -.004	ØY MIN	PUNCH PENETRATION	
		TENSION HEAD	REDUCED HEAD										MAX	MIN
0	0-1-3M	.060		0	.077	.4375	.035	.028	.125	.062	1.000	.125	.0225	.0185
1	1-1-3M	.073		1	.093	↑	.042	.034	↑	↑	↑	.156	.0270	.0230
2	2-1-3M	.086		2	.110	↑	.050	.040	↑	↑	↑	.188	.0315	.0275
3	3-1-3M	.099		3	.127	↑	.057	.046	↑	↑	↑	.219	.0365	.0325
4	4-1-3M	.112		4	.143	↓	.065	.052	↓	↓	↓	.234	.0405	.0365
6	6-1-3M	.138	.164	6	.177	.4375	.080	.063	.125	.062		.312	.0500	.0450
8	8-1-3M	.164	.190	8	.210	.5625	.094	.075	.212	.106		.375	.0595	.0545
10	10-1-3M	.190	.250	10	.243	.5625	.109	.087	↑	↑		.437	.0685	.0635
25	25-1-3M	.250	.312	1/4	.320	.8750	.145	.115				.594	.0890	.0840
31	31-1-3	.312	.375	5/16	.352	1.0000	.182	.119				.688	.0860	.0810
37	37-1-3	.375	.4375	3/8	.422	1.0000	.218	.142				.844	.1030	.0980
43	43-1-3	.4375	.500	7/16	.493	1.2500	.254	.166				.938	.1205	.1155
50	50-1-3	.500	.5625	1/2	.563	1.2500	.290	.190				1.062	.1375	.1325
56	56-1-3	.5625		9/16	.633	1.5000	.326	.214	↓	↓	↓	1.219	.1545	.1495
62	62-1-3	.625		5/8	.703	1.5000	.363	.238	.212	.106	1.000	1.344	.1710	.1660
75	75-1-3	.750		3/4	.844	2.0000	.435	.285			1.500	1.531	.2060	.2010
87	87-1-3	.875		7/8	.984	2.0000	.508	.332			1.500	1.812	.2395	.2345
100	100-1-3	1.000		1	1.125	2.5000	.580	.380			1.500	2.062	.2740	.2690

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TITLE:

**PUNCH, 100° FLUSH HEAD,
ACR® RIBBED TORQ-SET® RECESS**

DRAWN:
S.O. BRENNAN

DATE:
02/04/85

DRAWING NUMBER

PSC-2101

CHECKED:
J. GRADY

DATE:
02/04/85

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

REVISION
REISSUED
DEC. 21, 1987
FEB. 24, 1989
OCT. 31, 1989
2/ ECO 78
3/ ECO 148
JUN 22, 2012

FLAT HEAD PUNCHES METRIC SIZES

DASH NUMBER	SCREW SIZE	RECESS SIZE	A ±.002	D ±.0005	G ±.001	J REF	K +.001 -.000	L +.000 -.001	S +.000 -.004	Ø MIN	PUNCH PENETRATION	
											MAX.	MIN.
0M1.6	M1.6	0	.077	.4375	.035	.028	.125	.062	1.000	.125	.0225	.0185
1M2	M2	1	.093	.4375	.042	.034	.125	.062	1.000	.156	.0270	.0230
3M2.5	M2.5	3	.127	.4375	.057	.046	.125	.062	1.000	.219	.0365	.0325
4M3	M3	4	.143	.4375	.065	.052	.125	.062	1.000	.234	.0405	.0365
6M3.5	M3.5	6	.177	.4375	.080	.063	.125	.062	1.000	.312	.0500	.0450
8M4	M4	8	.210	.5625	.094	.075	.212	.106	1.000	.375	.0595	.0545
10M5	M5	10	.243	.5625	.109	.087	.212	.106	1.000	.437	.0685	.0635
25M6	M6	1/4	.320	.8750	.145	.115	.212	.106	1.000	.594	.0890	.0840
25M7	M7	1/4	.320	1.0000	.145	.115	.212	.106	1.000	.625	.0890	.0840
31M8	M8	5/16	.352	1.0000	.182	.119	.212	.106	1.000	.688	.0860	.0810
37M10	M10	3/8	.422	1.0000	.218	.142	.212	.106	1.000	.844	.1030	.0980
50M12	M12	1/2	.563	1.2500	.290	.190	.212	.106	1.000	1.062	.1375	.1325

REVISION

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TITLE:

**PUNCH, 100° FLUSH HEAD,
ACR® RIBBED TORQ-SET® RECESS**

DRAWN

G. DILLING

DATE

6/6/12

DRAWING NUMBER

PSC-2101

SHEET 2 OF 3

CHECKED:

G. DILLING

DATE

6/6/12

PHILLIPS SCREW CO.

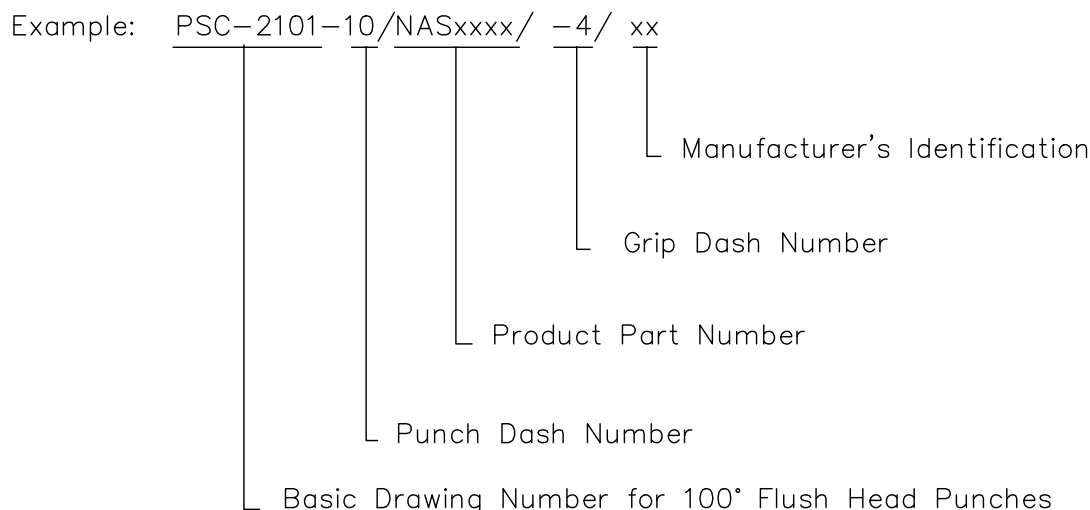
155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.

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

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

NOTES:

1. Punch numbering system consists of basic punch drawing number (ie., PSC-2xxx), proper dash number (ie., -10), a slash (/), product part number for head marking (ie., NASxxxx), a slash (/), grip dash number for head marking (ie., -4), a slash (/), and the manufacturer's identification for head marking (ie., xx). See drawing NAS1347 and the applicable product drawing.



2. Refer to drawing PSC-2100 for point dimensions not shown.
3. Deburr all ACR® Grooves.
4. Mark punches with this drawing number, applicable dash number, the legend "ACR® TORQ-SET®", and the serial number of the hob used in manufacture. All marking shall be etched, stamped, or engraved.
5. 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-2009.

REVISION
DEC. 21, 1987
1/ ECO 145
OCT 14, 2011
2/ ECO 148
JUN 22, 2012

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TITLE:

**PUNCH, 100° FLUSH HEAD,
ACR® RIBBED TORQ-SET® RECESS**

DRAWN:
S.O. BRENNAN

DATE:
02/04/85

DRAWING NUMBER

PSC-2101

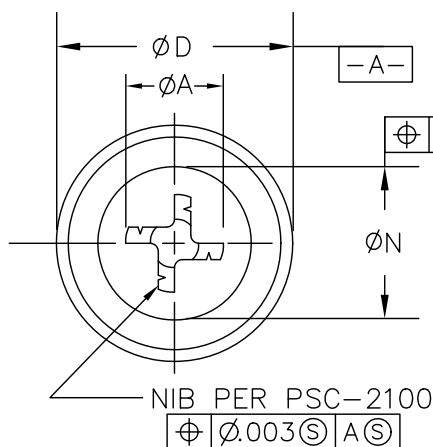
CHECKED:
J. GRADY

DATE:
02/04/85

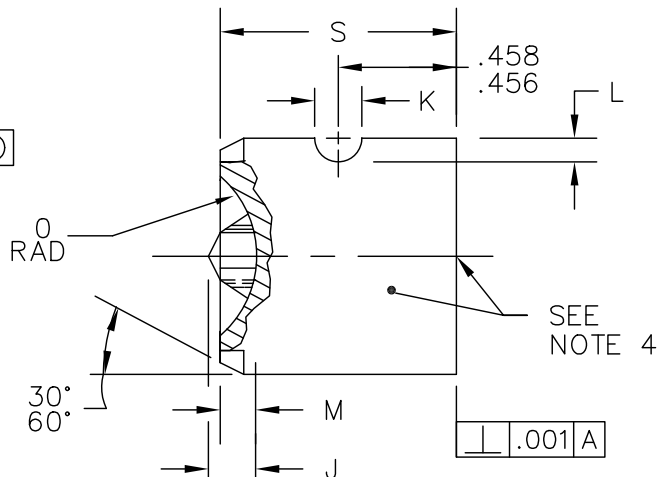
SHEET 3 OF 3

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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 POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



