

TYPE MMV

MARINE MEDIUM VOLTAGE
STANDARD & VFD POWER CABLES



AmerCable

ENERGY GROUP

TYPE MMV – MARINE MEDIUM VOLTAGE POWER CABLES

Single Conductor: 5kV – 15kV, 100% & 133% Insulation Levels. Rated 90°C
 Multi-Conductor: 5kV – 15kV, 100% & 133% Insulation Levels. Rated 90°C

Conductors

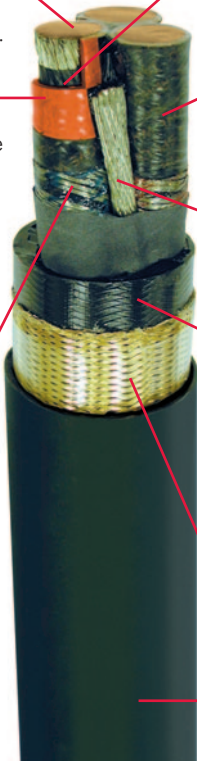
Soft annealed flexible stranded tinned copper per IEEE 1580 Table 11.

Insulation

Extruded thermosetting 90°C Ethylene Propylene Rubber (EPR), meeting UL 1309 (Type E), IEEE 1580 (Type E) and UL 1072.

Metallic Shield

Composite shield consisting of 0.0126" tinned copper braided with nylon providing 60% copper shielded coverage meeting UL 1309, IEEE Std. 1580 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 and UL1072.

Insulation Shield

Semi-conducting tape, with overlap, for fast and easy termination meeting UL 1309, IEEE 1580 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

A black, arctic grade, flame retardant, oil, abrasion, chemical and sunlight resistant thermosetting compound meeting UL 1309, IEEE 1580 and UL 1072. Colored jackets for signifying different voltage levels are also available on special request (ie. yellow = 5kV, orange = 8kV and red = 15kV).

Armor (optional)

(Optional) 0.0126" bronze braid providing 88% minimum coverage meeting UL 1309 and IEEE Std. 45-1998.

Sheath (optional)

A black, arctic grade, flame retardant, oil, abrasion, chemical, and sunlight resistant thermosetting compound meeting UL 1309, IEEE 1580 and UL 1072. Colored jackets for signifying different voltage levels is also available on special request (ie. yellow = 5kV, orange = 8kV and red = 15kV).

APPLICATIONS

AmerCable’s Type MMV marine medium voltage cables are for use aboard commercial ships, mobile offshore drilling units (MODUs), and fixed or floating offshore facilities.

FEATURES

- These cables utilize flexible stranded conductors, braided shields and a braided armor (when armored) which make them very suitable for applications involving repeated flexing and high vibration.
- These cables have a small minimum bending radius (6xOD for unarmored cables and 8xOD for armored cables) 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 on multiple module offshore platforms. Then coiling and terminating other end when modules are mated at sea thereby reducing installation time.
- Passes IEC 332-3 Category A and IEEE 1202 flame tests.

Ratings & Approvals

- UL Listed as Marine Shipboard Cable (E111461)
- American Bureau of Shipping (ABS)
- Det Norske Veritas (DNV) Pending
- Lloyd’s Register of Shipping (LRS) Pending
- 90°C Temperature Rating
- Voltage Rating – 5kV to 15kV (25kV available on request)

Hawke Gland Types	Unarmored	Armored & Sheathed
Industrial & Safe Area (IP68)	121	153-X
Increased Safety "EExe"	501/421	501/453/U
Explosion Proof	710 Class I, Div. 2 Class I, Zone 2	753 Class I, Div. 1 Class I, Zone 1 & 2
Flameproof "EExd"	501/421 Zone 1 & 2	501/453/U (2 liter or < enclosures) ICG 653/U (2 liter or > enclosures) Zone 1 & 2

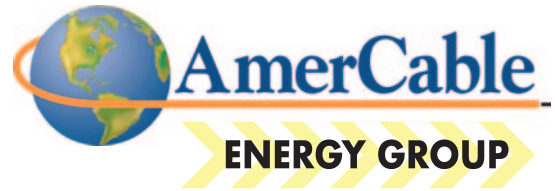
SINGLE CONDUCTOR TYPE MMV MARINE MEDIUM VOLTAGE – 5KV, 100/133% INSULATION LEVEL

