

INCH-POUND

MS33781B  
 9 JULY 1996  
 SUPERSEDING  
 MS33781A  
 24 JUNE 1965

MILITARY SPECIFICATION SHEET  
 RECESS, OFFSET CRUCIFORM,  
 DIMENSIONS OF RECESS, GAGE AND DRIVER FOR

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and the issue of the following specification listed in that issue of the Department of Defense Index of Specification and Standards (DODISS) specified in the solicitation: NONE

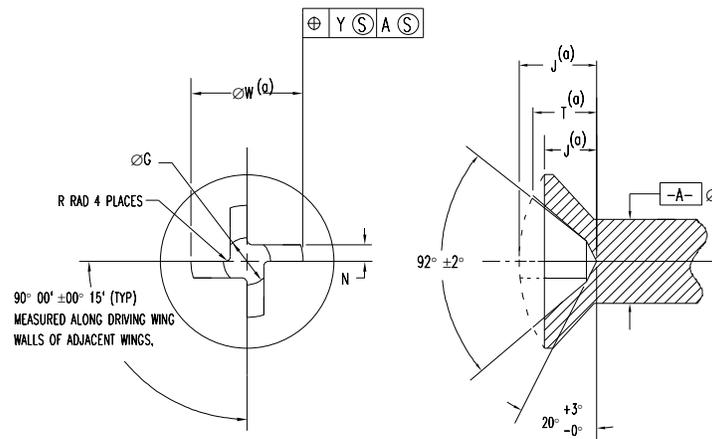


FIGURE 1. OFFSET CRUCIFORM RECESS<sup>(b)</sup>

Table I. Offset Cruciform Recess Dimensions<sup>(c)</sup>

Recess Size	N		ØG		R		Y
	Max	Min	Max	Min	Max	Min	Tol
0			.037	.033			
1	.018	.016	.044	.040	.010	.000	.012
2			.052	.048			
3	.021	.018	.059	.055			
4	.023	.020	.067	.063	.018	.008	
5	.026	.023	.075	.071			
6	.029	.026	.082	.078	.030	.016	
8	.034	.031	.096	.092			
10	.039	.036	.111	.107	.040	.023	
1/4	.051	.048	.147	.143			.016
5/16	.064	.061	.184	.180	.052	.031	
3/8	.076	.073	.220	.216			
7/16	.089	.086	.256	.252	.072	.048	
1/2	.102	.098	.292	.288	.089	.062	
9/16	.115	.111	.328	.324	.108	.078	.024
5/8	.127	.123	.365	.361			

(a) The specific part standard or drawing which specifies this recess drive referencing this document shall specify values for dimensions J, W, T, and depth GAGE PENETRATION, if the values specified herein are not compatible with the part configuration or performance requirements.

(b) These recesses are also produced and marketed by the Licensees of Phillips Screw Company under the designation of Torq-Set<sup>®</sup>.

(c) For dimensions of ribbed recesses, sizes 6 through 5/16 inch, see MS14191.

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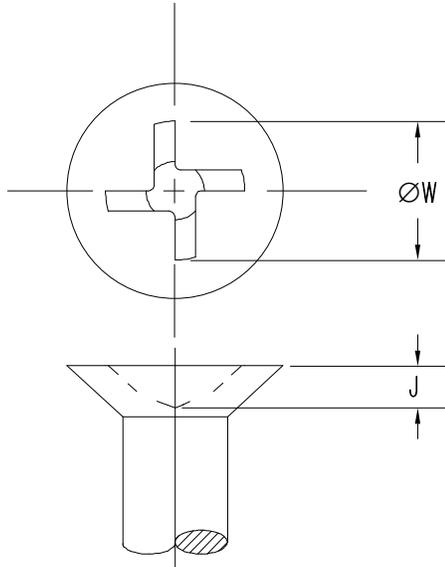


