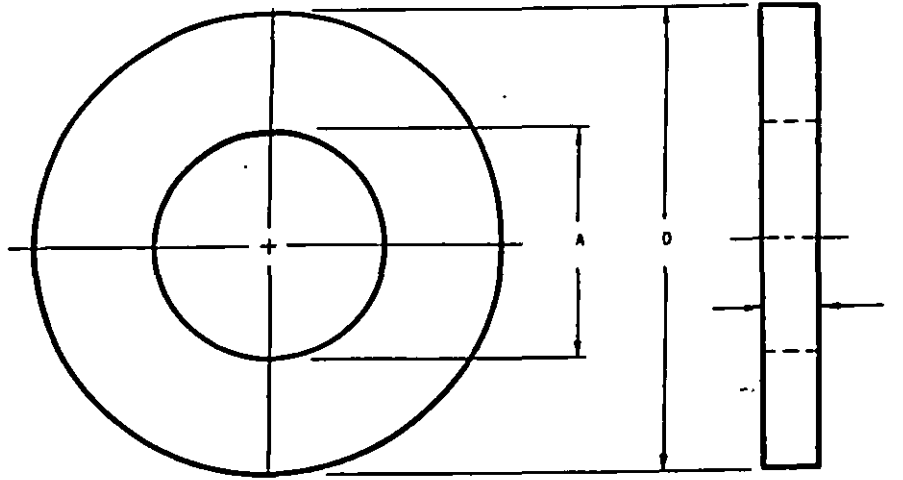


REVIEWER SYMBOLS:  
ARMY - EA, AV  
NAVY -  
AIR FORCE - 82  
DLA - 15



REQUIREMENTS:

- 1. MATERIAL: CARBON STEEL PER MIL-S-7952 - NO CODE
- CORROSION RESISTANT STEEL PER MIL-S-5059, AMS 5510 OR AMS 5512. - C CODE
- ALUMINUM ALLOY 2024 (ALCLAD) PER QQ-A-250/5, CONDITION T3 OR T4 - D CODE
- BRASS PER QQ-B-613, COMPOSITION I OR II - B CODE
- 2. COATING: CADMIUM PLATE PER QQ-P-416, TYPE II, CLASS 2 (FOR CARBON STEEL ONLY) - NO CODE
- ANODIZE PER MIL-A-8625 - K CODE
- CHEMICAL SURFACE TREAT PER MIL-C-5541, CLASS 3 - J CODE
- BLACK OXIDE COAT PER MIL-C-13924 (FOR CRES ONLY) - X CODE
- NATURAL BRASS - NO CODE
- PASSIVATE PER QQ-P-35 (FOR UNCOATED CPES ONLY) - NO CODE
- ANODIZE PER MIL-A-8625 OR CHEM SURFACE TREAT PER MIL-C-5541, CLASS 1A - P CODE

NOTICE: When Government drawings, specifications or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility, nor any obligation whatsoever; and the fact that the Government may have furnished, borrowed, or in any way supplied the said drawings, specifications, or other data is not to be regarded as endorsement or acceptance in any manner by the Government in any other portion or procurement, or conveying any rights or permission to manufacture, use, or sell any patented invention that they in any way be related thereto.

DISCONTINUED/REPLACEMENT: Approved for public release, distribution is unlimited.  
NOTE: This drawing was prepared by joint action of the Air Force and Navy Departments of the Air Force. Many drawings for this product. This drawing is a modification of a drawing prepared for the Air Force. It is the responsibility of the Air Force and Navy departments to insure that the drawing is correct and that the drawing is the latest data of approved sheets.  
AMSC B1A Project No. 5310-1733

**21** INACTIVE FOR NEW DESIGN. NAS 1149 MAY BE SUBSTITUTED IN ALL APPLICATIONS.

**21** DENOTES CHANGES

P.A. NAVY-AS CUSTODIANS: ARMY-AV NAVY-AS AIR FORCE-99	AIR FORCE-NAVY AERONAUTICAL STANDARD	AN 960
	WASHER , FLAT	
PROCUREMENT SPECIFICATION FF-W-92		SHEET 1 OF 3

