

# MIL-C-17 Coaxial Cable

Harbour supplies a complete line of high temperature, high performance QPL approved MIL-C-17 coax cables for military, commercial and industrial applications. The specific M17 constructions referenced are manufactured in accordance with the most recent revision of the MIL-C-17 specification. The MIL-C-17 specification defines complete physical and electrical characteristics for each M17 part number, including dimensional parameters, dielectric materials, shield construction, maximum attenuation, and VSWR levels.

## VSWR Sweep Testing

When selecting a 50 ohm coaxial cable, constructions with VSWR requirements are recommended. Manufacturing and sweep testing cables with concern for VSWR ensures a quality cable free of spikes over the referenced frequency range. (Note the test frequencies specified in the electrical characteristics section.)

## Precision PTFE Dielectric Coax

All of the PTFE dielectric coax cables listed are high temperature, high performance constructions exhibiting high dielectric strength and low capacitance in proportion to their dielectric constant. All PTFE dielectrics are manufactured with tolerances tighter than the MIL-C-17 specification to ensure uniformity of electrical characteristics, especially impedance, attenuation and VSWR.

## High Performance Polyethylene Dielectric Coax

Harbour also manufactures high performance solid polyethylene dielectric coaxial cable, and is QPL approved to manufacture two versions of RG217: M17/78-RG217 with VSWR requirements up to 3 GHz and the unswept version, M17/165-00001. These cables have a high maximum operating voltage up to 7,000 Volts RMS.

## Tape Wrapped PTFE Constructions

Harbour manufactures PTFE tape wrapped cables to a previous revision of the MIL-C-17 specification. These constructions can withstand operating temperatures up to 250° C versus 200° C for FEP jacketed cables. PTFE tape wrapped cables are generally more flexible than their FEP jacketed counterparts.

## UL Approvals

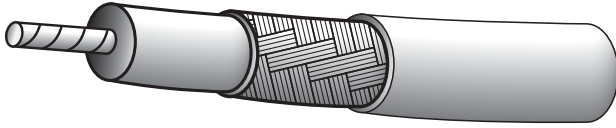
All of Harbour's M17 part numbers with PTFE dielectrics and FEP jackets may be ordered with **UL 1354** (80° C, 30 Volt) or **UL 1971** (150° C, 125 Volt) listing.