Size AWG/ kcmil	mm ²	Part No. 37-105	Unarmored				Armored & Sheathed (BS)				Ampacity			DC Resistance at 25°C (ohms/1000 ft.)	AC Resistance at 90°C, 60 Hz (ohms/1000 ft.)
			Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	Inductive Reactance (ohms/ 1000 ft.)	Voltage Drop (Volts/amp/ 1000 ft.)	Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	Inductive Reactance (ohms/ 1000 ft.)	Voltage Drop (Volts/amp/ 1000 ft.)	In Free Air (amps)	Triangular Configuration (amps)	Single Banked in Tray (amps)		
8	7.6	-101	0.587	205	0.054	1.282	0.803	398	0.061	1.288	80	69	68	0.694	0.885
6	12.5	-102	0.641	260	0.050	0.822	0.900	502	0.058	0.830	107	92	91	0.436	0.556
4	21	-103	0.723	349	0.044	0.566	0.981	620	0.051	0.573	141	121	120	0.286	0.376
2	34	-104	0.790	456	0.041	0.361	1.049	745	0.047	0.367	186	159	158	0.175	0.230
1	43	-105	0.824	522	0.040	0.296	1.082	826	0.047	0.303	214	184	182	0.140	0.184
1/0	54	-106	0.915	645	0.039	0.245	1.160	970	0.045	0.250	247	212	210	0.111	0.147
2/0	70	-107	0.991	797	0.038	0.202	1.240	1171	0.043	0.207	285	244	242	0.089	0.117
3/0	86	-108	1.020	884	0.037	0.278	1.280	1254	0.042	0.173	328	281	279	0.070	0.094
4/0	109	-109	1.087	1053	0.035	0.141	1.332	1414	0.040	0.146	381	325	324	0.056	0.075
262	132	-110	1.167	1266	0.034	0.122	1.391	1645	0.038	0.127	435	371	370	0.046	0.063
313	159	-111	1.210	1293	0.033	0.108	1.469	1725	0.037	0.112	486	413	413	0.038	0.053
373	189	-112	1.310	1683	0.032	0.095	1.555	2138	0.036	0.099	544	460	462	0.032	0.045
444	227	-113	1.369	1935	0.032	0.086	1.614	2407	0.035	0.090	606	510	515	0.027	0.039
535	273	-114	1.436	2223	0.031	0.077	1.753	2826	0.035	0.082	682	570	580	0.022	0.033
646	326	-115	1.535	2598	0.030	0.070	1.852	3236	0.034	0.075	767	635	652	0.019	0.028
777	394	-116	1.632	3066	0.030	0.065	1.935	3728	0.033	0.069	865	709	735	0.015	0.025

SINGLE CONDUCTOR TYPE MMV MARINE MEDIUM VOLTAGE – 8KV, 100% INSULATION LEVEL

Size AWG/ kcmil	mm ²	Part No. 37-105	Unarmored				Armored & Sheathed (BS)				Ampacity			DC Resistance at 25°C (ohms/1000 ft.)	AC Resistance at 90°C, 60 Hz (ohms/1000 ft.)
			Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	Inductive Reactance (ohms/ 1000 ft.)	Voltage Drop (Volts/amp/ 1000 ft.)	Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	Inductive Reactance (ohms/ 1000 ft.)	Voltage Drop (Volts/amp/ 1000 ft.)	In Free Air (amps)	Triangular Configuration (amps)	Single Banked in Tray (amps)		
6	12.5	-118	0.687	287	0.052	0.824	0.946	545	0.059	0.831	107	92	91	0.436	0.556
4	21	-119	0.771	392	0.046	0.567	1.030	667	0.052	0.574	141	121	120	0.286	0.376
2	34	-120	0.874	517	0.043	0.362	1.119	829	0.048	0.368	186	159	158	0.175	0.230
1	43	-121	0.919	594	0.042	0.298	1.164	919	0.047	0.304	214	184	182	0.140	0.184
1/0	54	-122	0.975	693	0.041	0.246	1.233	1047	0.046	0.251	247	212	210	0.111	0.147
2/0	70	-123	1.020	809	0.039	0.203	1.278	1178	0.044	0.208	285	244	242	0.089	0.117
3/0	86	-124	1.069	928	0.038	0.169	1.328	1314	0.043	0.174	328	281	279	0.070	0.094
4/0	109	-125	1.170	1128	0.036	0.142	1.429	1559	0.041	0.147	381	325	324	0.056	0.075
262	132	-126	1.213	1282	0.035	0.123	1.471	1714	0.039	0.128	435	371	370	0.046	0.063
313	159	-127	1.283	1495	0.034	0.109	1.528	1938	0.038	0.113	486	413	413	0.038	0.053
373	189	-128	1.338	1705	0.033	0.096	1.596	2185	0.037	0.100	544	460	462	0.032	0.045
444	227	-129	1.411	1977	0.033	0.087	1.656	2465	0.036	0.091	606	510	515	0.027	0.039
535	273	-130	1.492	2298	0.032	0.078	1.809	2926	0.036	0.082	682	570	580	0.022	0.033
646	326	-131	1.583	2691	0.031	0.071	1.887	3334	0.035	0.075	767	635	652	0.019	0.028
777	394	-132	1.748	3246	0.030	0.066	2.065	3970	0.034	0.070	865	709	735	0.015	0.025

