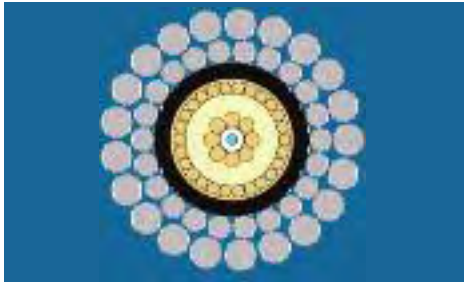




Rochester and Raychem Brand Custom Engineered Cables

for Harsh Environments



Electro-Optic Tow Cables

- Dynamic steel armored, electrical and optical cable solutions for depths up to 6,000 meters for mine sweeping, anti-submarine warfare, sonar, and geophysical usages.
- STEEL-LIGHT optical elements meet challenges posed by harsh environments and hydrostatic pressures encountered at full ocean depths.
- Cable construction designed to endure the demands of required tow strengths and communication while minimizing diameter requirements.



Side Scan Sonar Tow Cables

- Low drag, side scan sonar cables contain both single coaxes and coaxes with multiconductor configurations to interface with towfish.
- Double armored cables and jacketed versions offer high strength for shallow and deepwater search and recovery efforts, as well as archeological, marine construction, and route surveys.
- Range of diameters from 0.433" to 0.880". Constructed for ease of deployment.



ROV and Plow Umbilical Cables

- Deepwater and high tensile strength ROV cables for offshore research, salvage, and oceanographic production. Features include sustainability to high loads as well as specialized optical and conductor elements tailored for data or video transmission.
- Aramid and steel strength umbilical cables provide power to remotely operated vehicles as well as video and data communication.
- Plow umbilicals for trenching, continuous burial, and backfill efforts.



Tethers and Umbilical Cables (Thinwall/Lightweight)

- Heavy lift umbilical cables, neutrally buoyant tether cables and heavy tether cables available for all lifting applications in offshore and marine environments.
- Small size cables offer reduced weight and diameter, providing longer length on current handling equipment.
- Cable types offer high voltage ratings, high temperature, reduced diameter power conductors with flexible conductors, shielded twisted pairs for instrumentation and co-axial or databus for data and video.



Offshore Oil Production Cables

- Uniquely tailored for offshore oil production and exploration, product line includes umbilical tethers, BOP control umbilicals, seismic lead-in cables and ROV cables as well as instrumentation and communication cables.
- High performance armored cables are impervious to the rigorous environmental conditions of offshore drilling and oil production.
- Specialized constructions comprise both optical and electrical capabilities in a variety of diameters and strengths.

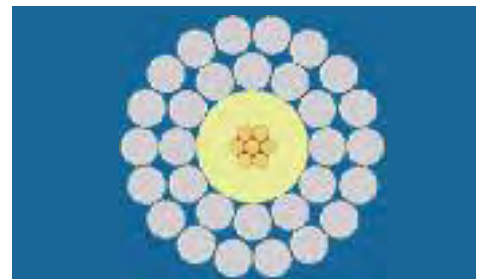
TV Inspection Cables

- Robust cables used with mobile, closed circuit TV inspection systems to exploit subterranean sewer lines and storm sewer facilities.
- Offered in diameters ranging from 0.257" to 0.595".
- Multi-conductor and armored coaxial constructions available.



Single-Conductor CTD & Instrumentation Cables

- Double armored and single-conductor cables tailored for CTD systems used to measure the physical properties of seawater.
- Provides signal transmission for underwater sensors or light mooring tasks.
- Small in diameter, high in strength, suitable for wave and tide recorders and other instrumentation equipment.



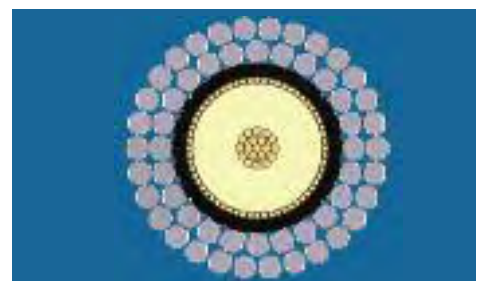
Multi-Conductor Instrumentation Cables

- Double armored cables containing multiple conductors in various gauge constructions customized for oceanographic exploration.
- Furnishes signal transmission for underwater instrumentation and tow devices.
- Manufactured to withstand loads induced.



