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An American National Standard

Standard Specification for Stuffing Tubes, Nylon, and Packing Assemblies (Metric)¹

This standard is issued under the fixed designation F1836M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

- 1.1 This specification covers the general requirements for nylon stuffing tubes and packing assemblies. Nylon stuffing tubes are intended for making electric cable penetrations in marine shipboard enclosures for electrical equipment. The following types are suitable for both thin-wall enclosures up to 5 mm (3/16 in.) thick and thick-wall enclosures, bulkheads, and decks of 5 to 19 mm (3/16 to 3/4 in.) thick.
 - 1.2 This specification does not cover metal stuffing tubes.
 - 1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.
- 1.4 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to its use.

2. Referenced Documents

2.1 ASTM Standards:²

D2000 Classification System for Rubber Products in Automotive Applications

D4066 Classification System for Nylon Injection and Extrusion Materials (PA)

2.2 NEMA Standards:

Standard 250 Enclosures for Electrical Equipment (1000 V Max)³

2.3 ASME Standard:

ASME B1.1 Unified Inch Screw Threads (UN and UNR Thread Form)⁴

2.4 IEC Standard

Standard 68-2-6 Environmental Testing-Part 2: Tests-Test FC: Vibration (Sinusoidal) Sixth Edition⁵

3. Terminology

- 3.1 Definitions of Terms Specific to This Standard:
- 3.1.1 *nylon stuffing tube*, *n*—a marine electrical fitting used for the sealing of cable penetration into shipboard enclosures while maintaining or exceeding the degree of protection for which the enclosure is rated.
- 3.1.2 packing assembly, n—the compressible insert for the nylon stuffing tube. It consists of one neoprene bushing and three nylon washers.
 - 3.1.3 enclosure, n—an electrical panel, cabinet, junction box, light fixture, electrical equipment, control box, or panel.

4. Classification

- 4.1 Nylon stuffing tubes shall be of the following types (see Fig. 1):
- 4.1.1 *Type 1*—straight—Unified Form Thread.

¹ This specification is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.10 on Flectrical

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from National Electrical Manufacturers Association (NEMA), 1300 N. 17th St., Suite 1752, Rosslyn, VA 22209, http://www.nema.org.

⁴ Available from the International Electrotechnical Commission, 3 rue de Varembe, Case postale 131, CH-1211, Geneva 20, Switzerland.

⁵ Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Three Two Park Ave., New York, NY 10016-5990, http://www.asme.org.

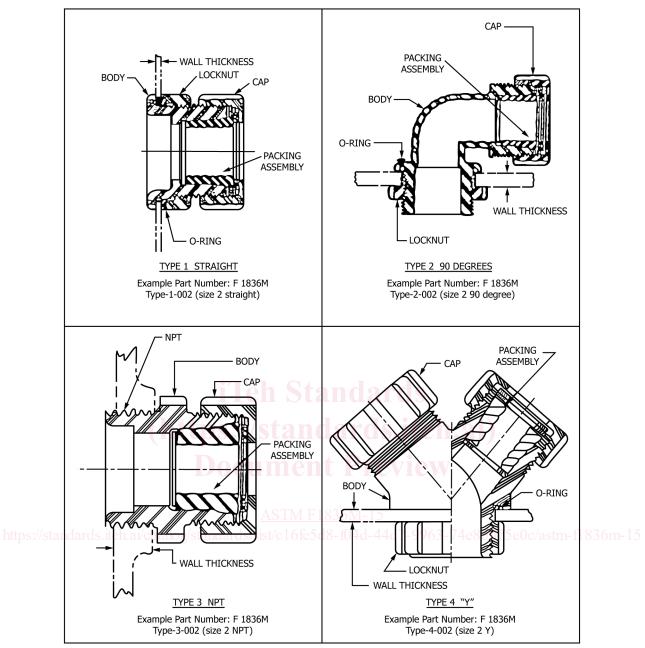


FIG. 1 Stuffing Tube Types

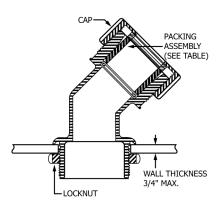


FIG. 1 Stuffing Tube Types (continued)



- 4.1.2 *Type* 2—90°—Unified Form Thread.
- 4.1.3 *Type 3*—NPT—American Standard Pipe Thread.
- 4.1.4 *Type 4*—Y—Unified Form Thread.

