

MILITARY SPECIFICATION SHEET

Connector, Electric, Backshell, with Heat-Shrinkable Strain-Relief, Boot (Straight or Right Angle), Bayonet-Coupling Series

The complete requirements for procuring the backshell described herein shall consist of this document and the issue in effect of MIL-C-83723 (USAF).

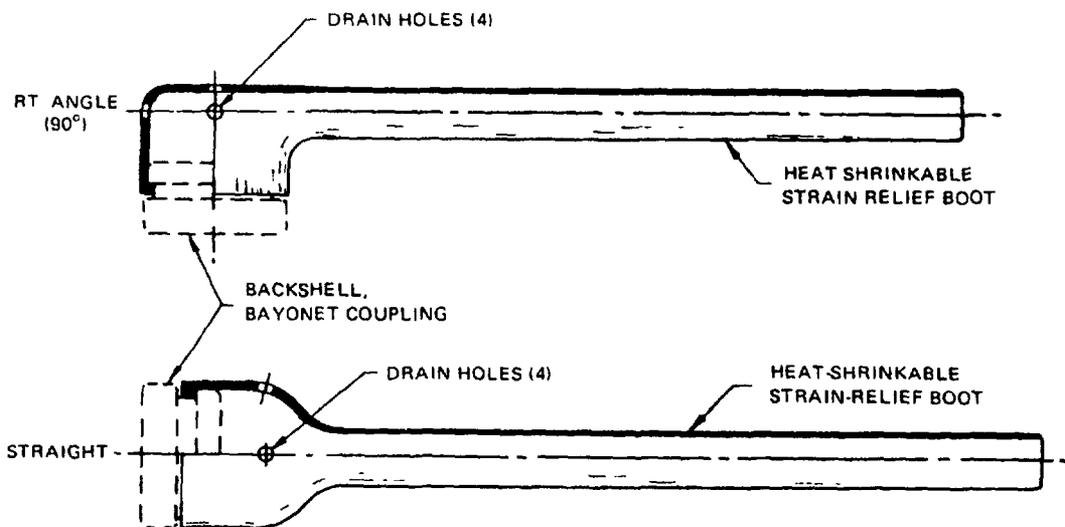


FIGURE 1 COMPLETED ASSEMBLY

NOTES

- 1) Part Numbers The part number shall consist of the military part number indicator, basic specification and specification sheet number, boot configuration, backshell size, and component designation.

Examples

<u>M</u>	<u>83723-16</u>	<u>S</u>	<u>22</u>	<u>A</u>
Military Part No. Indicator	Basic Spec. and Spec. Sheet No.	Boot Configuration	Backshell Size	Component Designation
		S. Straight		A Polyolefin (150°C) - Boot and Backshell
		A Right Angle		B Fluoroelastomer (200°C) - Boot and Backshell
		M Backshell		(M Backshell Only
				(A Polyolefin Boot Only
				(B Fluoroelastomer Boot Only

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

M83723/16A22(B - Right angle fluoroelastomer boot to fit 22 size backshell

- 2) Marking Package to be marked with military part number and manufacturers identification.

