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Before ordering check with factory for most current data.

| FAX ID | Description |
|--------|-------------------------|
| 4030 | Data sheet |
| 4080 | Installation guidelines |

FTS/CES

Heat-shrinkable boot feedthroughs

Applications

Thermofit FTS/CES heat-shrinkable boot feedthroughs provide a watertight and fumetight seal where cables enter connection boxes, bulkheads, or other enclosures. Feedthroughs are available in two basic types. The standard feedthrough for thin-wall enclosures consists of a three-part assembly—a rigid plastic nut, O-ring, and heat-shrinkable boot. The feedthrough for threaded-hole applications is a one-part assembly that combines a tapered National Pipe Thread (NPT) in rigid plastic with a heat-shrinkable boot.

Features/Benefits

- Comes in many sizes and configurations.
- Is economical.
- Seals multicable openings.
- Offers an operating temperature range of -55°C to 90°C.

CES:

- Meets or exceeds MIL-I-81765/1A.
- Seals per U.S. Coast Guard HQ 3774 in wet, dry, and corrosive locations.

FTS:

- ABS (American Bureau of Shipping) type approval.
- DNV (Det Norske Veritas) type approval.
- Lloyd's (Lloyd's Register of Shipping) type approval.



Specifications/Approvals

The heat-shrinkable boot used on CES feedthroughs meets or exceeds MIL-I-81765/1A. Refer to Nemosyne FR for the material properties.

The CES feedthrough appears on NAVSEA drawing number 803-5001027, Section 1, Group B, Sheet 13 (FSCM 53711) as an approved method.

The CES feedthrough is acceptable for use on merchant vessels inspected by the U.S. Coast Guard (CG-293) and has an ABS Certificate of Equipment Type Approval (92-QE-10218-X) for -55°C to 90°C rating.

Product Dimensions (mm/in)

Standard: Single leg

| Commercial description | Military description | Overall nominal recovered length | Min. expanded I.D. nose* | Max. recovered I.D. nose* | Adapter I.D. | Drill size** |
|------------------------|----------------------|----------------------------------|--------------------------|---------------------------|--------------|--------------|
| FTS-1-121 | CES-1 | 69.85 (2.75) | 12.70 (0.50) | 4.31 (0.17) | 19.05 (0.75) | 25.40 (1.00) |
| FTS-1-132 | CES-2 | 69.85 (2.75) | 19.05 (0.75) | 6.35 (0.25) | 19.05 (0.75) | 25.40 (1.00) |
| FTS-1-163 | CES-3 | 95.25 (3.75) | 28.45 (1.12) | 12.70 (0.50) | 27.94 (1.10) | 30.05 (1.38) |
| FTS-1-185 | CES-4 | 114.30 (4.50) | 40.64 (1.60) | 19.05 (0.75) | 39.62 (1.56) | 50.80 (2.00) |
| FTS-1-196 | CES-5 | 177.80 (7.00) | 69.85 (2.75) | 36.32 (1.43) | 73.66 (2.90) | 88.90 (3.50) |

Standard: Multilegged

| Commercial description | Military description | Number of legs | Min. expanded I.D. legs (typical)* | Max recovered I.D. leg (typical) | Adapter I.D. | Drill size** | Overall nom. recovered length |
|------------------------|----------------------|----------------|------------------------------------|----------------------------------|--------------|--------------|-------------------------------|
| FTS-2-111 | CES-3-D1 | 2 | 11.94 (0.47) | 3.81 (0.15) | 27.94 (1.10) | 30.05 (1.38) | 88.90 (3.50) |
| FTS-3-101 | CES-2-T1 | 3 | 8.38 (0.33) | 2.79 (0.11) | 19.05 (0.75) | 25.40 (1.00) | 69.85 (2.75) |
| FTS-3-121 | CES-3-T1 | 3 | 12.70 (0.50) | 4.57 (0.18) | 27.94 (1.10) | 30.05 (1.38) | 88.90 (3.50) |
| FTS-3-132 | CES-4-T1 | 3 | 20.83 (0.82) | 6.35 (0.25) | 39.62 (1.56) | 50.80 (2.00) | 88.90 (3.50) |
| FTS-4-121 | CES-3-F1 | 4 | 12.70 (0.50) | 4.83 (0.19) | 27.94 (1.10) | 30.05 (1.38) | 88.90 (3.50) |
| FTS-4-153 | CES-4-F1 | 4 | 20.83 (0.82) | 8.13 (0.32) | 39.62 (1.56) | 50.80 (2.00) | 88.90 (3.50) |

Note: If armored cable is used, the factory-applied sealant will not fill the interstices of the armor. The armor must be cut back so that the adapter is allowed to shrink and seal to the cable sheath as well as come down over the armor. To keep the armor from unraveling, some armor must be approximately 6.35 to 9.53 mm (1/4 to 3/8 in) inside the adapter leg.

