

Type MMV-WP Medium Voltage Wind Power Cable

Three-Conductor: 5kV & 15kV, 133% • Rated 105°C

Conductors

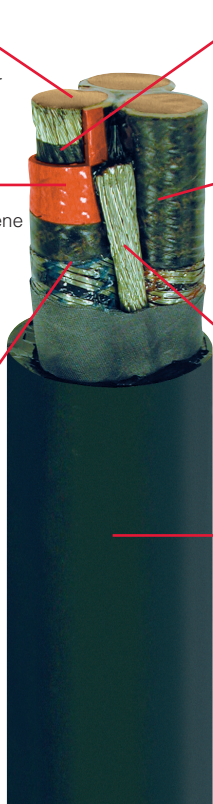
Soft annealed flexible stranded tinned copper per IEEE 1580 Table 11 and UL 1072

Insulation

Extruded thermosetting 105°C Ethylene Propylene Rubber (EPR), meeting UL 1309 (Type E), IEEE 1580 (Type E), ICEA S-68-516 and UL 1072.

Metallic Shield

Composite shield consisting of tinned copper braid with nylon providing 60% copper coverage meeting UL 1309, IEEE Std. 1580, ICEA S-68-516 and UL 1072. The nylon is colored for easy phase identification (three conductor = black, blue, red) without the need to remove the shield to find an underlying colored tape.



Conductor Shield

A combination of semi-conducting tape and extruded thermosetting semi-conducting material meeting UL 1309, IEEE 1580, ICEA S-68-516 and UL1072.

Insulation Shield

Semi-conducting tape, with overlap, for fast and easy termination meeting UL 1309, IEEE 1580, ICEA S-68-516 and UL 1072.

Grounding Conductor (optional)

One uninsulated soft annealed flexible stranded tinned copper conductor per ASTM B 33 and sized according to Table 21.1 of UL 1072.

Jacket

Black, arctic grade, flame retardant, oil, abrasion, chemical and sunlight resistant thermosetting compound meeting UL 1309, IEEE 1580, ICEA S-68-516 and UL 1072. Jacket is two layer reinforced on multi-conductor constructions. Colored jackets for signifying different voltage levels are also available on special request (ie. yellow = 5kV and red = 15kV).



Applications

AmerCable's Type MMV-WP wind power medium voltage cables are for use as the service loop (drop) cable on the output side of the wind turbine generator at temperatures from -40°C to +105°C.

Features

- Carries both NEC markings for onshore applications and marine markings for offshore applications.
- Two layer, reinforced thermoset jacket resists torsional movement.
- Withstands greater than 10,000 cycles of twist, 720 degrees in both directions.
- These cables utilize flexible stranded conductors and braided shields which make them very suitable for applications involving repeated flexing and twisting.
- These cables have a small minimum bending radius (6xOD) for easy installation.
- Optional uninsulated grounding conductors sized per UL 1072.
- The increased flexibility of this cable allows for termination of one end and coiling in the nacelle. Then coiling and terminating other end when nacelle is mated with the tower, thereby reducing installation time.
- Passes IEC 332-3 Category A and IEEE 1202/UL 1581 flame tests.

Ratings & Approvals

- UL Listed as Marine Shipboard Cable (E111461)
- UL Listed as NEC Type MV-105 (E116415)
- American Bureau of Shipping (ABS)
- Det Norske Veritas (DNV)
- 105°C Temperature Rating
- Voltage Rating: 5kV & 15kV
- Torsional Rating: +/- 27°/ft

Termination Kits

AmerCable recommends Raychem's HVT-M series terminations for multi-conductor constructions.