(B) Denotes changes

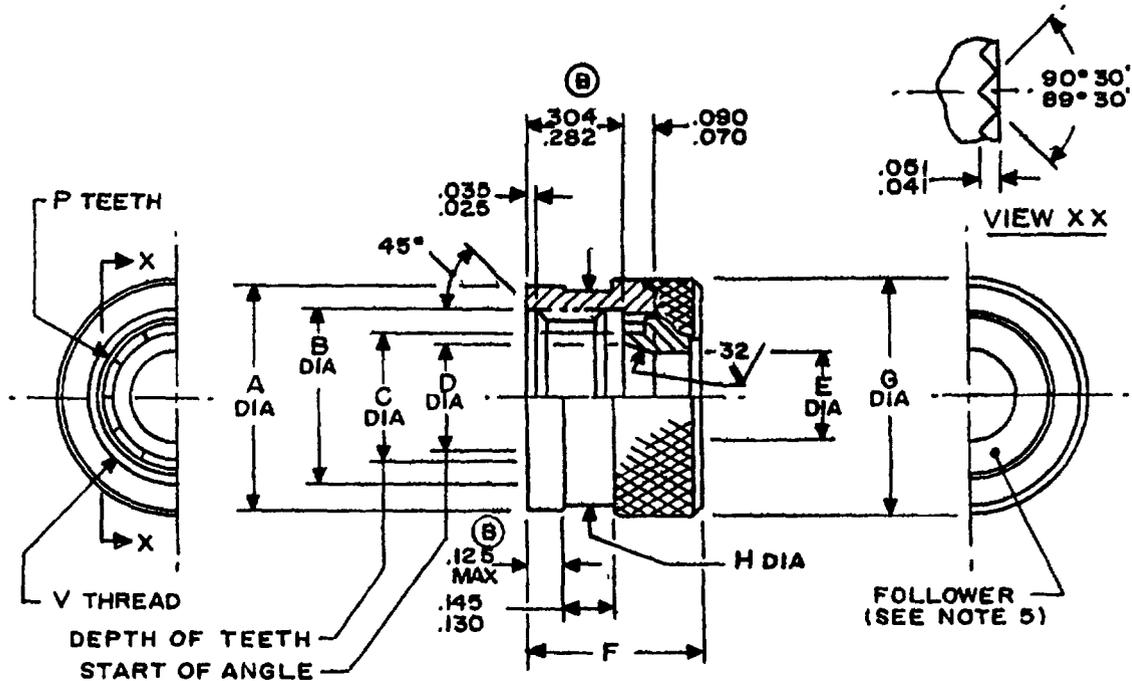


FIGURE 2. BACKSHELL, BAYONET COUPLING

TABLE I CONSTRUCTION DETAILS

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	.500	.360	.299	.250	.540	.668	.600	.500-20UNF-2B	12
10	.774	.625	.494	.433	.295	.540	.783	.715	.625-24UNEF-2B	15
12	.898	.750	.610	.549	.491	.540	.918	.850	.750-20UNEF-2B	21
14	1.024	.875	.735	.674	.555	.540	1.043	.975	.875-20UNEF-2B	24
16	1.152	1.000	.860	.799	.680	.540	1.218	1.100	1.000-20UNEF-2B	30
18	1.243	1.062	.916	.869	.759	.540	1.290	1.172	1.0625-18UNEF-2B	33
20	1.370	1.188	1.041	.994	.884	.540	1.416	1.298	1.1875-18UNEF-2B	36
22	1.443	1.312	1.166	1.119	1.009	.540	1.540	1.422	1.3125-18UNEF-2B	39
24	1.618	1.438	1.291	1.244	1.134	.540	1.666	1.548	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 be free to rotate on the follower

Ⓟ

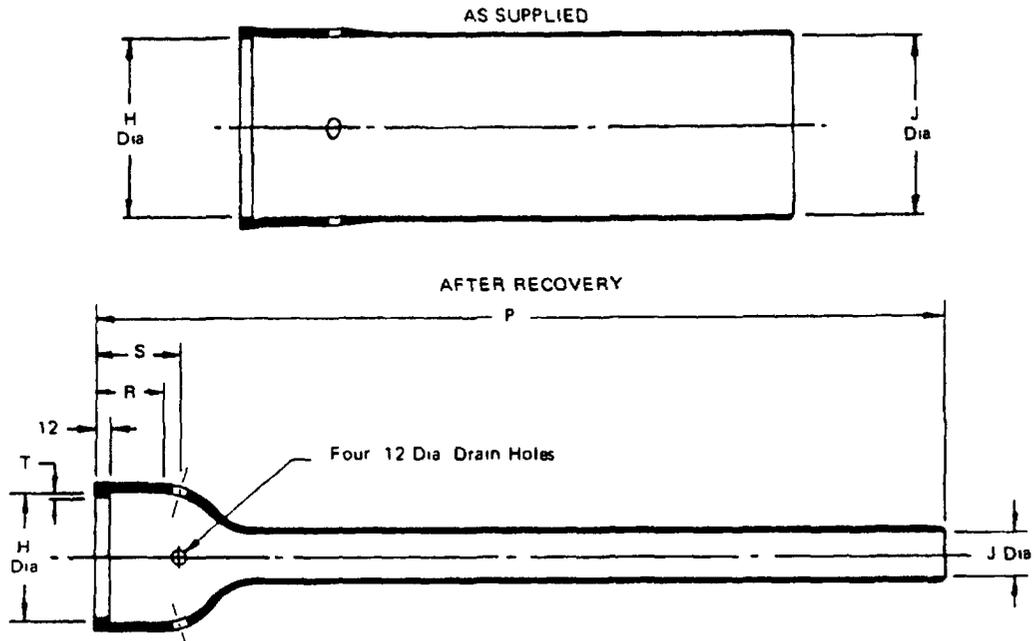


FIGURE 3 HEAT SHRINKABLE STRAIN RELIEF BOOT, STRAIGHT

TABLE II CONSTRUCTION DETAILS

Shell Size	Dimensions Inch								
	H Dia.		J Dia.		P	R	S	T	
	As Supplied (Min)	Recovered (Max)	As Supplied (Min) (Note 2)	Recovered (Max)					
8	1 01	59	A 1 01	B 63	29	4 77	48	59	040
10	1 16	74	1 16	72	33	5 46	48	60	040
12	1 34	90	1 34	84	38	6 28	48	62	040
14	1 34	90	1 34	84	38	6 28	48	62	040
16	1 47	1 16	1 47	91	41	7 00	55	70	065
18	1 47	1 16	1 47	91	41	7 00	55	70	065
20	1 72	1 34	1 72	1 07	48	8 00	60	78	065
22	1 72	1 34	1 72	1 07	48	8 00	60	78	065
24	1 97	1 62	1 97	1 23	56	8 00	60	82	065

NOTES .