APPROVED 18 FEB 42 REVIS'D 16 14 DEC 81 17 31 JAN 83 18 20 JULY 84 19 31 JAN 86 20 1 APR 86 21 06 AUG 92

**NOTES:**

1. REMOVE ALL BURRS AND SHARP EDGES.
2. DIMENSIONS IN INCHES - TOLERANCES ON THICKNESS:  
FOR ALUMINUM ALLOY WASHER:  
.016  $\pm$  .003; .032  $\pm$  .004; .042  $\pm$  .004; .049  $\pm$  .005;  
.063  $\pm$  .006; .090  $\pm$  .007.  
ALL OTHER MATERIALS:  $\pm$  .010.
3. PARALLELISM AND FLATNESS:  
WASHER FACES SHALL BE PARALLEL WITHIN .002 INCH.  
WASHER FACES SHALL BE FLAT WITHIN:  
.007 INCH FOR SIZES UP TO AND INCLUDING THE 1/2 INCH SIZE.  
.010 INCH FOR 9/16 TO 1-1/4 INCH SIZES, INCLUSIVE AND  
.015 INCH FOR 1-5/16 INCH AND LARGER SIZES.
4. ~~THICKNESS CODES:~~  
~~REGULAR SERIES - NO CODE~~  
~~LIGHT SERIES - L CODE~~  
~~EXTRA LIGHT SERIES - LL CODE (DESIGNATES .016 THICKNESS WHERE L DESIGNATES .032 THICKNESS)~~  
~~MEDIUM SERIES - M CODE (DESIGNATES .032 THICKNESS WHERE L DESIGNATES .016 THICKNESS)~~
5. J CODE WASHERS ARE INTENDED FOR USE WHEN LOW ELECTRICAL RESISTANCE IS REQUIRED.
6. K CODE WASHERS ARE INTENDED FOR USE WHERE CORROSION PROTECTION IS THE PRIME CONSIDERATION.
7. P CODE WASHERS ARE REINSTATED FROM "CANCELLED" TO "INACTIVE FOR NEW DESIGN" AS OF 30 JUNE 1982. USE J OR K CODE WASHERS. P CODE WASHERS MAY BE USED UNTIL STOCK IS DEPLETED.
8. BRASS WASHERS ARE REINSTATED FROM "CANCELLED" TO "INACTIVE FOR NEW DESIGN", AS OF 30 JUNE 1982
9. NO. 2 THREAD SIZES ARE REINSTATED FROM "CANCELLED" TO "INACTIVE FOR NEW DESIGN" AS OF 30 JUNE 1982.
10. EXAMPLE OF PART NUMBER:  
AN960 X C 616 LL - CRES STEEL WASHER FOR 3/8 BOLT OR SCREW SIZE, .016 INCH THICK,  
BLACK OXIDE COATED PER MIL-C-13924  
  - THICKNESS CODE (SEE ~~NOTE 4~~ AND TABLE I)
  - BOLT OR SCREW SIZE (SEE TABLE I)
  - MATERIAL CODE (SEE REQ. 1 AND TABLE I)
  - COATING CODE (SEE REQ. 2 AND TABLE I)
  - BASIC PART NUMBER
11. MEDIUM SERIES - M CODE CANCELLED AFTER 20 JULY 1984

REV 16 PART NO. DESIGNATION:	SUPERSEDING REV 17 PART NO. DESIGNATION:
(a) AN960XC10LL AN960JD10LL AN960KD10LL AN960XC10L AN960JD10L AN960KD10L	(b) <del>AN960XC10L</del> <del>AN960JD10L</del> <del>AN960KD10L</del> <del>AN960XC10M</del> <del>AN960JD10M</del> <del>AN960KD10M</del>