5. Ordering Information

- 5.1 Orders for stuffing tubes under this specification shall include the following:
- 5.1.1 Type (see 4.1).
- 5.1.2 Part number (see Table 1).
- 5.1.3 Packing assembly size (see Fig. 2 and Table 2).
- 5.1.4 The O-ring included in the stuffing tube assembly has a finite shelf life. If the stuffing tube assembly is used after the shelf life has expired, the O-ring should be replaced, using the appropriate size listed in Table 1.

	Tube	Part	Cable Range				Packing	Clea	rance Hole Diameter	O-Ring
	Size	No.		in.		mm	Assembly ^A		for Tube Install	Buna-N
		_	min.	max.	min.	max.		in.	mm	Size
	1	Type-1-001	0.077	0.300	1.96	7.62	-16	0.885	22.48	212
	2	-002	0.275	0.472	6.99	11.99	-17	1.010	25.65	214
	3	-003	0.410	0.472	10.41	11.99	-18	1.135	28.83	216
Straight	4	-004	0.450	0.777	11.43	19.74	-19	1.260	32.00	218
Type 1	4T	-005	0.450	0.777	11.43	19.74	-19	1.385	35.18	220
	5	-006	0.752	1.113	19.10	28.27	-20	2.010	51.05	226
	6	-007	0.806	1.390	20.47	35.31	C-21	2.510	63.75	230
	7	-008	1.433	1.610	36.40	40.89	-22	2.760	70.10	232
	8	-009	1.625	2.00	41.28	50.80	-23	3.260	82.80	236
	9	-010	2.030	2.700	51.56	68.58	-24	4.010	101.85	242
		010	2.000	2.700	01:00	00.00		1.010	101.00	
	Tube	Part		C	able Range		Packing	Clea	rance Hole Diameter	O-Rino
	Size	No.		in.	able Harige	mm	Assembly ^A	Olca	for Tube Install	Buna-N
	OIZE	140.	min.	max.	min.	max.	Assembly .	in.	mm	- Size
	1	Type-2-001	0.077	0.300	1.96	7.62	-16	0.885	22.48	212
90°	2	-002	0.077	0.300	6.99	11.99	-17	0.885	22.48	212
Type 2	3	-002	0.275	0.472	10.41	11.99	-18	1.135	28.83	216
	3 4T			0.472						
		-005	0.450		AS 11.43	1836 19.74	-19	1.260	32.00	218
	os://s	ards -006 -007 ai/c	0.752 0.806	1.113 tanc _{1.390}	19.10 20.47	5d8-10 ^{28.27} 35.31	ld7-99 <mark>-20</mark> -74	2.010 2.510	5e0c/astm- 63.75	220 230
	0									
								2.0.0		
	Tube	Part			able Range		Packing	NPT		
	Tube Size	Part _ No.				mm				200
		No.	min.	С			Packing			200
				C in.	able Range	mm	Packing			
	Size	No.	min.	in. max.	able Range min.	mm max.	Packing Assembly ^A	NPT		
	Size 1	No	min. 0.077	C in. max. 0.300	able Range min. 1.96	mm max. 7.62	Packing Assembly ^A -16	NPT		
NPT	Size 1 2	No	min. 0.077 0.275	Cin. max. 0.300 0.472	min. 1.96 6.99	mm max. 7.62 11.99	Packing Assembly ^A -16 -17	0.5 0.75		
	Size 1 2 3	No	min. 0.077 0.275 0.410	max. 0.300 0.472 0.472	min. 1.96 6.99 10.41	mm max. 7.62 11.99 11.99	Packing Assembly ^A -16 -17 -18	0.5 0.75 1.0		
	Size 1 2 3 4T	No	min. 0.077 0.275 0.410 0.450	C in. max. 0.300 0.472 0.472 0.777 1.113	min. 1.96 6.99 10.41 11.43 19.10	mm max. 7.62 11.99 11.99 19.74 28.27	Packing Assembly ^a -16 -17 -18 -19	0.5 0.75 1.0 1.0		
