

This drawing shall be approved by the Naval Ship Engineering Center, and is necessary to be used by the Navy and its contractors. All other military activities are prohibited. This standard shall prevail.

MILITARY STANDARDS
 MS16207(SHIP)

BOLTS, SQUARE NECK, (CARRIAGE BOLT),
 ROUND HEAD, UNC-2A, COPPER-SILICON
 ALLOY, NONMAGNETIC

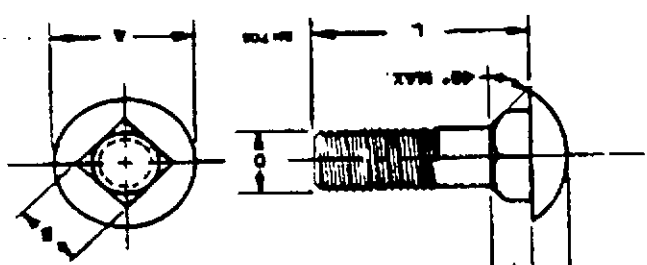
TITLE

P.A. BHPS Other Case

PROJECT 5306-0248

(C) FOR CHANGE SEE SHEETS 1 AND 2
 5306

NOMINAL SIZE	THREADS PER INCH	BODY DIAMETER	MAX.	MIN.	LENGTH TOLERANCE				
					DIA. 1/4 TO 3/8	DIA. 7/16	DIA.	DASH NO.	
1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	21
3/4	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	22
1	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	23
1-1/4	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	24
1-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	25
1-3/4	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	26
2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	27
2-1/4	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	28
2-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	29
2-3/4	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	30
3	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	31
3-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	32
4	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	33
4-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	34
5	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	35
5-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	36
6	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	37
6-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	38
7	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	39
7-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	40
8	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	41
8-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	42
9	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	43
9-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	44
10	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	45
10-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	46
11	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	47
11-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	48
12	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	49
12-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	50
13	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	51
13-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	52
14	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	53
14-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	54
15	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	55
15-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	56
16	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	57
16-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	58
17	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	59
17-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	60
18	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	61
18-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	62
19	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	63
19-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	64
20	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	65
20-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	66
21	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	67
21-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	68
22	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	69
22-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	70
23	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	71
23-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	72
24	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	73
24-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	74
25	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	75
25-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	76
26	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	77
26-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	78
27	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	79
27-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	80
28	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	81
28-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	82
29	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	83
29-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	84
30	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	85
30-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	86
31	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	87
31-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	88
32	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	89
32-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	90
33	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	91
33-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	92
34	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	93
34-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	94
35	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	95
35-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	96
36	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	97
36-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	98
37	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	99
37-1/2	12	1.2	1.200	1.187	1.200	1.187	1.200	1.187	100



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5306
 FED SUP CLASS

has been approved by the April Ship Engineering Center
 and is mandatory for use by
 All other military activities as required
 standard where suitable.

P.A. SHIPS
 Other Chart

TITLE BOLTS, SQUARE NECK, (CARRIAGE BOLT),
 ROUND HEAD, UNC-2A, COPPER-SILICON

MILITARY STAN MS16207(5)

- 11 MATERIAL: COPPER-SILICON ALLOY (SILICON BRONZE) SHALL BE IN ACCORDANCE WITH 99-C-981 COPPER ALLOY NO. 951.
- 12 TENSILE STRENGTH, MINIMUM TENSILE STRENGTH OF BOLT SHALL BE 50,000 P.S.I.
- 13 PROTECTIVE COATING: NONE.
- 14 THREADS: THREADS SHALL BE UNC-2A IN ACCORDANCE WITH HANDBOOK 22B.
- 15 THREAD LENGTH FOR BOLTS 6 INCHES AND LESS IN LENGTH THE MINIMUM THREAD LENGTH SHALL BE TWICE THE NOMINAL SIZE PLUS 1/4 INCH.
- 16 6 INCHES LONG THE MINIMUM THREAD LENGTH SHALL BE TWICE THE NOMINAL SIZE PLUS 1/4 INCH.
- 17 NOMINAL SIZE PLUS 1/2 INCH. BOLTS TOO SHORT FOR PRACTICABLE THREAD LENGTH SHALL BE THREADED AS CLOSE AS PRACTICABLE.
- 18 USE: COPPER-SILICON ALLOY BOLTS ARE INTENDED FOR USE IN SMALL MAGNETIC MINESWEEPERS WHERE GOOD RESISTANCE TO SEA WATER IS REQUIRED.
- 19 DIMENSIONS: ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIALLY REQUIRED.
- 20 REFERENCED DOCUMENTS SHALL BE OF THE ISSUE IN EFFECT ON DATE OF DRAWING FOR BIDS.
- 21 FOR DESIGN FEATURE PURPOSES, THIS STANDARD TAKES PRECEDENCE OVER PROCUREMENT DOCUMENTS REFERENCED HEREIN.