- 1) Boots will shrink to recovered dimensions upon application of heat in excess of 175° C
- 2) Material
 - A Polyolefin
 - B Fluorelastomer

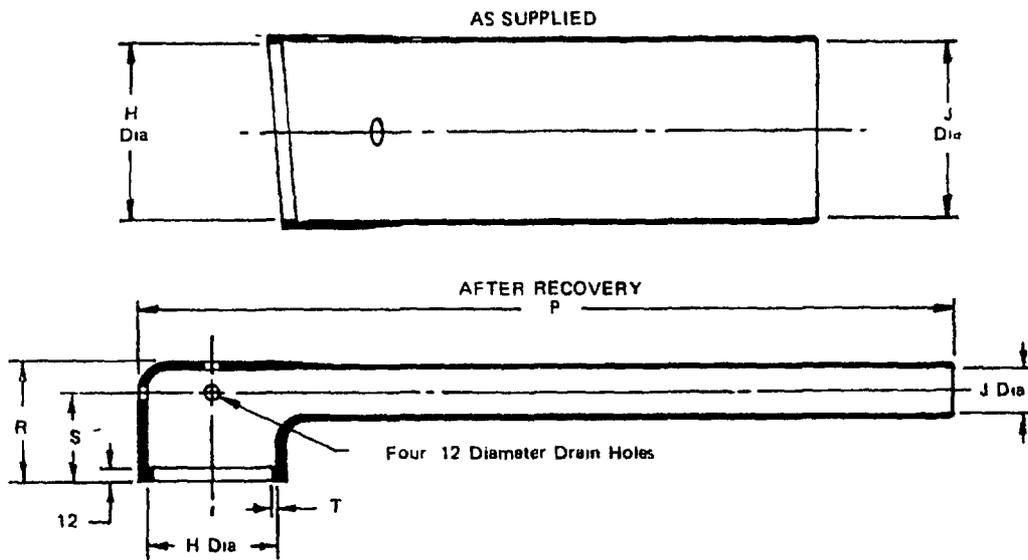


FIGURE 4 HEAT-SHRINKABLE STRAIN-RELIEF BOOT, RIGHT ANGLE (90°)

TABLE III CONSTRUCTION DETAILS

Shell Size	Dimensions, Inch								
	H Dia		J Dia		P	R	S	T	
	As Supplied (Min)	Recovered (Max)	As Supplied (Min) (Note 2)						Recovered (Max)
8	1 01	59	A	B	29	4 88	78	59	040
10	1.16	74	1 16	72	33	5 76	82	60	040
12	1 34	90	1 34	84	38	6 78	86	62	040
14	1 34	90	1 34	84	38	6 78	86	62	040
16	1 47	1 16	1 47	91	41	7 29	96	70	065
18	1 47	1 16	1 47	91	41	7 29	96	70	065
20	1 72	1 34	1 72	1 07	48	8 41	1 08	78	065
22	1 72	1 34	1 72	1 07	48	8 41	1 08	78	065
24	1 97	1 62	1 97	1 23	56	8 84	1 16	82	065

NOTES:

- 1) Boots will shrink to recovered dimensions upon application of heat in excess of 175° C.
- 2) Material
 - A. Polyolefin
 - B Fluoroelastomer

MATERIAL

Material shall be modified crosslinked Polyolefin (Type A: 150° C) or fluoroelastomer (Type B: 200° C) and shall have the characteristics shown in Table IV.

