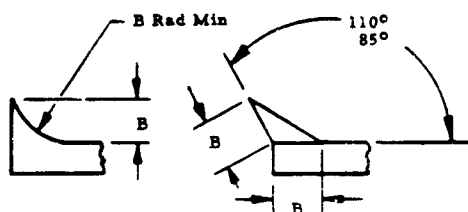
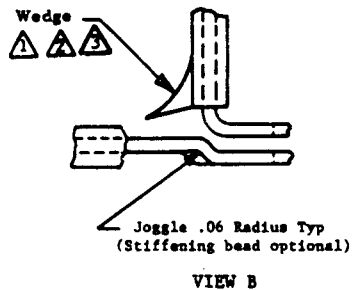
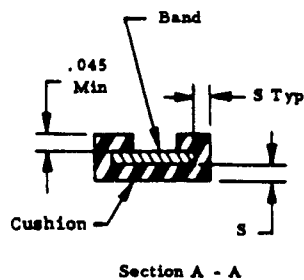
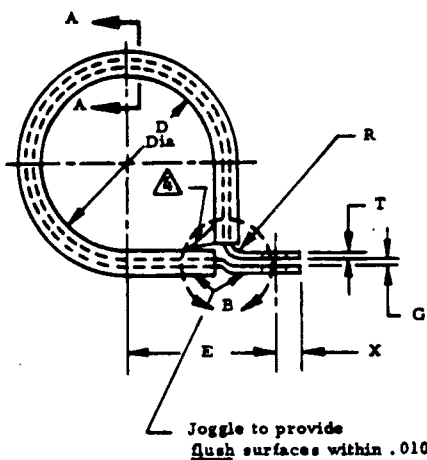
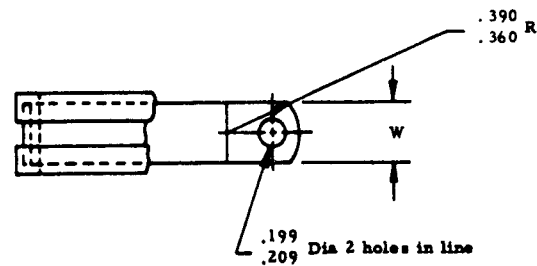


USER SYMBOLS:
ARMY - EA

REVIEWER SYMBOLS:
ARMY - AR
USAF - 11
DLA - 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 DD155."

This military standard is approved for use by all Departments and Agencies of the Department of Defense. Selection for all new engineering and design applications and for repetitive use shall be made from this document.



| | | |
|---|---|-------------------|
| E REVISED AND REDRAWN | | MILITARY STANDARD |
| P.A. NAVY - AS Other Cust ARMY - AV USAF - 99 | TITLE CLAMP, LOOP TYPE, CUSHIONED, SUPPORT | MS21919 |
| PROCUREMENT SPECIFICATION MIL-C-8603 | SUPPLEDES: | SHEET 1 OF 4 |

APPROVED 3 JULY 53 REVISED E 30 SEPT 81

USER SYMBOLS:
ARMY - EA

REVIEWER SYMBOLS:
ARMY - AR
USAF - 11
DLA - 1B

*Review/user information is current as of the date of this document.
For future coordination of changes in this document, draft circulation
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& Agencies of the Department of Defense. Selection for all new
engineering and design applications and for reapplying use shall
be made from this document.