(a) REINSTATED AFTER 20 JULY 1984(b) CANCELLED AFTER 20 JULY 1984

APPROVED 18 FEB 82 REVISED (21) FOR CHANGES SEE SHEET 1

P.A.  
NAVY-AS  
CUSTODIANS:  
ARMY-AV  
NAVY-AS  
AIR FORCE-99

AIR FORCE-NAVY AERONAUTICAL STANDARD

WASHER, FLAT

AN 960

PROCUREMENT SPECIFICATION  
FF-W-92

SHEET 2 OF 3

TABLE 1. WASHER DIMENSIONS AND DASH NUMBERS

BOLT OR SCREW SIZE	A DIA .010	D +.070 -.005 DIA	T	DASH NUMBERS							
				CARBON STEEL	CORROSION RESISTANT STEEL		ALUMINUM ALLOY CHEMICAL CONVERSION COATING	ALUMINUM ALLOY TREATED SURFACES		UNTREATED	BRASS
					UNCOATED PASSIVATED C2L	COATED XC2L		KD2L	PD2L		
NO. 2	.099	.250	.016 .032	2L 2	C2L C2	XC2L XC2	JD2L J2	KD2L KD2	PD2L PD2	D2L D2	B2
NO. 3	.105	.250	.016 .032	3L 3	C3L C3	XC3L XC3	JD3L J3	KD3L KD3	PD3L PD3	D3L D3	B3
NO. 4	.125	.312	.016 .032	4L 4	C4L C4	XC4L XC4	JD4L J4	KD4L KD4	PD4L PD4	D4L D4	B4
NO. 5	.140	.438	.042	5	C5	XC5	J5	KD5	PD5	D5	B5
NO. 6	.149	.375	.016 .032	6L 6	C6L C6	XC6L XC6	JD6L J6	KD6L KD6	PD6L PD6	D6L D6	B6
NO. 8	.174	.375	.016 .032	8L 8	C8L C8	XC8L XC8	JD8L J8	KD8L KD8	PD8L PD8	D8L D8	B8
NO. 9	.188	.500	.049	9	C9	XC9	J9	KD9	PD9	D9	B9
NO. 10	.203	.438	.016 .032 .063	10L 10	C10L C10	XC10LL XC10L XC10	JD10LL JD10L JD10	KD10LL KD10L KD10	PD10L	D10L	B10
NO. 11	.234	.625	.065	11	C11	XC11	J11	KD11	PD11	D11	B11
1/4	.265	.500	.016 .032 .063	416L 416	C416L C416	XC416L XC416	JD416L JD416	KD416L KD416	PD416L PD416	D416L D416	B416
5/16	.328	.562	.016 .032 .063	516L 516	C516L C516	XC516L XC516	JD516L JD516	KD516L KD516	PD516L PD516	D516L D516	B516
3/8	.390	.625	.016 .032 .063	616LL 616L 616	C616LL C616L C616	XC616LL XC616L XC616	JD616L JD616	KD616L KD616	PD616L PD616	D616L D616	B616
7/16	.453	.750	.016 .032 .063	716L 716	C716L C716	XC716LL XC716L XC716	JD716L JD716	KD716L KD716	PD716L PD716	D716L D716	B716
1/2	.515	.875	.016 .032 .063	816L 816	C816L C816	XC816L XC816	JD816L JD816	KD816L KD816	PD816L PD816	D816L D816	B816
9/16	.578	1.062	.016 .032 .063	916L 916	C916L C916	XC916L XC916	JD916L JD916	KD916L KD916	PD916L PD916	D916L D916	B916
5/8	.640	1.188	.016 .032 .063	1016L 1016	C1016L C1016	XC1016L XC1016	JD1016L JD1016	KD1016L KD1016	PD1016L PD1016	D1016L D1016	B1016
3/4	.765	1.312	.016 .032 .090	1216L 1216	C1216L C1216	XC1216L XC1216	JD1216L JD1216	KD1216L KD1216	PD1216L PD1216	D1216L D1216	B1216
7/8	.890	1.500	.016 .032 .090	1416L 1416	C1416L C1416	XC1416L XC1416	JD1416L JD1416 JD1616L	KD1416L KD1416 KD1616L	PD1416L PD1616L	D1416L D1616L	B1416
1	1.015	1.750	.016 .032 .090	1616L 1616	C1616L C1616	XC1616L XC1616	JD1616L	KD1616L	PD1616L	D1616L	B1616
1-1/16	1.078	1.812	.016 .032 .090	1716L 1716	C1716	XC1716	JD1716L	KD1716L	PD1716L	D1716L	B1716
1-1/8	1.140	1.875	.016 .032 .090	1816L 1816	C1816	XC1816	JD1816L	KD1816L	PD1816L	D1816L	B1816
1-1/4	1.265	2.000	.016 .032 .090	2016L 2016	C2016	XC2016	JD2016L	KD2016L	PD2016L	D2016L	B2016
1-5/16	1.328	2.062	.016 .032 .090	2116L 2116	C2116	XC2116	JD2116L	KD2116L	PD2116L	D2116L	B2116
1-3/8	1.640	2.375	.016 .032 .090	2516L 2516	C2516	XC2516	JD2516L	KD2516L	PD2516L	D2516L	B2516
1-7/8	1.890	2.625	.016 .032 .090	3016L 3016	C3016	XC3016	JD3016L	KD3016L	PD3016L	D3016L	B3016
2-1/4	2.265	3.000	.016 .032 .090	3616L 3616	C3616	XC3616	JD3616L	KD3616L	PD3616L	D3616L	B3616
2-1/2	2.515	3.250	.016 .032 .090	4016L 4016	C4016	XC4016	JD4016L	KD4016L	PD4016L	D4016L	B4016

APPROVED 18 FEB 42 REVISED 21 FOR CHANGES SEE SHEET 1

P.A.:  
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PROCUREMENT SPECIFICATION  
FF-N-99

**AIR FORCE-NAVY AERONAUTICAL STANDARD**  
**WASHER, FLAT**

**AN 960**