Coaxial Cables

- Coaxial cables are integral for numerous oceanographic usages and provide ideal telemetry solutions. Net sounder coaxes for the fishing industry can withstand substantial loads. This cable type is also instrumental for shallow and deep tow applications and helicopter dip sonar.
- Offers rugged, superior performance, and strength without sacrificing flexibility.
- Offered in a variety of sizes, cables contain both single and multiple coaxes and conductors.



Armored Mining Cables

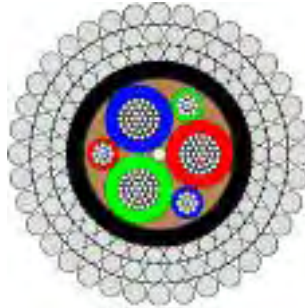
- Product line utilized for lighting, communication, and power in coal mines.
- Flame retardant constructions range from 3 - #14 AWG conductors to 7 - #16 AWG conductors that withstand voltages from 600 Vdc to 1,000 Vdc
- The cables have been approved for use in coal mines by the U.S. Department of Labor, Mine Safety and Health Administration.



NOTE: The products depicted in this catalog are a representation of the various cable types designed and produced. Please contact your Tyco Electronics sales representative for more information.



A301901



A302351



A302356



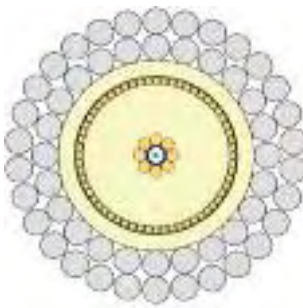
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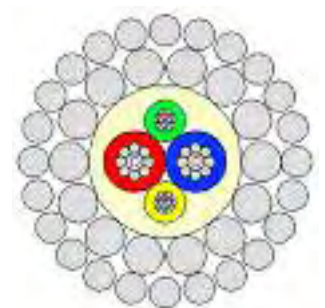
A303950



A303954



A304097



A305382

Part Number	Diameter		Breaking Strength		Weight in Water		Cdrs.	dc Resistance		Fibers
	mm	in	kN	lbf	kg/km	lbs/kft		Ω /km	Ω /kft	
A301901	6.53	.257	24.9	5,600	137	92	2	•	•	1mmf
A302351	17.30	.681	204.6	46,000	905	608	3	4.9	1.5	3smf
A302356	13.72	.540	97.9	22,000	571	384	3	11.5	3.5	3mmf
A303717	18.26	.719	213.5	48,000	984	661	2	•	•	1smf
A303950	11.07	.436	64.5	14,500	332	223	3	23.5	7.2	3mmf
A303954	11.07	.436	64.5	14,500	338	227	3	23.5	7.2	4mmf
A304097	17.27	.680	177.9	40,000	806	542	2	•	•	2smf
A305382	9.98	.393	71.0	16,000	322	217	2	82.0	25.0	2smf



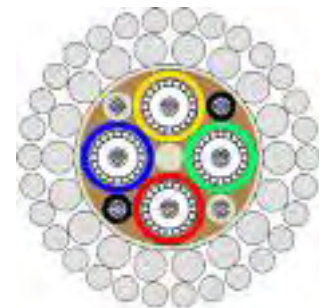
A301301



A302799



A303471



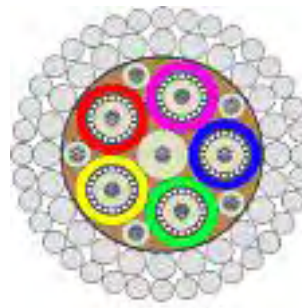
A390480



A390880



A303613



A303567

Part Number	Diameter		Breaking Strength		Weight in Water		Cdrs.	Zo Ω	Coaxes	Stock Item
	mm	in	kN	lbf	kg/km	lbs/kft				
A301301	12.65	.498	89.0	20,000	448	301	3	30	3	Yes
A302799	11.43	.450	71.2	16,000	379	255	0	40	1	Yes
A303471	13.84	.545	24.5	5,500	112	75	4	35	4	Yes
A390480	12.17	.479	84.5	19,000	469	315	4	35	4	Yes
A390880	22.35	.880	204.6	46,000	1,254	843	18	74	1	Yes
A303613	11.00	.433	85.0	19,100	388	261	0	45	1	No
A303567	13.34	.525	86.7	19,500	504	339	6	35	5	No



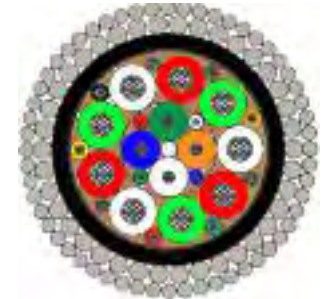
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A303955