## Physical Characteristics:

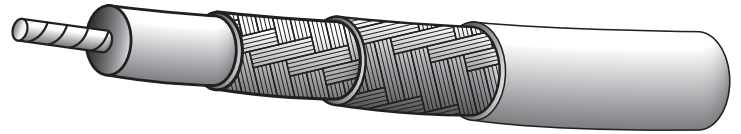
M17 Number	Center Conductor	Dielectric	Shield	Jacket	Overall Diameter	Minimum Recommended Bend Radius	Operating Temp. (° C)	Weight (lbs./MFT)	Comments
M17/60-RG142	.037" SCCS	.116"PTFE	SPC (2)	FEP	.195"	1.0"	-55 +200	43.0	
M17/78-RG217	.106" BC	.370"PE	BC (2)	PVC	.545"	2.8"	-40 +85	225	
M17/93-RG178	.0120"(7/.004")SCCS	.033"PTFE	SPC	FEP	.071"	0.4"	-55 +200	6.3	
M17/93-00001	.0120"(7/.004")SCCS	.033"PTFE	SPC	PFA	.071"	0.4"	-55 +230	6.3	High Temp M17/93-RG178
M17/94-RG179	.0120"(7/.004")SCCS	.063"PTFE	SPC	FEP	.100"	0.4"	-55 +200	10.8	
M17/95-RG180	.0120"(7/.004")SCCS	.102"PTFE	SPC	FEP	.141"	0.7"	-55 +200	19.8	
M17/110-RG302	.0253"SCCS	.146"PTFE	SPC	FEP	.202"	1.0"	-55 +200	40.0	
M17/111-RG303	.037"SCCS	.116"PTFE	SPC	FEP	.170"	0.9"	-55 +200	31.0	
M17/112-RG304	.059" SCCS	.185"PTFE	SPC (2)	FEP	.280"	1.4"	-55 +200	94.0	
M17/113-RG316	.0201"(7/.0067")SCCS	.060"PTFE	SPC	FEP	.098"	0.5"	-55 +200	12.2	
M17/127-RG393	.094"(7/.0312")SC	.285"PTFE	SPC (2)	FEP	.390"	2.0"	-55 +200	165.0	
M17/128-RG400	.0384"(19/.008")SC	.116"PTFE	SPC (2)	FEP	.195"	1.0"	-55 +200	50.0	
M17/131-RG403	.0120"(7/.004")SCCS	.033"PTFE	SPC (2)	FEP(2)	.116"	0.6"	-55 +200	15.0	Triaxial M17/93-RG178
M17/152-00001	.0201"(7/.0067")SCCS	.060"PTFE	SPC (2)	FEP	.114"	0.6"	-55 +200	18.5	Double shield M17/113-RG316
M17/158-00001	.037"SCCS	.116"PTFE	SPC (2)	FEP	.195"	1.0"	-55 +200	56.0	Unswept M17/60-RG142
M17/165-00001	.106"BC	.370"PE	BC (2)	PVC	.545"	2.8"	-40 +85	225	Unswept M17/78-RG217
M17/169-00001	.0120"(7/.004")SCCS	.033"PTFE	SPC	FEP	.071"	0.4"	-55 +200	6.3	Unswept M17/93-RG178
M17/170-00001	.037"(SCCS	.116"PTFE	SPC	FEP	.170"	0.9"	-55 +200	39.0	Unswept M17/111-RG303
M17/172-00001	.0201"(7/.0067")SCCS	.060"PTFE	SPC	FEP	.098"	0.5"	-55 +200	11.5	Unswept M17/113-RG316
M17/174-00001	.094"(7/.0312")SCCS	.285"PTFE	SPC (2)	FEP	.390"	2.0"	-55 +200	175.0	Unswept M17/127-RG393
M17/175-00001	.0384"(19/.008")SC	.116"PTFE	SPC (2)	FEP	.390"	1.0"	-55 +200	50.0	Unswept M17/128-RG400
M17/176-00002	.0235"(19/.005")SPA(2)	.042"PTFE	SPA	PFA	.129"	0.6"	-55 +230	18.0	Twinax
PTFE Tape Wrap Jacketed RG Cables									
RG 187 A/U	.0120"(7/.004)SCCS	.063"PTFE	SPC	PTFE	.100"	0.5"	-55 +250	10.0	250° C rated
RG 188 A/U	.0201"(7/.0067)SCCS	.060"PTFE	SPC	PTFE	.100"	0.5"	-55 +250	11.0	250° C rated
RG 195 A/U	.0120"(7/.004)SCCS	.102"PTFE	SPC	PTFE	.141"	0.7"	-55 +250	18.0	250° C rated
RG 196 A/U	.0120"(7/.004)SCCS	.034"PTFE	SPC	PTFE	.067"	0.4"	-55 +250	6.0	250° C rated