NOTES

NOMINAL SIZE	THREADS PER INCH		BODY DIAMETER		DIAMETER OF HEAD		HEIGHT OF HEAD		DEPTH OF SQUARE		WIDTH OF SQUARE		LENGTH TOLERANCE		(L) LENGTH
	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	5/8 - 3/4 DIA.	
1 1/2	1.094	1.032	0.515	0.470	0.281	0.250	0.344	0.313	0.281	0.250	0.313	0.281	0.250	1/2	1
2	1.563	1.460	0.642	0.594	0.408	0.375	0.408	0.375	0.344	0.313	0.375	0.344	0.313	1/2	2
2 1/2	1.983	1.875	0.770	0.718	0.475	0.442	0.475	0.442	0.442	0.410	0.442	0.410	0.375	1/2	3
3	2.363	2.245	0.898	0.846	0.563	0.530	0.563	0.530	0.530	0.500	0.530	0.500	0.468	1/2	4
3 1/2	2.743	2.615	1.026	0.974	0.648	0.615	0.648	0.615	0.615	0.585	0.615	0.585	0.553	1/2	5
4	3.123	2.985	1.154	1.102	0.733	0.690	0.733	0.690	0.690	0.660	0.690	0.660	0.628	1/2	6
4 1/2	3.503	3.345	1.282	1.230	0.818	0.775	0.818	0.775	0.775	0.745	0.775	0.745	0.713	1/2	7
5	3.883	3.715	1.410	1.358	0.903	0.860	0.903	0.860	0.860	0.830	0.860	0.830	0.798	1/2	8
5 1/2	4.263	4.085	1.538	1.486	0.988	0.945	0.988	0.945	0.945	0.915	0.945	0.915	0.883	1/2	9
6	4.643	4.455	1.666	1.614	1.073	1.030	1.073	1.030	1.030	1.000	1.030	1.000	0.968	1/2	10
6 1/2	5.023	4.825	1.794	1.742	1.158	1.115	1.158	1.115	1.115	1.085	1.115	1.085	1.053	1/2	11
7	5.403	5.195	1.922	1.870	1.243	1.200	1.243	1.200	1.200	1.170	1.200	1.170	1.138	1/2	12
7 1/2	5.783	5.565	2.050	2.000	1.328	1.285	1.328	1.285	1.285	1.255	1.285	1.255	1.223	1/2	13
8	6.163	5.935	2.178	2.130	1.413	1.370	1.413	1.370	1.370	1.340	1.370	1.340	1.308	1/2	14
8 1/2	6.543	6.305	2.306	2.260	1.498	1.455	1.498	1.455	1.455	1.425	1.455	1.425	1.393	1/2	15
9	6.923	6.675	2.434	2.390	1.583	1.540	1.583	1.540	1.540	1.510	1.540	1.510	1.478	1/2	16
9 1/2	7.303	7.045	2.562	2.520	1.668	1.625	1.668	1.625	1.625	1.595	1.625	1.595	1.563	1/2	17
10	7.683	7.415	2.690	2.650	1.753	1.710	1.753	1.710	1.710	1.680	1.710	1.680	1.648	1/2	18
10 1/2	8.063	7.785	2.818	2.780	1.838	1.795	1.838	1.795	1.795	1.765	1.795	1.765	1.733	1/2	19
11	8.443	8.155	2.946	2.910	1.923	1.880	1.923	1.880	1.880	1.850	1.880	1.850	1.818	1/2	20
11 1/2	8.823	8.525	3.074	3.040	2.008	1.965	2.008	1.965	1.965	1.935	1.965	1.935	1.903	1/2	21
12	9.203	8.895	3.202	3.170	2.093	2.050	2.093	2.050	2.050	2.020	2.050	2.020	1.988	1/2	22
12 1/2	9.583	9.265	3.330	3.300	2.178	2.135	2.178	2.135	2.135	2.105	2.135	2.105	2.073	1/2	23
13	9.963	9.635	3.458	3.430	2.263	2.220	2.263	2.220	2.220	2.190	2.220	2.190	2.158	1/2	24
13 1/2	10.343	10.005	3.586	3.560	2.348	2.305	2.348	2.305	2.305	2.275	2.305	2.275	2.243	1/2	25
14	10.723	10.375	3.714	3.690	2.433	2.390	2.433	2.390	2.390	2.360	2.390	2.360	2.328	1/2	26
14 1/2	11.103	10.745	3.842	3.820	2.518	2.475	2.518	2.475	2.475	2.445	2.475	2.445	2.413	1/2	27
15	11.483	11.115	3.970	3.950	2.603	2.560	2.603	2.560	2.560	2.530	2.560	2.530	2.498	1/2	28
15 1/2	11.863	11.485	4.098	4.080	2.688	2.645	2.688	2.645	2.645	2.615	2.645	2.615	2.583	1/2	29
16	12.243	11.855	4.226	4.210	2.773	2.730	2.773	2.730	2.730	2.700	2.730	2.700	2.668	1/2	30
16 1/2	12.623	12.185	4.354	4.340	2.858	2.815	2.858	2.815	2.815	2.785	2.815	2.785	2.753	1/2	31
