

INCH-POUND

MIL-DTL-83723/16B
w/AMENDMENT 2
16 May 2011
SUPERSEDING
MIL-C-83723/16B(USAF)
AMENDMENT 1
14 September 1993

DETAIL SPECIFICATION SHEET

CONNECTOR, ELECTRICAL, BACKSHELL, WITH HEAT-SHRINKABLE STRAIN-RELIEF,
BOOT (STRAIGHT OR RIGHT ANGLE), BAYONET-COUPLING, SERIES I AND III

This specification is approved for use by all Departments
and Agencies of the Department of Defense.

The requirements for acquiring the product described herein
shall consist of this specification sheet and MIL-DTL-83723.

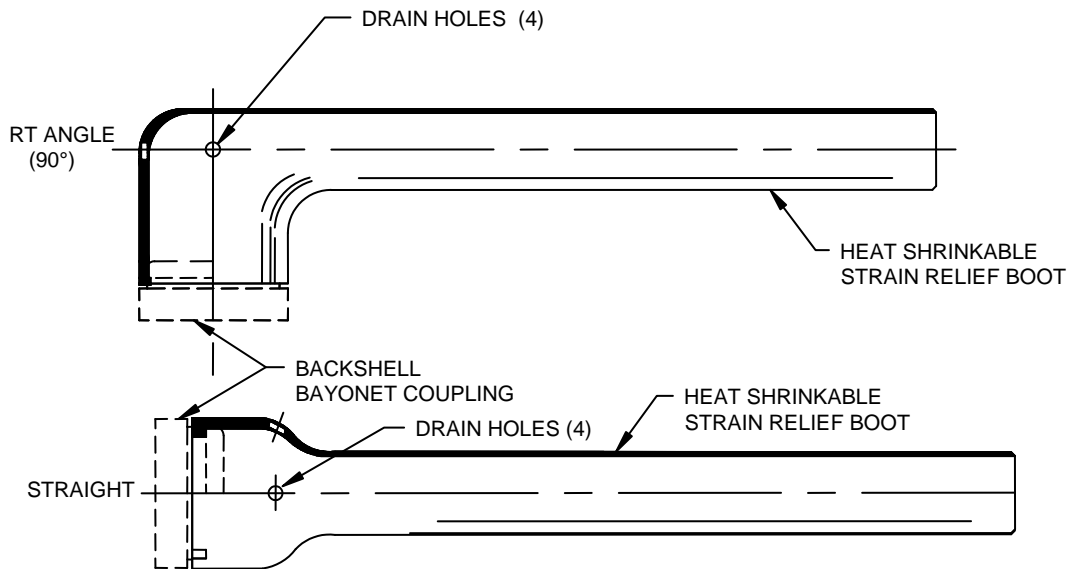
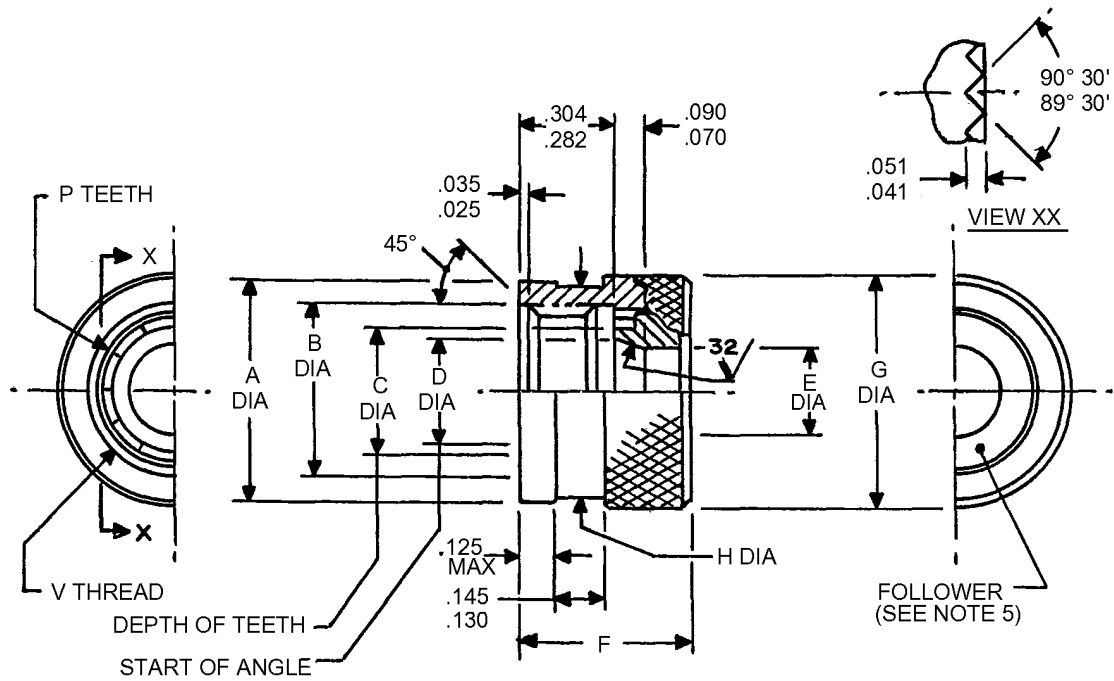