1/



DASH NUMBER	FORMER CODE NO REF ONLY	SCREW SIZE	RECESS SIZE	A ±.002	D ±.0005	G ±.001	J REF	K +.001 -.000	L +.000 -.001	M +.002 -.000	N +.005 -.000	O +.005 -.000	S +.000 -.004	PUNCH PENETRATION	
														MAX	MIN
0 (7)	0-4-4M	.060	0	.068	.4375	.035	.030	.125	.062	.019	.111	.091	1.000	.0180	.0140
1 (7)	1-4-4M	.073	1	.082	↑	.042	.036	↑	↑	.024	.137	.111	↑	.0215	.0175
2 (7)	2-4-4M	.086	2	.097	↑	.050	.042	↑	↑	.028	.162	.132	↑	.0250	.0210
3 (7)	3-4-4M	.099	3	.111	↑	.057	.049	↑	↑	.033	.188	.150	↑	.0285	.0245
4 (7)	4-4-4M	.112	4	.126	↓	.065	.055	↓	↓	.037	.214	.173	↑	.0320	.0280
6 (7)	6-4-4M	.138	6	.155	.4375	.080	.067	.125	.062	.048	.265	.207	↑	.0390	.0340
8 (7)	8-4-4M	.164	8	.185	.5625	.094	.080	.212	.106	.059	.317	.244	↑	.0470	.0420
10(7)	10-4-4M	.190	10	.214	.5625	.109	.093	↑	↑	.066	.363	.284	↑	.0540	.0490
25(7)	25-4-4M	.250	1/4	.281	.8750	.145	.123	↑	↑	.089	.482	.373	↑	.0695	.0645
31(7)	31-4-4M	.312	5/16	.352	1.0000	.182	.150	↑	↑	.095	.605	.527	↑	.0860	.0810
37(7)	37-4-4M	.375	3/8	.422	1.2500	.218	.178	↑	↑	.112	.730	.652	↑	.1030	.0980
43(7)	43-4-4M	.437	7/16	.493	1.5000	.254	.206	↓	↓	.126	.853	.782	↓	.1205	.1155
50(7)	50-4-4M	.500	1/2	.563	1.5000	.290	.233	.212	.106	.141	.977	.917	1.000	.1375	.1325
56		.562	9/16	.633	2.0000	.326	.267	—	—	.150	1.031	.960	1.500	.1545	.1495
62		.625	5/8	.703	2.5000	.363	.300	—	—	.187	1.162	.995	1.500	.1710	.1660
75		.750	3/4	.844	2.5000	.435	.367	—	—	.257	1.425	1.115	1.500	.2060	.2010
4D		.112	4	.136	.4375	.065	.055	.125	.062	.020	.214	.300	1.000	.0380	.0340
6D		.138	6	.166	.4375	.080	.067	.125	.062	.025	.265	.370	1.000	.0455	.0405
8D		.164	8	.197	.5625	.094	.080	.212	.106	.030	.317	.440	1.000	.0540	.0490
10T		.190	10	.214	.5625	.109	.090	.212	.106	.094	.465	.335	1.000	.0540	.0490
25T		.250	1/4	.281	.8750	.142	.119	.212	.106	.125	.600	.423	1.000	.0695	.0645
31T		.312	5/16	.352	1.0000	.182	.150	.212	.106	.156	.740	.517	1.000	.0860	.0810
10TSPL		.190	10	.214	.8750	.109	.084	.212	.106	.084	.560	.509	1.000	.0540	.0490
4DS		.112	4	.126	.4375	.065	.049	.125	.062	.020	.214	.300	1.000	.0320	.0280
6DS		.138	6	.155	.4375	.080	.060	.125	.062	.025	.265	.370	1.000	.0390	.0340
8DS		.164	8	.185	.5625	.094	.072	.212	.106	.030	.317	.440	1.000	.0470	.0420

1/ ECO 78
OCT. 31, 1989

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DEC. 21, 1987

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TITLE:

**PUNCH, CURVED TOP PAN HEAD,
ACR® RIBBED TORQ-SET® RECESS**

DRAWN:
S.O. BRENNAN

DATE:
04/19/85

DRAWING NUMBER

CHECKED:
J. GRADY

DATE:
04/19/85

PSC-2102

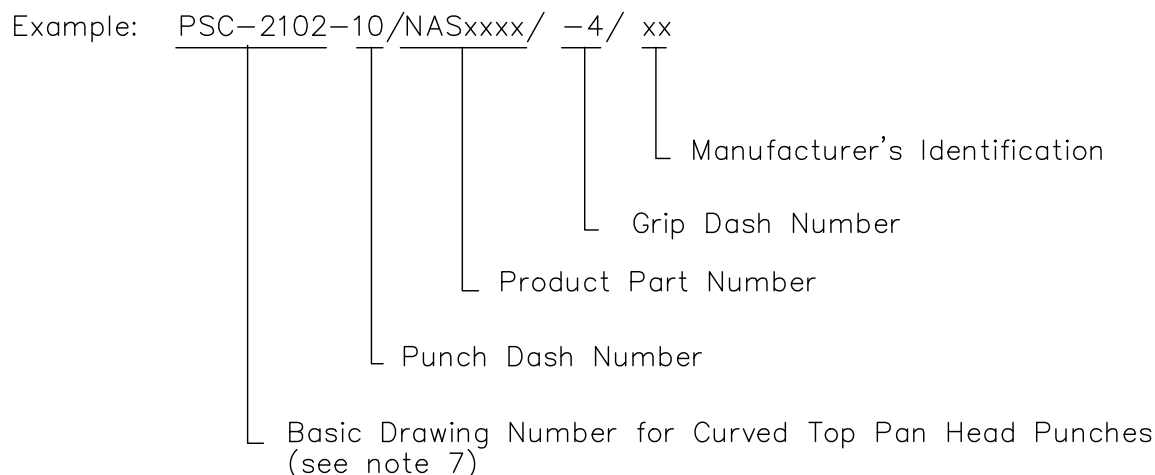
SHEET 1 OF 2

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

NOTES:

1. Punch numbering system consists of basic punch drawing number (ie., PSC-2xxx), proper dash number (ie., -10), a slash (/), product part number for head marking (ie., NASxxxx), a slash (/), grip dash number for head marking (ie., -4), a slash (/), and the manufacturer's identification for head marking (ie., xx). See drawing NAS1347 and the applicable product drawing.



2. Refer to drawing PSC-2100 for point dimensions not shown.
3. Deburr all ACR® Grooves.
4. Mark punches with this drawing number, applicable dash number, the legend "ACR® TORQ-SET®", and the serial number of the hob used in manufacture. All marking shall be etched, stamped, or engraved.
5. 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-2009.
6. These punches dash no's 0 – 50 (no D or T) are designed to produce pan heads with the side height contained in the die.
"D" stands for domed pan head
"T" stands for truss head.
"DS" stands for domed head standard recess dims.
7. See punches on PSC – 2107 for side height contained in punch.
8. For flat pan heads, use punches per PSC-2106.

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DEC. 21, 1987
1/ ECO 145
OCT 14, 2011

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**PUNCH, CURVED TOP PAN HEAD,
ACR® RIBBED TORQ-SET® RECESS**

DRAWN:

S.O. BRENNAN

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04/19/85

DRAWING NUMBER

PSC-2102

CHECKED:

J. GRADY

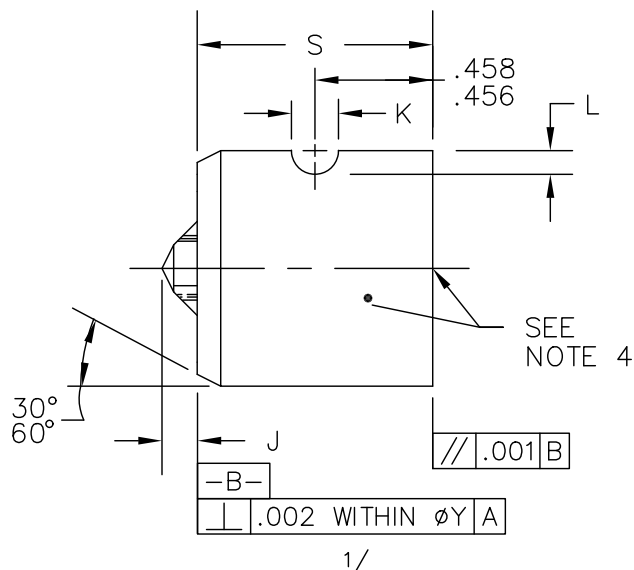
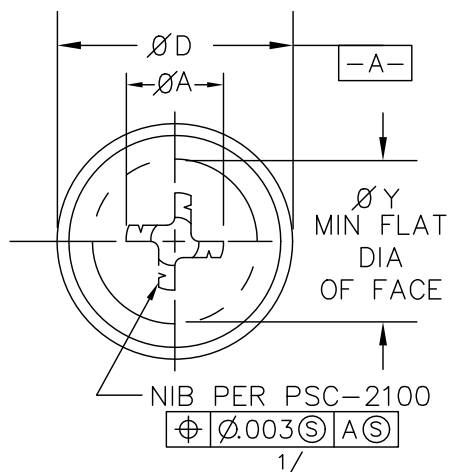
DATE:

