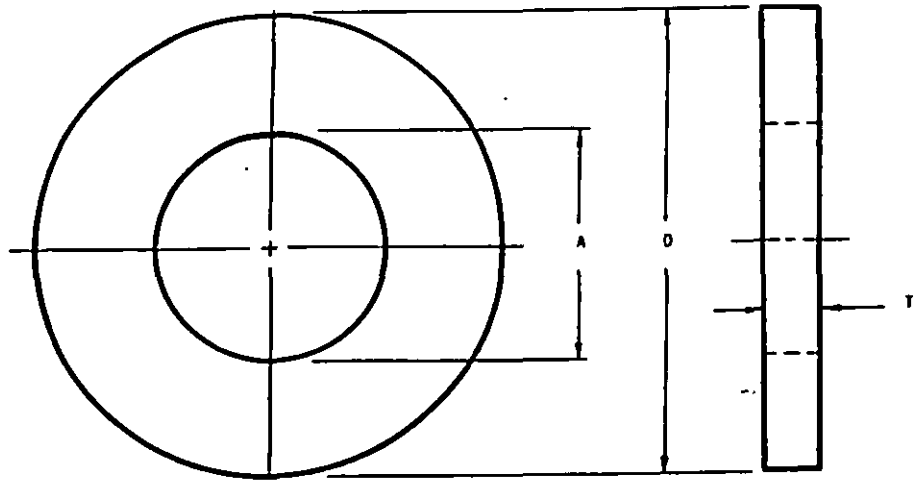


REVIEWER SYMBOLS:  
ARMY - EA, AY  
NAVY -  
AIR FORCE - 82  
DLA - 1S



- 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 by acceptance or otherwise as in any manner honoring the contractor or any other person or organization, or conveying any rights or permission to manufacture, use, or sell any patented invention that they in any way be related thereto.

DISCONTINUATION: Approved for public release, distribution is unlimited.  
NOTE: This drawing was prepared by joint action of the Air Force and Navy Custodians of the Air Force. Many drawings for this product. This drawing contains all information including drawings for this product, and the applicable portions for the procurement drawings for this product, as far as it may affect the use of this drawing. It is the latest data of approved sheets.  
AMSC B1A Project No. 5310-1733

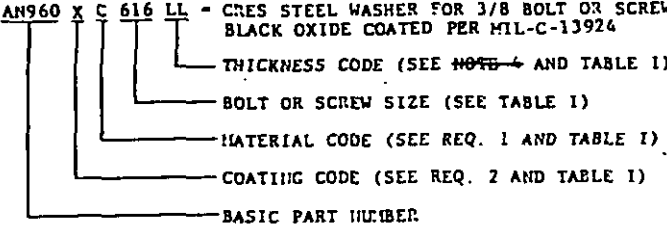
**(21) INACTIVE FOR NEW DESIGN. NAS 1149 MAY BE SUBSTITUTED IN ALL APPLICATIONS.**

(21) DENOTES CHANGES

|  |                                      |              |
|--|--------------------------------------|--------------|
| P.A.<br>NAVY-AS<br>CUSTODIANS:<br>ARMY-AY<br>NAVY-AS<br>AIR FORCE-99 | AIR FORCE-NAVY AERONAUTICAL STANDARD | AN 960       |
|  | WASHER , FLAT                        |              |
| PROCUREMENT SPECIFICATION<br>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 + .003; .032 + .004; .042 + .004; .049 + .005;  
.063 ± .006; .090 ± .007.  
ALL OTHER MATERIALS: ± .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  

11. MEDIUM SERIES - M CODE CANCELLED AFTER 20 JULY 1984

| REV 16 PART NO. DESIGNATION:  | SUPERSEDING REV 17 PART NO. DESIGNATION:   |
|---|--|
| (a) AN960XC10LL<br>AN960JD10LL<br>AN960KD10LL<br>AN960XC10L<br>AN960JD10L<br>AN960KD10L | (b) <del>AN960XC10L</del><br><del>AN960JD10L</del><br><del>AN960KD10L</del><br><del>AN960XC10H</del><br><del>AN960JD10H</del><br><del>AN960KD10H</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.<br>NAVY-AS<br>CUSTODIANS:<br>ARMY-AV<br>NAVY-AS<br>AIR FORCE-99 | AIR FORCE-NAVY AERONAUTICAL STANDARD | AN 960       |
|  | WASHER, FLAT                         |              |
| PROCUREMENT SPECIFICATION<br>FF-W-92                                 |                                      | SHEET 2 OF 3 |

