

MILITARY SPECIFICATION SHEET

CABLE, RADIO FREQUENCY, FLEXIBLE, TWIN, M17/176-00002 and M17/176-00003

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-17.

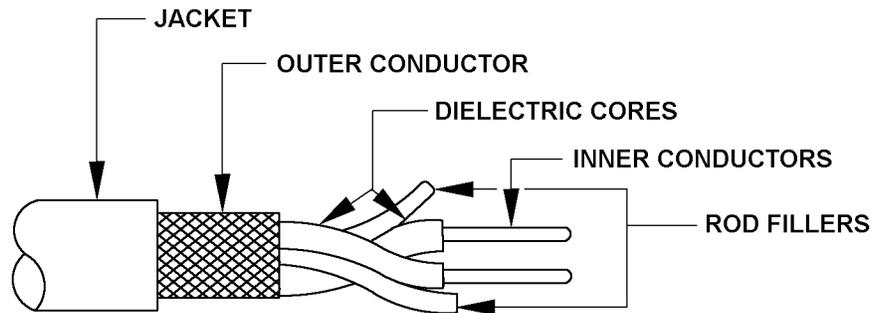


FIGURE 1. Configuration M17/176-00002 and M17/176-00003.

TABLE I. Description.

| Components | Construction details |
|-------------------------------------|--|
| Inner conductors 1/ | Two number 24 AWG conductors, each consisting of nineteen strands of number 36 AWG silver-coated, high strength copper alloy wire. Diameter of each strand: 0.0050 inch. Overall diameter of each conductor: .023 inch minimum, .024 inch maximum. |
| Dielectric cores (M17/176-00002) | Two PTFE cores twisted together with a left hand lay of 11 to 14 twists/foot. Fill to round with two PTFE rod fillers. Diameter of each dielectric core: .042 ± .002 inch. Core colors: One blue, one white. |
| Dielectric cores (M17/176-00003) | Two ECTFE or ETFE foam cores twisted together with a left hand lay of 11 to 14 twists/foot. Fill to round with two ECTFE or ETFE rod fillers. Diameter of each dielectric core: .042 ± .002 inch. Core colors: One blue, one white. |
| Outer conductor 1/ | Single braid of AWG number 38, silver-coated, high strength copper alloy wire. Diameter: .102 inch maximum. Coverage: 93.3 percent nominal, 90 percent minimum. Carriers: 16 Ends: 6 Picks/inch: 11.2 ± 10 percent. Braid angle: 22 nominal. |
| Jacket (M17/176-00002) | Type XIII: PFA. Overall diameter: .129 ± .005 inch. Color: Translucent blue. |
| Jacket (M17/176-00003) | Type: PFA, FEP, ETFE or ECTFE. Overall diameter: .125 ± .005 inch. Color: Translucent blue, white, or clear. |

1/ Silver-coated in accordance with ASTM B298, high strength copper alloy in accordance with ASTM B624.



ENGINEERING INFORMATION:

Continuous working voltage: 750 V rms, maximum.

Operating frequency: 10 GHz, maximum.

Velocity of propagation: 68 percent nominal for M17/176-00002.

72 percent nominal for M17/176-00003.

Operating temperature range: -55° to +200°C for M17/176-00002.

-55° to +150°C for M17/176-00003.

Inner conductor properties:

DC resistance (maximum at 20°C): 2.84 ohms per 100 feet.

Elongation: 6 percent, minimum.

Tensile strength: 50 klb_f/in², minimum.

Engineering note: This cable is useful in general, high temperature applications. (Used in 1 MHz multiplex applications in accordance with MIL-STD-1553.)

REQUIREMENTS:

Dimensions, configuration, and description: See figure 1 and table I.

Environmental and mechanical:

Visual and mechanical:

Out-of-roundness: Applicable.

Eccentricity: 10 percent, maximum.

Adhesion of conductors:

Inner conductor to core: 1 pound, minimum; 6 pounds, maximum.

Aging stability: Not applicable.

Stress-crack resistance: 230°C ± 5°C. Mandrel size is 5 times the jacket diameter
for M17/176-00002.
150°C ± 5°C. Mandrel size is 10 times the jacket diameter
for M17/176-00003.

Outer conductor integrity: Not applicable.

Cold bend: -55°C ± 2°C.

Dimensional stability: +200°C ± 5°C for M17/176-00002.
+150°C ± 5°C for M17/176-00003.

Inner conductor from core: .125 inch, maximum.

Inner conductor from jacket: .187 inch, maximum.

Contamination: Not applicable.

Bendability: Not applicable.

Flammability: Not applicable.

Weight: 18 pounds per 1,000 feet, maximum for M17/176-00002.

16 pounds per 1,000 feet, maximum for M17/176-00003.

ELECTRICAL:

Continuity: Applicable.

Spark test: 2,000 Vrms +10 percent, -0 percent.

Voltage withstanding: 1,000 V rms, +10 percent, -0 percent

Insulation resistance: 5,000 megohms per 1,000 feet.

Corona extinction voltage: Not applicable.

Characteristic impedance: 77 ohms ± 7 at 1 MHz.

Attenuation: 1.4 dB per 100 feet, maximum at 1 MHz.

Structural return loss: Not applicable.

Capacitance: 24 pF per foot, maximum.

Capacitance stability: Not applicable.

Capacitance unbalance: 5 percent, maximum.
 Transmission unbalance: Not applicable.
 Mechanically induced noise voltage: Not applicable.
 Time delay: Not applicable.
 Phase stability: Not applicable.
 Inductance: 118 μ H per foot, minimum.

Measure inductance (L) at 1 MHz of a 10 foot 2 inch test cable using any suitable test instrument. The shield shall be floated. The end of the cable shall be shorted. The impedance (Z) shall then be calculated using the following formula: Where inductance = L (in henrys) and capacitance = C (in farads):

$$Z = \sqrt{L/C}$$

Part or Identifying Number (PIN): See table II.

Supersession data: See table II.

TABLE II. Cross-reference of part number.

| PIN | Superseded PIN or type designation |
|---------------|------------------------------------|
| M17/176-00002 | M17/176-00001 |
| M17/176-00003 | 8712812-1 <u>1/</u> |

1/ Air Force Drawing 8712812

Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Referenced documents. In addition to MIL-DTL-17, this document references the following:

MIL-STD-1553 ASTM B298 ASTM B624

CONCLUDING MATERIAL

Custodians:

Army – CR
 Navy – EC
 Air Force – 85
 DLA - CC

Preparing activity:

DLA - CC

(Project 6145-2015-028)

Review activities:

Army – AT, CR4, MI
 Navy – AS, MC, OS, SH
 Air Force – 19, 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.