04/19/85

SHEET 2 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®
HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



DASH NUMBER	FORMER CODE NO REF ONLY	SCREW SIZE	RECESS SIZE	A ±.002	D ±.0005	G ±.001	J REF	K +.001 -.000	L +.000 -.001	S +.000 -.004	ØY MIN	PUNCH PENETRATION	
												MAX	MIN
0	0-1-82	.060	0	.082	.4375	.035	.030	.125	.062	1.000	.125	.0250	.0210
1	1-1-82	.073	1	.099	↑	.042	.036	↑	↑	↑	.156	.0300	.0260
2	2-1-82	.086	2	.117	↑	.050	.043	↑	↑	↑	.188	.0350	.0310
3	3-1-82	.099	3	.135	↑	.057	.050	↑	↑	↑	.219	.0405	.0365
4	4-1-82	.112	4	.152	↓	.065	.056	↓	↓	↑	.234	.0450	.0410
6	6-1-82	.138	6	.188	.4375	.080	.069	.125	.062	↑	.312	.0555	.0505
8	8-1-82	.164	8	.223	.5625	.094	.082	.212	.106	↑	.375	.0660	.0610
10	10-1-82	.190	10	.258	.5625	.109	.095	↑	↑	↑	.437	.0760	.0710
25	25-1-82	.250	1/4	.340	.8750	.145	.125	↑	↑	↑	.594	.0990	.0940
31	31-1-82	.312	5/16	.377	1.0000	.182	.131	↓	↓	↓	.687	.0985	.0935
37	37-1-82	.375	3/8	.452	1.0000	.218	.158	.212	.106	1.000	.844	.1180	.1130

**FOR SCREW SIZES .4375 AND LARGER,
USE PUNCHES ON PSC-2101**

1/ ECO 78
OCT. 31, 1989

REISSUED
DEC. 21, 1987

ECO 30, 13 AUG 81

① ECO 30, 13 AUG 81

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TITLE:

**PUNCH FLAT FILLISTER HEAD
AND 82° FLUSH HEAD
ACR® RIBBED TORQ-SET® RECESS**

DRAWN:
S.O. BRENNAN

DATE:
02/07/85

DRAWING NUMBER

PSC-2103

CHECKED:
J. GRADY

DATE:
02/07/85

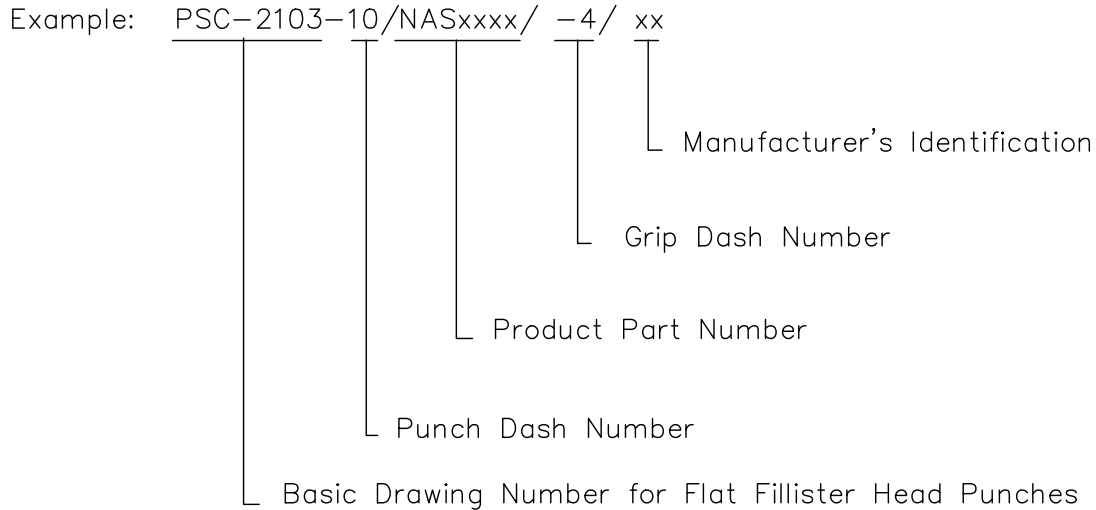
SHEET 1 OF 2

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

NOTES:

1. Punch numbering system consists of basic punch drawing number (ie., PSC-2xxx), proper dash number (ie., -10), a slash (/), product part number for head marking (ie., NASxxxx), a slash (/), grip dash number for head marking (ie., -4), a slash (/), and the manufacturer's identification for head marking (ie., xx). See drawing NAS1347 and the applicable product drawing.



2. Refer to drawing PSC-2100 for point dimensions not shown.
3. Deburr all ACR[®] Grooves.
4. Mark punches with this drawing number, applicable dash number, the legend "ACR[®] TORQ-SET[®]", and the serial number of the hob used in manufacture. All marking shall be etched, stamped, or engraved.
5. 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-2009.

1/ ECO 145
OCT 14, 2011

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DEC. 21, 1987

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TITLE:

**PUNCH FLAT FILLISTER HEAD
AND 82° FLUSH HEAD
ACR[®] RIBBED TORQ-SET[®] RECESS**

DRAWN:
S.O. BRENNAN

DATE:
02/07/85

DRAWING NUMBER

PSC-2103

CHECKED:
J. GRADY

DATE:
02/07/85

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

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

TRIMMED HEX PUNCHES METRIC SIZES

DASH NUMBER	SCREW SIZE	HEX SIZE (mm)	RECESS SIZE	A ±.002	D ±.0005	G ±.001	J REF	K +.001 -.000	L +.000 -.001	M +.002 -.000	N +.005 -.000	C +.005 -.000	S +.000 -.004	PUNCH PENETRATION	
														MAX	MIN
1M2-3.2	M2	3.2	1	.099	.4375	.042	.036	.125	.062	.005	.163	.126	1.000	.0300	.0260
3M2.5-4	M2.5	4	3	.135	↑	.057	.050	↑	↑	.006	.202	.157	↑	.0405	.0365
4M3-5	M3	5	4	.152	↓	.065	.056	↓	↓	.008	.257	.197		.0450	.0410
4M3-6	M3	6	4	.152	.4375	.065	.056	.125	.062	.012	.307	.217		.0450	.0410
4M3-7	M3	7	4	.152	.5625	.065	.056	.212	.106	.014	.360	.256		.0450	.0410
6M3.5-5.5	M3.5	5.5	6	.188	.4375	.080	.069	.125	.062	.011	.282	.200		.0555	.0505
8M4-6 *	M4	6	8	.223	.5625	.094	.082	.212	.106	.012	.307	.217		.0660	.0610
8M4-7	M4	7	8	.223	.5625	.094	.082	↑	↑	.014	.360	.256		.0660	.0610
8M4-8	M4	8	8	.223	.5625	.094	.082			.016	.414	.295		.0660	.0610
10M5-8	M5	8	10	.258	.8750	.109	.095			.016	.414	.295		.0760	.0710
10M5-9	M5	9	10	.258	↑	.109	.095			.018	.465	.331		.0760	.0710
25M6-10	M6	10	1/4	.340	↓	.145	.125			.021	.527	.370		.0990	.0940
25M6-11	M6	11	1/4	.340	.8750	.145	.125			.023	.578	.406		.0990	.0940
25M7-11	M7	11	1/4	.340	1.0000	.145	.125			.023	.578	.406		.0990	.0940
25M7-12	M7	12	1/4	.340	1.0000	.145	.125			.025	.632	.445		.0990	.0940
31M8-13	M8	13	5/16	.377	1.2500	.182	.131			.027	.686	.484		.0985	.0935
31M8-14	M8	14	5/16	.377	↑	.182	.131			.030	.748	.524		.0985	.0935
37M10-16	M10	16	3/8	.452	↓	.218	.158			.034	.856	.602		.1180	.1130
37M10-17	M10	17	3/8	.452	1.2500	.218	.158			.037	.918	.642		.1180	.1130
50M12-18	M12	18	1/2	.563	1.5000	.290	.190			.038	.965	.681		.1375	.1325
50M12-19	M12	19	1/2	.563	1.5000	.290	.190	↓	↓	.041	1.026	.720	↓	.1375	.1325
50M12-21	M12	21	1/2	.563	1.5000	.290	.190	.212	.106	.046	1.142	.799	1.000	.1375	.1325

1/ * RECESS DIAMETER A IS LARGER THAN C FLAT

1/ THE FOLLOWING PUNCHES ARE PROVIDED FOR CERTAIN NA PARTS HAVING LARGER THAN
NORMAL FLAT DIAMETER ON TOP OF HEAD

4M3-6A	M3	6	4	.152	.4375	.065	.056	.125	.062	.009	.303	.236	1.000	.0450	.0410
4M3-7A	M3	7	4	.152	.4375	.065	.056	.125	.062	.011	.358	.276		.0450	.0410
8M4-6A	M4	6	8	.223	.5625	.094	.082	.212	.106	.009	.303	.236		.0660	.0610
8M4-7A	M4	7	8	.223	.5625	.094	.082	.212	.106	.011	.358	.276		.0660	.0610
8M4-8A	M4	8	8	.223	.5625	.094	.082	.212	.106	.013	.412	.315		.0660	.0610
10M5-8A	M5	8	10	.258	.8750	.109	.095	.212	.106	.013	.412	.315		.0760	.0710
25M6-10A	M6	10	1/4	.340	.8750	.145	.125	.212	.106	.017	.521	.394		.0990	.0940

1/ ECO 80
NOV. 22, 91

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TITLE:

**PUNCH, TRIMMED HEXAGON HEAD,
ACR[®] RIBBED TORQ-SET[®] RECESS**

DRAWN:

S.O. BRENNAN

DATE:

04/25/83

DRAWING NUMBER

PSC-2105

CHECKED:

J. GRADY

DATE:

04/25/83

SHEET 2 OF 3

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.