| Dash Nos. | Rigid Tube Nom. OD (Ref) | DIMENSIONS | | | | | | | | | | | | |
|-----------|--------------------------|------------|-------------------|------------|-----------------|-------|-------------------|---------------------|------|-----------------|------------|-----------------|------------|-----------------|
| | | B | D ±.015 Dia | E ±.015 | | G | R ±.016 Rad | S ±.020 -.000 | T | | W ±.010 | | X ±.015 | |
| | | | | Alum | Steel & Cres | | | | Alum | Steel & Cres | Alum | Steel & Cres | Alum | Steel & Cres |
| -1 | 1/16 | .062 | .062 | .436 | .436 | | | | .020 | .020 | .375 | | .188 | |
| -2 | 1/8 | .046 | .125 | .457 | .457 | | | | | | | | | |
| -3 | 3/16 | .110 | .188 | .498 | .498 | | | | | | | | | |
| -4 | 1/4 | | .250 | .529 | .529 | | | | .032 | | | | .188 | |
| -5 | 5/16 | | .313 | .560 | .560 | | .062 | | | | .375 | | | |
| -6 | 3/8 | .093 | .375 | .592 | .592 | | | | | | | | | |
| -7 | 7/16 | .125 | .438 | .623 | .623 | | | | | | | | | |
| -8 | 1/2 | | .500 | .654 | .654 | .016 | | .040 | | | | | | |
| -9 | 9/16 | | .563 | .749 | .749 | -.000 | | | | | | | | |
| -10 | 5/8 | | .625 | .783 | .780 | | | | | | | | | |
| -11 | 11/16 | | .688 | .814 | .811 | | | | | | | | | |
| -12 | 3/4 | | .750 | .845 | .842 | | | | .050 | | | | | |
| -13 | 13/16 | | .813 | .877 | .858 | .109 | | | | | | | | |
| -14 | 7/8 | | .875 | .908 | .889 | | | | | | | | | |
| -15 | 15/16 | | .938 | .939 | .920 | | | | | | | | | |
| -16 | 1 | | 1.000 | .970 | .951 | | | | | .032 | | | | |
| -17 | 1-1/16 | | 1.063 | 1.002 | .983 | | | | | | | | | |
| -18 | 1-1/8 | | 1.125 | 1.062 | 1.030 | | | | | | | | | |
| -19 | 1-3/16 | | 1.188 | 1.093 | 1.061 | | | | | | | | | |
| -20 | 1-1/4 | | 1.250 | 1.124 | 1.092 | | | | | | | | | |
| -21 | 1-5/16 | | 1.313 | 1.156 | 1.124 | | | | | | | | | |
| -22 | 1-3/8 | | 1.375 | 1.187 | 1.155 | | | | | | | | | |
| -23 | 1-7/16 | | 1.438 | 1.218 | 1.186 | .094 | | | | .500 | | | | |
| -24 | 1-1/2 | | 1.500 | 1.249 | 1.217 | +.031 | | | | | | | | |
| -25 | 1-9/16 | | 1.563 | 1.281 | 1.259 | -.000 | | | | | | | | |
| -26 | 1-5/8 | | 1.625 | 1.312 | 1.280 | | | | | | | | | |
| -27 | | | 1.688 | 1.344 | 1.312 | | | | | | | | | |
| -28 | 1-3/4 | | 1.750 | 1.374 | 1.342 | | | | | | | | | |
| -29 | | | 1.813 | 1.406 | 1.374 | | | | | | | | | |
| -30 | 1-7/8 | .155 | 1.875 | 1.437 | 1.405 | | | | | .500 | .218 | .218 | | |
| -31 | | .312 | 1.938 | 1.468 | 1.444 | | | | | | | | | |
| -32 | 2 | | 2.000 | 1.499 | 1.475 | | | | | | | | | |
| -33 | | | 2.062 | 1.531 | 1.507 | | | | | | | | | |
| -34 | 2-1/8 | | 2.125 | 1.562 | 1.538 | .125 | .060 | .062 | | | | | | |
| -35 | | | 2.188 | 1.594 | 1.570 | | | | | | | | | |
| -36 | 2-1/4 | | 2.250 | 1.624 | 1.600 | | | | | | | | | |
| -37 | | | 2.312 | 1.655 | 1.631 | | | | | | | | | |
| -38 | 2-3/8 | | 2.375 | 1.687 | 1.663 | | | | | | | | | |
| -40 | 2-1/2 | | 2.500 | 1.752 | 1.728 | | | | | .040 | | | | |
| -42 | | | 2.625 | 1.812 | 1.788 | .125 | | | | | | | | |
| -43 | | | 2.688 | 1.844 | 1.820 | +.031 | | | | | | | | |
| -44 | 2-3/4 | | 2.750 | 1.875 | 1.851 | -.000 | | | | | | | | |
| -45 | | | 2.812 | 1.906 | 1.882 | | | | | | | | | |
| -46 | | | 2.875 | 1.937 | 1.913 | | | | | | | | | |
| -48 | 3 | | 3.000 | 2.000 | 1.976 | | | | | | | | | |
| -50 | | | 3.125 | 2.062 | 2.038 | | | | | | | | | |
| -52 | 3-1/4 | | 3.250 | 2.125 | 2.101 | | | | | | | | | |
| -54 | | | 3.375 | 2.187 | 2.163 | | | | | | | | | |
| -56 | 3-1/2 | A | 3.500 | 2.250 | 2.226 | | | | | | | | | |
| -58 | | | 3.625 | 2.312 | 2.288 | | | | | | | | | |
| -64 | 4 | | 4.000 | 2.500 | 2.476 | | | | | | | | | |
| -66 | | | 4.125 | 2.562 | 2.538 | | | | | | | | | |