TYPE MMV – MARINE MEDIUM VOLTAGE POWER CABLES



Single Conductor: 5kV – 15kV, 100% & 133% Insulation Levels. Rated 90°C
 Multi-Conductor: 5kV – 15kV, 100% & 133% Insulation Levels. Rated 90°C

SINGLE CONDUCTOR TYPE MMV MARINE MEDIUM VOLTAGE – 8KV, 133% INSULATION LEVEL

Size AWG/ kcmil	Part No. 37-105	Unarmored				Armored & Sheathed (BS)				Ampacity			DC Resistance at 25°C (ohms/1000 ft.)	AC Resistance at 90°C, 60 Hz (ohms/1000 ft.)	
		Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	Inductive Reactance (ohms/ 1000 ft.)	Voltage Drop (Volts/amp/ 1000 ft.)	Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	Inductive Reactance (ohms/ 1000 ft.)	Voltage Drop (Volts/amp/ 1000 ft.)	In Free Air (amps)	Triangular Configuration (amps)	Single Banked in Tray (amps)			
6	12.5	-134	0.739	321	0.054	0.826	0.997	595	0.060	0.832	107	92	91	0.436	0.556
4	21	-135	0.823	419	0.047	0.569	1.081	722	0.053	0.575	141	121	120	0.286	0.376
2	34	-136	0.932	570	0.045	0.365	1.191	910	0.050	0.370	186	159	158	0.175	0.230
1	43	-137	0.971	636	0.044	0.300	1.229	989	0.049	0.305	214	184	182	0.140	0.184
1/0	54	-138	1.017	725	0.042	0.247	1.262	1062	0.047	0.252	247	212	210	0.111	0.147
2/0	70	-139	1.073	856	0.040	0.204	1.332	1243	0.045	0.209	285	244	242	0.089	0.117
3/0	86	-140	1.146	992	0.039	0.171	1.404	1406	0.044	0.175	328	281	279	0.070	0.094
4/0	109	-141	1.191	1157	0.038	0.143	1.445	1580	0.042	0.148	381	325	324	0.056	0.075
262	132	-142	1.265	1334	0.036	0.124	1.518	1525	0.040	0.129	435	371	370	0.046	0.063
313	159	-143	1.335	1554	0.035	0.110	1.580	2065	0.039	0.114	486	413	413	0.038	0.053
373	189	-144	1.392	1768	0.034	0.097	1.651	2266	0.038	0.101	544	460	462	0.032	0.045
444	227	-145	1.461	2040	0.033	0.088	1.778	2906	0.038	0.093	606	510	515	0.027	0.039
535	273	-146	1.589	2418	0.032	0.078	1.892	3063	0.036	0.083	682	570	580	0.022	0.033
646	326	-147	1.645	2676	0.032	0.072	1.962	3364	0.036	0.076	767	635	652	0.019	0.028
777	394	-148	1.790	3298	0.032	0.067	2.107	4035	0.036	0.071	865	709	735	0.015	0.025

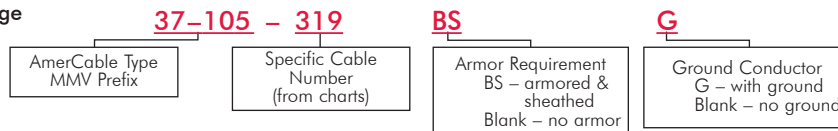
SINGLE CONDUCTOR TYPE MMV MARINE MEDIUM VOLTAGE – 15KV, 100% INSULATION LEVEL

Size AWG/ kcmil	Part No. 37-105	Unarmored				Armored & Sheathed (BS)				Ampacity			DC Resistance at 25°C (ohms/1000 ft.)	AC Resistance at 90°C, 60 Hz (ohms/1000 ft.)	
		Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	Inductive Reactance (ohms/ 1000 ft.)	Voltage Drop (Volts/amp/ 1000 ft.)	Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	Inductive Reactance (ohms/ 1000 ft.)	Voltage Drop (Volts/amp/ 1000 ft.)	In Free Air (amps)	Triangular Configuration (amps)	Single Banked in Tray (amps)			
2	34	-150	1.004	627	0.049	0.369	1.262	990	0.053	0.373	186	164	158	0.175	0.230
1	43	-151	1.046	705	0.047	0.303	1.304	1082	0.051	0.308	214	189	182	0.140	0.184
1/0	54	-152	1.093	815	0.045	0.251	1.351	1210	0.049	0.255	247	217	210	0.111	0.147
2/0	70	-153	1.143	925	0.044	0.208	1.402	1334	0.047	0.212	284	250	241	0.089	0.117
3/0	86	-154	1.192	1050	0.042	0.174	1.451	1478	0.046	0.178	327	288	278	0.070	0.094
4/0	109	-155	1.259	1233	0.040	0.146	1.517	1685	0.044	0.150	378	332	321	0.056	0.075
262	132	-156	1.353	1443	0.039	0.128	1.598	1909	0.042	0.131	431	377	366	0.046	0.063
313	159	-157	1.400	1628	0.038	0.113	1.658	2124	0.042	0.117	481	418	409	0.038	0.053
373	189	-158	1.453	1864	0.037	0.100	1.771	2471	0.041	0.104	536	464	456	0.032	0.045
444	227	-159	1.533	2153	0.036	0.091	1.837	2774	0.040	0.095	598	514	508	0.027	0.039
535	273	-160	1.647	2508	0.036	0.082	1.964	3189	0.039	0.086	672	574	571	0.022	0.033
646	326	-161	1.740	2825	0.035	0.075	2.043	3525	0.038	0.079	754	638	641	0.019	0.028
777	394	-162	1.880	3475	0.034	0.070	2.197	4243	0.037	0.073	848	709	721	0.015	0.025