TABLE IV MATERIAL REQUIREMENTS

Material Property	Unit	Requirement Type A	Requirement Type B	Method of Test
PHYSICAL Dimensions Dimensional Recovery	inches	In accordance with Table II and III	In accordance with Table II and III	ASTM D 876
Elastic Memory	percent	275 min expansion 93 min retraction	200 min expansion 90 min expansion	Note 1
Tensile Strength	psi	1200 minimum	1800 minimum	ASTM D 412 Die D
Ultimate Elongation	percent	250 minimum	300 minimum	
Specific Gravity		1.40 maximum	1.95 maximum	ASTM D 792
Low Temperature Flexibility at 55°C (67°F)		No cracking	No cracking	Note 2
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	Note 3
Heat Aging (168 hours) Type A 175°C Type B 250°C Followed by tests for Tensile Strength Elongation				Note 4
	psi percent	1000 minimum 200 minimum	1200 minimum 250 minimum	ASTM D 412, Die D
Hardness	Shore D	38 ± 5	85 ± 5	ASTM D 2240
Stiffness	psi	10000 maximum	7500 maximum	ASTM D 747
CHEMICAL Flammability		nonburning	nonburning	ASTM D 635
Fungus Resistance		Rating of 1 or less	Rating of 1 or less	ASTM D 876
Corrosion 16 hrs at 175°C Copper Mirror		noncorrosive	noncorrosive	ASTM D 2671, Appendix A 1 5 1
Fluid Resistance 24 hrs at 25°C Hydraulic fluid JP 4 fuel Lubricating Oil 5% aqueous sodium chloride Deicing fluid Followed by test for Tensile Strength Elongation				Note 5
	psi	750 minimum	1600 minimum	
	percent	200 minimum	200 minimum	
Water Absorption	percent	0.5 maximum	0.5 maximum	ASTM D 876, Procedure A
ELECTRICAL Dielectric Strength	volts/mil	200 minimum	200 minimum	ASTM D 876
Volume Resistivity	ohms cm	10 ¹² minimum	10 ¹⁰ minimum	ASTM D 257

(Application for copies of ASTM Publications should be addressed to the American Society for Testing and Materials 1916 Race Street Philadelphia Pennsylvania 19103)

NOTES:

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:

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

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

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 D 412, 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.

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 be not 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

Fluid	Specification
Hydraulic fluid, petroleum base	MIL-H-5606
JP-4 Fuel	MIL-H-5624
Lubricating oil	MIL-L-7808
Lubricating oil	MIL-L-23699
5% aqueous sodium chloride	SS-S-550
Deicing fluid	MIL-A-8243

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 in Figure 5 shall be performed. The minimum force required to pull boot from connector at any angle shall be 25 pounds.

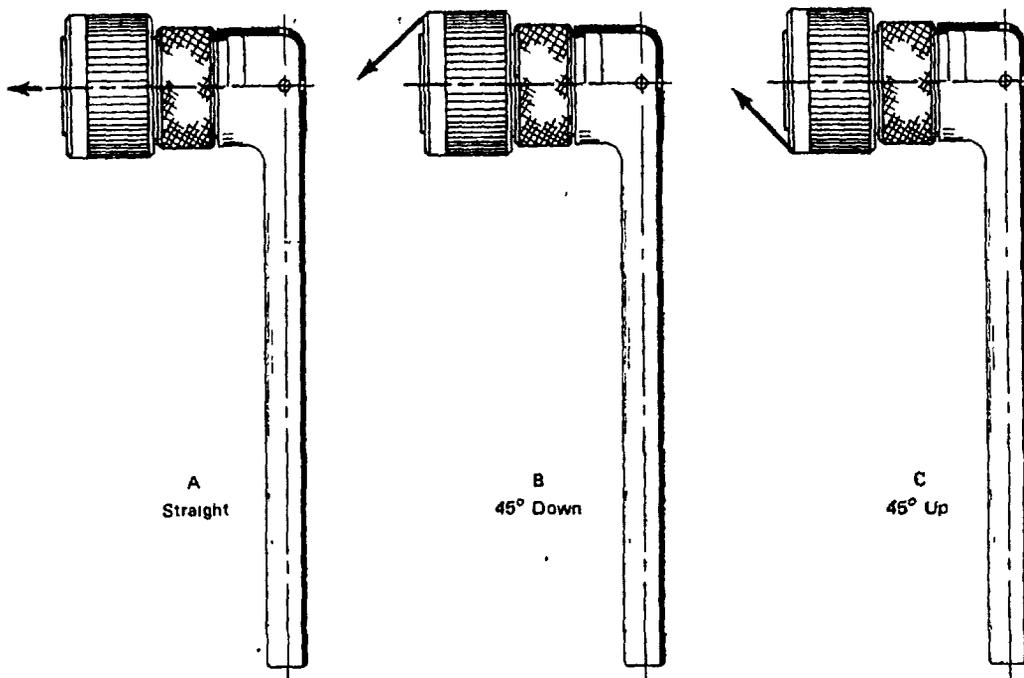


FIGURE 5 PULL OFF TEST METHOD

QUALITY ASSURANCE

Preproduction Tests

Preproduction tests shall consist of the entire list of material requirements in Table IV and the performance test for temperature life in Figure 5.

Acceptance Test

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

Custodian:
Air Force - 80

Preparing Activity:
Air Force - 80

Review Activities:
Air Force - 70, 71, 82, 84, 11

(Project 5935-F636-16)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

OMB Approval
No 22-R255

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