APPROVED 3 JUN 71 REVISED E FOR CHANGES SEE SPEC'S 1 THRU 4

| | | |
|---|--|------------------------------|
| P.A. NAVY - AS Other Cust | TITLE CLAMP, LOOP TYPE, UNSHOWN, SUPPLY | MILITARY STANDARD MS21919 |
| PROCUREMENT SPECIFICATION MIL-C-8-03 | SUPERSEDES | SHEET 2 OF 4 |

REQUIREMENT:

1. MATERIALS:

BAND - ALUMINUM ALLOY
CORROSION RESISTANT STEEL
LOW CARBON STEEL

CUSHION - ETHYLENE PROPYLENE
NITRILE
CHLOROPRENE
SILICONE
FLUROSILICONE

} SEE PROCUREMENT SPECIFICATION

2. FINISH:

CHEMICAL CONVERSION
PASSIVATED
CADMIUM PLATED

} SEE PROCUREMENT SPECIFICATION

3. MATERIAL CODES:

LETTER(S) INDICATES BAND AND CUSHION MATERIALS. DO NOT SPECIFY BAND/CUSHION COMBINATIONS NOT LISTED. MAXIMUM RECOMMENDED TEMPERATURE IS INDICATED IN PARENTHESIS.

DE - ALUMINUM BAND WITH ETHYLENE PROPYLENE CUSHION (212°F)

DF - ALUMINUM BAND WITH NITRILE CUSHION (212°F)

DG - ALUMINUM BAND WITH CHLOROPRENE CUSHION (212°F)

CE - CRES BAND WITH ETHYLENE PROPYLENE CUSHION (275°F)

CF - CRES BAND WITH NITRILE CUSHION (212°F)

CH - CRES BAND WITH SILICONE CUSHION (400°F)

CG - CRES BAND WITH CHLOROPRENE CUSHION (212°F)

CJ - CRES BAND WITH FLUROSILICONE CUSHION (450°F)

F - LOW CARBON STEEL BAND WITH NITRILE CUSHION (212°F)

G - LOW CARBON STEEL BAND WITH CHLOROPRENE CUSHION (212°F)

H - LOW CARBON STEEL BAND WITH SILICONE CUSHION (400°F)



4. CUSHION APPLICATION AND COLOR INFORMATION

ETHYLENE PROPLENE - FOR USE IN AREAS CONTAMINATED WITH PHOSPHATE ESTER HYDRAULIC FLUID AND OTHER SYNTHETIC FLUIDS. EXCELLENT OZONE RESISTANCE. NOT RESISTANT TO PETROLEUM BASED FLUIDS. COLOR SHALL BE SOLID PURPLE.

NITRILE - FOR USE PRIMARILY IN FUEL IMMERSION AND FUEL VAPORS. GOOD OZONE RESISTANCE. NOT RESISTANT TO PHOSPHATE ESTER BASED FLUIDS. NOT FOR USE ON

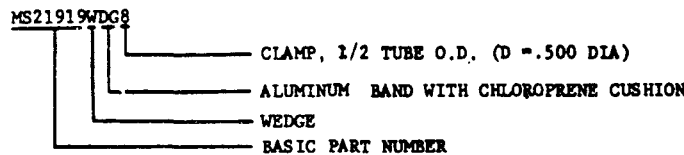
USER SYMBOLS:
ARMY - EA

REVIEWER SYMBOLS:
ARMY - AR
USAF - 11
DLA - IS

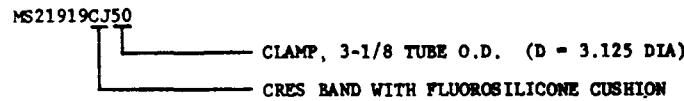
This is current as of the date of this document.
Use of changes to this document, draft circulation
and information in the current 9881SS.