FIGURE 2

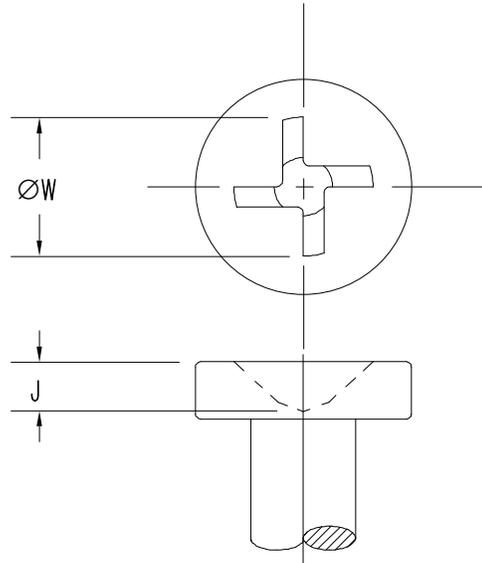


FIGURE 3

Screw Size	Recess and Driver Size	ØW Wing	J Recess Depth	GAGE PENET
0	0	.082	.031	.0225
		.072	.021	.0145
1	1	.098	.037	.0270
		.088	.027	.0185
2	2	.115	.043	.0315
		.105	.033	.0225
3	3	.132	.049	.0365
		.122	.039	.0270
4	4	.148	.055	.0405
		.138	.045	.0305
5	5	.165	.061	.0450
		.155	.051	.0350
6	6	.182	.066	.0500
		.172	.056	.0395
8	8	.215	.078	.0595
		.205	.068	.0480
10	10	.248	.090	.0685
		.238	.080	.0560
1/4	1/4	.325	.118	.0890
		.315	.108	.0750
5/16	5/16	.357	.122	.0860
		.347	.112	.0700
3/8	3/8	.427	.145	.1030
		.417	.135	.0850
7/16	7/16	.498	.169	.1205
		.488	.159	.1005
1/2	1/2	.568	.193	.1375
		.558	.183	.1155
9/16	9/16	.638	.217	.1545
		.628	.207	.1305
5/8	5/8	.708	.241	.1710
		.698	.231	.1450

Screw Size	Recess and Driver Size	ØW Wing	J Recess Depth	GAGE PENET
0	0	.087	.033	.0250
		.077	.023	.0170
1	1	.104	.039	.0300
		.094	.029	.0215
2	2	.122	.046	.0350
		.112	.036	.0260
3	3	.140	.053	.0405
		.130	.043	.0310
4	4	.157	.059	.0450
		.147	.049	.0350
5	5	.175	.066	.0500
		.165	.056	.0400
6	6	.193	.072	.0555
		.183	.062	.0450
8	8	.228	.085	.0660
		.218	.075	.0545
10	10	.263	.098	.0760
		.253	.088	.0635
1/4	1/4	.345	.128	.0990
		.335	.118	.0850
5/16	5/16	.382	.134	.0985
		.372	.124	.0825
3/8	3/8	.457	.161	.1180
		.447	.151	.1000
7/16	7/16	.498	.169	.1205
		.488	.159	.1005
1/2	1/2	.568	.193	.1375
		.558	.183	.1155
9/16	9/16	.638	.217	.1545
		.628	.207	.1305
5/8	5/8	.708	.241	.1710
		.698	.231	.1450

(a) Gage penetration is defined as the distance to which the gage, shown on Page 5, will enter the recess.

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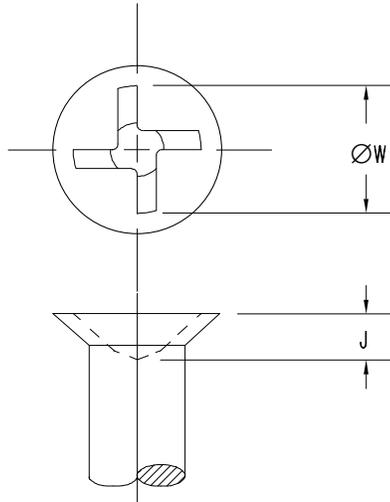