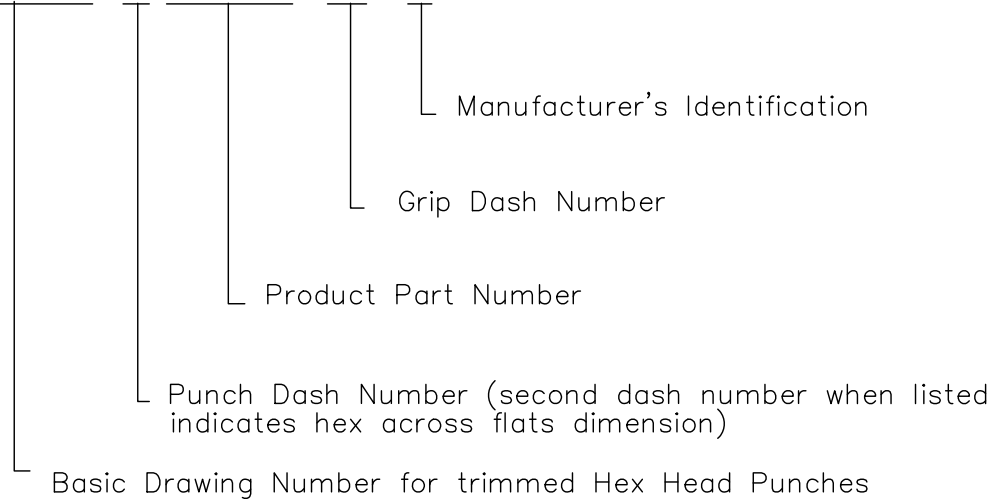
PHONE: 774-396-6190 FAX: 508-966-2326

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

NOTES:

1. Punch numbering system consists of basic punch drawing number (ie., PSC-2xxx), proper dash number (ie., -10), a slash (/), product part number for head marking (ie., NASxxxx), a slash (/), grip dash number for head marking (ie., -4), a slash (/), and the manufacturer's identification for head marking (ie., xx). See drawing NAS1347 and the applicable product drawing.

Example: PSC-2105-10/NASxxxx/-4/xx



2. Refer to drawing PSC-2100 for point dimensions not shown.
3. Deburr all ACR® Grooves.
4. Mark punches with this drawing number, applicable dash number, the legend "ACR® TORQ-SET®", and the serial number of the hob used in manufacture. All marking shall be etched, stamped, or engraved.
5. 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-2009.

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1/ ECO 145
OCT 14, 2011

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TITLE:

**PUNCH, TRIMMED HEXAGON HEAD,
ACR® RIBBED TORQ-SET® RECESS**

DRAWN:

S.O. BRENNAN

DATE:

04/25/83

DRAWING NUMBER

PSC-2105

CHECKED:

J. GRADY

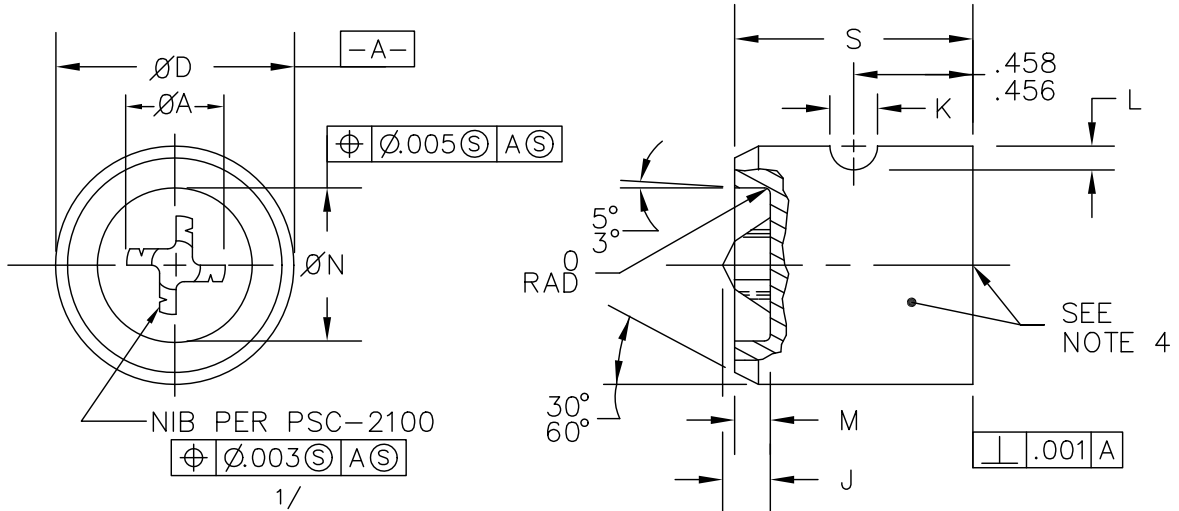
DATE:

04/25/83

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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DASH NUMBER	SCREW SIZE	RECESS SIZE	A $\pm .002$	D $\pm .0005$	G $\pm .001$	J REF	K $+ .001$ $- .000$	L $+ .000$ $- .001$	M $+ .002$ $- .000$	N $+ .005$ $- .000$	O $+ .000$ $- .010$	S $+ .000$ $- .004$	PUNCH PENETRATION	
													MAX	MIN
0	.060	0	.082	.4375	.035	.030	.125	.062	.022	.111	.020	1.000	.0250	.0210
1	.086	1	.099	↑	.042	.036	↑	↑	.027	.137	.020	↑	.0300	.0260
2	.073	2	.117	↑	.050	.043	↑	↑	.032	.162	.020	↑	.0350	.0310
3	.099	3	.135	↑	.057	.050	↑	↑	.037	.188	.025	↑	.0405	.0365
4	.112	4	.152	↓	.065	.056	↓	↓	.041	.214	.025	↑	.0450	.0410
6	.138	6	.188	.4375	.080	.069	.125	.062	.050	.265	.030	↑	.0555	.0505
8	.164	8	.223	.5625	.094	.082	.212	.106	.061	.317	.030	↑	.0660	.0610
10	.190	10	.258	.8750	.109	.095	↑	↑	.071	.369	.035	↑	.0760	.0710
25	.250	1/4	.340	.8750	.145	.125	↑	↑	.094	.487	.040	↑	.0990	.0940
31	.312	5/16	.377	1.000	.182	.131	↑	↑	.093	.607	.050	↑	.0985	.0935
37	.375	3/8	.452	1.2500	.218	.158	↑	↑	.108	.735	.050	↑	.1180	.1130
43	.437	7/16	.493	1.5000	.254	.166	↓	↓	.124	.808	.060	↓	.1205	.1155
50	.500	1/2	.563	1.5000	.290	.190	.212	.106	.140	.920	.065	1.000	.1375	.1325

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TITLE:

**PUNCH, FLAT PAN HEAD,
ACR[®] RIBBED TORQ-SET[®] RECESS**

DRAWN:
S.O. BRENNAN

DATE:
04/12/85

DRAWING NUMBER

PSC-2106

CHECKED:
J. GRADY

DATE:
04/12/85

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

1/ ECO 78
OCT. 31, 1989

REISSUED
DEC. 21, 1987

REVISION

FLAT PAN HEAD PUNCHES METRIC SIZES

DASH NUMBER	SCREW SIZE	RECESS SIZE	A ±.002	D ±.0005	G ±.001	J REF	K +.001 -.000	L +.000 -.001	M +.002 -.000	N +.005 -.000	O +.000 -.010	S +.000 -.004	PUNCH PENETRATION	
													MAX	MIN
0M1.6	M1.6	0	.082	.4375	.035	.030	.125	.062	.023	.121	.012	1.000	.0250	.0210
1M2	M2	1	.099	↑	.042	.036	↑	↑	.028	.152	.015	↑	.0300	.0260
3M2.5	M2.5	3	.135	↓	.057	.050	↓	↓	.035	.192	.025	↓	.0405	.0365
4M3	M3	4	.152	↓	.065	.056	↓	↓	.043	.231	.025	↓	.0450	.0410
6M3.5	M3.5	6	.188	.4375	.080	.069	.125	.062	.050	.271	.030		.0555	.0505
8M4	M4	8	.223	.5625	.094	.082	.212	.106	.056	.310	.030		.0660	.0610
10M5	M5	10	.258	.8750	.109	.095	↑	↑	.071	.389	.035		.0760	.0710
25M6	M6	1/4	.340	.8750	.145	.125			.085	.467	.040		.0990	.0940
25M7	M7	1/4	.340	1.0000	.145	.125			.085	.546	.060		.0990	.0940
31M8	M8	5/16	.377	1.0000	.182	.131			.094	.625	.080		.0985	.0935
37M10	M10	3/8	.452	1.2500	.218	.158	↓	↓	.118	.782	.120	↓	.1180	.1130
50M12	M12	1/2	.563	1.5000	.290	.190	.212	.106	.142	.940	.150	1.000	.1375	.1325