Hawke Gland Types	Hawke P/N
Industrial & Safe Area (IP68)	121
Increased Safety "EExe"	501/421
Explosion Proof	710 Class I, Div. 2 Class I, Zone 2
Flameproof "EExd"	501/421 Zone 1 & 2

37-105WP

Type MMV-WP Medium Voltage Wind Power Cable

Three-Conductor: 5kV & 15kV, 133% Insulation Level. Rated 105°C



Three-Conductor Type MMV-WP 5kV, 100/133% Insulation Level

		Ampacity										
Size AWG/ kcmil	mm2	Part No. 37-105	Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	In Free Air (amps)	Single Banked (No Spacing) in Trays (amps)	DC Resistance at 25°C (ohms/1000 ft.)	AC Resistance at 90°C, 60Hz (ohms/1000 ft.)	Inductive Reactance (ohms/ 1000 ft.)	Voltage Drop (Volts per amp per 1000 ft.)	Optional Grounding Conductor	Maximum Suspended Length (ft.)
1/0	50	-306WP	2.146	3204	201	171	0.117	0.147	0.034	0.239	4	302
2/0	70	-307WP	2.290	3394	232	197	0.093	0.117	0.033	0.196	4	366
3/0	-	-308WP	2.372	3787	266	226	0.074	0.094	0.032	0.163	3	401
4/0	95	-309WP	2.514	4455	306	260	0.058	0.075	0.031	0.136	3	434
262	120	-310WP	2.686	5158	348	296	0.048	0.063	0.030	0.118	3	455
313	150	-311WP	2.850	5966	386	328	0.040	0.053	0.029	0.104	2	474
373	185	-312WP	2.966	6764	429	365	0.034	0.045	0.029	0.092	2	497
444	-	-313WP	3.213	8027	455	387	0.028	0.039	0.028	0.083	1	503
535	240	-314WP	3.363	9130	528	449	0.024	0.033	0.028	0.074	1	530
646	300	-315WP	3.595	10505	584	496	0.020	0.028	0.027	0.067	1	551
777	400	-316WP	3.752	11959	647	550	0.016	0.025	0.027	0.062	1/0	585

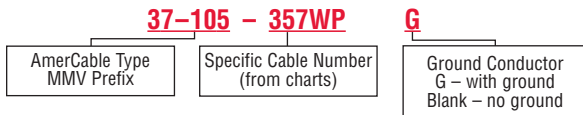
Three-Conductor Type MMV-WP 15kV, 133% Insulation Level

		Ampacity										
Size AWG/ kcmil	mm2	Part No. 37-105	Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	In Free Air (amps)	Single Banked (No Spacing) in Trays (amps)	DC Resistance at 25°C (ohms/1000 ft.)	AC Resistance at 90°C, 60Hz (ohms/1000 ft.)	Inductive Reactance (ohms/ 1000 ft.)	Voltage Drop (Volts per amp per 1000 ft.)	Optional Grounding Conductor	Maximum Suspended Length (ft)
2	35	-357WP	2.517	3311	156	133	0.184	0.230	0.044	0.364	6	180
1	-	-358WP	2.558	3521	178	151	0.147	0.184	0.043	0.299	4	216
1/0	50	-359WP	2.711	4076	205	174	0.117	0.147	0.041	0.246	4	237
2/0	70	-360WP	2.837	4619	234	199	0.093	0.117	0.039	0.203	4	269
3/0	-	-361WP	2.964	5194	269	229	0.074	0.094	0.038	0.170	3	293
4/0	95	-362WP	3.159	6033	309	263	0.058	0.075	0.037	0.142	3	321

Ordering Type MMV-WP Medium Voltage Cables

Example:

- 3-conductor power cable
- 15kV 133%
- #2 AWG
- Ground



**SAVE
TIME**

**Order Your Cable with
Factory Installed
Termination Kits
and Lugs**

**SAVE
MONEY**

Type MMV-WP Medium Voltage Wind Power Cable

Single-Conductor: 5kV, 15kV & 35kV • Rated 105°C

Conductors

Soft annealed flexible stranded tinned copper per IEEE 1580 Table 11 and UL 1072

Insulation

Extruded thermosetting 105°C Ethylene Propylene Rubber (EPR), meeting UL 1309 (Type E), IEEE 1580 (Type E), ICEA S-68-516 and UL 1072.

Metallic Shield

Composite shield consisting of tinned copper braid with nylon providing 60% copper coverage meeting UL 1309, IEEE Std. 1580, ICEA S-68-516 and UL 1072.



Conductor Shield

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Insulation Shield

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Jacket

Black, arctic grade, flame retardant, oil, abrasion, chemical and sunlight resistant thermosetting compound meeting UL 1309, IEEE 1580, ICEA S-68-516 and UL 1072. Colored jackets for signifying different voltage levels are also available on special request (ie. yellow = 5kV, and red = 15kV & 35kV).