17	13.003	12.555	4.482	4.470	2.943	2.900	2.943	2.900	2.900	2.870	2.900	2.870	2.838	1/2	32
17 1/2	13.383	12.925	4.610	4.600	3.028	2.985	3.028	2.985	2.985	2.955	2.985	2.955	2.923	1/2	33
18	13.763	13.295	4.738	4.730	3.113	3.070	3.113	3.070	3.070	3.040	3.070	3.040	3.008	1/2	34
18 1/2	14.143	13.665	4.866	4.860	3.198	3.155	3.198	3.155	3.155	3.125	3.155	3.125	3.093	1/2	35
19	14.523	14.035	5.000	4.990	3.283	3.240	3.283	3.240	3.240	3.210	3.240	3.210	3.178	1/2	36
19 1/2	14.903	14.405	5.128	5.120	3.368	3.325	3.368	3.325	3.325	3.295	3.325	3.295	3.263	1/2	37
20	15.283	14.775	5.256	5.250	3.453	3.410	3.453	3.410	3.410	3.380	3.410	3.380	3.348	1/2	38
20 1/2	15.663	15.145	5.384	5.380	3.538	3.495	3.538	3.495	3.495	3.465	3.495	3.465	3.433	1/2	39
21	16.043	15.515	5.512	5.510	3.623	3.580	3.623	3.580	3.580	3.550	3.580	3.550	3.518	1/2	40
21 1/2	16.423	15.885	5.640	5.640	3.708	3.665	3.708	3.665	3.665	3.635	3.665	3.635	3.603	1/2	41
22	16.803	16.255	5.768	5.770	3.793	3.750	3.793	3.750	3.750	3.720	3.750	3.720	3.688	1/2	42
22 1/2	17.183	16.625	5.896	5.900	3.878	3.835	3.878	3.835	3.835	3.805	3.835	3.805	3.773	1/2	43
23	17.563	16.995	6.024	6.030	3.963	3.920	3.963	3.920	3.920	3.890	3.920	3.890	3.858	1/2	44
23 1/2	17.943	17.365	6.152	6.160	4.048	4.005	4.048	4.005	4.005	3.975	4.005	3.975	3.943	1/2	45
24	18.323	17.735	6.280	6.290	4.133	4.090	4.133	4.090	4.090	4.060	4.090	4.060	4.028	1/2	46
24 1/2	18.703	18.105	6.408	6.420	4.218	4.175	4.218	4.175	4.175	4.145	4.175	4.145	4.113	1/2	47
25	19.083	18.475	6.536	6.550	4.303	4.260	4.303	4.260	4.260	4.230	4.260	4.230	4.198	1/2	48
25 1/2	19.463	18.845	6.664	6.680	4.388	4.345	4.388	4.345	4.345	4.315	4.345	4.315	4.283	1/2	49
26	19.843	19.215	6.792	6.810	4.473	4.430	4.473	4.430	4.430	4.400	4.430	4.400	4.368	1/2	50
26 1/2	20.223	19.585	6.920	6.940	4.558	4.515	4.558	4.515	4.515	4.485	4.515	4.485	4.453	1/2	51
27	20.603	20.000	7.048	7.070	4.643	4.600	4.643	4.600	4.600	4.570	4.600	4.570	4.538	1/2	52
27 1/2	20.983	20.415	7.176	7.200	4.728	4.685	4.728	4.685	4.685	4.655	4.685	4.655	4.623	1/2	53
28	21.363	20.830	7.304	7.330	4.813	4.770	4.813	4.770	4.770	4.740	4.770	4.740	4.708	1/2	54
28 1/2	21.743	21.245	7.432	7.460	4.898	4.855	4.898	4.855	4.855	4.825	4.855	4.825	4.793	1/2	55
29	22.123	21.660	7.560	7.590	4.983	4.940	4.983	4.940	4.940	4.910	4.940	4.910	4.878	1/2	56
29 1/2	22.503	22.075	7.688	7.720	5.068	5.025	5.068	5.025	5.025	5.000	5.025	5.000	4.968	1/2	57
30	22.883	22.490	7.816	7.850	5.153	5.110	5.153	5.110	5.110	5.080	5.110	5.080	5.048	1/2	58
30 1/2	23.263	22.905	7.944	7.980	5.238	5.195	5.238	5.195	5.195	5.165	5.195	5.165	5.133	1/2	59
31	23.643	23.320	8.072	8.110	5.323	5.280	5.323	5.280	5.280	5.250	5.280	5.250	5.218	1/2	60
31 1/2	24.023	23.735	8.200	8.240	5.408	5.365	5.408	5.365	5.365	5.335	5.365	5.335	5.303	1/2	61
32	24.403	24.150	8.328	8.370	5.493	5.450	5.493	5.450	5.450	5.420	5.450	5.420	5.388	1/2	62
32 1/2	24.783	24.565	8.456	8.500	5.578	5.535	5.578	5.535	5.535	5.505	5.535	5.505	5.473	1/2	63
33	25.163	24.980	8.584	8.630	5.663	5.620	5.663	5.620	5.620	5.590	5.620	5.590	5.558	1/2	64
33 1/2	25.543														