Ordering Type MMV Medium Voltage Cables

Example:

- 3 conductor power cable
- 8kV 100%
- #2 AWG
- ground
- bronze armored & sheathed



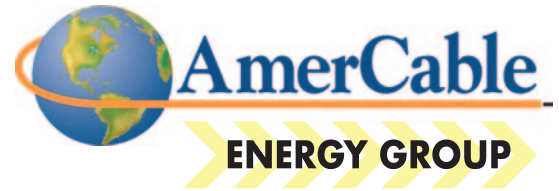
SINGLE CONDUCTOR TYPE MMV MARINE MEDIUM VOLTAGE – 15KV, 133% INSULATION LEVEL

Size AWG/ kcmil	mm ²	Part No. 37-105	Unarmored				Armored & Sheathed (BS)				Ampacity			DC Resistance at 25°C (ohms/1000 ft.)	AC Resistance at 90°C, 60 Hz (ohms/1000 ft.)
			Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	Inductive Reactance (ohms/ 1000 ft.)	Voltage Drop (Volts/amp/ 1000 ft.)	Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	Inductive Reactance (ohms/ 1000 ft.)	Voltage Drop (Volts/amp/ 1000 ft.)	In Free Air (amps)	Triangular Configuration (amps)	Single Banked in Tray (amps)		
2	34	-164	1.089	701	0.050	0.370	1.347	1095	0.055	0.375	186	164	158	0.175	0.230
1	43	-165	1.125	779	0.049	0.305	1.384	1185	0.053	0.309	214	189	182	0.140	0.184
1/0	54	-166	1.178	886	0.047	0.252	1.437	1312	0.051	0.256	247	217	210	0.111	0.147
2/0	70	-167	1.230	1022	0.045	0.209	1.488	1463	0.049	0.213	284	250	241	0.089	0.117
3/0	86	-168	1.291	1162	0.044	0.176	1.536	1614	0.047	0.179	327	288	278	0.070	0.094
4/0	109	-169	1.357	1340	0.042	0.148	1.616	1818	0.046	0.151	378	332	321	0.056	0.075
262	132	-170	1.434	1535	0.040	0.129	1.751	2132	0.044	0.133	431	377	366	0.046	0.063
313	159	-171	1.490	1743	0.039	0.114	1.807	2361	0.043	0.118	481	418	409	0.038	0.053
373	189	-172	1.543	1960	0.038	0.101	1.860	2599	0.042	0.105	536	464	456	0.032	0.045
444	227	-173	1.615	2250	0.038	0.093	1.932	2916	0.041	0.096	598	514	508	0.027	0.039
535	273	-174	1.755	2675	0.037	0.084	2.072	3398	0.040	0.087	672	574	571	0.022	0.033
646	326	-175	1.847	3068	0.036	0.077	2.164	3816	0.039	0.080	754	638	641	0.019	0.028
777	394	-176	1.969	3608	0.035	0.071	2.286	4410	0.038	0.074	848	709	721	0.015	0.025

THREE CONDUCTOR TYPE MMV MARINE MEDIUM VOLTAGE – 5KV, 100/133% INSULATION LEVEL

Size AWG/ kcmil	mm ²	Part No. 37-105	Unarmored		Armored & Sheathed (BS)		Ampacity		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
			Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	In Free Air (amps)	Single Banked in Trays (amps)					
8	7.6	-301	1.176	722	1.434	1356	66	56	0.708	0.885	0.048	1.275	8
6	12.5	-302	1.294	918	1.539	1371	88	75	0.445	0.556	0.044	0.815	6
4	21	-303	1.469	1252	1.773	1847	116	99	0.300	0.376	0.039	0.560	6
2	34	-304	1.615	1620	1.935	2299	152	129	0.184	0.230	0.036	0.356	6
1	43	-305	1.746	1942	2.045	2646	175	149	0.147	0.184	0.035	0.291	4
1/0	54	-306	1.845	2257	2.149	2994	201	171	0.117	0.147	0.034	0.239	4
2/0	70	-307	1.996	2744	2.300	3540	232	197	0.093	0.117	0.033	0.196	4
3/0	86	-308	2.081	3110	2.398	3966	266	226	0.074	0.094	0.032	0.163	3
4/0	109	-309	2.222	3714	2.539	4614	306	260	0.058	0.075	0.031	0.136	3
262	132	-310	2.410	4486	2.789	5614	348	296	0.048	0.063	0.030	0.118	3
313	159	-311	2.488	4599	2.867	5760	386	328	0.040	0.053	0.029	0.104	2
373	189	-312	2.659	5825	3.038	7061	429	365	0.034	0.045	0.029	0.092	2
444	227	-313	2.892	6946	3.270	8297	455	387	0.028	0.039	0.028	0.083	1
535	273	-314	3.036	7961	3.415	9317	528	449	0.024	0.033	0.028	0.074	1
646	326	-315	3.249	9274	3.627	10789	584	496	0.020	0.028	0.027	0.067	1
777	394	-316	3.458	10902	3.823	12471	647	550	0.016	0.025	0.027	0.062	1/0