FIGURE 1. Completed assembly.

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Inches	mm
.025	0.64
.035	0.89
.041	1.04
.051	1.30
.070	1.78
.090	2.29
.125	3.18
.139	3.35
.145	3.68
.282	7.16
.304	7.72

FIGURE 2. Backshell, bayonet coupling.

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Shell size	Dimensions in inches									P No. of Teeth
	A Dia (Max)	B Dia (Min)	C Dia (Max)	D Dia (Min)	E Dia (Min)	F (Max)	G Dia (Min)	H Dia (Max)	V Threads	
8	.657 (16.687)	.500 (12.7)	.360 (9.144)	.299 (7.594)	.250 (6.35)	.540 (13.716)	.668 (16.967)	.600 (15.24)	.500-20UNF-2B	12
10	.774 (19.659)	.625 (15.875)	.494 (12.547)	.433 (10.998)	.295 (7.493)	.540 (13.716)	.783 (19.888)	.715 (18.161)	.625-24UNEF-2B	15
12	.898 (22.809)	.750 (19.05)	.610 (15.494)	.549 (13.944)	.491 (12.471)	.540 (13.716)	.918 (23.317)	.850 (21.29)	.750-20UNEF-2B	21
14	1.024 (26.009)	.875 (22.225)	.735 (18.669)	.674 (17.119)	.555 (14.097)	.540 (13.716)	1.043 (26.492)	.975 (24.765)	.875-20UNEF-2B	24
16	1.152 (22.260)	1.000 (25.4)	.860 (21.844)	.799 (20.294)	.680 (9.652)	.540 (13.716)	1.218 (30.937)	1.100 (27.94)	1.000-20UNEF-2B	30
18	1.243 (31.572)	1.062 (26.974)	.916 (23.266)	.869 (22.072)	.759 (19.278)	.540 (13.716)	1.290 (32.766)	1.172 (29.768)	1.0625-18UNEF-2B	33
20	1.370 (34.798)	1.188 (30.175)	1.041 (26.441)	.994 (25.247)	.884 (22.453)	.540 (13.716)	1.416 (35.966)	1.298 (32.967)	1.1875-18UNEF-2B	36
22	1.443 (36.652)	1.312 (33.324)	1.166 (29.166)	1.119 (28.422)	1.009 (25.628)	.540 (13.716)	1.540 (39.116)	1.422 (36.118)	1.3125-18UNEF-2B	39
24	1.618 (41.097)	1.438 (36.525)	1.291 (32.791)	1.244 (31.597)	1.134 (28.803)	.540 (13.716)	1.666 (42.316)	1.548 (39.319)	1.4375-18UNEF-2B	42 or 45

NOTES:

1. Material: Aluminum alloy.
2. Finish: Class R, 200°C, conductive finish.
3. Dimensions apply after plating.
4. Remove all burrs and sharp edges.
5. Complete backshell consists of accessory nut and a follower. Accessory nut shall be captivated to, and shall be free to rotate on, the follower.
6. Dimensions are in inches. Metric equivalents are given for information only.

