FEDERAL SUPPLY CLASS
5975

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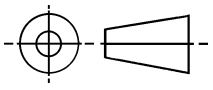
UNDER DEPARTMENT OF DEFENSE POLICIES AND PROCEDURES, ANY QUALIFICATION REQUIREMENTS AND ASSOCIATED QUALIFIED PRODUCTS LISTS ARE MANDATORY FOR DOD CONTRACTS. ANY REQUIREMENT RELATING TO QUALIFIED PRODUCTS LISTS (QPL'S) HAS NOT BEEN ADOPTED BY SAE AND IS NOT PART OF THIS TECHNICAL REPORT.

ISSUED 1998-08 REAFFIRMED 2009-04

THIRD ANGLE PROJECTION



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http://www.sae.org/technical/standards/AS23190/2

PREPARED BY COMMITTEE E-25

SAE Aerospace
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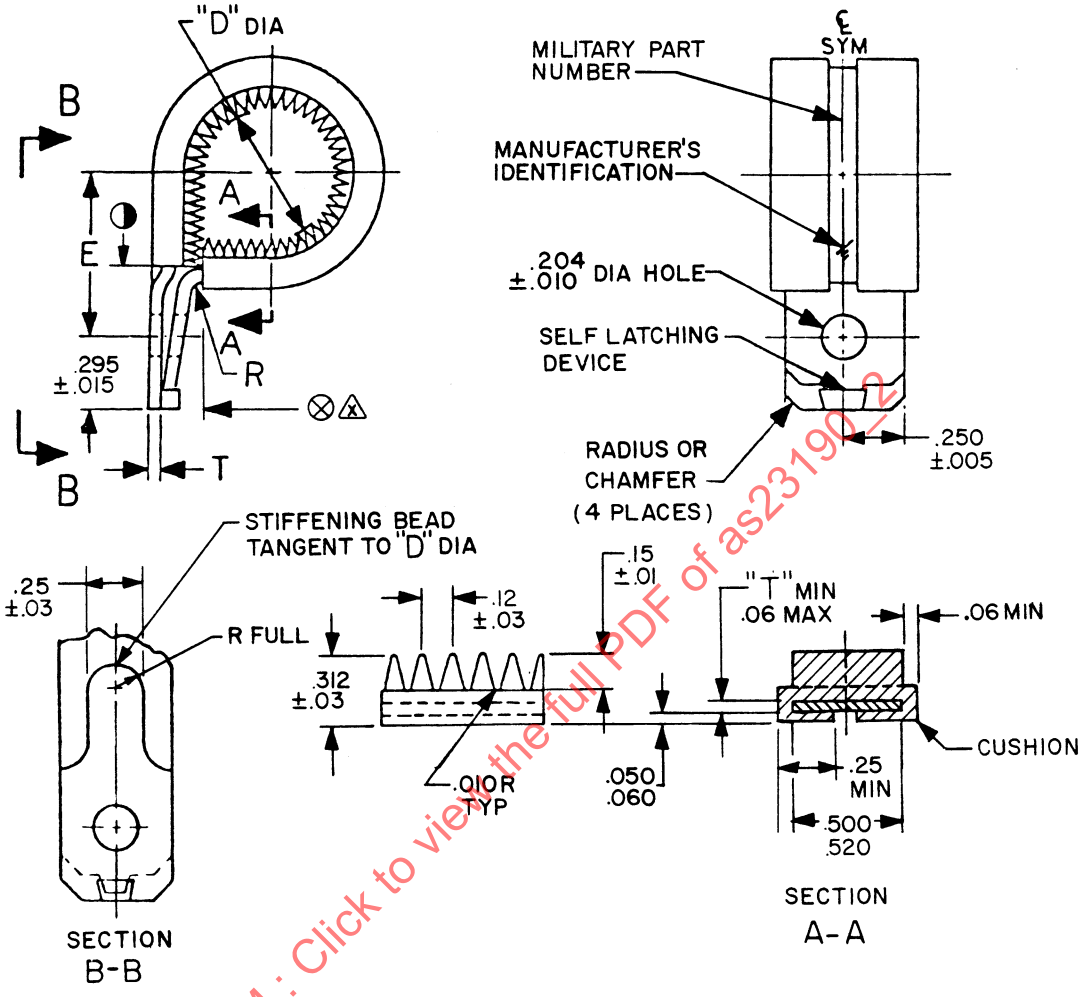
AEROSPACE STANDARD