TABLE 1. WASHER DIMENSIONS AND DASH NUMBERS

FED. SUP CLASS  
5310

| BOLT OR<br>SCREW<br>SIZE | A<br>DIA<br>.010 | D<br>+.070<br>-.005<br>DIA | T                    | DASH NUMBERS         |                               |                            |  |                                     |                    |                     |           |       |
|--------------------------|------------------|----------------------------|----------------------|----------------------|-------------------------------|----------------------------|--|-------------------------------------|--------------------|---------------------|-----------|-------|
|                          |                  |                            |                      | CARBON<br>STEEL      | CORROSION RESISTANT<br>STEEL  |                            | ALUMINUM ALLOY<br>CHEMICAL CONVERSION<br>COATING | ALUMINUM ALLOY<br>ANODIZED SURFACES |                    | TREATED<br>SURFACES | UNTREATED | BRASS |
|                          |                  |                            |                      |                      | UNCOATED<br>PASSIVATED<br>C2L | COATED<br>XC2L             |  | KD2L                                | PD2L               |                     |           |       |
| NO. 2                    | .099             | .250                       | .016<br>.032         | 2L<br>2              |                               |                            | JD2L<br>J2                                       | KD2L<br>KD2                         | PD2L<br>PD2        | U2L<br>U2           | B2        |       |
| NO. 3                    | .105             | .250                       | .016<br>.032         | 3L<br>3              | C3L<br>C3                     | XC3L<br>XC3                | JD3L<br>JD3                                      | KD3L<br>KD3                         | PD3L<br>PD3        | D3L<br>D3           | B3        |       |
| NO. 4                    | .125             | .312                       | .016<br>.032         | 4L<br>4              | C4L<br>C4                     | XC4L<br>XC4                | JD4L<br>JD4                                      | KD4L<br>KD4                         | PD4L<br>PD4        | D4L<br>D4           | B4        |       |
| NO. 5                    | .140             | .438                       | .042                 | 5                    | C5                            | XC5                        | JD5  | KD5                                 | PD5                | D5                  | B5        |       |
| NO. 6                    | .149             | .375                       | .016<br>.032         | 6L<br>6              | C6L<br>C6                     | XC6L<br>XC6                | JD6L<br>JD6                                      | KD6L<br>KD6                         | PD6L<br>PD6        | D6L<br>D6           | B6        |       |
| NO. 8                    | .174             | .375                       | .016<br>.032         | 8L<br>8              | C8L<br>C8                     | XC8L<br>XC8                | JD8L<br>JD8                                      | KD8L<br>KD8                         | PD8L<br>PD8        | D8L<br>D8           | B8        |       |
| NO. 9                    | .188             | .500                       | .049                 | 9                    | C9                            | XC9                        | JD9  | KD9                                 | PD9                | D9                  | B9        |       |
| NO. 10                   | .203             | .438                       | .016<br>.032<br>.063 | 10L<br>10            | C10L<br>C10                   | XC10LL<br>XC10L<br>XC10    | JD10LL<br>JD10L<br>JD10                          | KD10LL<br>KD10L<br>KD10             | PD10L              | D10L                | B10       |       |
| NO. 11                   | .234             | .625                       | .065                 | 11                   | C11                           | XC11                       | JD11   | KD11                                | PD11               | D11                 | B11       |       |
| 1/4                      | .265             | .500                       | .016<br>.032<br>.063 | 416L<br>416          | C416L<br>C416                 | XC416L<br>XC416            | JD416L<br>JD416                                  | KD416L<br>KD416                     | PD416L<br>PD416    | D416L<br>D416       | B416      |       |
| 5/16                     | .328             | .562                       | .016<br>.032<br>.063 | 516L<br>516          | C516L<br>C516                 | XC516L<br>XC516            | JD516L<br>JD516                                  | KD516L<br>KD516                     | PD516L<br>PD516    | D516L<br>D516       | B516      |       |
| 3/8                      | .390             | .625                       | .016<br>.032<br>.063 | 616LL<br>616L<br>616 | C616LL<br>C616L<br>C616       | XC616LL<br>XC616L<br>XC616 | JD616L<br>JD616                                  | KD616L<br>KD616                     | PD616L<br>PD616    | D616L<br>D616       | B616      |       |