FIGURE 2. Backshell, bayonet coupling – Continued.

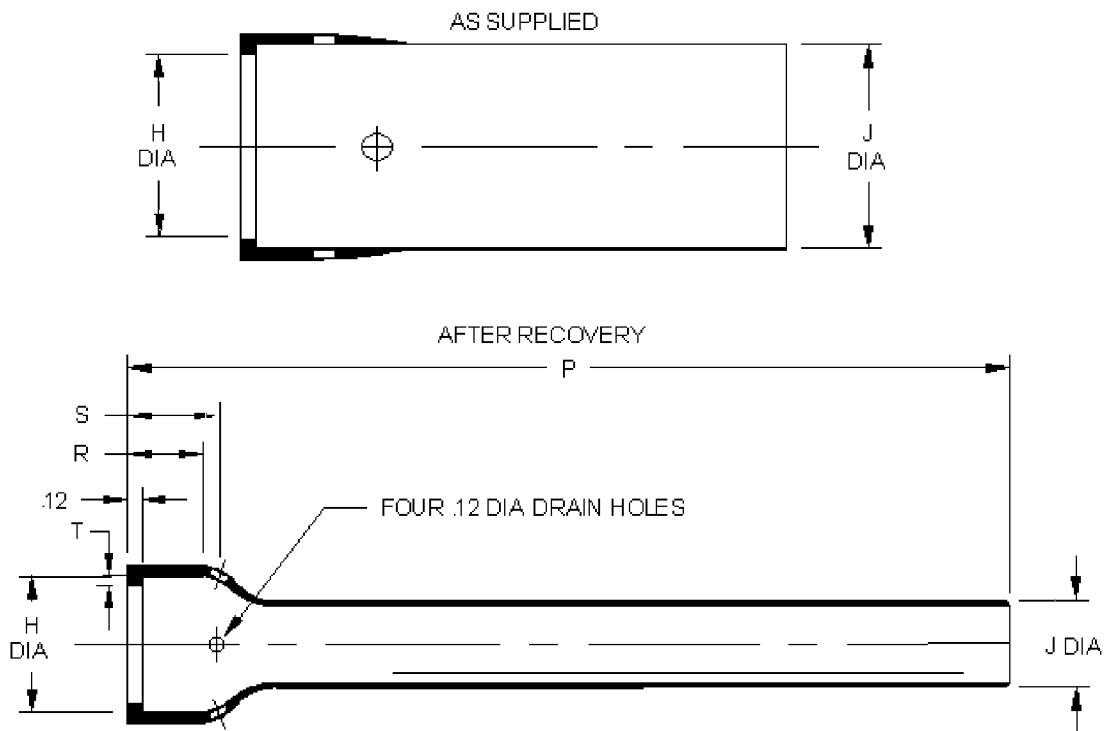


FIGURE 3. Heat shrinkable strain relief boot, straight.