STRAPS, CLAMPS, PLASTIC AND METAL, AND MOUNTING HARDWARE, PLASTIC FOR CABLE HARNESS TYING AND SUPPORT CLAMP, LOOP, METAL, CUSHIONED, ADJUSTABLE, WIRE SUPPORT, TYPE V, CLASS 1

AS23190/2
SHEET 1 OF 9

THE COMPLETE REQUIREMENTS FOR ACQUIRING THE CLAMP DESCRIBED HEREIN SHALL CONSIST OF THIS DOCUMENT AND THE ISSUE IN EFFECT OF SPECIFICATION MIL-S-23190.



Ⓧ Cushion "M" material shall start at the point "◑" as shown and stop tangent to "R" at the point identified "Ⓧ" as shown.

TABLE I.

Dash No.	D (Ref)	E ±.015	R	T	Dash No.	D (Ref)	E ±.015	R	T
-1	.078	D/2 +.562	.062	.020 Min	-32	2.000	D/2 +.622	.125	.040 Min
-3	.187	D/2 +.604			-34	2.125			
-4	.250			.032 Min	-36	2.250			
-6	.375	D/2 +.614			-38	2.375			
-8	.500				-40	2.500			
-10	.625				-42	2.625			
-12	.750				-44	2.750			
-14	.875				-46	2.875			
-16	1.000				-48	3.000	D/2 +.632		
-18	1.125				-50	3.125			
-20	1.250				-52	3.250			
-22	1.375				-54	3.375			
-24	1.500				-56	3.500			
-26	1.625		.125		-58	3.625			
-28	1.750				-64	4.000			
-30	1.875				-66	4.125			

Inches	mm	Inches	mm	Inches	mm	Inches	mm
.005	0.13	.187	4.75	.625	15.88	2.250	57.15
.010	0.25	.204	5.18	.632	16.05	2.375	60.33
.015	0.38	.250	6.35	.750	19.05	2.500	63.50
.020	0.51	.260	6.60	.875	22.23	2.625	66.68
.030	0.76	.295	7.49	1.000	25.40	2.750	69.85
.032	0.81	.312	7.92	1.125	28.58	2.875	73.03
.040	1.02	.375	9.53	1.250	31.75	3.000	76.20
.050	1.27	.500	12.70	1.375	34.93	3.125	79.38
.060	1.52	.510	12.95	1.500	38.10	3.250	82.55
.062	1.57	.520	13.21	1.625	41.28	3.375	85.73
.070	1.78	.562	14.27	1.750	44.45	3.500	88.90
.078	1.98	.604	15.34	1.875	47.63	3.625	92.08
.120	3.05	.614	15.60	2.000	50.80	4.000	101.60
.125	3.18	.622	15.80	2.125	53.98	4.125	104.78
.150	3.81						

REQUIREMENTS:

1. MATERIAL:

   CLAMP: CORROSION AND HEAT RESISTANT STEEL IN ACCORDANCE WITH AMS 5510 OR AMS 5512. PASSIVATE PER QQ-P-35.

   CUSHION:

   a. SILICONE (DESIGNATOR A):

      (1) SAMPLES: THE SAMPLE SHALL CONSIST OF TEN (10) ASTM STANDARD SLABS OR 360 SQUARE INCHES (2320 CM^2) OF EXTRUDED OR CALENDERED STRIP 0.070 INCH NOMINAL THICKNESS WITH A MINIMUM WIDTH OF 3 INCHES.

      (2) PHYSICAL AND CHEMICAL PROPERTIES: THE SILICONE ELASTOMER SHALL MEET THE FOLLOWING CHEMICAL AND PHYSICAL PROPERTIES SPECIFIED IN TABLE II.

