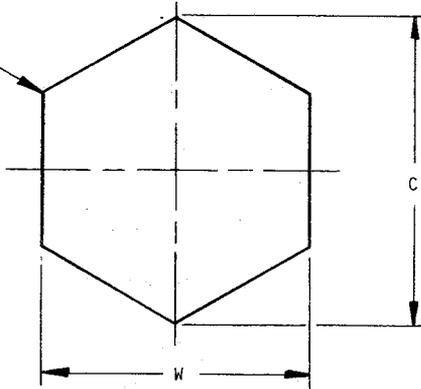


FED. SUP CLASS
53GP

CORNERS' CONTOUR SHALL BE WITHIN THE LIMITS DEFINED BY THE DIA C MIN, W MIN AND W MAX



THIS STANDARD ESTABLISHES DIMENSIONS OF STANDARD HEXAGONS FOR FASTENERS

NOMINAL ACROSS FLATS	W BASIC SIZE ACROSS FLATS	LIMITS OF SIZE ACROSS FLATS		C ACROSS CORNERS
		MIN (a)	(A) MAX (b)	MINIMUM (c) ^(d)
5/32	.1562	.150	.1562	.171
* 3/16	.1875	.181	.1880	.207
7/32	.2188	.212	.2190	.242
(A) 1/4	.2500	.243	.2500	.277
9/32	.2812	.274	.2812	.313
* 5/16	.3125	.305	.3140	.348
* (A) 11/32	.3438	.336	.3450	.383
(A) 3/8	.3750	.367	.3760	.410
* 7/16	.4375	.429	.4380	.480
* 1/2	.5000	.492	.5020	.552
* 9/16	.5625	.554	.5640	.623
* 5/8	.6250	.616	.6270	.694
* 11/16	.6875	.678	.6900	.764
* 3/4	.7500	.741	.7530	.836
13/16	.8125	.803	.8160	.907
* 7/8	.8750	.865	.8780	.978
* 15/16	.9375	.928	.9420	1.050
1	1.0000	.990	1.0040	1.120
(A) 1-1/16	1.0625	1.053	1.0650	1.192
* (A) 1-3/16	1.1875	1.177	1.1910	1.346
1-1/8	1.1250	1.115	1.1290	1.263
1-3/16	1.1875	1.177	1.1910	1.334
(A) 1-1/4	1.2500	1.239	1.2540	1.405
1-5/16	1.3125	1.302	1.3170	1.476
(A) 1-7/16	1.4375	1.427	1.4430	1.619
* 1-1/2	1.5000	1.489	1.5050	1.690
* 1-5/8	1.6250	1.614	1.6310	1.832
* (A) 1-11/16	1.6875	1.676	1.6930	1.903
* 1-13/16	1.8125	1.801	1.8190	2.046
* (A) 1-7/8	1.8750	1.863	1.8820	2.117
2	2.0000	1.988	2.0080	2.259
* (A) 2-1/16	2.0625	2.050	2.0710	2.330
* (A) 2-1/8	2.125	2.113	(f) 2.1270	2.402
* (A) 2-1/4	2.250	2.238	2.2590	2.545
2-3/16	2.1875	2.175	2.1970	2.473
2-3/8	2.3750	2.360	2.3850	2.684

THIS IS A DESIGN STANDARD AND NOT TO BE USED AS A PART NO.

(A) REVISED AND REDRAWN

USER SYMBOLS:
ARMY - AT, MI

REVIEWER SYMBOLS:
ARMY - ME, AR
NAVY - OS, SH
USAF - 99, 82
DSA - IS

"Review/user information is current as of the date of this document. For future coordination of changes to this document, draft circulation should be based on the information in the current DODISS."

DISTRIBUTION STATEMENT A: APPROVED FOR PUBLIC RELEASE. DISTRIBUTION IS UNLIMITED.
This military standard is approved for use by all Departments & Agencies of the Department of Defense. Selection for all new engineering and design applications and for repetitive use shall be made from this document.

AMSC N/A

P.A. NAVY - AS Other Cust USAF - 11 ARMY - AV	INTER-NATIONAL INTEREST	TITLE	MILITARY STANDARD
		WRENCHING ELEMENT, EXTERNAL HEXAGON, FOR THREADED FASTENERS	MS21132
PROCUREMENT SPECIFICATION NONE	SUPERSEDES:	SHEET	1 OF 2

APPROVED 30 NOV 73 REVISED (A) 25 MAR 87

USER SYMBOLS:
ARMY - AT, MI

REVIEWER SYMBOLS:
ARMY - ME, AR
NAVY - OS, SH
USAF - 99, 82
DSA - IS

"Review/user information is current as of the date of this document.
For future coordination of changes to this document, draft circulation
should be based on the information in the current DODISS."