REVISION
DEC. 21, 1987
1/ ECO 80
NOV. 22, 91

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TITLE:

**PUNCH, FLAT PAN HEAD,
ACR® RIBBED TORQ-SET® RECESS**

DRAWN:
S.O. BRENNAN

DATE:
04/12/85

DRAWING NUMBER

PSC-2106

CHECKED:
J. GRADY

DATE:
04/12/85

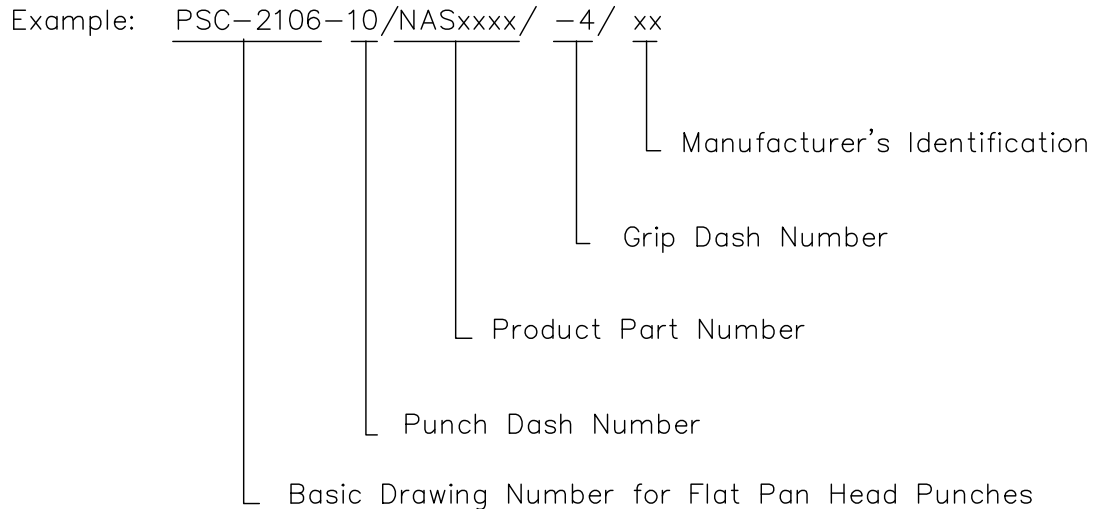
SHEET 2 OF 3

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

NOTES:

1. Punch numbering system consists of basic punch drawing number (ie., PSC-2xxx), proper dash number (ie., -10), a slash (/), product part number for head marking (ie., NASxxxx), a slash (/), grip dash number for head marking (ie., -4), a slash (/), and the manufacturer's identification for head marking (ie., xx). See drawing NAS1347 and the applicable product drawing.



2. Refer to drawing PSC-2100 for point dimensions not shown.
3. Deburr all ACR[®] Grooves.
4. Mark punches with this drawing number, applicable dash number, the legend "ACR[®] TORQ-SET[®]", and the serial number of the hob used in manufacture. All marking shall be etched, stamped, or engraved.
5. 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-2009.

1/ ECO 145
OCT 14, 2011

REISSUED
DEC. 21, 1987

REVISION

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TITLE:

**PUNCH, FLAT PAN HEAD,
ACR[®] RIBBED TORQ-SET[®] RECESS**

DRAWN:
S.O. BRENNAN

DATE:
04/12/85

DRAWING NUMBER

PSC-2106

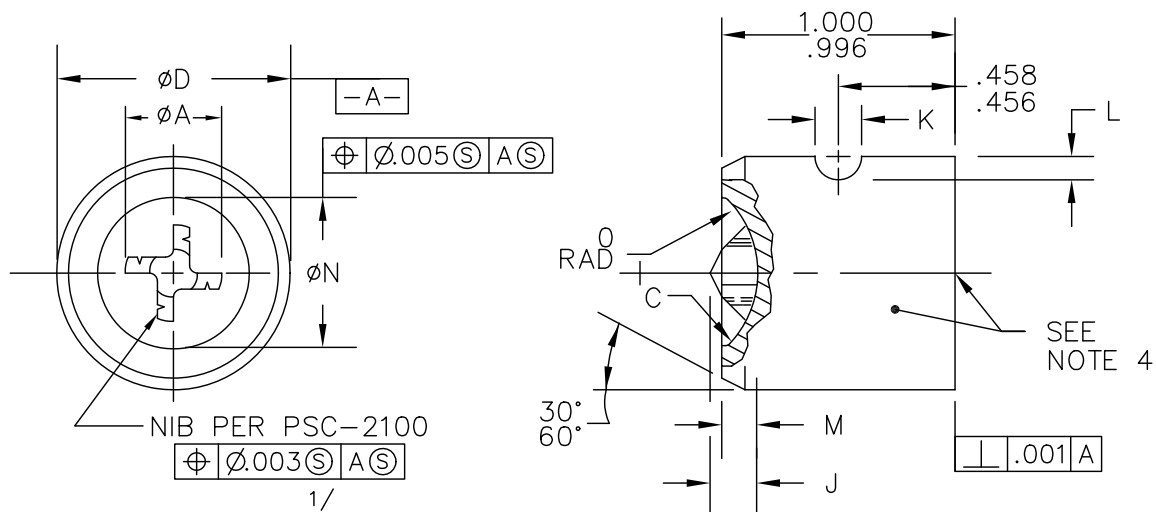
CHECKED:
J. GRADY

DATE:
04/12/85

SHEET 3 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



/2

DASH NUMBER	SCREW SIZE	RECESS SIZE	ϕA $\pm .002$	ϕD $\pm .0005$	G $\pm .001$	J REF	K $+ .001$ $- .000$	L $+ .000$ $- .001$	M $+ .002$ $- .000$	ϕN $+ .005$ $- .000$	O $+ .005$ $- .000$	C $\pm .005$	PUNCH PENETRATION	
													MAX	MIN
0	.060	0	.068	.4375	.035	.030	.125	.062	.030	.106	.091	.015	.0180	.0140
1	.073	1	.082		.042	.036			.036	.132	.111	.015	.0215	.0175
2	.086	2	.097		.050	.042			.040	.157	.132	.032	.0250	.0210
3	.099	3	.111		.057	.049			.047	.183	.150	.032	.0285	.0245
4	.112	4	.126		.065	.055			.053	.209	.173	.032	.0320	.0280
6	.138	6	.155	.4375	.080	.067	.125	.062	.065	.260	.207	.041	.0390	.0340
8	.164	8	.185	.5625	.094	.080	.212	.106	.077	.312	.244	.043	.0470	.0420
10	.190	10	.214	.5625	.109	.093			.089	.358	.284	.047	.0540	.0490
25	.250	1/4	.281	.8750	.145	.123			.118	.477	.373	.062	.0695	.0645
31	.312	5/16	.352	1.000	.182	.150			.147	.600	.527	.095	.0860	.0810
37	.375	3/8	.422	1.2500	.218	.178			.177	.726	.652	.118	.1030	.0980
43	.437	7/16	.493	1.5000	.254	.206			.207	.848	.787	.160	.1205	.1155
50	.500	1/2	.563	1.5000	.290	.233	.212	.106	.235	.972	.917	.190	.1375	.1325

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TITLE: **PUNCH, DOUBLE RADIUS PAN HEAD,
ACR[®] RIBBED TORQ-SET[®] RECESS**

DRAWN:
S.O. BRENNAN

DATE:
02/07/85

DRAWING NUMBER

PSC-2107

CHECKED:
J. GRADY

DATE:
02/07/85

SHEET 1 OF 2

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

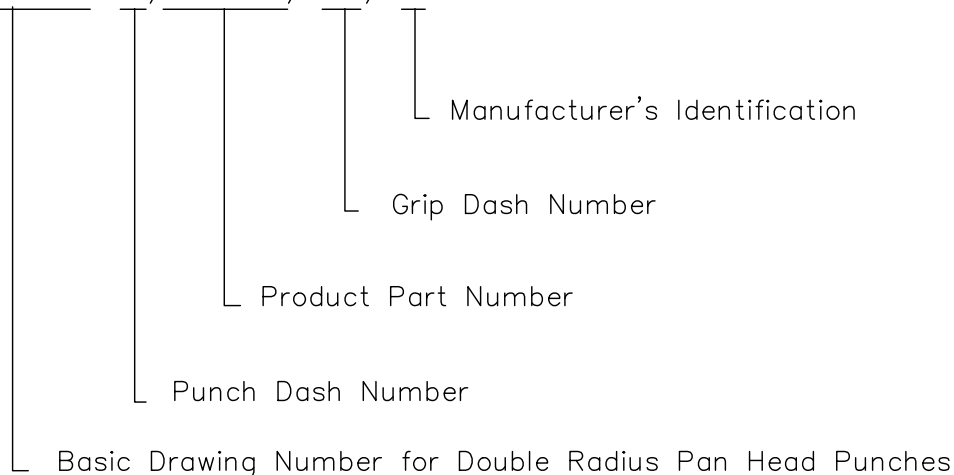
PHILLIPS II[®] PHILLIPS[®] POZIDRIV[®] ACR[®] POZISQUARE[®] PHILLIPS SQUARE-DRIV[®] TORQ-SET[®] TRI-WING[®] MORTORQ[®]
HEXSTIX[®] POZILOCK[®] ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

REVISION
DEC. 21, 1987
1/ ECO 78
OCT. 31, 1989
2/ ECO 99
JULY 30, 1992

NOTES:

1. Punch numbering system consists of basic punch drawing number (ie., PSC-2xxx), proper dash number (ie., -10), a slash (/), product part number for head marking (ie., NASxxxx), a slash (/), grip dash number for head marking (ie., -4), a slash (/), and the manufacturer's identification for head marking (ie., xx). See drawing NAS1347 and the applicable product drawing.