TYPE MMV – MARINE MEDIUM VOLTAGE POWER CABLES



Single Conductor: 5kV – 15kV, 100% & 133% Insulation Levels. Rated 90°C
 Multi-Conductor: 5kV – 15kV, 100% & 133% Insulation Levels. Rated 90°C

THREE CONDUCTOR TYPE MMV MARINE MEDIUM VOLTAGE – 8KV, 100% INSULATION LEVEL

Size AWG/ kcmil	mm2	Part No. 37-105	Unarmored		Armored & Sheathed (BS)		Ampacity		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
			Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	In Free Air (amps)	Single Banked in Trays (amps)					
6	12.5	-317	1.383	1036	1.651	1534	88	75	0.445	0.556	0.046	0.818	6
4	21	-318	1.574	1378	1.891	2035	116	99	0.300	0.376	0.041	0.562	6
2	34	-319	1.763	1840	2.080	2563	152	129	0.184	0.230	0.038	0.357	6
1	43	-320	1.861	2119	2.178	2883	175	149	0.147	0.184	0.037	0.293	4
1/0	54	-321	1.960	2442	2.277	3242	201	171	0.117	0.147	0.036	0.241	4
2/0	70	-322	2.077	2880	2.394	3729	232	197	0.093	0.117	0.034	0.198	4
3/0	86	-323	2.184	3301	2.501	4192	266	226	0.074	0.094	0.033	0.165	3
4/0	109	-324	2.337	3943	2.654	4889	306	260	0.058	0.075	0.032	0.138	3
262	132	-325	2.493	4568	2.872	5731	348	296	0.048	0.063	0.031	0.119	3
313	159	-326	2.645	5318	3.010	6525	386	328	0.040	0.053	0.030	0.105	2
373	189	-327	2.824	6195	3.203	7510	429	365	0.034	0.045	0.030	0.093	2
444	227	-328	2.981	7150	3.360	8527	455	387	0.028	0.039	0.029	0.084	1
535	273	-329	3.156	8278	3.521	9715	528	449	0.024	0.033	0.029	0.075	1
646	326	-330	3.354	9660	3.732	11206	584	496	0.020	0.028	0.028	0.068	1
777	394	-331	3.583	11307	3.962	12971	647	550	0.016	0.025	0.028	0.063	1/0

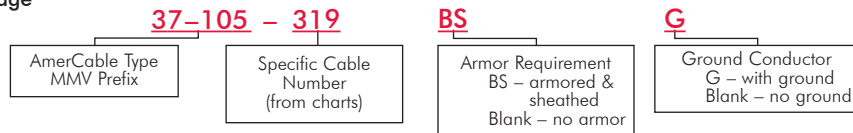
THREE CONDUCTOR TYPE MMV MARINE MEDIUM VOLTAGE – 8KV, 133% INSULATION LEVEL

Size AWG/ kcmil	mm2	Part No. 37-105	Unarmored		Armored & Sheathed (BS)		Ampacity		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
			Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	In Free Air (amps)	Single Banked in Trays (amps)					
6	12.5	-332	1.504	1166	1.821	1796	88	75	0.445	0.556	0.048	0.820	6
4	21	-333	1.743	1629	2.060	2347	116	99	0.300	0.376	0.043	0.564	6
2	34	-334	1.889	2075	2.206	2854	152	129	0.184	0.230	0.040	0.359	6
1	43	-335	1.972	2301	2.289	3110	175	149	0.147	0.184	0.038	0.294	4
1/0	54	-336	2.071	2636	2.375	3464	201	171	0.117	0.147	0.037	0.242	4
2/0	70	-337	2.192	3088	2.509	3982	232	197	0.093	0.117	0.036	0.199	4
3/0	86	-338	2.303	3524	2.606	4442	266	226	0.074	0.094	0.035	0.166	3
4/0	109	-339	2.447	4169	2.812	5295	306	260	0.058	0.075	0.033	0.139	3
262	132	-340	2.620	4854	2.987	6055	348	296	0.048	0.063	0.032	0.121	3
313	159	-341	2.819	5736	3.198	7012	386	328	0.040	0.053	0.032	0.106	2
373	189	-342	2.942	6502	3.286	7804	429	365	0.034	0.045	0.031	0.094	2
444	227	-343	3.090	7436	3.469	8863	455	387	0.028	0.039	0.030	0.085	1
535	273	-344	3.365	8869	3.744	10418	528	449	0.024	0.033	0.030	0.076	1
646	326	-345	3.486	9753	3.864	11361	584	496	0.020	0.028	0.029	0.069	1