FIGURE 4

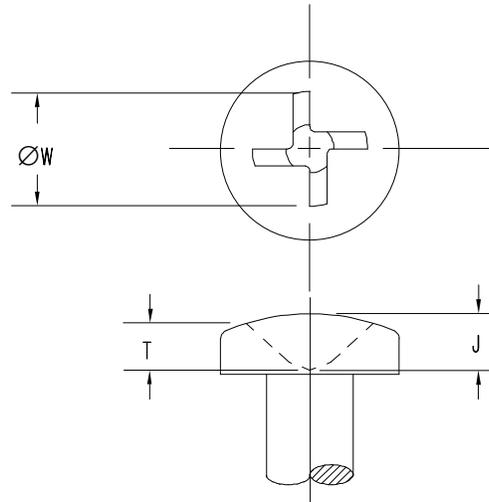


FIGURE 5

Screw Size	Recess and Driver Size	ØW Wing	J Recess Depth	GAGE PENET
0	-	-	-	-
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
8	6	.182 .172	.066 .056	.0500 .0395
10	8	.215 .205	.078 .068	.0595 .0480
1/4	10	.248 .238	.090 .080	.0685 .0560
5/16	1/4	.325 .315	.118 .108	.0890 .0750
3/8	5/16	.357 .347	.122 .112	.0860 .0700
7/16	3/8	.427 .417	.145 .135	.1030 .0850
1/2	7/16	.498 .488	.169 .159	.1205 .1005
9/16	1/2	.568 .558	.193 .183	.1375 .1155
5/8	9/16	.638 .628	.217 .207	.1545 .1305

Screw Size	Recess and Driver Size	Head				
		Pan and Brazier			Pan	Brazier
		ØW Wing	T Recess Depth	GAGE PENET	J Recess Depth	J Recess Depth
0	0	.073 .063	.026 .016	.0180 .0100	.032 .022	-
1	1	.087 .077	.031 .021	.0215 .0130	.039 .029	-
2	2	.102 .092	.036 .026	.0250 .0160	.045 .035	-
3	3	.116 .106	.041 .031	.0285 .0190	.052 .042	-
4	4	.131 .121	.046 .036	.0320 .0220	.058 .048	-
5	5	.146 .136	.051 .041	.0355 .0255	.064 .054	-
6	6	.160 .150	.055 .045	.0390 .0285	.070 .060	.072 .062
8	8	.190 .180	.065 .055	.0470 .0355	.083 .073	.085 .075
10	10	.219 .209	.075 .065	.0540 .0415	.096 .086	.098 .088
1/4	1/4	.286 .276	.098 .088	.0695 .0555	.126 .116	.130 .120
5/16	5/16	.357 .347	.122 .112	.0860 .0700	.153 .143	.164 .154
3/8	3/8	.427 .417	.145 .135	.1030 .0850	.181 .171	.197 .187
7/16	7/16	.498 .488	.169 .159	.1205 .1005	.209 .199	.230 .220
1/2	1/2	.568 .558	.193 .183	.1375 .1155	.236 .226	.263 .253
9/16	9/16	.638 .628	.217 .207	.1545 .1305	.270 .260	.296 .286
5/8	5/8	.708 .698	.241 .231	.1710 .1450	.303 .293	.329 .319

(a) Gage penetration is defined as the distance to which the gage, shown on Page 5, will enter the recess.

(b) See MIL - STD - 1515 for aircraft usage limitations.