Example: PSC-2107-10/NASxxxx/ -4/ xx



2. Refer to drawing PSC-2100 for point dimensions not shown.
3. Deburr all ACR® Grooves.
4. Mark punches with this drawing number, applicable dash number, the legend "ACR® TORQ-SET®", and the serial number of the hob used in manufacture. All marking shall be etched, stamped, or engraved.
5. 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-2009.
6. This punch is intended for use in materials such as titanium or A-286, where material "fallaway" is a problem.

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TITLE: **PUNCH, DOUBLE RADIUS PAN HEAD,
ACR[®] RIBBED TORQ-SET[®] RECESS**

DRAWN:
S.O. BRENNAN

DATE:
02/07/85

DRAWING NUMBER

PSC-2107

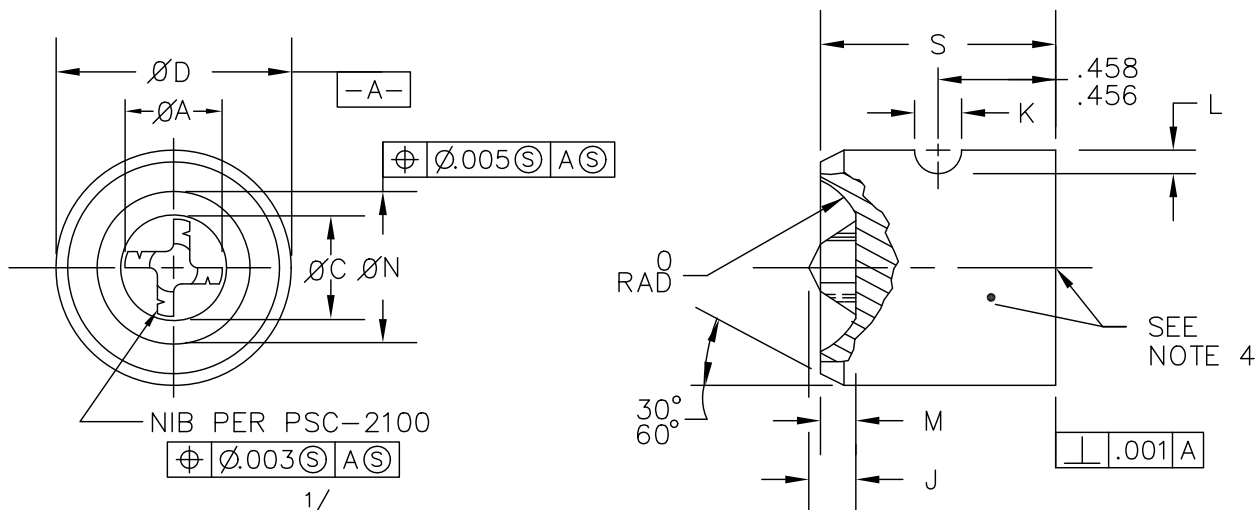
SHEET 2 OF 2

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

1/ ECO 145
OCT 14, 2011REISSUED
DEC. 21, 1987

REVISION



DASH NUMBER	SCREW SIZE	RECESS SIZE	A ±.002	D ±.0005	G ±.001	J REF	K +.001 -.000	L +.000 -.001	M +.002 -.000	N +.005 -.000	O +.005 -.000	C +.001 -.000	PUNCH PENETRATION	
													MAX	MIN
8	.190	8	.228	.5625	.094	.084	.212	.106	.009	.300	.419	.248	.0685	.0635
10	.250	10	.267	.5625	.109	.099	.212	.106	.012	.393	.741	.292	.0805	.0755
25	.312	1/4	.352	.5625	.145	.130	.212	.106	.015	.474	.691	.382	.1050	.1000

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TITLE:

**PUNCH, 100° REDUCED
FLAT TOP DOME HEAD,
ACR® RIBBED TORQ-SET® RECESS**

DRAWN:
S.O. BRENNAN

DATE:
10/07/85

DRAWING NUMBER

CHECKED:
J. GRADY

DATE:
11/22/85

PSC-2109

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

1/ ECO 78
OCT. 31, 1989

REISSUED
DEC. 21, 1987

REVISION

1. Punch numbering system consists of basic punch drawing number (ie., PSC-2xxx), proper dash number (ie., -10), a slash (/), product part number for head marking (ie., NASxxxx), a slash (/), grip dash number for head marking (ie., -4), a slash (/), and the manufacturer's identification for head marking (ie., xx). See drawing NAS1347 and the applicable product drawing.

2. Refer to drawing PSC-2100 for point dimensions not shown.
3. Deburr all ACR® Grooves.
4. Mark punches with this drawing number, applicable dash number, the legend "ACR® TORQ-SET®", and the serial number of the hob used in manufacture. All marking shall be etched, stamped, or engraved.
5. 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-2009.
6. This punch is intended for use with a die countersink diameter equal to $\varnothing N$ nominal.
7. Locate marking inside $\varnothing C$.

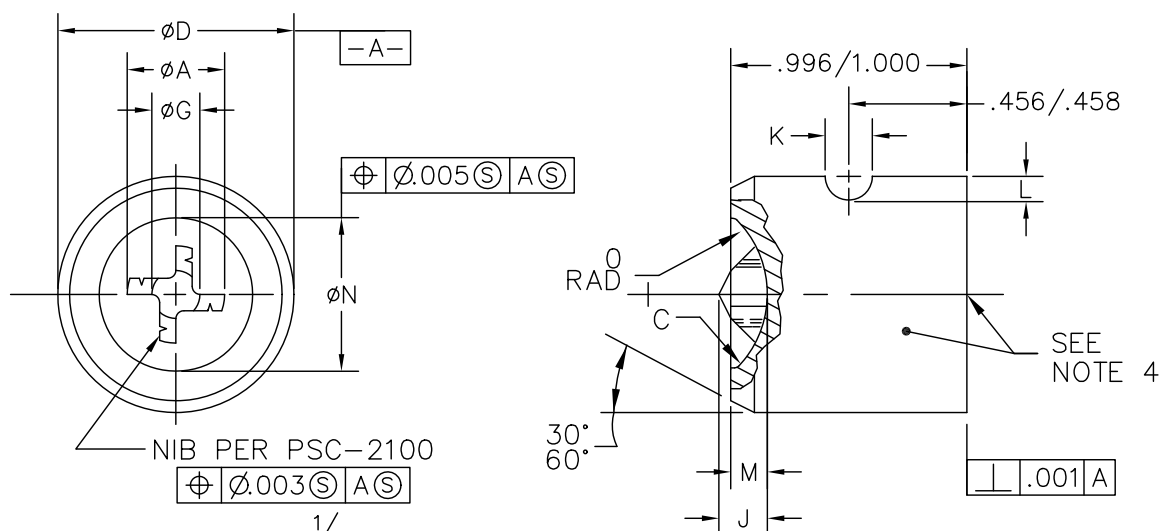
REVISION	REISSUED DEC. 21, 1987	1/ ECO 145 OCT 14, 2011
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**PUNCH, 100° REDUCED
FLAT TOP DOME HEAD,
ACR® RIBBED TORQ-SET® RECESS**

SHEET 2 OF 2

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	$\varnothing A$ $\pm .002$	$\varnothing D$ $\pm .0005$	G $\pm .001$	J REF	K $+ .001$ $- .000$	L $+ .000$ $- .001$	M $+ .002$ $- .000$	$\varnothing N$ $+ .005$ $- .000$	O $+ .005$ $- .000$	C $\pm .005$	PUNCH PENETRATION	
													MAX	MIN
0	.060	0												
1	.073	1												
2	.086	2												
3	.099	3												
4	.112	4												
6	.138	6												
8	.164	8												
10	.190	10	.214	.5625	.109	.087	.212	.106	.061	.375	.400	.080	.0540	.0490
25	.250	1/4												
31	.312	5/16												
37	.375	3/8												
43	.437	7/16												
50	.500	1/2												

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TITLE:

PUNCH, WASHER HEAD, ACR® RIBBED TORQ-SET® RECESS

DRAWN:
J. GRADY

DATE:
06/05/92

DRAWING NUMBER

PSC-2110

CHECKED:
J. GRADY

DATE:
06/05/92

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

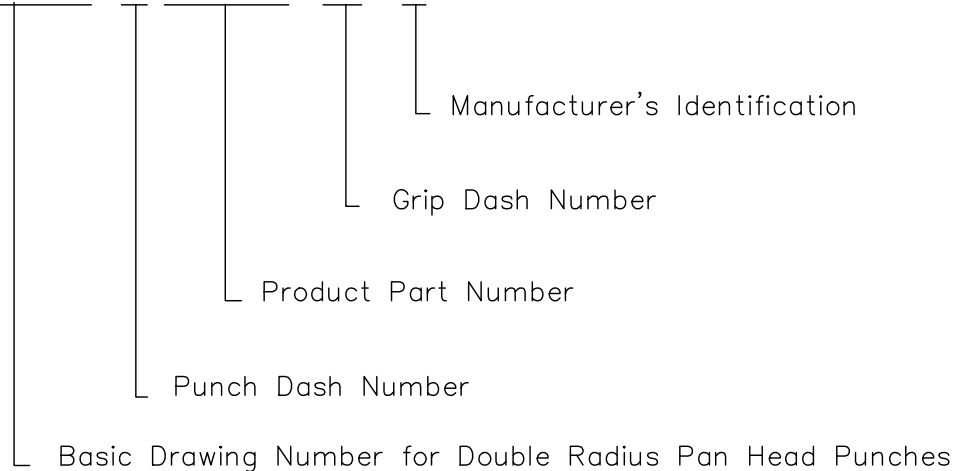
ISSUED
JUNE 05, 1992

REVISION

NOTES:

1. Punch numbering system consists of basic punch drawing number (ie., PSC-2xxx), proper dash number (ie., -10), a slash (/), product part number for head marking (ie., NASxxxx), a slash (/), grip dash number for head marking (ie., -4), a slash (/), and the manufacturer's identification for head marking (ie., xx). See drawing NAS1347 and the applicable product drawing.

Example: PSC-2110-10/NASxxxx/ -4/ xx



2. Refer to drawing PSC-2100 for point dimensions not shown.
3. Deburr all ACR® Grooves.
4. Mark punches with this drawing number, applicable dash number, the legend "ACR® TORQ-SET®", and the serial number of the hob used in manufacture. All marking shall be etched, stamped, or engraved.
5. 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-2009.

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TITLE:

PUNCH, WASHER HEAD, ACR[®] RIBBED TORQ-SET[®] RECESS

DRAWN:
J. GRADY

DATE:
06/05/92

DRAWING NUMBER

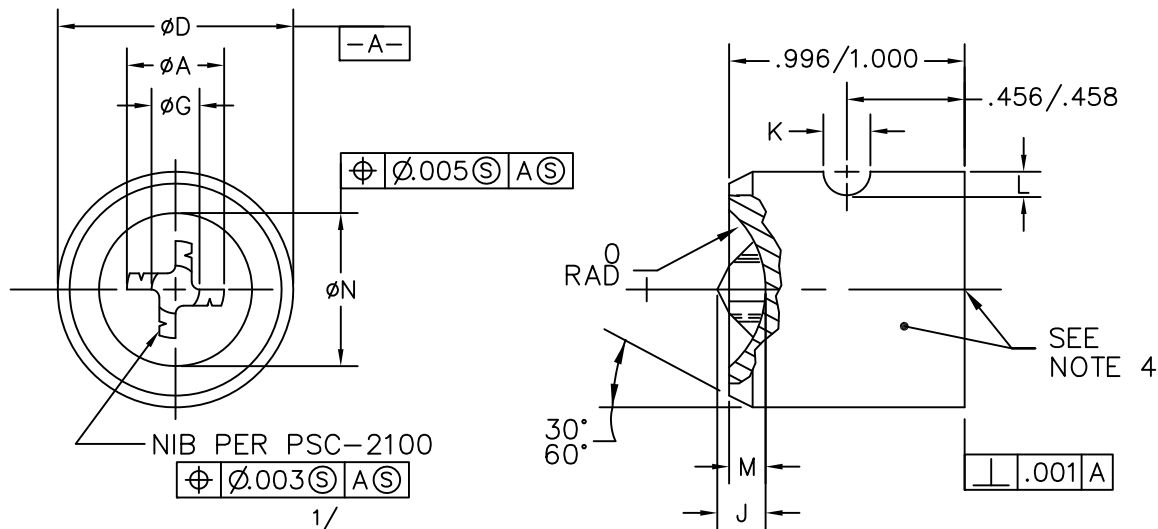
PSC-2110

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	ISSUED JUNE 05, 1992	1/ ECO 145 OCT 14, 2011
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DASH NUMBER	SCREW SIZE	RECESS SIZE	ØA ±.002	ØD ±.0005	ØG ±.001	J REF	K +.001 -.000	L +.000 -.001	M +.002 -.000	ØN +.005 -.000	O +.005 -.000	PUNCH PENETRATION	
												MAX	MIN
6	.138	6	.155	.4375	.080	.069	.125	.062	.055	.268	.190	.0390	.0340
8	.164	8	.185	.5625	.094	.082	.212	.106	.066	.323	.230	.0470	.0420
10	.190	10	.214	.5625	.109	.095	↑	↑	.080	.378	.264	.0540	.0490
25	.250	1/4	.281	.8750	.145	.127			.111	.485	.320	.0695	.0645
31	.312	5/16	.352	1.0000	.182	.161			.135	.590	.390	.0860	.0810
37	.375	3/8	.422	1.2500	.218	.194			.159	.695	.460	.1030	.0980
43	.437	7/16	.493	1.5000	.254	.227			.182	.800	.530	.1205	.1155
50	.500	1/2	.563	1.5000	.290	.260			.206	.905	.600	.1375	.1325
56	.562	9/16	.633	1.5000	.326	.293	↓	↓	.230	1.010	.670	.1545	.1495
62	.625	5/8	.703	1.5000	.363	.326	.212	.106	.253	1.115	.740	.1710	.1660

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TITLE:

**PUNCH, BLAZIER HEAD,
ACR® RIBBED TORQ-SET® RECESS**

DRAWN:
S.O. BRENNAN

DATE:
02/22/85

DRAWING NUMBER

PSC-2122

CHECKED:
J. GRADY

DATE:
02/22/85

SHEET 1 OF 2

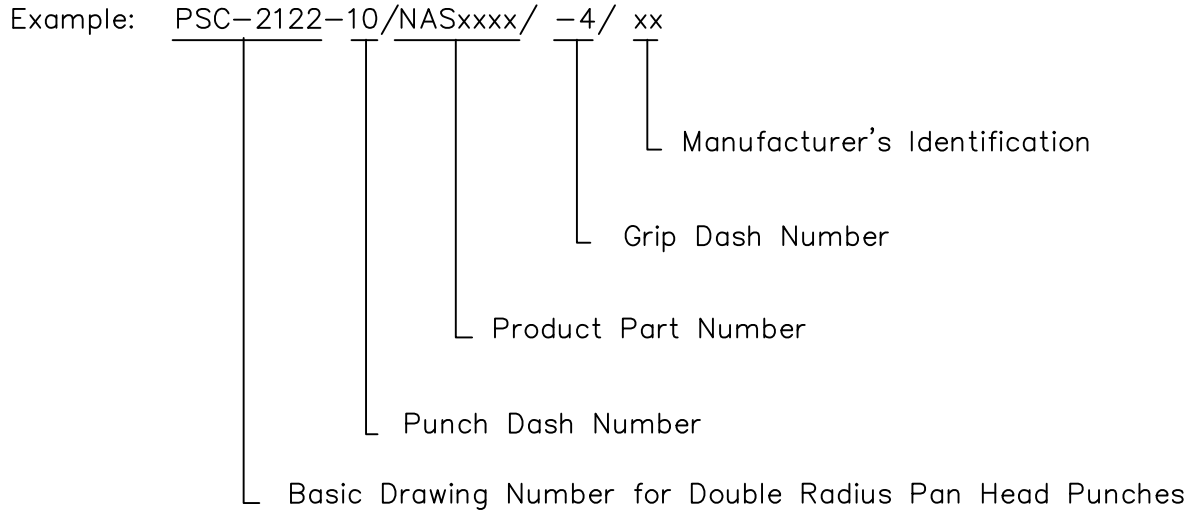
PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

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

REVISION
REISSUED
DEC. 21, 1987
1/ ECO 78
OCT. 31, 1989
2/ ECO 162
AUG 5, 2015

NOTES:

1. Punch numbering system consists of basic punch drawing number (ie., PSC-2xxx), proper dash number (ie., -10), a slash (/), product part number for head marking (ie., NASxxxx), a slash (/), grip dash number for head marking (ie., -4), a slash (/), and the manufacturer's identification for head marking (ie., xx). See drawing NAS1347 and the applicable product drawing.



2. Refer to drawing PSC-2100 for point dimensions not shown.
3. Deburr all ACR® Grooves.
4. Mark punches with this drawing number, applicable dash number, the legend "ACR® TORQ-SET®", and the serial number of the hob used in manufacture. All marking shall be etched, stamped, or engraved.
5. 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-2009.