TABLE II. CHEMICAL AND PHYSICAL PROPERTIES. 1/

Property	Requirement	Test Procedure
Tensile Strength	900 psi Minimum	ASTM D-412
Elongation	300% Minimum	ASTM D-412
Tear Strength	40 ppi Minimum	ASTM D-624 Die "B" with the grain
Hardness	50 ± 10 pts	--
Compression Set; 22 Hours at 150° ± 2°C (302° ± 4°F), 25% Deflection	15% Maximum	ASTM D-395
Heat Resistance	35 Days at 260° ± 10°C (500° ± 18°F)	ASTM D-573
Change in Volume	-15% Maximum	
Change in Hardness	+15 pts Maximum	
Change in tensile strength	-60% Maximum	
Change in elongation	-60% Maximum	
Change in tear strength	-0% Maximum	
Immersion in Fluid	22 Hours at 70° ± 1°C (158° ± 2°F)	ASTM D-471
In MIL-H-5606, Hydraulic Fluid	--	
Change in Volume	-0, +15%	
Change in Hardness	-15, +0 pts	
In MIL-L-7808, Lubricating Oil	--	
Change in Volume	-0, +15%	
Change in Hardness	-15, +0 pts	

1/ For qualification only.

(3) COLOR: THE SILICONE ELASTOMER COLOR SHALL BE RED.

b. FLUOROSILICONE (DESIGNATOR B): FLUOROSILICONE ELASTOMER SHALL BE IN ACCORDANCE WITH MIL-R-25988, TYPE II, CLASS 1, GRADE 60. COLOR SHALL BE BLACK.

2. MELTING POINT: NOT REQUIRED.

3. QUALIFICATION TEST SAMPLES: TABLE II TEST RESULTS FOR SILICONE CUSHION MATERIALS AND TEST RESULTS FOR MIL-R-25988 FLUOROSILICONE CUSHION MATERIALS SHALL BE PROVIDED WITH THE QUALIFICATION SAMPLES.

M23190/2-1A Will Qualify	-1 thru -2
-3B	-3 thru -4
-10A	-6 thru -14
-20B	-16 thru -24
-28A	-26 thru -30
-36B	-32 thru -38
-42A	-40 thru -46
-52B	-48 thru -54
-64B	-56 thru -66

4. QUALITY CONFORMANCE INSPECTION:

4.1 GROUP A INSPECTION TESTS: THE FOLLOWING TEST SHALL BE INCLUDED AS PART OF THE GROUP A INSPECTION.

a. COMPRESSION SET (SILICONE ONLY - DESIGNATOR A)

(1) SAMPLING PLAN. THE SPECIMENS SHALL BE TAKEN FROM A STANDARD ASTM SLAB OR FROM 36 SQUARE INCHES (232 CM^2) OF EXTRUDED OR CALENDERED STRIP 0.070 INCH NOMINAL THICKNESS WITH A MINIMUM WIDTH OF 3 INCHES SUPPLIED WITH THE PRODUCTION LOT (MANUFACTURED FROM THE SAME LOT OF MATERIAL AS THE CLAMP CUSHION). THE ACCEPTED QUALITY LEVEL (AQL) SHALL BE 0.0 (PERCENT DEFECTIVE).

(2) TEST METHOD. THE CUSHION SHALL BE TESTED IN ACCORDANCE WITH TABLE II.

(3) REQUIREMENT. THE COMPRESSION SET REQUIREMENT SHALL BE AS SPECIFIED IN TABLE II.

b. CUSHION HARDNESS TEST (SILICONE ONLY - DESIGNATOR A)

(1) SAMPLING PLAN. THE SPECIMENS SHALL BE TAKEN FROM A STANDARD ASTM SLAB OR FROM 36 SQUARE INCHES (232 CM^2) OF EXTRUDED OR CALENDERED STRIP 0.070 INCH NOMINAL THICKNESS WITH A MINIMUM WIDTH OF 3 INCHES SUPPLIED WITH THE PRODUCTION LOT (MANUFACTURED FROM THE SAME LOT OF MATERIAL AS THE CLAMP CUSHION). THE ACCEPTED QUALITY LEVEL (AQL) SHALL BE 0.0 (PERCENT DEFECTIVE).

(2) TEST METHOD. THE CUSHION SHALL BE TESTED IN ACCORDANCE WITH TABLE II.