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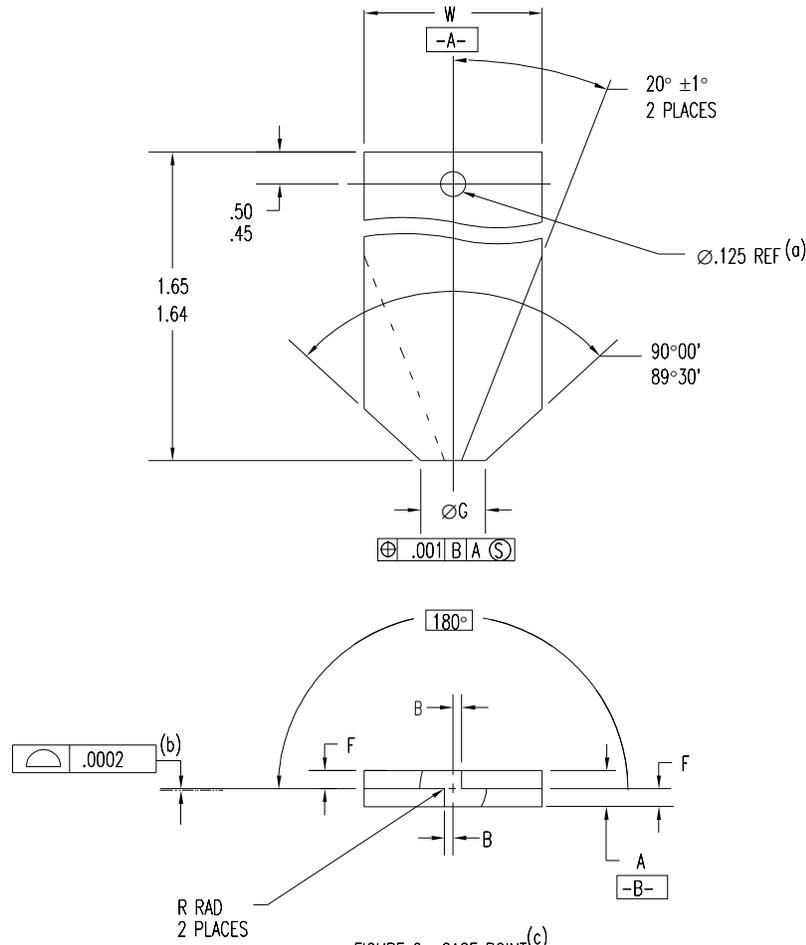


FIGURE 6: GAGE POINT (c)

Recess Size	A Ref		F +.0001		B Max	ØG ±.001		R Max	W ±.010	
	Go	Not Go	Go	Not Go		Go	Not Go		Go	Not Go
0						.038	.065			
1	.0319	.0361	.0159	.0180	.004	.045	.077	.005	.250	.312
2						.053	.090			
3	.0359	.0421	.0179	.0210	.006	.060	.104	.007		.375
4	.0399	.0461	.0199	.0230		.068	.120			
5	.0459	.0521	.0229	.0260		.076	.134			.438
6	Use MS14191									
8	Use MS14191									
10	Use MS14191									
1/4	Use MS14191									
5/16	Use MS14191									
3/8	.1459	.1521	.0729	.0760	.014	.222	.338	.030	.438	.625
7/16	.1719	.1781	.0859	.0890	.020	.258	.394	.040	.625	.750
1/2	.1959	.2041	.0979	.1020		.294	.450			
9/16	.2219	.2301	.1109	.1150		.330	.506			
5/8	.2459	.2541	.1229	.1270		.367	.562			

- (a) A hole of suitable size to be drilled through gage for ring.
- (b) Contour requirement with unilateral tolerance (outside) applies only to centerline surface.
- (c) Permanently mark manufacturer's part number and serial number.