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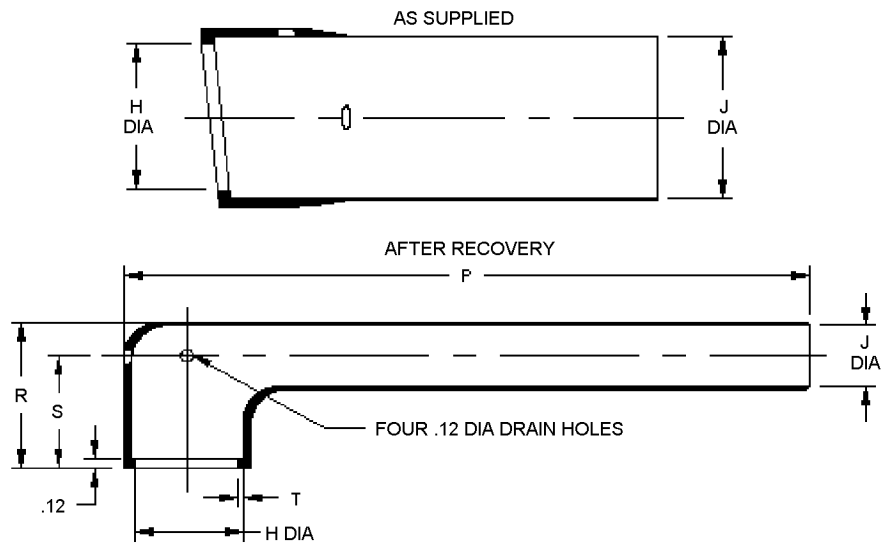
Shell size	Dimensions in inches								
	H Dia		J Dia			P	R	S	T
	As Supplied (Min)	Recovered (Max)	As Supplied (Min) (Note 2)		Recovered (Max)				
			Material type A	Material type B					
8	1.01 (25.64)	.59 (14.966)	1.01 (25.654)	.63 (16.002)	.29 (7.336)	4.77 (121.158)	.48 (12.192)	.59 (14.986)	.040 (1.016)
10	1.16 (29.48)	.74 (18.796)	1.16 (29.464)	.72 (18.288)	.33 (8.382)	5.46 (138.684)	.48 (12.192)	.60 (15.24)	.040 (1.016)
12	1.34 (34.03)	.90 (22.86)	1.34 (34.036)	.84 (21.336)	.38 (9.652)	6.28 (159.512)	.48 (12.192)	.62 (15.748)	.040 (1.016)
14	1.34 (34.03)	.90 (22.86)	1.34 (34.036)	.84 (21.336)	.38 (9.652)	6.28 (159.512)	.48 (12.192)	.62 (15.748)	.040 (1.016)
16	1.47 (37.338)	1.16 (29.464)	1.47 (37.338)	.91 (23.114)	.41 (10.414)	7.00 (177.8)	.55 (13.97)	.70 (17.78)	.065 (1.651)
18	1.47 (37.338)	1.16 (29.464)	1.47 (37.338)	.91 (23.114)	.41 (10.414)	7.00 (177.8)	.55 (13.97)	.70 (17.78)	.065 (1.651)
20	1.72 (43.688)	1.34 (34.06)	1.72 (43.688)	1.07 (27.178)	.48 (12.192)	8.00 (203.2)	.60 (15.24)	.78 (19.812)	.065 (1.651)
22	1.72 (43.668)	1.34 (34.06)	1.72 (43.688)	1.07 (27.178)	.48 (12.192)	8.00 (203.2)	.60 (15.24)	.78 (19.812)	.065 (1.651)
24	1.97 (50.03)	1.62 (41.148)	1.97 (50.30)	1.23 (31.242)	.56 (14.224)	8.00 (203.2)	.60 (15.24)	.82 (20.828)	.065 (1.651)

NOTES:

- Boots will shrink to recovered dimensions upon application of heat in excess of 175°C.
- Material shall be modified crosslinked polyolefin (Type A: 150°C) or fluoroelastomer (Type B: 200°C) and shall have the characteristics shown in table I.
 - Polyolefin.
 - Fluoroelastomer.
- Dimensions are in inches. Metric equivalents are given for information only.

FIGURE 3. Heat shrinkable strain relief boot, straight - Continued.