NOTES:

- 1. LETTER "W" INDICATES WEDGE TYPE CUSHION. WEDGE (W) IS MANDATORY FOR -2 THRU -48 SIZE CLAMPS.
- 2. WEDGE IS PROHIBITED ON -1 AND -50 THRU -66 SIZE CLAMPS.
- 3. WEDGE SHALL BE INTEGRALLY MOLDED TO CUSHION OR VULCANIZED USING PRESSURE AND HEAT TO ACCOMPLISH A BOND BETWEEN CUSHION AND WEDGE.
- 4. WEDGE SHALL OVERLAP AND TOUCH OPPOSITE END OF CUSHION WHEN CLAMP MOUNTING HOLES ARE ALIGNED AND DIMENSION G IS 0.00 (CLAMP COMPLETELY CLOSED).
- 5. THE CLAMP BAND SHALL BE FINISHED DURING MANUFACTURE SUCH AS TO REMOVE ALL TOOL AND DIE MARKS, SHARP EDGES AND BURRS.
- 6. CLAMPS WITH LOW CARBON STEEL BANDS ARE INACTIVE FOR NEW AIRCRAFT DESIGN AS OF 1 OCTOBER 1982.
- 7. CANCELLED P/N LISTED IN INTERCHANGEABILITY TABLE, ARE CANCELLED AFTER 1 OCTOBER 1982. REPLACEMENT P/N CAN REPLACE CANCELLED P/N UNIVERSALLY BUT CANCELLED P/N CANNOT REPLACE REPLACEMENT P/N UNIVERSALLY.
- 8. DIMENSIONS ARE IN INCHES.
- 9. INTENDED USE: THESE CLAMPS ARE INTENDED FOR GENERAL PURPOSE CLAMPING APPLICATIONS INCLUDING ELECTRICAL WIRE BUNDLE CLAMPING. FOR HIGH PERFORMANCE LOOP STYLE CLAMPS FOR USE IN MIL-R-5440 HYDRAULIC SYSTEMS SEE MIL-C-85052.
- 10. EXAMPLE PART NUMBERS:
FOR -2 THRU -48 SIZE CLAMPS (WEDGE MANDATORY) 1



FOR -50 THRU -66 SIZE CLAMPS (WEDGE PROHIBITED) 2



- 11. REFERENCED DOCUMENTS SHALL BE OF THE ISSUE IN EFFECT ON DATE OF INVITATIONS FOR BIDS OR REQUEST FOR PROPOSAL, EXCEPT THAT REFERENCED ADOPTED INDUSTRY DOCUMENTS SHALL GIVE THE DATE OF THE ISSUE ADOPTED.
- 12. FOR DESIGN FEATURE PURPOSES, THIS STANDARD TAKES PRECEDENCE OVER PROCUREMENT DOCUMENTS REFERENCED HEREIN.

INTERCHANGEABILITY TABLE 3

| FOR -2 THRU -48 | | FOR -50 THRU -66 | |
|-----------------------|-------------------------|-----------------------|-------------------------|
| CANCELLED PART NUMBER | REPLACEMENT PART NUMBER | CANCELLED PART NUMBER | REPLACEMENT PART NUMBER |
| MS21919WB(F,G,H)() | MS21919W(F,G,H)() 6 | MS21919WC(F,G,H)() | MS21919C(F,G,H)() |
| MS21919B(F,G,H)() | MS21919W(F,G,H)() 6 | MS21919WD(F,G)() | MS21919D(F,G)() |
| MS21919D(F,G)() | MS21919WD(F,G)() | MS21919WB(F,G,H)() | MS21919(F,G,H)() 6 |
| MS21919C(F,G,H)() | MS21919WC(F,G,H)() | MS21919B(F,G,H)() | MS21919(F,G,H)() 6 |
| MS21919(F,G,H)() | MS21919W(F,G,H)() 6 | MS21919DH() | MS21919CH() |
| MS21919DH() | MS21919WCH() | MS21919WDH() | MS21919CH() |
| MS21919WDH() | MS21919WCH() | MS21919W(F,G,H)() | MS21919(F,G,H)() 6 |

NOTE: INSERT APPROPRIATE SIZE(DASH NO.) IN PARENTHESIS AT END OF PART NUMBER.

| | | |
|---|--------------------------------------|-------------------|
| P.A. NAVY - AS Other Cust ARMY - AV USAF - 99 | TITLE | MILITARY STANDARD |
| | CLAMP, LOOP TYPE, CUSHIONED, SUPPORT | MS21919 |
| PROCUREMENT SPECIFICATION MIL-C-8603 | SUPERSEDES | SHEET 4 OF 4 |

USER SYMBOLS: ARMY - EA
 REVIEWER SYMBOLS: ARMY - AR, USAF - 11, DLA - 1S
 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.
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APPROVED 3 JULY 53
 REVISED E
 FOR CHANGES SEE SHEETS 1 THRU 4