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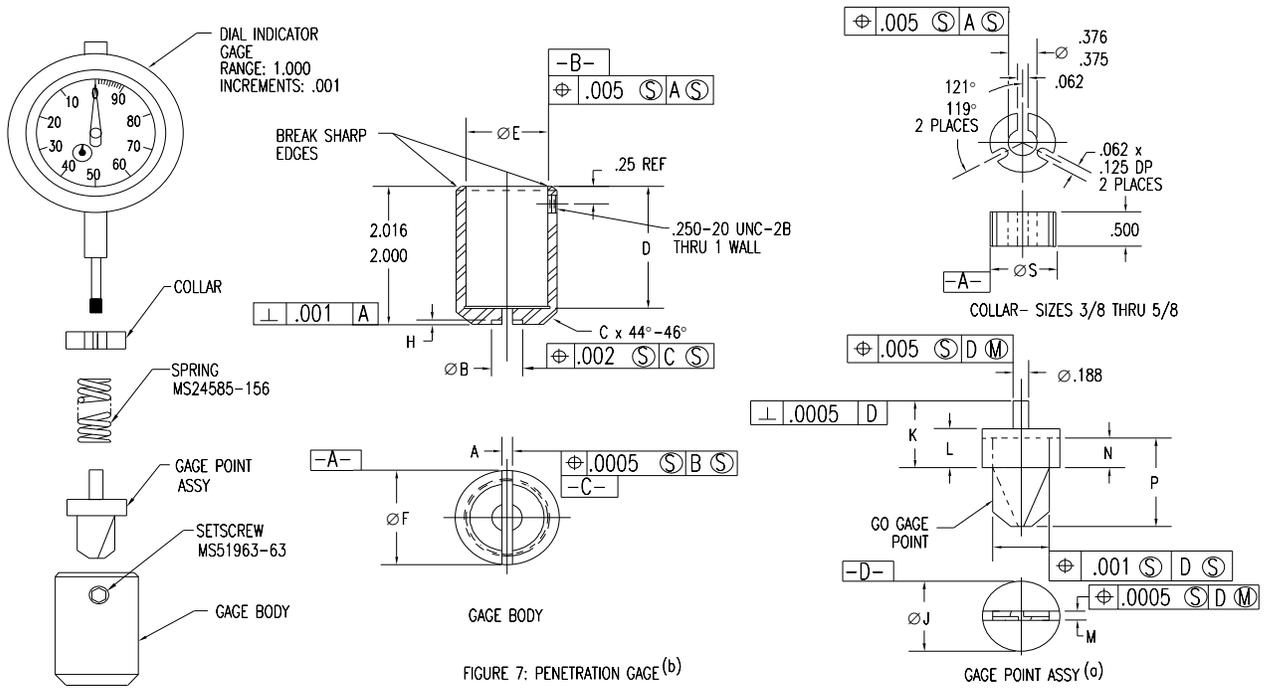
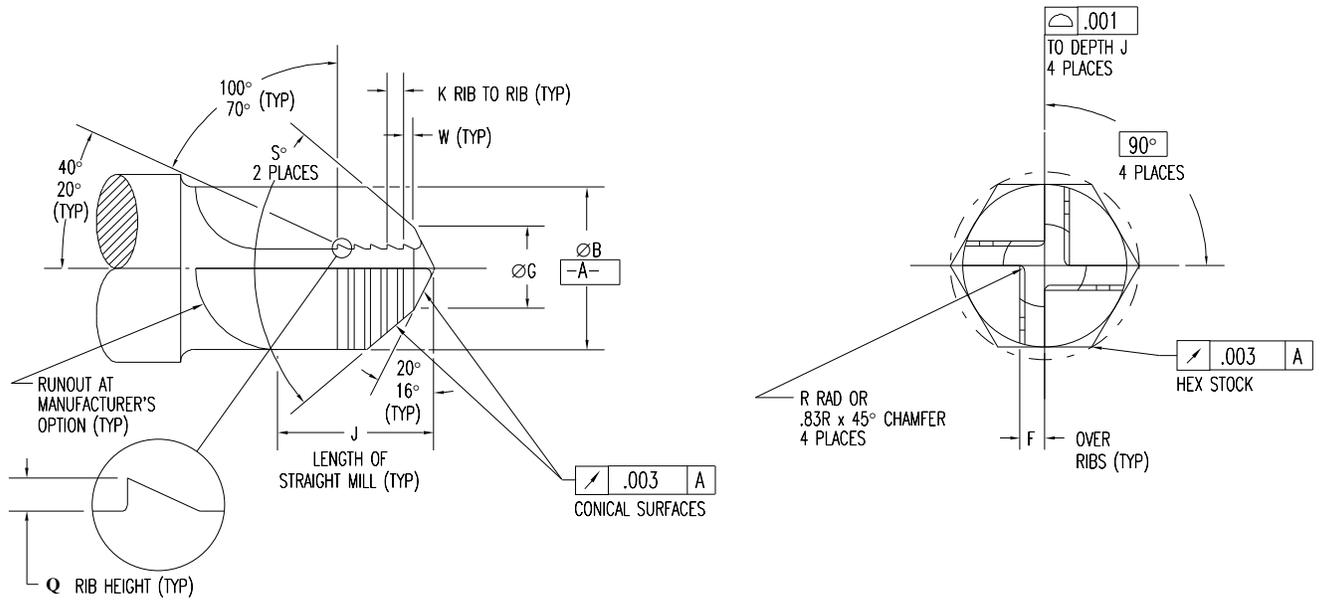