	1 2 3 4T 5 6	No	min. 0.077 0.275 0.410 0.450 0.752 0.806	C in. max. 0.300 0.472 0.472 0.777 1.113 1.390	min. 1.96 6.99 10.41 11.43 19.10 20.47	mm max. 7.62 11.99 11.99 19.74 28.27 35.31	Packing Assembly ^A -16 -17 -18 -19 -20 -21	0.5 0.75 1.0 1.0 1.5 2		200
	1 2 3 4T 5 6 7	No	min. 0.077 0.275 0.410 0.450 0.752 0.806 1.433	C in. max. 0.300 0.472 0.472 0.777 1.113 1.390 1.610	min. 1.96 6.99 10.41 11.43 19.10 20.47 36.40	mm max. 7.62 11.99 11.99 19.74 28.27 35.31 40.89	Packing Assembly ^A -16 -17 -18 -19 -20 -21 -22	0.5 0.75 1.0 1.0 1.5 2 2.5		200
	1 2 3 4T 5 6	No	min. 0.077 0.275 0.410 0.450 0.752 0.806	C in. max. 0.300 0.472 0.472 0.777 1.113 1.390	min. 1.96 6.99 10.41 11.43 19.10 20.47	mm max. 7.62 11.99 11.99 19.74 28.27 35.31	Packing Assembly ^A -16 -17 -18 -19 -20 -21	0.5 0.75 1.0 1.0 1.5 2		
NPT Type 3	Size 1 2 3 4T 5 6 7 8	No	min. 0.077 0.275 0.410 0.450 0.752 0.806 1.433 1.625	Cin. max. 0.300 0.472 0.472 0.777 1.113 1.390 1.610 2.00	min. 1.96 6.99 10.41 11.43 19.10 20.47 36.40 41.28	mm max. 7.62 11.99 11.99 19.74 28.27 35.31 40.89 50.80	Packing Assembly ^A -16 -17 -18 -19 -20 -21 -22 -23	0.5 0.75 1.0 1.0 1.5 2 2.5 3		
	1 2 3 4T 5 6 7 8 9 Tube	No	min. 0.077 0.275 0.410 0.450 0.752 0.806 1.433 1.625	Cin. max. 0.300 0.472 0.472 0.777 1.113 1.390 1.610 2.00 2.700	min. 1.96 6.99 10.41 11.43 19.10 20.47 36.40 41.28	mm max. 7.62 11.99 11.99 19.74 28.27 35.31 40.89 50.80	Packing Assembly ^A -16 -17 -18 -19 -20 -21 -22 -23 -24 Packing	0.5 0.75 1.0 1.0 1.5 2 2.5 3 3.5	urance Hole Diameter	O-Ring
	1 2 3 4T 5 6 7 8 9	No	min. 0.077 0.275 0.410 0.450 0.752 0.806 1.433 1.625	C in. max. 0.300 0.472 0.472 0.777 1.113 1.390 1.610 2.00 2.700	min. 1.96 6.99 10.41 11.43 19.10 20.47 36.40 41.28 51.56	mm max. 7.62 11.99 11.99 19.74 28.27 35.31 40.89 50.80	Packing Assembly ^A -16 -17 -18 -19 -20 -21 -22 -23 -24	0.5 0.75 1.0 1.0 1.5 2 2.5 3 3.5		O-Ring Buna-N
	1 2 3 4T 5 6 7 8 9 Tube	No	min. 0.077 0.275 0.410 0.450 0.752 0.806 1.433 1.625 2.030	Cin. max. 0.300 0.472 0.472 0.777 1.113 1.390 1.610 2.00 2.700 Ca in. max.	min. 1.96 6.99 10.41 11.43 19.10 20.47 36.40 41.28 51.56 able Ranges min.	mm max. 7.62 11.99 11.99 19.74 28.27 35.31 40.89 50.80 68.58	Packing Assembly ^A -16 -17 -18 -19 -20 -21 -22 -23 -24 Packing Assembly ^A	0.5 0.75 1.0 1.0 1.5 2 2.5 3 3.5 Clea	rance Hole Diameter for Tube Install mm	O-Ring Buna-N Size
Type 3	1 2 3 4T 5 6 7 8 9 Tube	No	min. 0.077 0.275 0.410 0.450 0.752 0.806 1.433 1.625 2.030	Cin. max. 0.300 0.472 0.472 0.777 1.113 1.390 1.610 2.00 2.700 Ca	min. 1.96 6.99 10.41 11.43 19.10 20.47 36.40 41.28 51.56 able Ranges	mm max. 7.62 11.99 11.99 19.74 28.27 35.31 40.89 50.80 68.58	Packing Assembly ^A -16 -17 -18 -19 -20 -21 -22 -23 -24 Packing	0.5 0.75 1.0 1.0 1.5 2 2.5 3 3.5	arance Hole Diameter for Tube Install	O-Ring Buna-N