Applications

AmerCable's Type MMV-WP wind power medium voltage cables are for use as the service loop (drop) cable on the output side of the wind turbine generator at temperatures from -40°C to +105°C.

Features

- Carries both NEC markings for onshore applications and marine markings for offshore applications.
- Withstands greater than 10,000 cycles of twist, 720 degrees in both directions.
- These cables utilize flexible stranded conductors and braided shields which make them very suitable for applications involving repeated flexing and twisting.
- These cables have a small minimum bending radius (6xOD) for easy installation.
- The increased flexibility of this cable allows for termination of one end and coiling in the nacelle. Then coiling and terminating other end when nacelle is mated with the tower, thereby reducing installation time.
- Passes IEC 332-3 Category A and IEEE 1202/UL 1581 flame tests.

Ratings & Approvals

- UL Listed as Marine Shipboard Cable (E111461)
- UL Listed as NEC Type MV-105 (E116415)
- American Bureau of Shipping (ABS)
- Det Norske Veritas (DNV)
- 105°C Temperature Rating
- Voltage Rating: 5kV, 15kV & 35kV
- Torsional Rating: +/- 27°/ft

Termination Kits

AmerCable recommends Raychem's HVT series terminations for single-conductor constructions.

Hawke Gland Types	Hawke P/N
Industrial & Safe Area (IP68)	121
Increased Safety "EExe"	501/421
Explosion Proof	710 Class I, Div. 2 Class I, Zone 2
Flameproof "EExd"	501/421 Zone 1 & 2

37-105WP

Type MMV-WP Medium Voltage Wind Power Cable

Single Conductor: 5kV, 15kV & 35kV • Rated 105°C



Renewable Energy Cables

Single-Conductor Type MMV-WP

5kV, 100/133% Insulation Level

						Ampacity							
Size AWG/kcmil	mm2	Part No. 37-105	Diameter Over Insulation (inches)	Nominal Diameter (inches)	Weight (Lbs./1000 ft.)	In Free Air (amps)	Triangular Configuration (amps)	Single Banked in Tray (amps)	DC Resistance at 25°C (ohms/1000 ft.)	AC Resistance at 90°C, 60Hz (ohms/1000 ft.)	Inductive Reactance (ohms/1000 ft.)	Voltage Drop (Volts per amp per 1000 ft.)	Maximum Suspended Length (ft.)
2	35	-104WP	0.560	0.765	458	186	159	158	0.175	0.230	0.041	0.361	433
1	-	-105WP	0.597	0.805	539	214	184	182	0.140	0.184	0.040	0.296	470
1/0	50	-106WP	0.649	0.892	672	247	212	210	0.111	0.147	0.039	0.245	480
2/0	70	-107WP	0.720	0.952	803	285	244	242	0.089	0.117	0.038	0.202	576
3/0	-	-108WP	0.755	0.995	928	328	281	279	0.070	0.094	0.143	0.278	546
4/0	95	-109WP	0.820	1.057	1108	381	325	324	0.056	0.075	0.035	0.141	582
262	120	-110WP	0.899	1.136	1297	435	371	370	0.046	0.063	0.034	0.122	604
313	150	-111WP	0.970	1.202	1496	486	413	413	0.038	0.053	0.033	0.108	630
373	185	-112WP	1.016	1.267	1726	544	460	462	0.032	0.045	0.032	0.095	650
444	-	-113WP	1.108	1.342	2007	606	510	515	0.027	0.039	0.032	0.086	670
535	240	-114WP	1.161	1.423	2340	682	570	580	0.022	0.033	0.031	0.077	690