DISTRIBUTION STATEMENT A: APPROVED FOR PUBLIC RELEASE, DISTRIBUTION IS UNLIMITED.
This military standard is approved for use by all Departments &
Agencies of the Department of Defense. Selection for all new
engineering and design applications and for repetitive use shall be
made from this document.

- (A) (a) MINIMUM DIMENSION ACROSS FLATS = $W - 0.01 \sqrt[4]{W}$ WHERE "W" IS THE BASIC SIZE EXPRESSED AS THE COMPLETE DECIMAL EQUIVALENT OF THE FRACTIONAL SIZE.
- (b) THE ABOVE DIMENSIONS ARE COMPATIBLE WITH FED-STD-346 GAGES, WRENCH OPENINGS.
- (c) FOR SIZES SMALLER THAN 3/8 (.375), DIMENSIONS ACROSS CORNERS C MINIMUM = (1.141) X (W MINIMUM).
- (d) FOR SIZES 3/8 (.375) AND LARGER, DIMENSIONS ACROSS CORNERS C MINIMUM = (1.141) X (W MINIMUM) - (.009).
- (e) THE HEXAGON SIZES LISTED HERE ARE BASED ON THE FOLLOWING CRITERIA:
1. THE SIZE REQUIRED TO ENVELOP THE OUTSIDE DIAMETER OF THE MINIMUM BEARING AREA OF THE BOLT HEAD AND NUT FACE REQUIRED BY THE BEARING YIELD STRENGTH OF THE BOLTED MATERIAL.
 2. BOLTED MATERIAL BEARING YIELD STRENGTH OF 83 KSI.
 3. TENSION BOLT MATERIAL TENSILE STRENGTH OF 125 KSI.
 4. SHEAR BOLT MATERIAL ULTIMATE TENSILE STRENGTH OF 160 KSI.
 5. SIZES FOR WHICH WRENCHES ARE AVAILABLE.
 6. SIZES ARE NOT BASED ON THE DESIGN REQUIREMENTS OF FLANGED OR RING BASE BOLT HEADS OR NUTS.
- (f) MAXIMUM DIMENSION ACROSS FLATS = $W + 0.002$.

* CERTAIN PROVISIONS (LIMITS FOR ACROSS FLATS DIMENSIONS (W)) OF THIS STANDARD ARE THE SUBJECT OF INTERNATIONAL STANDARDIZATION AGREEMENT ASCC 17/2 AIR STD. WHEN REVISION, OR CANCELLATION OF THIS STANDARD IS PROPOSED WHICH WILL AFFECT OR VIOLATE THE INTERNATIONAL AGREEMENT CONCERNED, THE PREPARING ACTIVITY WILL TAKE APPROPRIATE RECONCILIATION ACTION THROUGH INTERNATIONAL STANDARDIZATION CHANNELS, INCLUDING DEPARTMENTAL STANDARDIZATION OFFICES, IF REQUIRED.

- (A) IN THE EVENT OF A CONFLICT BETWEEN THE TEXT OF THIS STANDARD AND THE REFERENCES CITED HEREIN, THE TEXT OF THIS STANDARD SHALL TAKE PRECEDENCE.
- (A) REFERENCED GOVERNMENT (OR NON-GOVERNMENT) DOCUMENTS OF THE ISSUE LISTED IN THAT ISSUE OF THE DEPARTMENT OF DEFENSE INDEX OF SPECIFICATIONS AND STANDARDS (DoDISS) SPECIFIED IN THE SOLICITATION FORM A PART OF THIS STANDARD TO THE EXTENT SPECIFIED HEREIN.

AMSC N/A

P.A. NAVY - AS Other Cust USAF - 11 ARMY - AV	INTER- NATIONAL INTEREST	TITLE WRENCHING ELEMENT, EXTERNAL HEXAGON, FOR THREADED FASTENERS	MILITARY STANDARD		
			MS21132		
PROCUREMENT SPECIFICATION NONE	SUPERSEDES:	SHEET	2	OF	2

APPROVED 30 NOV 73 REVISED (A) FOR CHANGES SHEETS 1 & 2