*Smaller end (heat recoverable).

**Required hole diameter for this part.

Product Dimensions (mm/in) (continued)

Threaded: Single leg

| Commercial description | Military description | Overall nominal recovered length | Min. expanded I.D. nose* | Max. recovered I.D. nose | Adapter I.D. | Thread size |
|------------------------|----------------------|----------------------------------|--------------------------|--------------------------|--------------|------------------|
| FTS-1-P05-132 | CES-2-A50 | 83.82 (3.30) | 19.05 (0.75) | 6.35 (0.25) | 12.70 (0.50) | 1/2–14 NPT |
| FTS-1-P07-132 | CES-2-A75 | 83.82 (3.30) | 19.05 (0.75) | 6.35 (0.25) | 19.05 (0.75) | 3/4–14 NPT |
| FTS-1-P10-132 | CES-2-A100 | 83.82 (3.30) | 19.05 (0.75) | 6.35 (0.25) | 19.05 (0.75) | 1–11 1/2 NPT |
| FTS-1-P10-163 | CES-3-A100 | 110.99 (4.37) | 28.45 (1.12) | 12.70 (0.50) | 25.40 (1.00) | 1–11 1/2 NPT |
| FTS-2-P15-163 | CES-3-A150 | 117.35 (4.62) | 28.45 (1.12) | 12.70 (0.50) | 27.94 (1.10) | 1 1/2–11 1/2 NPT |

Threaded: Multilegged

| Commercial description | Military description | Number of legs | Min. expanded I.D. (each leg)* | Max. recovered I.D. (each leg) | Adapter I.D. | Thread size | Overall nom. recovered length |
|------------------------|----------------------|----------------|--------------------------------|--------------------------------|--------------|------------------|-------------------------------|
| FTS-2-P10-111 | CES-3A-D1 | 2 | 11.94 (0.47) | 3.81 (0.15) | 25.40 (1.00) | 1–11 1/2 NPT | 95.25 (3.75) |
| FTS-2-P15-111 | CES-3A-D2 | 2 | 11.94 (0.47) | 3.81 (0.15) | 27.94 (1.10) | 1 1/2–11 1/2 NPT | 95.25 (3.75) |
| FTS-3-P05-101 | CES-2A-T1 | 3 | 8.38 (0.33) | 2.79 (0.11) | 12.70 (0.50) | 1/2–14 NPT | 95.25 (3.75) |
| FTS-3-P07-101 | CES-2A-T2 | 3 | 8.38 (0.33) | 2.79 (0.11) | 19.05 (0.75) | 3/4–14 NPT | 95.25 (3.75) |
| FTS-3-P10-101 | CES-2A-T3 | 3 | 8.38 (0.33) | 2.79 (0.11) | 19.05 (0.75) | 1–11 1/2 NPT | 95.25 (3.75) |
| FTS-3-P10-121 | CES-3A-T1 | 3 | 12.70 (0.50) | 4.57 (0.18) | 25.40 (1.00) | 1–11 1/2 NPT | 95.25 (3.75) |
| FTS-3-P15-132 | CES-3A-T2 | 3 | 12.70 (0.50) | 4.57 (0.18) | 27.94 (1.10) | 1 1/2–11 1/2 NPT | 95.25 (3.75) |
| FTS-4-P10-121 | CES-3A-F1 | 4 | 12.70 (0.50) | 4.83 (0.19) | 25.40 (1.00) | 1–11 1/2 NPT | 95.25 (3.75) |
| FTS-4-P15-153 | CES-3A-F2 | 4 | 12.70 (0.50) | 4.83 (0.19) | 27.94 (1.10) | 1 1/2–11 1/2 NPT | 95.25 (3.75) |

Note: If armored cable is used, the factory-applied sealant will not fill the interstices of the armor. The armor must be cut back so that the adapter is allowed to shrink and seal to the cable sheath as well as come down over the armor. To keep the armor from unraveling, some armor must be approximately 6.3 to 9.53 mm (1/4 to 3/8 in) inside the adapter leg.

*Smaller end (heat recoverable).

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