15kV, 133% Insulation Level

						Ampacity							
Size AWG/kcmil	mm2	Part No. 37-105	Diameter Over Insulation (inches)	Nominal Diameter (inches)	Weight (Lbs./1000 ft.)	In Free Air (amps)	Triangular Configuration (amps)	Single Banked in Tray (amps)	DC Resistance at 25°C (ohms/1000 ft.)	AC Resistance at 90°C, 60Hz (ohms/1000 ft.)	Inductive Reactance (ohms/1000 ft.)	Voltage Drop (Volts per amp per 1000 ft.)	Maximum Suspended Length (ft.)
2	35	-164WP	0.820	1.147	786	186	164	158	0.175	0.230	0.050	0.370	252
1	-	-165WP	0.851	1.185	880	214	189	182	0.140	0.184	0.049	0.305	288
1/0	50	-166WP	0.905	1.230	989	247	217	210	0.111	0.147	0.047	0.252	326
2/0	70	-167WP	0.963	1.288	1134	284	250	241	0.089	0.117	0.045	0.209	366
3/0	-	-168WP	1.008	1.353	1292	327	288	278	0.070	0.094	0.044	0.176	372
4/0	95	-169WP	1.072	1.415	1490	378	332	321	0.056	0.075	0.042	0.148	433
262	120	-170WP	1.159	1.494	1703	431	377	366	0.046	0.063	0.040	0.129	460
313	150	-171WP	1.230	1.560	1922	481	418	409	0.038	0.053	0.039	0.114	490
373	185	-172WP	1.264	1.625	2175	536	464	456	0.032	0.045	0.038	0.101	515
444	-	-173WP	1.364	1.762	2592	598	514	508	0.027	0.039	0.038	0.093	519
535	240	-174WP	1.423	1.839	2947	672	574	571	0.022	0.033	0.037	0.084	548

35kV, 100% Insulation Level

						Ampacity							
Size AWG/kcmil	mm2	Part No. 37-105	Diameter Over Insulation (inches)	Nominal Diameter (inches)	Weight (Lbs./1000 ft.)	In Free Air (amps)	Triangular Configuration (amps)	Single Banked in Tray (amps)	DC Resistance at 25°C (ohms/1000 ft.)	AC Resistance at 90°C, 60Hz (ohms/1000 ft.)	Inductive Reactance (ohms/1000 ft.)	Voltage Drop (Volts per amp per 1000 ft.)	Maximum Suspended Length (ft.)
2	35	-180WP	1.080	1.389	1047	182	167	155	0.175	0.230	0.055	0.375	190
1	-	-181WP	1.124	1.448	1168	209	192	178	0.140	0.184	0.054	0.310	217
1/0	50	-182WP	1.171	1.495	1285	241	220	205	0.111	0.147	0.052	0.257	250
2/0	70	-183WP	1.226	1.550	1432	278	250	236	0.089	0.117	0.050	0.214	289
3/0	-	-184WP	1.276	1.600	1588	319	288	271	0.070	0.094	0.048	0.180	319
4/0	95	-185WP	1.342	1.665	1797	371	332	315	0.056	0.075	0.046	0.152	359
262	120	-186WP	1.422	1.804	2115	421	376	358	0.046	0.063	0.045	0.134	370
313	150	-187WP	1.469	1.851	2333	467	416	397	0.038	0.053	0.043	0.118	404

MMV-WP Stranding Profile

Size AWG/kcmil	Size mm ²	Number of Strands	Individual Strand Dia. (inches)	Closest IEEE 45 Std. Size	Uninsulated Conductor Dia. (inches)
2	35	133	0.0223	66	0.324
1	-	209	0.0201	83	0.361
1/0	50	266	0.0201	106	0.407
2/0	70	342	0.0201	133	0.461
3/0	-	418	0.0201	168	0.510
4/0	95	532	0.0201	212	0.575
262	120	646	0.0201	262	0.654
313	150	777	0.0201	313	0.720
373	185	925	0.0201	373	0.785
444	-	1110	0.0201	444	0.860
535	240	1332	0.0201	535	0.941
646	300	1591	0.0201	646	1.029
777	400	1924	0.0201	777	1.132



MMV-WP Ampacities & Electrical Data

Ampacities are based on API RP 14F (June 1999) Table 3. Ampacities are based on a 90°C conductor temperature and a 45°C ambient temperature. The 105°C ampacities from this table may be used as permitted. Ampacities covered by NEC article 328.80 may also be used (90°C or 105°C as permitted).

Inductive reactance and voltage drop values are based on a 90°C conductor temperature and 60 Hz operation.

Please consult AmerCable on values based on other parameters.