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Shell size	Dimensions in inches								
	H Dia		J Dia			P	R	S	T
	As Supplied (min)	Recovered (max)	As Supplied (min) (Note 2)		Recovered (max)				
			Material type A	Material type B					
8	1.01 (25.654)	.59 (14.986)	1.01 (25.654)	.63 (16.002)	.29 (7.366)	4.88 (123.952)	.78 (19.812)	.59 (14.986)	.040 (1.625)
10	1.16 (29.464)	.74 (18.796)	1.16 (29.464)	.72 (18.288)	.33 (8.382)	5.76 (146.304)	.82 (20.828)	.60 (15.24)	.040 (1.625)
12	1.34 (34.036)	.90 (22.86)	1.34 (34.036)	.84 (21.336)	.38 (9.652)	6.78 (172.212)	.86 (21.844)	.62 (15.748)	.040 (1.625)
14	1.34 (34.036)	.90 (22.86)	1.34 (34.036)	.84 (21.336)	.38 (9.652)	6.78 (172.212)	.86 (21.844)	.62 (15.748)	.040 (1.625)
16	1.47 (37.338)	1.16 (29.464)	1.47 (37.338)	.91 (23.114)	.41 (10.414)	7.29 (185.166)	.96 (24.384)	.70 (17.78)	.065 (1.625)
18	1.47 (37.338)	1.16 (29.464)	1.47 (37.338)	.91 (23.114)	.41 (10.414)	7.29 (185.166)	.96 (24.384)	.70 (17.78)	.065 (1.625)
20	1.72 (43.688)	1.34 (34.036)	1.72 (43.688)	1.07 (27.178)	.48 (12.192)	8.41 (213.614)	1.08 (27.432)	.78 (19.812)	.065 (1.625)
22	1.72 (43.688)	1.34 (34.036)	1.72 (43.688)	1.07 (27.178)	.48 (12.192)	8.41 (213.614)	1.08 (27.432)	.78 (19.812)	.065 (1.625)
24	1.97 (50.038)	1.62 (41.148)	1.97 (50.038)	1.23 (31.242)	.56 (14.224)	8.84 (224.536)	1.16 (29.464)	.82 (20.828)	.065 (1.625)

NOTES:

- Boots will shrink to recovered dimensions upon application of heat in excess of 175°C.
- Material shall be modified crosslinked polyolefin (Type A: 150°C) or fluoroelastomer (Type B: 200°C) and shall have the characteristics shown in table I.
 - Polyolefin.
 - Fluoroelastomer.
- Dimensions are in inches. Metric equivalents are given for information only.

FIGURE 4. Heat shrinkable strain boot, right angle (90°).

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REQUIREMENTS:

Dimensions and configurations: See figures 1 through 4.

Material: Backshell – See figure 2. Heat shrinkable boots – see figures 3 and 4 and table I.

QUALIFICATION:

Initial qualification shall consist of the entire list of material requirements in table I and the performance test for temperature life on figure 5. Sampling for initial qualification shall be in accordance with MIL-DTL-83723.

1. Elastic memory:

A 6 x 1/8-inch specimen cut from a molded slab shall be marked with two parallel gage lines 1 inch apart in the central portion of the specimen. A 2-inch portion of the specimen including both gage lines then shall be heated for 5 minutes in a $200 \pm 5^{\circ}\text{C}$ ($392 \pm 9^{\circ}\text{F}$) oven or equivalent, removed from the oven, and stretched within 10 seconds until the gage lines are 4 inches apart. The extended specimen then shall be cooled at room temperature and released from tension. After 24 hours at room temperature, the distance between the gage lines shall be measured and recorded as the extended length. The portion of the specimen including both gage lines then shall be reheated for 5 minutes in a $200 \pm 5^{\circ}\text{C}$ ($392 \pm 9^{\circ}\text{F}$) oven or equivalent, removed from the oven, and allowed to retract. The specimen shall again be cooled to room temperature and the distance between the gage lines then shall be measured and recorded as the retracted length. Expansion and retraction shall be calculated as follows:

$$\text{Expansion} = (\text{extended length} - 1) \times 100 \text{ percent}$$

$$\text{Retraction} = \frac{\text{extended length} - \text{retracted length}}{\text{extended length} - 1} \times 100 \text{ percent}$$

2. Low-temperature flexibility:

A 6 x 1/4-inch specimen cut from a molded slab shall be mounted in a loop position between movable, parallel jaws 2-1/2 inches apart. Each end of the specimen shall be firmly fastened by at least 3/4 of an inch extending into a set of jaws. The specimen and the test fixture shall be conditioned for 4 hours at $-55^{\circ} \pm 2^{\circ}\text{C}$ ($-67 \pm 4^{\circ}\text{F}$). While at this temperature, the jaws shall be moved rapidly from 2 1/2 inch to a 1-inch separation.

3. Heat shock:

A 6-inch by 1/4-inch specimen cut from a molded slab shall be conditioned in an oven at temperature. After this conditioning, the specimen shall be visually examined for evidence of dripping, flowing, or cracking.