(3) REQUIREMENT. THE HARDNESS REQUIREMENT SHALL BE AS SPECIFIED IN TABLE II.

c. CUSHION FLUID TEST (FLUOROSILICONE ONLY - DESIGNATOR B)

(1) SAMPLING PLAN. RANDOM CLAMP SPECIMENS SHALL BE SELECTED AT INSPECTION LEVEL S2 OF MIL-STD-105. THE ACCEPTED QUALITY LEVEL SHALL BE ZERO (PERCENT DEFECTIVE). UPON APPROVAL BY THE QUALIFYING ACTIVITY, AN IN-PROCESS CONTROL PROCEDURE MAY BE PERMITTED.

(2) TEST METHOD. THE CUSHION SHALL BE REMOVED FROM EACH CLAMP THEN THE FULL LENGTH AND WIDTH MEASURED TO THE NEAREST TENTH OF AN INCH. THE CUSHION SHALL BE SOAKED IN AVIATION TURBINE FUEL, GRADE JP-4, MANUFACTURED IN ACCORDANCE WITH MIL-T-5624. THE SOAK SHALL BE 22 HOURS (+1, -0 HOURS) AT ROOM AMBIENT (20 + 5°C). AT THE END OF THE SOAK PERIOD THE EXCESS FUEL SHALL BE REMOVED BY WIPING, THEN AIR DRYED AT ROOM AMBIENT FOR NO LONGER THAN ONE FOURTH HOUR. THE FULL LENGTH AND WIDTH SHALL THEN BE MEASURED TO THE NEAREST TENTH OF AN INCH. THE PERCENT DIFFERENCE BETWEEN THE INITIAL AND FINAL MEASUREMENT SHALL BE DETERMINED.

(3) REQUIREMENT. THE PERCENT DIFFERENCE IN THE LENGTH AND THE WIDTH SHALL NOT EXCEED 20 PERCENT.

(4) SAMPLE DISPOSITION. THE CLAMP BAND MAY BE RETURNED TO STOCK FOR REFURBISHING.

NOTES:

1. DIMENSIONS ARE IN INCHES.
2. REMOVE ALL BURRS AND SHARP EDGES AND BREAK ALL SHARP CORNERS ON CLAMP BAND. MOLD MARKS AND FLASH ARE PERMISSIBLE ON CUSHIONS.
3. METRIC EQUIVALENTS (TO THE NEAREST .01 MM) ARE GIVEN FOR GENERAL INFORMATION ONLY AND ARE BASED UPON 1 INCH = 25.4 MM.
4. THE CLAMPS COVERED BY THIS SPECIFICATION ARE MANUFACTURED UNDER UNITED STATES PATENT NUMBER 3995795. THE PATENT EXPIRES ON 7 DECEMBER 1993. THE GOVERNMENT DOES NOT HAVE A ROYALTY-FREE LICENSE.
5. THESE CLAMPS ARE INTENDED FOR USE WITH ELECTRICAL WIRE AND WIRE BUNDLES ON AEROSPACE VEHICLES.
6. CUSHION APPLICATION:

   SILICONE - SILICONE CUSHIONS ARE FOR ELEVATED TEMPERATURE USAGE IN PHOSPHATE ESTER BASED FLUID AND OTHER SYNTHETIC FLUID CONTAMINATED AREAS. SILICONE CUSHIONS ARE UNAFFECTED BY OZONE AND NOT RESISTANT TO PETROLEUM BASED FLUIDS.

   FLUOROSILICONE - FLUOROSILICONE CUSHIONS ARE FOR ELEVATED TEMPERATURE USAGE IN PETROLEUM BASED FLUID CONTAMINATED AREAS. FLUOROSILICONE CUSHIONS ARE UNAFFECTED BY OZONE AND ARE RESISTANT TO PHOSPHATE ESTER BASED FLUIDS.
7. THESE CLAMPS ARE EQUIVALENT TO THE MS21919 CLAMPS OF THE SAME DASH NUMBER AND CUSHION MATERIAL. MS21919 CANNOT REPLACE MIL-S-23190/2 CLAMPS. SEE TABLE II.
8. THE LOCKING MECHANISM SHALL BE CLOSED AND LOCKED WHEN CLAMPED OVER A MANDREL WITH A DIAMETER “D” SPECIFIED IN TABLE I.