Ordering Type MMV Medium Voltage Cables

Example:

- 3 conductor power cable
- 8kV 100%
- #2 AWG
- ground
- bronze armored & sheathed



THREE CONDUCTOR TYPE MMV MARINE MEDIUM VOLTAGE – 15KV, 100% INSULATION LEVEL

			Unarmored		Armored & Sheathed (BS)		Ampacity						
Size AWG/ kcmil	mm2	Part No. 37-105	Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	In Free Air (amps)	Single Banked 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
2	34	-346	2.043	2314	2.360	3147	156	133	0.184	0.230	0.042	0.361	6
1	43	-347	2.133	2599	2.450	3469	178	151	0.147	0.184	0.040	0.296	4
1/0	54	-348	2.235	2992	2.552	3904	205	174	0.117	0.147	0.039	0.244	4
2/0	70	-349	2.343	3392	2.660	4339	234	199	0.093	0.117	0.037	0.201	4
3/0	86	-350	2.449	3838	2.828	4988	269	229	0.074	0.094	0.036	0.168	3
4/0	109	-351	2.592	4490	2.971	5708	309	263	0.058	0.075	0.035	0.141	3
262	132	-352	2.831	5449	3.210	6765	352	299	0.048	0.063	0.034	0.122	3
313	159	-353	2.958	6078	3.337	7448	389	331	0.040	0.053	0.033	0.107	2
373	189	-354	3.074	6892	3.453	8314	432	367	0.034	0.045	0.032	0.095	2
444	227	-355	3.245	7928	3.624	9442	456	388	0.028	0.039	0.031	0.086	1
535	273	-356	3.491	9248	3.869	10858	528	449	0.024	0.033	0.031	0.077	1

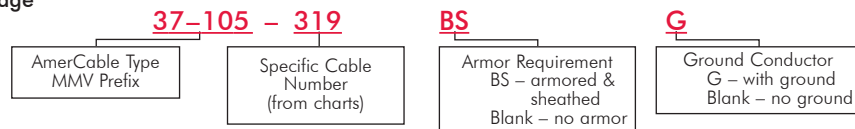
THREE CONDUCTOR TYPE MMV MARINE MEDIUM VOLTAGE – 15KV, 133% INSULATION LEVEL

			Unarmored		Armored & Sheathed (BS)		Ampacity						
Size AWG/ kcmil	mm2	Part No. 37-105	Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	Nominal Diameter (inches)	Weight (Lbs./ 1000 ft.)	In Free Air (amps)	Single Banked 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
2	34	-357	2.226	2655	2.543	3556	156	133	0.184	0.230	0.044	0.364	6
1	43	-358	2.304	2927	2.621	3866	178	151	0.147	0.184	0.043	0.299	4
1/0	54	-359	2.419	3324	2.798	4454	205	174	0.117	0.147	0.041	0.246	4
2/0	70	-360	2.529	3809	2.908	4995	234	199	0.093	0.117	0.039	0.203	4
3/0	86	-361	2.663	4329	3.041	5566	269	229	0.074	0.094	0.038	0.170	3
4/0	109	-362	2.867	5131	3.245	6458	309	263	0.058	0.075	0.037	0.142	3
262	132	-363	3.033	5863	3.411	7273	352	299	0.048	0.063	0.035	0.124	3
313	159	-364	3.153	6602	3.532	8067	389	331	0.040	0.053	0.034	0.109	2
373	189	-365	3.267	7367	3.646	8888	432	367	0.034	0.045	0.034	0.097	2
444	227	-366	3.423	8400	3.801	9991	456	388	0.028	0.039	0.033	0.088	1
535	273	-367	3.598	9594	3.976	11262	528	449	0.024	0.033	0.033	0.079	1

Ordering Type MMV Medium Voltage Cables

Example:

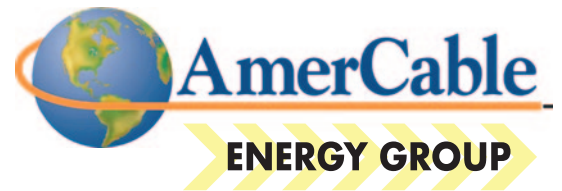
- 3 conductor power cable
- 8kV 100%
- #2 AWG
- ground
- bronze armored & sheathed



37-105VFD

TYPE MMV-VFD MARINE MEDIUM VOLTAGE VFD POWER CABLE

Three Conductor: 8kV – 15kV • 133% Insulation Level • Rated 90°C



Conductors (3)

Soft annealed flexible stranded tinned copper per IEEE 1580 Table 11.