	1 2 3 4T 5 6 7 8 9 Tube Size	No	min. 0.077 0.275 0.410 0.450 0.752 0.806 1.433 1.625 2.030	Cin. max. 0.300 0.472 0.472 0.777 1.113 1.390 1.610 2.00 2.700 Ca in. max.	min. 1.96 6.99 10.41 11.43 19.10 20.47 36.40 41.28 51.56 able Ranges min.	mm max. 7.62 11.99 11.99 19.74 28.27 35.31 40.89 50.80 68.58	Packing Assembly ^A -16 -17 -18 -19 -20 -21 -22 -23 -24 Packing Assembly ^A	0.5 0.75 1.0 1.0 1.5 2 2.5 3 3.5 Clea	rance Hole Diameter for Tube Install mm	O-Rinç Buna-N Size
Type 3	Size 1 2 3 4T 5 6 7 8 9 Tube Size	No	min. 0.077 0.275 0.410 0.450 0.752 0.806 1.433 1.625 2.030	Cin. max. 0.300 0.472 0.472 0.777 1.113 1.390 1.610 2.00 2.700 Ca in. max. 0.300	min. 1.96 6.99 10.41 11.43 19.10 20.47 36.40 41.28 51.56 able Ranges min. 1.96	mm max. 7.62 11.99 11.99 19.74 28.27 35.31 40.89 50.80 68.58	Packing Assembly ^A -16 -17 -18 -19 -20 -21 -22 -23 -24 Packing Assembly ^A	NPT 0.5 0.75 1.0 1.0 1.5 2 2.5 3 3.5 Clea in. 0.885	urance Hole Diameter for Tube Install mm 22.48	O-Ring Buna-N Size 212
Type 3	Size 1 2 3 4T 5 6 7 8 9 Tube Size	No	min. 0.077 0.275 0.410 0.450 0.752 0.806 1.433 1.625 2.030 min. 0.077	Cin. max. 0.300 0.472 0.472 0.777 1.113 1.390 1.610 2.00 2.700 Ca in. max. 0.300 0.472	min. 1.96 6.99 10.41 11.43 19.10 20.47 36.40 41.28 51.56 able Ranges min. 1.96 6.99	mm max. 7.62 11.99 11.99 19.74 28.27 35.31 40.89 50.80 68.58	Packing Assembly ^A -16 -17 -18 -19 -20 -21 -22 -23 -24 Packing Assembly ^A	NPT 0.5 0.75 1.0 1.0 1.5 2 2.5 3 3.5 Cleatin. 0.885 1.010	urance Hole Diameter for Tube Install mm 22.48 25.65	O-Ring Buna-N Size 212 214
Type 3	Size 1 2 3 4T 5 6 7 8 9 9 Tube Size 1 2 3 4T	No	min. 0.077 0.275 0.410 0.450 0.752 0.806 1.433 1.625 2.030 min. 0.077 0.275 0.410	Cin. max. 0.300 0.472 0.472 0.777 1.113 1.390 1.610 2.00 2.700 Ca in. max. 0.300 0.472 0.472 0.472	min. 1.96 6.99 10.41 11.43 19.10 20.47 36.40 41.28 51.56 able Ranges min. 1.96 6.99 10.41 11.43	mm max. 7.62 11.99 11.99 19.74 28.27 35.31 40.89 50.80 68.58 mm max. 7.62 11.99 11.99	Packing Assembly ^A -16 -17 -18 -19 -20 -21 -22 -23 -24 Packing Assembly ^A -16 -17 -18 -19	NPT 0.5 0.75 1.0 1.0 1.5 2 2.5 3 3.5 Clea in. 0.885 1.010 1.135 1.385	arance Hole Diameter for Tube Install mm 22.48 25.65 28.83 35.18	O-Ring Buna-N Size 212 214 216
Type 3	1 2 3 4T 5 6 7 8 9 Tube Size 1 2 3 4T Tube	No	min. 0.077 0.275 0.410 0.450 0.752 0.806 1.433 1.625 2.030 min. 0.077 0.275 0.410	Cin. max. 0.300 0.472 0.472 0.777 1.113 1.390 1.610 2.00 2.700 Ca in. max. 0.300 0.472 0.472 0.777 Ca	min. 1.96 6.99 10.41 11.43 19.10 20.47 36.40 41.28 51.56 able Ranges min. 1.96 6.99 10.41	mm max. 7.62 11.99 11.99 19.74 28.27 35.31 40.89 50.80 68.58 mm max. 7.62 11.99 11.99 19.74	Packing Assembly ^A -16 -17 -18 -19 -20 -21 -22 -23 -24 Packing Assembly ^A -16 -17 -18 -19 -20 -21 -22 -23 -24 Packing Assembly ^A	NPT 0.5 0.75 1.0 1.0 1.5 2 2.5 3 3.5 Clea in. 0.885 1.010 1.135 1.385	arance Hole Diameter for Tube Install mm 22.48 25.65 28.83 35.18 arance Hole Diameter	O-Ring Buna-N Size 212 214 216
