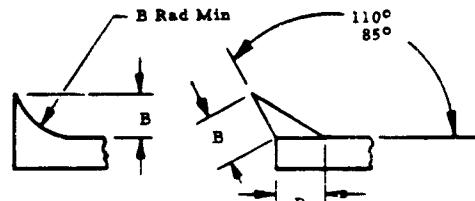
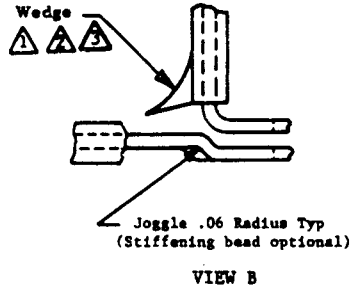
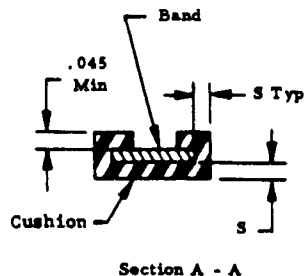
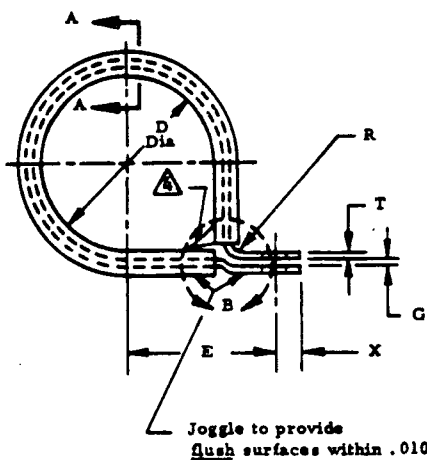
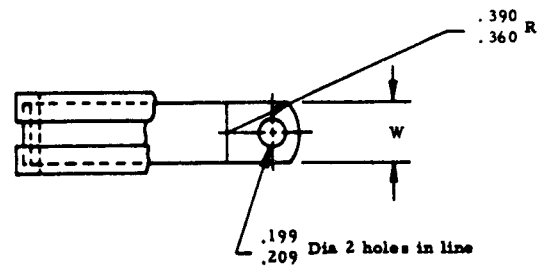


USER SYMBOLS:
ARMY - EA

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

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

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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	.436	.436				.020	.020	.375		.188		
-2	1/8	.046	.125	.457										
-3	3/16	.110	.188	.498										
-4	1/4		.250	.529				.032				.188		
-5	5/16		.313	.560			.062			.375				
-6	3/8	.093	.375	.592										
-7	7/16	.125	.438	.623										
-8	1/2		.500	.654	.016		.040							
-9	9/16		.563	.752	-.000									
-10	5/8		.625	.783										
-11	11/16		.688	.814										
-12	3/4		.750	.845				.050						
-13	13/16		.813	.877		.109								
-14	7/8		.875	.908										
-15	15/16		.938	.939										
-16	1		1.000	.970				.032						
-17	1-1/16		1.063	1.002										
-18	1-1/8		1.125	1.062										
-19	1-3/16		1.188	1.093										
-20	1-1/4		1.250	1.124										
-21	1-5/16		1.313	1.156										
-22	1-3/8		1.375	1.187										
-23	1-7/16		1.438	1.218	.094					.500				
-24	1-1/2		1.500	1.249	.031									
-25	1-9/16		1.563	1.281	-.000									
-26	1-5/8		1.625	1.312										
-27			1.688	1.344										
-28	1-3/4		1.750	1.374										
-29			1.813	1.406										
-30	1-7/8	.155	1.875	1.437						.500	.218	.218		
-31		.312	1.938	1.468										
-32	2		2.000	1.499										
-33			2.062	1.531										
-34	2-1/8		2.125	1.562		.125	.060	.062						
-35			2.188	1.594										
-36	2-1/4		2.250	1.624										
-37			2.312	1.655										
-38	2-3/8		2.375	1.687										
-40	2-1/2		2.500	1.752										
-42			2.625	1.812	.125				.040					
-43			2.688	1.844	.031									
-44	2-3/4		2.750	1.875	-.000									
-45			2.812	1.906										
-46			2.875	1.937										
-48	3		3.000	2.000										
-50			3.125	2.062										
-52	3-1/4		3.250	2.125										
-54			3.375	2.187										
-56	3-1/2	.2	3.500	2.250										
-58			3.625	2.312										
-64	4		4.000	2.500										
-66			4.125	2.562										

APPROVED 3 .MIF / 1 REVISED E FOR CHANGES SEE SPEC'S 1 THRU 4

P.A. NAVY - AS Other Cust	TITLE	MILITARY STANDARD
ARMY - AV USAF - 99	CLAMP, LOOP TYPE, UNSHOWN, SUPPLY	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
FLUOROSILICONE

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 FLUOROSILICONE 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 TITANIUM TUBING. COLOR SHALL BE SOLID YELLOW.

CHLOROPRENE - FOR GENERAL PURPOSE USE IN AREAS CONTAMINATED WITH PETROLEUM BASED HYDRAULIC FLUIDS AND OCCASIONAL FUEL SPLASH. EXCELLENT OZONE RESISTANT. NOT RESISTANT TO PHOSPHATE ESTER BASED FLUIDS. NOT FOR USE ON TITANIUM TUBING. COLOR SHALL BE BLACK WITH A BLUE IDENTIFIER PER THE PROCUREMENT SPECIFICATION.

SILICONE - FOR ELEVATED TEMPERATURE USAGE IN PHOSPHATE ESTER BASED FLUID AND OTHER SYNTHETIC FLUID CONTAMINATED AREAS. UNAFFECTED BY OZONE. NOT RESISTANT TO PETROLEUM BASED FLUIDS. COLOR SHALL BE NATURAL WHITE.

FLUOROSILICONE - FOR ELEVATED TEMPERATURE USAGE IN PETROLEUM BASED FLUID CONTAMINATED AREAS. UNAFFECTED BY OZONE. NOT RESISTANT TO PHOSPHATE ESTER BASED FLUIDS. COLOR SHALL BE SOLID BLUE.

USER SYMBOLS:
ARMY - EA

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

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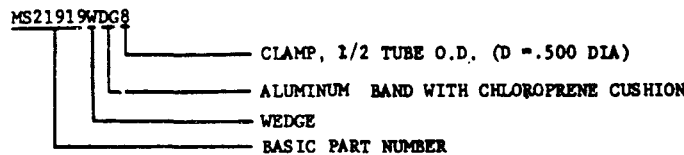
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APPROVED 3 JULY 53 REVISED E FOR CHANGES SEE SHEETS 1 THRU 4

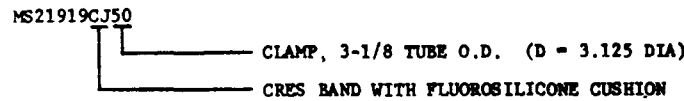
P.A. NAVY - AS Other Cust ARMY - AV USAF - 99	TITLE	MILITARY STANDARD
	CLAMP, LOOP TYPE, CUSHIONED, SUPPORT	MS21919
PROCUREMENT SPECIFICATION MIL-C-8603	SUPERSEDES	SHEET 3 OF 4

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
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APPROVED 3 JULY 53
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 FOR CHANGES SEE SHEETS 1 THRU 4