

FED. SUP CLASS
 5306

STAMP MS PART NO. (EXAMPLE, MS14181-04016) AND MANUFACTURER'S IDENTIFICATION DERESSED .010 MAX

FORGED MS PART NO. (EXAMPLE MS14181-04016) AND MANUFACTURER'S IDENTIFICATION, RAISED .010 MAX. (OPTIONAL)

C WRENCHING ELEMENT SEE NOTE 5

K DIA WHEN REQ'D DRILL 4 HOLES EQUALLY SPACED AS SHOWN. MANDATORY TO CSK DRILLED HOLES.

MAJOR DIA. SHALL BE .001 LESS THAN MIN. SHANK DIA. OF BOLT. THREADS SHALL BE IN ACCORDANCE WITH MIL-S-8879

FLAT, CURVED OR ANGULAR BOTTOM OPTIONAL

SECTION A-A

LENGTH TO FIRST COMPLETE THD PITCH NOT TO EXCEED 2 THD PITCHES INCLUDING CHAMF.

REQUIREMENTS:

1. MATERIAL: NICKEL ALLOY 718 PER AMS 5662, AMS 5663.
2. HEAT TREATMENT: 220 KSI MIN TENSILE STRENGTH AT ROOM TEMPERATURE.
3. FINISH: PASSIVATED PER QQ-P-35.
4. SURFACE TEXTURE: PER ANSI B46.1.
5. LIQUID PENETRANT INSPECTION PER MIL-STD-6866.
6. PERFORMANCE: PER MIL-B-85604 EXCEPT AS FOLLOWS:
 - (a) STRESS RUPTURE VALUES AS TABULATED IN TABLE I.
 - (b) ELEVATED TEMPERATURE TENSILE STRENGTH VALUES AS TABULATED IN TABLE I.

NOTES:

1. DIMENSIONS IN INCHES, UNLESS OTHERWISE SPECIFIED, TOLERANCES: DECIMALS $\pm .010$, ANGLE: $\pm 2^\circ$.
2. DESIGN AND USAGE INFORMATION: THESE BOLTS ARE DESIGNED TO BE USED WITH MS14182 NUTS AND MS14183 WASHERS.
3. REFERENCE DIMENSIONS ARE FOR DESIGN PURPOSES ONLY AND ARE NOT INSPECTION OR MANUFACTURING REQUIREMENTS.
4. GRIP LENGTH OF BOLT SHALL BE MEASURED FROM UNDERSIDE OF HEAD TO THE END OF FULL CYLINDRICAL PORTION OF SHANK.
5. WRENCHING ELEMENT PER MS33787. WRENCHES PER MIL-W-8982.
6. DIAMETER DASH NO. AT TOP OF TABLE 11, PLUS GRIP DASH NO. CONSTITUTES A COMPLETE PART NUMBER OF A GIVEN BOLT.
7. ADD LETTER "H" BEFORE DASH NO. TO DESIGNATE DRILLED HEAD. FIRST TWO DASH NUMBERS DESIGNATE DIAMETER IN SIXTEENTHS. LAST THREE DASH NUMBERS DESIGNATE GRIP LENGTH IN SIXTEENTHS.
8. UNASSIGNED DASH NOS. SHALL NOT BE USED.
9. EXAMPLES OF PART NUMBER: MS14181-04016 = .2500-28 BOLT, 1.510 LONG, 1.000 GRIP, UNDRILLED HEAD.
MS14181H04016 = .2500-28 BOLT, 1.510 LONG, 1.000 GRIP, DRILLED HEAD.
10. FOR DESIGN PURPOSES, THIS STANDARD TAKES PRECEDENCE OVER PROCUREMENT DOCUMENTS REFERENCED HEREIN.
11. REFERENCED DOCUMENTS SHALL BE OF THE ISSUE IN EFFECT ON DATE OF INVITATIONS FOR BID OR REQUEST FOR PROPOSAL EXCEPT THAT REFERENCED ADOPTED INDUSTRY DOCUMENTS SHALL GIVE THE DATE OF THE ISSUE ADOPTED.