Table VII. Penetration Gage Dimensions (c)

Recess Size	A	ØB	C	D	ØE	ØF	H	ØJ	K	L	M	N	P	ØS
0	+0.002	+0.002		+0.005	+0.001		+0.016	-0.0005			±0.001		±0.005	-0.0005
1	.033	.073	.125	1.875	.375	.875	.031	.3745	.844	.500	.034	.188	.510	N/A
2		.087									.038			
3		.102									.042			
4		.116									.048			
5		.131												
6			Use MS14191											
8			Use MS14191											
10			Use MS14191											
1/4			Use MS14191											
5/16			Use MS14191											
3/8	.147	.427	.250	1.750	.750	1.250	.062	.7495	.719	.375	.148	.312	.800	.7495
7/16	.173	.498									.174			
1/2	.197	.568	.125	1.750	.750	1.250	.062	.7495	.719	.375	.198	.312	.800	.7495
9/16	.223	.638									.224			
5/8	.247	.708									.248			

- (a) Component bonding at manufacturer's option.
- (b) Marking shall include manufacturer's name, part number and recess size.
- (c) Unless otherwise specified, tolerance: decimals ±.016.

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ENLARGED VIEW OF RIB

FIGURE 8: RIBBED DRIVER (a)(b)(c)

Driver Size	ØB	F Over Ribs		ØG	J Min	K	Q	R		S	W Max	Min Ribs							
		Max	Min					Max	Min										
0	.185	-.005	.0155	.0140	.039	.010	.003	.005	.000	93° 30'	.009	3							
1					.046														
2					.054														
3					.061														
4					.069														
5	.077	.078	.077	.078	.010	.001	.005	.007	.012	4									
6	Use MS14191																		
8	Use MS14191																		
10	Use MS14191																		
1/4	Use MS14191																		
5/16	Use MS14191																		
3/8	.434	.0705	.0675	.223	.172	.021	.005	.028	.023	91° 30'	.035	6							
7/16													.0835	.0805	.259	.040	.035		
1/2													.0945	.0915	.295	.203	.055	.050	90° 30'
9/16													.1055	.1020	.331	.218	.068	.063	
5/8													.1175	.1140	.368	.250	.026	.002	.068

- (a) Drivers shall have ribs on the removal wall of each wing.
- (b) See MIL-B-85643 for procurement.
- (c) The ribbed drivers in this document are covered under United States Patent 4,187,892, which expires 31 October 1997. The government does not have a royalty free license. These drivers are also produced and marketed by the Licensees of Phillips Screw Company under the designation of ACR® Multi-Ribbed Torq-Set.®

Notes:

1. Dimensions are in inches.
2. This is a design specification not to be used as a part number.
3. In the event of a conflict between the text of this document and the references cited herein, the text of this document shall take precedence.
4. Unless otherwise specified, issues of referenced documents are those in effect at time of solicitation.

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Custodians:

Army - AV  
Air Force - 99

Preparing activity:

Navy - AS

Review activities:

DLA - IS  
Air Force - 82

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