| 7/16                     | .453             | .750                       | .016<br>.032<br>.063 | 716L<br>716          | C716L<br>C716                 | XC716LL<br>XC716L<br>XC716 | JD716L<br>JD716                                  | KD716L<br>KD716                     | PD716L<br>PD716    | D716L<br>D716       | B716      |       |
| 1/2                      | .515             | .875                       | .016<br>.032<br>.063 | 816L<br>816          | C816L<br>C816                 | XC816L<br>XC816            | JD816L<br>JD816                                  | KD816L<br>KD816                     | PD816L<br>PD816    | D816L<br>D816       | B816      |       |
| 9/16                     | .578             | 1.062                      | .016<br>.032<br>.063 | 916L<br>916          | C916L<br>C916                 | XC916L<br>XC916            | JD916L<br>JD916                                  | KD916L<br>KD916                     | PD916L<br>PD916    | D916L<br>D916       | B916      |       |
| 5/8                      | .640             | 1.188                      | .016<br>.032<br>.063 | 1016L<br>1016        | C1016L<br>C1016               | XC1016L<br>XC1016          | JD1016L<br>JD1016                                | KD1016L<br>KD1016                   | PD1016L<br>PD1016  | D1016L<br>D1016     | B1016     |       |
| 3/4                      | .765             | 1.312                      | .016<br>.032<br>.090 | 1216L<br>1216        | C1216L<br>C1216               | XC1216L<br>XC1216          | JD1216L<br>JD1216                                | KD1216L<br>KD1216                   | PD1216L<br>PD1216  | D1216L<br>D1216     | B1216     |       |
| 7/8                      | .890             | 1.500                      | .016<br>.032<br>.090 | 1416L<br>1416        | C1416L<br>C1416               | XC1416L<br>XC1416          | JD1416L<br>JD1416<br>JD1616L                     | KD1416L<br>KD1416<br>KD1616L        | PD1416L<br>PD1616L | D1416L<br>D1616L    | B1416     |       |
| 1                        | 1.015            | 1.750                      | .016<br>.032<br>.090 | 1616L<br>1616        | C1616L<br>C1616               | XC1616L<br>XC1616          | JD1616L  | KD1616L                             | PD1616L            | D1616L              | B1616     |       |
| 1-1/16                   | 1.078            | 1.812                      | .016<br>.032<br>.090 | 1716L<br>1716        | C1716                         | XC1716                     | JD1716L  | KD1716L                             | PD1716L            | D1716L              | B1716     |       |
| 1-1/8                    | 1.140            | 1.875                      | .016<br>.032<br>.090 | 1816L<br>1816        | C1816                         | XC1816                     | JD1816L  | KD1816L                             | PD1816L            | D1816L              | B1816     |       |
| 1-1/4                    | 1.265            | 2.000                      | .016<br>.032<br>.090 | 2016L<br>2016        | C2016                         | XC2016                     | JD2016L  | KD2016L                             | PD2016L            | D2016L              | B2016     |       |
| 1-5/16                   | 1.328            | 2.062                      | .016<br>.032<br>.090 | 2116L<br>2116        | C2116                         | XC2116                     | JD2116L  | KD2116L                             | PD2116L            | D2116L              | B2116     |       |
| 1-3/8                    | 1.640            | 2.375                      | .016<br>.032<br>.090 | 2616L<br>2616        | C2616                         | XC2616                     | JD2616L  | KD2616L                             | PD2616L            | D2616L              | B2616     |       |
| 1-7/8                    | 1.890            | 2.625                      | .016<br>.032<br>.090 | 3016L<br>3016        | C3016                         | XC3016                     | JD3016L  | KD3016L                             | PD3016L            | D3016L              | B3016     |       |
| 2-1/4                    | 2.265            | 3.000                      | .016<br>.032<br>.090 | 3616L<br>3616        | C3616                         | XC3616                     | JD3616L  | KD3616L                             | PD3616L            | D3616L              | B3616     |       |
| 2-1/2                    | 2.515            | 3.250                      | .016<br>.032<br>.090 | 4016L<br>4016        | C4016                         | XC4016                     | JD4016L  | KD4016L                             | PD4016L            | D4016L              | B4016     |       |

APPROVED 18 FEB 42 REVISED 21 FOR CHANGES SEE SHEET 1

P.A.:  
NAVY-AS  
CUSTODIANS:  
ARMY-AV  
NAVY-AS  
AIR FORCE-99  
PROCUREMENT SPECIFICATION  
FF-N-99

AIR FORCE-NAVY AERONAUTICAL STANDARD  
WASHER, FLAT

AN 960

SHEET 3 OF 3