P.A. NAVY - AS Other Cust USAF - 11 ARMY - AV	TITLE BOLT, TENSION, NICKEL ALLOY 718, 220 KSI F _{tu} , 800°F., EXTERNAL WRENCHING, SPLINE DRIVE, FLANGED HEAD	MILITARY STANDARD <h1 style="margin: 0;">MS14181</h1>
PROCUREMENT SPECIFICATION MIL-B-85604 (U)	SUPERSEDES:	SHEET 1 OF 4

APPROVED 15 JUNE 78
 REVISED A 12 MAR 1981
 B 21 SEP 87

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TABLE 1

DIA DASH NO.	NOMINAL SIZE	THREAD UNJF-3A	A-DIA		B-DIA		C WRENCHING ELEMENT	D-DIA	
			MAX	MIN	MAX	MIN		MAX	MIN
03	NO. 10	.1900-32	.359	.349	.188	.173	8	.1895	.1885
04	1/4	.2500-28	.470	.460	.250	.235	10	.2495	.2485
05	5/16	.3125-24	.585	.575	.375	.360	12	.3120	.3110
06	3/8	.3750-24	.701	.691	.438	.423	14	.3745	.3735
07	7/16	.4375-20	.817	.807	.500	.485	16	.4370	.4360
08	1/2	.5000-20	.932	.922	.562	.547	20	.4995	.4985
09	9/16	.5625-18	1.047	1.037	.625	.610	22	.5615	.5605
10	5/8	.6250-18	1.163	1.153	.688	.673	24	.6240	.6230

TABLE 1 CONT'D

DIA DASH NO.	E MIN	H +.010	J-DIA +.010 -.030	K +.005	M	Q		R-RAD		T MIN REF
						MAX	MIN	MAX	MIN	
03	.113	.205	.100	.037	.062	.037	.017	.022	.016	.408
04	.149	.250	.125			.046	.026	.028	.022	.495
05	.187	.312	.215			.055	.035	.035	.029	.589
06	.224	.337	.260	.070	.065	.064	.044	.043	.033	.659
07	.262	.393	.320			.073	.053	.049	.039	.763
08	.299	.450	.380			.082	.062	.055	.045	.838
09	.336	.505	.440	.094		.091	.071	.061	.051	.935
10	.374	.562	.500			.100	.080	.068	.058	1.005

TABLE 1 CONT'D

DIA DASH NO.	U REF	BEARING AREA (MEAN DIA) SQ. IN.	TENSILE STRENGTH			DOUBLE SHEAR STRENGTH LB. MIN.	STRESS RUPTURE AT 800° F (LBS)	TOLERANCE	
			ROOM TEMPERATURE		AT 800° F			X	Z
			MAX. (LBS)	MIN. (LBS)	MIN. (LBS)				
03	.039	.0517	5,760	4,970	3,915	6,975	2,780	.004	
04	.045	.0914	10,300	8,885	7,110	12,125	4,975	.005	.004
05	.052	.1442	16,320	14,080	11,265	18,990	7,880	.006	
06		.2106	24,250	20,920	16,735	27,390	11,710	.008	
07	.063	.2896	32,800	28,300	22,600	37,325	15,840	.009	
08		.3786	43,800	37,800	30,200	48,790	21,200	.010	
09	.089	.4808	55,500	47,900	38,300	61,685	26,800	.011	.006
10		.5945	69,500	59,900	47,900	76,210	33,500	.012	

APPROVED 15 JUNE 78
REVISED (B) FOR CHANGES SEE SHEETS 1, 2, 3 AND 4P.A.
NAVY — AS
Other Cust
USAF — 11
ARMY — AV

TITLE

BOLT, TENSION, NICKEL ALLOY 718, 220 KSI F_{tu}, 800°F.,
EXTERNAL WRENCHING, SPLINE DRIVE, FLANGED HEAD

(B)

MILITARY STANDARD

MS 14181

PROCUREMENT SPECIFICATION
MIL-B-85604 (B)

SUPERSEDES:

SHEET 2 OF 4

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TABLE II

GRIP DASH NO.	GRIP ±.010	DIAMETER DASH NUMBERS							
		03	04	05	06	07	08	09	10
		LENGTH ±.015							
004	.250	0.683	0.770	0.864	0.934	1.038	1.113	1.210	1.280
006	.375	0.808	0.895	0.989	1.059	1.163	1.238	1.335	1.405
008	.500	0.933	1.020	1.114	1.184	1.288	1.363	1.460	1.530
010	.625	1.058	1.145	1.239	1.309	1.413	1.488	1.585	1.655
012	.750	1.183	1.270	1.364	1.434	1.538	1.613	1.710	1.780
014	.875	1.308	1.395	1.489	1.559	1.663	1.738	1.835	1.905
016	1.000	1.433	1.520	1.614	1.684	1.778	1.863	1.960	2.030
018	1.125	1.558	1.645	1.739	1.809	1.913	1.988	2.085	2.155
020	1.250	1.683	1.770	1.864	1.934	2.038	2.113	2.210	2.280
022	1.375	1.808	1.895	1.989	2.059	2.163	2.238	2.335	2.405
024	1.500	1.933	2.020	2.114	2.184	2.288	2.363	2.460	2.530
026	1.625	2.058	2.145	2.239	2.309	2.413	2.488	2.585	2.655
028	1.750	2.183	2.270	2.364	2.434	2.538	2.613	2.710	2.780
030	1.875	2.308	2.395	2.489	2.559	2.663	2.738	2.835	2.905
032	2.000	2.433	2.520	2.614	2.684	2.788	2.863	2.960	3.030
034	2.125	2.558	2.645	2.739	2.809	2.913	2.988	3.085	3.155
036	2.250	2.683	2.770	2.864	2.934	3.038	3.113	3.210	3.280
038	2.375	2.808	2.895	2.989	3.059	3.163	3.238	3.335	3.405
040	2.500	2.933	3.020	3.114	3.184	3.288	3.363	3.460	3.530
042	2.625	3.058	3.145	3.239	3.309	3.413	3.488	3.585	3.655
044	2.750	3.183	3.270	3.364	3.434	3.538	3.613	3.710	3.780
046	2.875	3.308	3.395	3.489	3.559	3.663	3.738	3.835	3.905
048	3.000	3.433	3.520	3.614	3.684	3.788	3.863	3.960	4.030
050	3.125	3.558	3.645	3.739	3.809	3.913	3.988	4.085	4.155
052	3.250	3.683	3.770	3.864	3.934	4.038	4.113	4.210	4.280
054	3.375	3.808	3.895	3.989	4.059	4.163	4.238	4.335	4.405
056	3.500	3.933	4.020	4.114	4.184	4.288	4.363	4.460	4.530
058	3.625	4.058	4.125	4.239	4.309	4.413	4.488	4.585	4.655
060	3.750	4.183	4.270	4.364	4.434	4.538	4.613	4.710	4.780
062	3.875	4.308	4.395	4.489	4.559	4.663	4.738	4.835	4.905
064	4.000	4.433	4.520	4.614	4.684	4.788	4.863	4.960	5.030
066	4.125	4.558	4.645	4.739	4.809	4.913	4.988	5.085	5.155
068	4.250	4.683	4.770	4.864	4.934	5.038	5.113	5.210	5.280
070	4.375	4.808	4.895	4.989	5.059	5.163	5.238	5.335	5.405
072	4.500	4.933	5.020	5.114	5.184	5.288	5.363	5.460	5.530
074	4.625	5.058	5.145	5.239	5.309	5.413	5.488	5.585	5.655
076	4.750	5.183	5.270	5.364	5.434	5.538	5.613	5.710	5.780

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SHEET 3 OF 4

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TABLE II CONT'D

GRIP DASH NO.	GRIP ±.010	DIAMETER DASH NUMBERS							
		03	04	05	06	07	08	09	10
		LENGTH ±.015							
078	4.875	5.308	5.395	5.489	5.559	5.663	5.738	5.835	5.905
080	5.000	5.433	5.520	5.614	5.684	5.788	5.863	5.960	6.030
082	5.125	5.558	5.645	5.739	5.809	5.913	5.988	6.085	6.155
084	5.250	5.683	5.770	5.864	5.934	6.038	6.113	6.210	6.280
086	5.375	5.808	5.895	5.989	6.059	6.163	6.238	6.335	6.405
088	5.500	5.933	6.020	6.114	6.184	6.288	6.363	6.460	6.530
090	5.625	6.058	6.145	6.239	6.309	6.413	6.488	6.585	6.655
092	5.750	6.183	6.270	6.364	6.434	6.538	6.613	6.710	6.780
094	5.875	6.308	6.395	6.489	6.559	6.663	6.738	6.835	6.905
096	6.000	6.433	6.520	6.614	6.684	6.788	6.863	6.960	7.030
098	6.125	6.558	6.645	6.739	6.809	6.913	6.988	7.085	7.155
100	6.250	6.683	6.770	6.864	6.934	7.038	7.113	7.210	7.280
102	6.375	6.808	6.895	6.989	7.059	7.163	7.238	7.335	7.405
104	6.500	6.933	7.020	7.114	7.184	7.288	7.363	7.460	7.530
106	6.625	7.058	7.145	7.239	7.309	7.413	7.488	7.585	7.655
108	6.750	7.183	7.270	7.364	7.434	7.538	7.613	7.710	7.780
110	6.875	7.308	7.395	7.489	7.559	7.663	7.738	7.835	7.905
112	7.000	7.433	7.520	7.614	7.684	7.788	7.863	7.960	8.030

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MILITARY STANDARD

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PROCUREMENT SPECIFICATION
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SUPERSEDES:

SHEET 4 OF 4