4. Heat aging:

Three specimens, prepared and measured in accordance with ASTM-D412, shall be conditioned at temperature for 168 hours in an oven with an air velocity of from 100 to 200 feet per minute past the specimens. After conditioning, the specimens shall be removed from the oven, cooled to room temperature, and tested for tensile strength and elongation.

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5. Fluid resistance:

Specimens, 6 x 0.25 x 0.075 shall be cut from molded slabs. Three (3) specimens shall be immersed in each of the fluids specified. The volume of fluid shall not be less than 20 times that of the specimens. After immersion, the specimens shall be lightly wiped and air dried for 30 to 60 minutes at standard conditions.

TEST FLUIDS FOR FLUID RESISTANCE

Fluid	Specification
Hydraulic fluid, petroleum base	MIL- PRF-5606
JP-4 Fuel	MIL-DTL-5624
Lubricating oil	MIL-PRF-7808
Lubricating oil	MIL-PRF-23699
Deicing fluid	SAE-AMS1424

PERFORMANCE:

Temperature life

Three straight and three 90° angle boots of each material (Type A and Type B) shall be installed on a connector and exposed to rated temperature (Type A: 150°C) (Type B: 200°C) for 1000 hours. At the end of this time they shall be cooled to room temperature and the pull-off tests shown on figure 5 shall be performed. The minimum force required to pull boot from connector at any angle shall be 25 pounds.

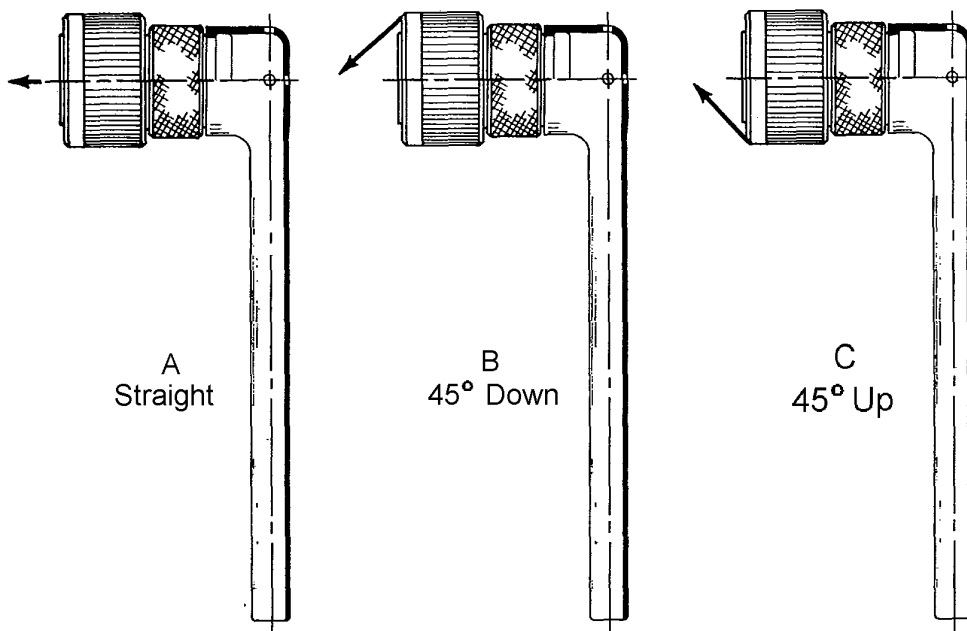


FIGURE 5. Pull off test method.

Acceptance Tests.

Acceptance tests shall consist of dimensional recovery, tensile strength, elongation, stiffness, heat shock, and hardness.