REVISION
REISSUED
DEC. 21, 1987
1/ ECO 145
OCT 14, 2011

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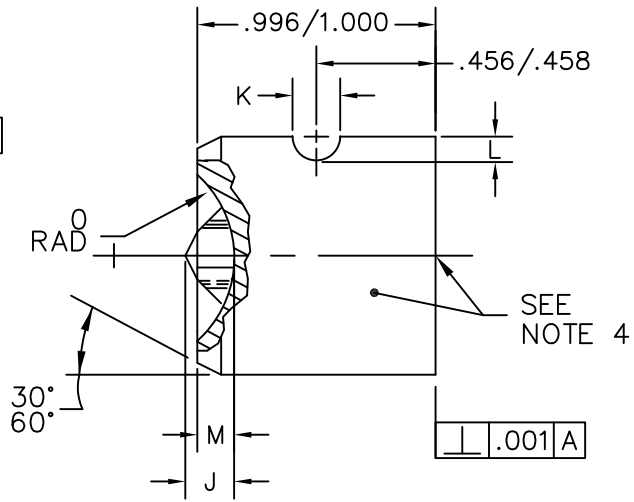
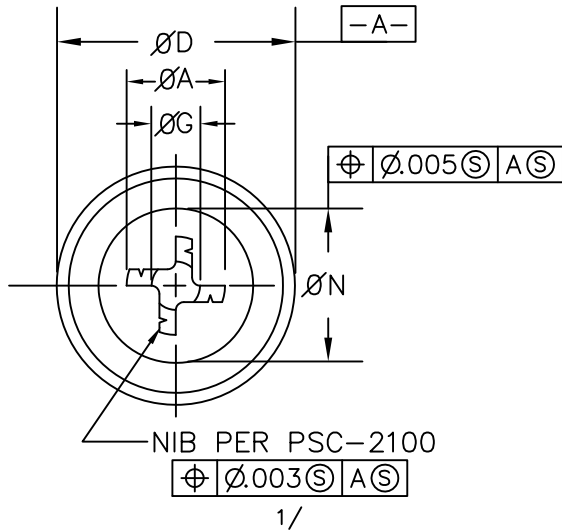
CHECKED:
J. GRADY

DATE:
02/22/85

SHEET 2 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



DASH NUMBER	SCREW SIZE	RECESS SIZE	ØA ±.002	ØD ±.0005	ØG ±.001	J REF	K +.001 -.000	L +.000 -.001	M +.002 -.000	ØN +.005 -.000	O +.005 -.000	PUNCH PENETRATION	
												MAX	MIN
6	.164	6	.185	.4375	.080	.071	.125	.062	.008	.256	1.028	.0555	.0505
8	.190	8	.218	.5625	.094	.084	.212	.106	.009	.300	1.254	.0650	.0600
10	.250	10	.257	.5625	.109	.099	↑	↑	.012	.393	1.615	.0770	.0720
25	.312	1/4	.337	.8750	.145	.130	↑	↑	.015	.474	1.880	.1000	.0950
31	.375	5/16	.374	.8750	.182	.137	↑	↑	.018	.560	2.187	.0980	.0930
37	.437	3/8	.446	1.0000	.218	.163	↑	↑	.021	.669	2.675	.1160	.1110
43	.500	7/16	.520	1.2500	.254	.191	↑	↑	.025	.756	2.870	.1350	.1300
50	.562	1/2	.593	1.5000	.290	.218	↓	↓	.028	.840	3.164	.1540	.1490
56	.625	9/16	.666	1.5000	.326	.245	.212	.106	.031	.928	3.488	.1725	.1675
8SPL	.190	8	.224	.5625	.094	.087	.212	.106	.009	.300	1.254	.0680	.0630
10SPL	.250	10	.264	.5625	.109	.103	↑	↑	.012	.393	1.615	.0810	.0760
25SPL	.312	1/4	.344	.8750	.145	.134	↑	↑	.015	.474	1.880	.1035	.0985
8NAR	.190	8	.224	.5625	.094	.090	↓	↓	.014	.299	.800	.0690	.0640
10NAR	.250	10	.264	.5625	.109	.104	↓	↓	.014	.392	1.400	.0810	.0760
25NAR	.312	1/4	.344	.8750	.145	.135	.212	.106	.018	.471	1.560	.1040	.0990

ECO 162
AUG. 5, 2015
REVISED
APR. 6, 2010
1/ ECO 78
OCT. 31, 1989
REISSUED
DEC. 21, 1987
REVISION

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TITLE:

**PUNCH, 100° REDUCED CROWN HEAD,
ACR® RIBBED TORQ-SET® RECESS**

DRAWN:
S.O. BRENNAN

DATE:
04/19/85

DRAWING NUMBER

PSC-2123

CHECKED:
J. GRADY

DATE:
03/10/85

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

100° REDUCED CROWN HEAD PUNCHES
METRIC SIZES PER
NA0123 , NA0124 , NA0125

DASH NUMBER	SCREW SIZE	RECESS SIZE	ØA	ØD	ØG	J	K	L	M	ØN	O	PUNCH PENETRATION	
			±.002	±.0005	±.001	REF	+ .001 - .000	+ .000 - .001	+ .002 - .000	+ .005 - .000	+ .005 - .000	MAX	MIN
8M5	MJ5	8	.216	.5625	.094	.081	.212	.106	.006	.302	1.903	.0635	.0585
8M5.5	MJ5 (.5 %)	8	.216	.5625	.094	.080	.212	.106	.005	.333	2.775	.0635	.0585
10M6	MJ6	10	.251	.5625	.109	.094	.212	.106	.007	.364	2.370	.0735	.0685
10M6.5	MJ6 (.5 %)	10	.251	.5625	.109	.094	.212	.106	.007	.394	2.776	.0735	.0685
	MJ6 (1 %)	10	USE PSC 2123-10M6.5										
25M8	MJ8	1/4	.330	.8750	.145	.122	.212	.106	.007	.486	4.221	.0950	.0900
25M8.5	MJ8 (.5 %)	1/4	.331	.8750	.145	.122	.212	.106	.007	.517	4.777	.0950	.0900
	MJ8 (1 %)	1/4	USE PSC 2123-25M8.5										
31M10	MJ10	5/16	.364	.8750	.182	.127	.212	.106	.008	.609	5.799	.0925	.0875
31M10.5	MJ10 (.5 %)	5/16	.365	.8750	.182	.127	.212	.106	.008	.640	6.404	.0925	.0875
	MJ10 (1 %)	5/16	USE PSC-2123-31M10.5										
37M12	MJ12	3/8	.434	1.0000	.218	.151	.212	.106	.009	.732	7.446	.1095	.1045
37M12.5	MJ12 (.5 %)	3/8	.435	1.0000	.218	.151	.212	.106	.009	.763	8.090	.1095	.1045
	MJ12 (1 %)	3/8	USE PSC-2123-37M12.5										

3/ COMPLETELY REVISED

REVISION
 DEC. 21, 1987
 REISSUED
 JUL. 11, 1990
 1/ ECO 63
 DEC. 26, 1991
 2/ ECO 79
 3/ ECO 104
 JAN. 20, 1993

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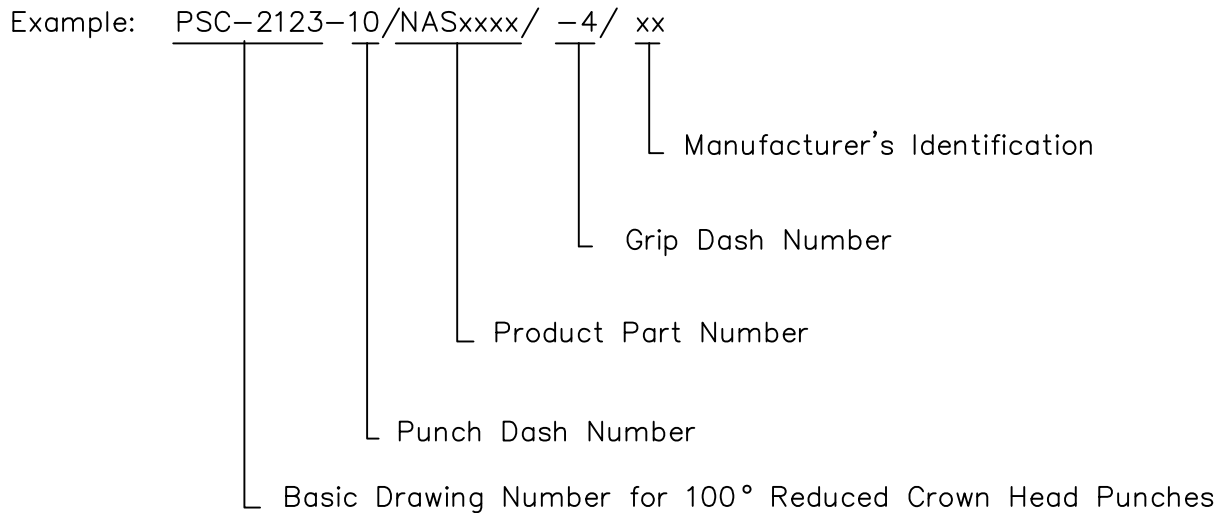
SHEET 2 OF 3

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REVISION
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1/ ECO 145
OCT 14, 2011

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