Insulation

Extruded thermosetting 90°C Ethylene Propylene Rubber (EPR), meeting UL 1309 (Type E), IEEE 1580 (Type E) and UL 1072.

Insulation Shield

Composite shield consisting of 0.0126" tinned copper braided with nylon providing 60% copper shielded coverage meeting UL 1309, IEEE Std. 1580, 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.

Low smoke halogen-free jacket available on request.

Conductor Shield

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

Insulation Shield

Semi-conducting layer meeting UL 1309, IEEE 1580 and UL 1072.

Symmetrical Insulated Grounding Conductors (3)

Soft annealed flexible stranded tinned copper conductor per IEEE 1580 Table 11. Gexol Insulation sized per Table 23.2 of UL1072. Color: Green

Jacket

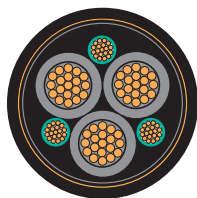
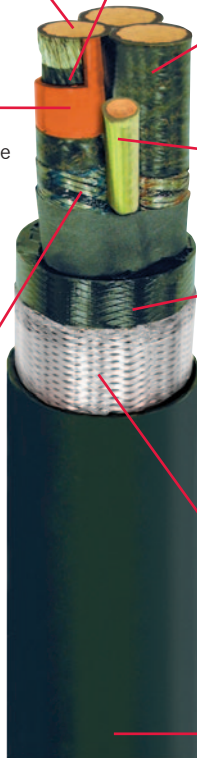
A black, arctic grade, flame retardant, oil, abrasion, chemical and sunlight resistant thermosetting compound meeting UL 1309/CSA 245, IEEE 1580, and UL 1072. This jacket allows for isolation between the insulation shields and overall shield. Shields can then be terminated on opposite ends to minimize circulating currents.

Armor/EMI Shield

Overall tinned copper braid plus aluminum/polyester tape provides 100% coverage. This braid serves as both an armor and EMI shield meeting both IEEE 1580 and UL 1307/CSA 245.

Sheath (optional)

A black, arctic grade, flame retardant, oil, abrasion, chemical and sunlight resistant thermosetting compound meeting UL 1309/CSA 245, IEEE 1580, and UL 1072. Colored jackets for signifying different voltage levels are also available on special request (orange = 8kV and red = 15kV).



APPLICATIONS

A flexible, braid and foil shielded, power cable specifically engineered for use in medium voltage variable frequency AC drive (VFD) applications.

FEATURES

- Flexible stranded conductors and braided shields. Suitable for applications involving repeated flexing and high vibration.
- Small minimum bending radius (8x OD) for easy installation.
- Insulation has a very low dielectric constant. This allows for longer output cable distances and minimizes common mode current.
- Overall braid plus foil shield is engineered with 100% coverage and a surface transfer impedance <50 milliohms at 10MHz to contain EMI.
- Symmetrical insulated ground conductors reduce induced voltage imbalances and carry common mode noise back to the drive.
- High strand count conductors and braid shield design is much more flexible, easier to install and more resistant to vibration than Type MC cable.
- Severe cold durability: exceeds CSA cold bend/cold impact (-40°C/-35°C).
- Flame retardant: IEC 332-3 Category A and IEEE 1202.
- Suitable for use in Class I, Division 1, and Zone 1 environments.

Ratings & Approvals

- UL Listed as Marine Shipboard Cable (E111461)
- American Bureau of Shipping (ABS)
- Det Norske Veritas (DNV) Pending
- Lloyd's Register of Shipping (LRS) Pending
- 90°C Temperature Rating
- Voltage Rating – 8kV to 15kV (25kV available on request)