# MIL-C-17 Coaxial Cable QPL Approved

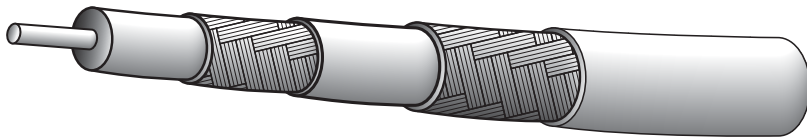
Single braid



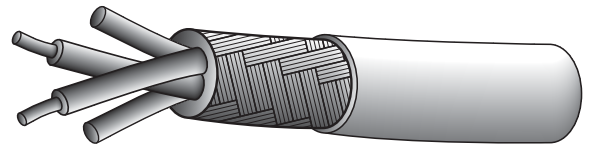
Double braid



Triax



Twinax



## Electrical Characteristics:

M17 Number	Impedance (ohms)	Capacitance (pF/ft)	Max Voltage	Attenuation (dB/100ft) @						Max Frequency (GHz)
				100 MHz Typ / Max	400 MHz Typ / Max	1 GHz Typ / Max	2.4 GHz Typ / Max	5 GHz Typ / Max	10 GHz Typ / Max	
M17/60-RG142	50 +/- 2	29.4	1900	4.0 / 5.5	8.1 / 11.7	13.4 / 19.2	21.3 / 30.4	33.3 / 48.7	-	17.4
M17/76-RG217	50 +/- 2	30.8	7000	1.5 / 1.6	3.5 / 3.7	6.7 / 7.0	-	-	-	3.0
M17/93-RG178	50 +/- 2	29.4	1000	13.0 / 16.0	27.2 / 33.0	44.2 / 52.0	41.7 / 56.1	-	-	3.0
M17/93-00001	50 +/- 2	29.4	1000	13.0 / 16.0	27.2 / 33.0	44.2 / 52.0	41.7 / 56.1	-	-	3.0
M17/94-RG179	75 +/- 3	19.4	1200	8.0 / 9.2	15.5 / 21.0	26.7 / 30.7	-	-	-	-
M17/95-RG180	95 +/- 5	17.4	1500	5.7 / 6.6	11.7 / 17.4	19.2 / 23.0	-	-	-	-
M17/110-RG302	75 +/- 3	19.4	2300	-	7.2 / 8.0	-	-	-	-	-
M17/111-RG303	50 +/- 2	29.4	1900	3.5 / 3.9	7.2 / 8.0	13.5 / 15.0	-	-	-	-
M17/112-RG304	50 +/- 2	29.4	3000	2.4 / 2.7	5.8 / 6.4	10.0 / 11.1	-	-	-	8.0
M17/113-RG316	50 +/- 2	29.4	1200	7.6 / 11.0	16.0 / 21.0	26.2 / 38.0	41.2 / 55.4	-	-	3.0
M17/127-RG393	50 +/- 2	29.4	2500	2.3 / 2.5	4.4 / 5.0	7.7 / 9.2	12.4 / 14.2	21.3 / 26.8	30.1 / 37.9	11.0
M17/128-RG400	50 +/- 2	29.4	1900	4.3 / 4.5	8.6 / 10.5	14.1 / 18.1	22.6 / 30.2	35.6 / 52.1	61.6 / 78.0	12.4
M17/131-RG403	50 +/- 2	29.4	1000	-	33.3 / 37.0	-	-	-	-	10.0
M17/152-00001	50 +/- 2	29.4	1200	8.1 / 11.5	17.8 / 24.0	29.6 / 40.0	43.1 / 58.3	100.0 / 110.0	153.0 / 170.0	12.4
M17/158-00001	50 +/- 2	29.4	1900	-	8.1 / 9.5	-	-	-	-	-
M17/165-00001	50 +/- 2	29.4	7000	-	3.5 / 3.7	-	-	-	-	-
M17/169-00001	50 +/- 2	29.4	1000	-	27.2 / 29.0	-	-	-	-	-
M17/170-00001	50 +/- 2	29.4	1900	-	7.7 / 8.6	-	-	-	-	-
M17/172-00001	50 +/- 2	29.4	1200	-	15.5 / 21.0	-	-	-	-	-
M17/174-00001	50 +/- 2	29.4	2500	-	4.4 / 5.0	-	-	-	-	-
M17/175-00001	50 +/- 2	29.4	1900	-	8.6 / 10.5	-	-	-	-	-
M17/176-00001	77 +/- 7	19.0	1000	-	-	-	-	-	-	-
PTFE Tape Wrap Jacketed RG Cables										
RG 187 A/U	75 +/- 3	19.4	1200	-	15.5 / 21.0	-	-	-	-	-
RG 188 A/U	50 +/- 2	29.4	1200	7.6 / 11.0	16.0 / 21.0	26.2 / 38.0	41.2 / 55.4	-	-	3.0
RG 195 A/U	95 +/- 5	17.4	1500	-	11.7 / 17.4	-	-	-	-	-
RG 196 A/U	50 +/- 2	29.4	1000	13.0 / 16.0	27.2 / 33.0	44.2 / 52.0	41.7 / 56.1	-	-	3.0

"Maximum frequencies" are those as referenced on individual slant sheets of the MIL-C-17 specification. No values are given for unswept constructions as the specification recommends these cables should not be used above 400 MHz. All figures referenced above are nominal unless otherwise specified.

# MIL-C-17 Coaxial Cables

- including M17/176-00001 Twinaxial Data Bus Cable

Harbour Industries is a QPL approved manufacturer of high temperature, high performance coaxial cables supplied in exact accordance with the MIL-C-17 specification. The information referenced has been taken from the MIL-C-17 "slant sheets" which define complete physical and electrical characteristics for each MIL-C-17 part number including dimensional parameters, dielectric materials, shield constructions, VSWR, and maximum attenuation over various frequency ranges. For complete individual slant sheets, see the Defense Supply Center Columbus (DSCC) link in the Industry Links section of Harbour's website.