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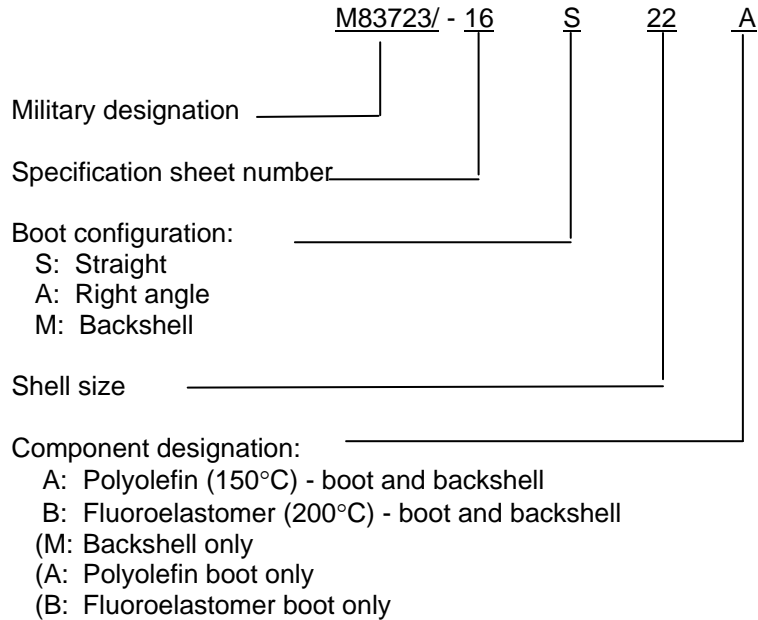
TABLE I. Material requirements, heat shrinkable boots.

Material Property	Unit	Requirement Type A	Requirement Type B	Method of Test
PHYSICAL Dimensions Dimensional Recovery	inches	In accordance with figures 3 and 4	In accordance with figures 3 and 4	ASTM-D876
Elastic Memory	percent	275 min expansion 93 min retraction	200 min expansion 90 min expansion	See qualification requirements
Tensile Strength	psi	1200 minimum	1800 minimum	ASTM-D412
Ultimate Elongation	percent	250 minimum	300 minimum	Die D
Specific Gravity		1.40 maximum	1.95 maximum	ASTM-D792
Low Temperature Flexibility at 55°C (67°F)		No cracking	No cracking	See qualification requirements
Heat Shock (4 hours) Type A 225°C (437°F) Type B 300°C (572°F)		No dripping, flowing or cracking	No dripping, flowing or cracking	See qualification requirements
Heat Aging (168 hours) Type A 175°C Type B 250°C Followed by tests for Tensile Strength Elongation				See qualification requirements
	psi	1000 minimum	1200 minimum	ASTM-D412,
	percent	200 minimum	250 minimum	Die D
Hardness	Shore D	38 ± 5	85 ± 5	ASTM-D2240
Stiffness	psi	10000 maximum	7500 maximum	ASTM-D747
CHEMICAL Flammability		Nonburning	nonburning	ASTM-D635
Fungus Resistance		Rating or 1 or less	Rating of 1 or less	ASTM-D876
Corrosion 16 hrs at 175°C Copper Mirror		Noncorrosive	noncorrosive	ASTM-D2671 Appendix A 1. 5. 1
Fluid Resistance 24 hrs at 25°C Hydraulic fluid JP 4 fuel Lubricating Oil Deicing fluid Followed by test for Tensile Strength Elongation				See qualification requirements
	psi	750 minimum	1600 minimum	
	percent	200 minimum	200 minimum	
Water Absorption	percent	0.5 maximum	0.5 maximum	ASTM-D876 Procedure A
ELECTRICAL Dielectric Strength	volts/mil	200 minimum	200 minimum	ASTM-D876
Volume Resistivity	ohms cm	10 ¹² minimum	10 ¹⁰ minimum	ASTM-D257

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Part or Identifying Number (PIN): The PIN shall consist of the military designation, specification sheet number, boot configuration, backshell size, and component designation.

PIN Example:



Additional PIN examples:

M83723/16M22(M - Metal backshell for shell size 22.

M82723/16A22(B -Right angle fluoroelastomer boot to fit backshell size 22.

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Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notation.

Referenced documents. In addition to MIL-DTL-83723, this document references the following:

MIL-DTL-5624
MIL-PRF-5606
MIL-PRF-7808
MIL-PRF-23699
ASTM-D257
ASTM-D412
ASTM-D635
ASTM-D747
ASTM-D792
ASTM-D876
ASTM-D2240
ASTM-D2671
SAE-AMS1424

CONCLUDING MATERIAL

Custodians:
Air Force – 85
DLA - CC

Preparing activity:
DLA - CC

Review activity:
Air Force – 99

(Project 5935-2010-087)

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