THREE CONDUCTOR TYPE MMV-VFD MARINE MEDIUM VOLTAGE 8KV • 133% INSULATION LEVEL

						Ampacity							
Size AWG/ kcmil	mm ²	Part No. 37-105	Nominal Diameter (Inches)	Weight (Lbs./ 1000 Ft.)	In Free Air (Amps)	Single Banked 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/Amp/ 1000 Ft.)	Green Insulated Grounding Conductor (3x) Size (AWG)		
6	12.5	-332TSVFD	1.815	1814	88	75	0.445	0.556	0.048	0.820	10		
4	21	-333TSVFD	2.028	2391	116	99	0.300	0.376	0.043	0.564	10		
2	34	-334TSVFD	2.174	2879	152	129	0.184	0.230	0.040	0.359	10		
1	43	-335TSVFD	2.290	3387	175	149	0.147	0.184	0.038	0.294	8		
1/0	54	-336TSVFD	2.356	3551	201	171	0.117	0.147	0.037	0.242	8		
2/0	70	-337TSVFD	2.477	4053	232	197	0.093	0.117	0.036	0.199	8		
3/0	86	-338TSVFD	2.588	4609	266	226	0.074	0.094	0.035	0.166	6		
4/0	109	-339TSVFD	2.815	5393	306	260	0.058	0.075	0.033	0.139	6		
262	132	-340TSVFD	2.968	6218	348	296	0.048	0.063	0.032	0.121	6		
313	159	-341TSVFD	3.166	7126	386	328	0.040	0.053	0.032	0.106	6		
373	189	-342TSVFD	3.289	8121	429	365	0.034	0.045	0.031	0.094	4		
444	227	-343TSVFD	3.437	9035	455	387	0.028	0.039	0.030	0.085	4		
535	273	-344TSVFD	3.735	10585	528	449	0.024	0.033	0.030	0.076	4		

THREE CONDUCTOR TYPE MMV-VFD MARINE MEDIUM VOLTAGE 15KV • 133% INSULATION LEVEL

						Ampacity							
Size AWG/ kcmil	mm ²	Part No. 37-105	Nominal Diameter (Inches)	Weight (Lbs./ 1000 Ft.)	In Free Air (Amps)	Single Banked 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/Amp/ 1000 Ft.)	Green Insulated Grounding Conductor (3x) Size (AWG)		
2	34	-357TSVFD	2.511	3591	156	133	0.184	0.230	0.044	0.364	10		
1	43	-358TSVFD	2.589	3935	178	151	0.147	0.184	0.043	0.299	8		
1/0	54	-359TSVFD	2.704	4368	205	174	0.117	0.147	0.041	0.246	8		
2/0	70	-360TSVFD	2.876	5059	234	199	0.093	0.117	0.039	0.203	8		
3/0	86	-361TSVFD	3.009	5704	269	229	0.074	0.094	0.038	0.170	6		
4/0	109	-362TSVFD	3.213	6592	309	263	0.058	0.075	0.037	0.142	6		
262	132	-363TSVFD	3.379	7404	352	299	0.048	0.063	0.035	0.124	6		
313	159	-364TSVFD	3.500	8196	389	331	0.040	0.053	0.034	0.109	6		
373	189	-365TSVFD	3.614	9135	432	367	0.034	0.045	0.034	0.097	4		
444	227	-366TSVFD	3.769	10236	456	388	0.028	0.039	0.033	0.080	4		

Ordering Type MMV-VFD Medium Voltage Cables

Example:

- 3 conductor MMV-VFD power cable
- 15kV
- #2 AWG

37-105 - 357TSVFD



TYPE MMV STRANDING PROFILE

Size AWG/kcmil	Number of Strands	Individual Strand Dia. (inches)	Closest IEEE 45 Std. Size	Equivalent Metric Size (mm ²)	Uninsulated Conductor Dia. (inches)
8	37	0.0201	16	7.57	0.136
6	61	0.0201	26	12.49	0.175
4	133	0.0177	41	21.11	0.258
2	133	0.0223	66	33.51	0.324
1	209	0.0201	83	42.79	0.361
1/0	266	0.0201	106	54.45	0.407
2/0	342	0.0201	133	70.01	0.461
3/0	418	0.0201	168	85.57	0.510
4/0	532	0.0201	212	108.91	0.575
262	646	0.0201	262	132.25	0.654
313	777	0.0201	313	159.06	0.720
373	925	0.0201	373	189.36	0.785
444	1110	0.0201	444	227.23	0.860
535	1332	0.0201	535	272.68	0.941
646	1591	0.0201	646	325.70	1.029
777	1924	0.0201	777	393.87	1.132
1111	2745	0.0201	1111	561.94	1.354



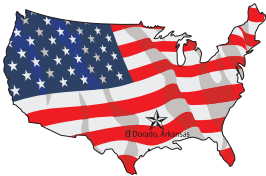
MMV AMPACITIES & ELECTRICAL DATA

Ampacities are based on API RP 14F (June 1999) Table 4 or 5 for single conductor cables and Table 3 for multi-conductor cables. The notes to these tables are also applicable. Ampacities are also based on a 90°C conductor temperature and a 45°C ambient temperature.

Inductive reactance and voltage drop values are based on a 90°C conductor temperature and 60 Hz operation. Values for single conductor cables are based on a symmetrical triangular configuration.

Please consult Nexans AmerCable on values for other configurations.

MMV Bend Radius			
	Unarmored	Armored	Armored & Sheathed
IEEE 45	6X Diameter	8X Diameter	8X Diameter
IEC 92	< 1" (25mm) 4 x Diameter > 1" (25mm) 6X Diameter	6X Diameter	8X Diameter
Transport Canada	< 1" (25mm) 4X Diameter > 1" (25mm) 6X Diameter	6X Diameter	6X Diameter



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