## The Importance of VSWR Sweep Testing

When selecting a 50 ohm coaxial cable, constructions with VSWR requirements are highly recommended. Manufacturing and sweep testing cables with concern for VSWR ensures a quality cable free of spikes over the frequency range referenced on the slant sheet.

## Precision PTFE Dielectrics Used

All of the PTFE dielectric coax cables listed are high temperature, high performance constructions exhibiting high dielectric strength and low capacitance in proportion to the cable's dielectric constant. Harbour manufactures all PTFE dielectric cable constructions with tolerances tighter than the MIL-C-17 specification to ensure uniformity of electrical characteristics, especially impedance, attenuation, and VSWR.

## Constructions with PTFE Tape Wrapped Jackets

Harbour manufactures PTFE tape wrapped cables - specifically RG187 A/U, RG188 A/U, RG195 A/U, and RG196 A/U - in accordance with a previous revision of the MIL-C-17 specification. These constructions can withstand operating temperatures up to 250 ° versus 200° C for FEP jacketed cables. PTFE tape wrapped cables are generally more flexible than their FEP jacketed counterpart. Alternative 250° constructions are also available with PFA jackets.

M17 Part	Center Conductor	Dielectric Diameter	Shield	Shield Diameter	Jacket	Overall Diameter	Bend Radius	Weight (lbs/mft)	Comments
M17/60-RG142	.037" SCCS	.116"	SPC (2)	.160"	FEP	.195"	1.0"	43.0	
M17/93-RG178	.0120" (7/.004")SCCS	.033"	SPC	.051"	FEP	.071"	0.4"	6.3	
M17/94-RG179	.0120" (7/.004")SCCS	.063"	SPC	.080"	FEP	.100"	0.4"	10.8	
M17/95-RG180	.0120" (7/.004")SCCS	.102"	SPC	.118"	FEP	.141"	0.7"	19.8	
M17/111-RG303	.037" SCCS	.116"	SPC	.136"	FEP	.170"	0.9"	31.0	
M17/112-RG304	.059" SCCS	.185"	SPC (2)	.240"	FEP	.280"	1.4"	94.0	
M17/113-RG316	.0201" (7/.0067")SCCS	.060"	SPC	.075"	FEP	.098"	0.5"	12.2	
M17/127-RG393	.094" (7/.0312") SPC	.285"	SPC (2)	.314"	FEP	.390"	2.0"	165.0	
M17/128-RG400	.0384" (19/.008") SPC	.116"	SPC (2)	.156"	FEP	.195"	1.0"	50.0	
M17/131-RG403	.0120" (7/.004")SCCS	.033"	SPC (2)	.090"	FEP (2)	.116"	0.6"	15.0	Triaxial RG-178
M17/152-00001	.0201" (7/.0067")SCCS	.060"	SPC (2)	.091"	FEP	.114"	0.6"	18.5	Double Shield RG-316
M17/158-00001**	.037" SCCS	.116"	SPC (2)	.160"	FEP	.195"	1.0"	56.0	Use M17/60-RG142
M17/169-00001**	.0120" (7/.004")SCCS	.033"	SPC	.051"	FEP	.071"	0.4"	6.3	Use M17/93-RG178
M17/170-00001**	.037" SCCS	.116"	SPC	.136"	FEP	.170"	0.9"	39.0	Use M17/111-RG303
M17/172-00001**	.0120" (7/.004")SCCS	.060"	SPC	.075"	FEP	.098"	0.5"	11.5	Use M17/113-RG316
M17/175-00001**	.0384"(19/.008")SPC	.116"	SPC (2)	.156"	FEP	.195"	1.0"	50.0	Use M17/128-RG400
M17/176-00002	.0235" (19/.005")SPA(2)	.042"	SPA	.100"	PFA	.129"	0.6"	18.0	Twinax
RG187 A/U	.0120" (7/.004")SCCS	.063"	SPC	.079"	PTFE	.100"	0.5"	10.0	Tape Wrapped Jacket
RG188 A/U	.0201" (7/.0067")SCCS	.060"	SPC	.080"	PTFE	.100"	0.5"	11.0	Tape Wrapped Jacket
RG195 A/U	.0129" (7/.004")SCCS	.102"	SPC	.117"	PTFE	.141"	0.7"	18.0	Tape Wrapped Jacket
RG196 A/U	.0120" (7/.004")SCCS	.034"	SPC	.050"	PTFE	.067"	0.4"	6.0	Tape Wrapped Jacket

\*\* DSCC has removed these part numbers from MIL-DTL-17.