Type 3	Size 1 2 3 4T 5 6 7 8 9 9 Tube Size 1 2 3 4T	No	min. 0.077 0.275 0.410 0.450 0.752 0.806 1.433 1.625 2.030 min. 0.077 0.275 0.410 0.450	Cin. max. 0.300 0.472 0.472 0.777 1.113 1.390 1.610 2.00 2.700 Cain. max. 0.300 0.472 0.472 0.777 Cain.	min. 1.96 6.99 10.41 11.43 19.10 20.47 36.40 41.28 51.56 able Ranges min. 1.96 6.99 10.41 11.43	mm max. 7.62 11.99 11.99 19.74 28.27 35.31 40.89 50.80 68.58 mm max. 7.62 11.99 11.99 19.74	Packing Assembly ^A -16 -17 -18 -19 -20 -21 -22 -23 -24 Packing Assembly ^A -16 -17 -18 -19	NPT 0.5 0.75 1.0 1.0 1.5 2 2.5 3 3.5 Clea in. 0.885 1.010 1.135 1.385	arance Hole Diameter for Tube Install mm 22.48 25.65 28.83 35.18 arance Hole Diameter for Tube Install	O-Ring Buna-N Size 212 214 216
Type 3	1 2 3 4T 5 6 7 8 9 Tube Size 1 2 3 4T Tube	No	min. 0.077 0.275 0.410 0.450 0.752 0.806 1.433 1.625 2.030 min. 0.077 0.275 0.410	Cin. max. 0.300 0.472 0.472 0.777 1.113 1.390 1.610 2.00 2.700 Ca in. max. 0.300 0.472 0.472 0.777 Ca	min. 1.96 6.99 10.41 11.43 19.10 20.47 36.40 41.28 51.56 able Ranges min. 1.96 6.99 10.41 11.43	mm max. 7.62 11.99 11.99 19.74 28.27 35.31 40.89 50.80 68.58 mm max. 7.62 11.99 11.99 19.74	Packing Assembly ^A -16 -17 -18 -19 -20 -21 -22 -23 -24 Packing Assembly ^A -16 -17 -18 -19 -20 -21 -22 -23 -24 Packing Assembly ^A	NPT 0.5 0.75 1.0 1.0 1.5 2 2.5 3 3.5 Clea in. 0.885 1.010 1.135 1.385	arance Hole Diameter for Tube Install mm 22.48 25.65 28.83 35.18 arance Hole Diameter	O-Ring Buna-N Size 212 214 216

^A See Table 2 size selection.

0.752 0.806

-005

1.113 1.390 28.27 35.31 2.010 2.510

<u>-20</u> -21 51.05 63.75

19.10 20.47



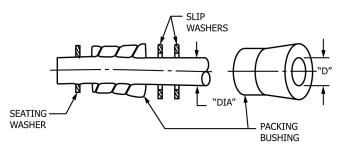


FIG. 2 Typical Packing Assembly

5.1.5 ASTM Part Number. The part number comprises the ASTM specification number, type designator and assigned dash number as shown in the following example:

F1836M	Type-3	-002
ASTM	Part Type	Size
Designator	Designator	Designator

Example: F1836M Type-3-002: Size 2 NPT stuffing tube (see Fig. 1).

6. Materials and Manufacture

- 6.1 Materials:
- 6.1.1 Polyamide (nylon) molding plastic material shall be Group 1, Class 8, Grade 1 in accordance with Specification D4066.
- 6.1.2 Synthetic rubber (neoprene) shall be in accordance with Classification D2000, M2, BC, 410, A14, B14, C12, and F19.

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ASTM F1836M-15

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