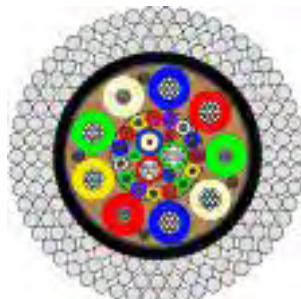
A304267



A304472



A304493



A304562



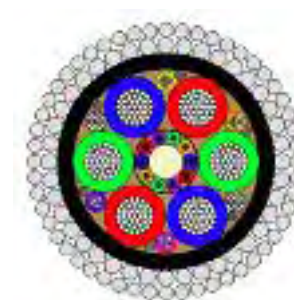
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A304822

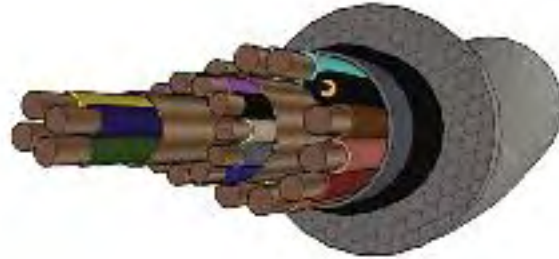
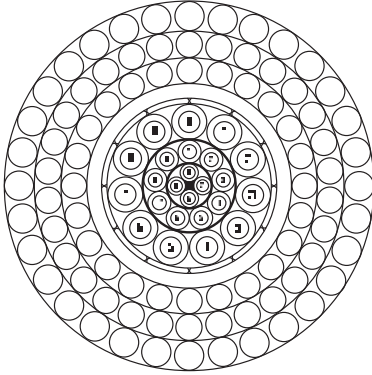


A304835



A304982

Part Number	Diameter		Breaking Strength		Weight in Water		Power Cdrs.	Signal		
	mm	in	kN	lbf	kg/km	lbs/kft		Cdrs.	Coaxes	Fibers
A302467	38.10	1.500	498	112,000	746	501	6	3	-	6smf
A303955	30.48	1.200	271	61,000	598	402	3	-	-	3smf
A304267	43.64	1.718	596	134,000	3,768	2,532	32	16	4	7mmf
A304472	36.32	1.430	449	101,000	2,838	1,907	13	4	-	6smf
A304493	45.62	1.796	645	145,000	4,392	2,951	15	3	-	9smf
A304562	45.52	1.792	845	190,000	5,193	3,490	20	4	1	7smf
A304613	65.38	2.574	1,014	228,000	8,367	5,623	34	-	-	8mmf, 4smf
A304822	42.67	1.680	569	128,000	3,612	2,427	18	16	3	6mmf
A304835	42.42	1.670	641	144,000	4,123	2,771	14	1	-	12smf
A304982	42.10	1.658	623	140,000	4,271	2,870	12	4	-	4smf



TMS and ROV Power

- Voltage ratings to 3000V AC (3 phase)
- Cross sections from 18 AWG to 10 AWG
- 19 and 37 strand tin plated copper conductors
- 0.2 to 0.5mm dual wall, irradiation cross linked insulation
- Temperature rating -65 to +110°C

TMS and ROV Instrumentation

- Voltages ratings to 2400V AC (3 phase)
- Cross sections from 24 AWG to 18 AWG
- 19 strand tin plated copper conductors
- 0.20 to 0.35mm dual wall, irradiation cross linked insulation
- Temperature rating -65 to +110°C
- Constructed as pairs, triples or quads
- Aluminium laminate foil or tin plated copper braid
- Controlled impedance components available on request

Fiber Package

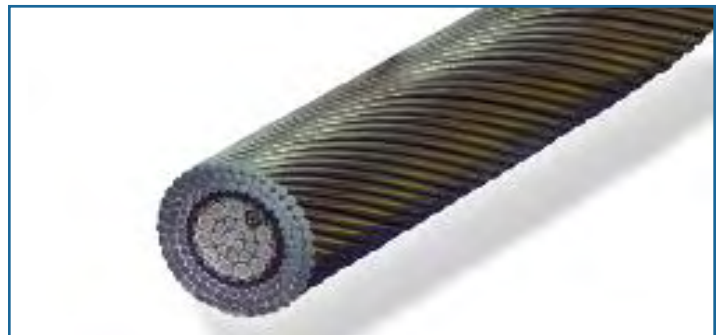
- Single mode, multimode or mixed fiber packages
- 1 to 60 fibers
- 0.8 to 5.0mm OD fiber in steel tube
- Sheathed in polyolefin
- Temperature rating -65 to +110°C

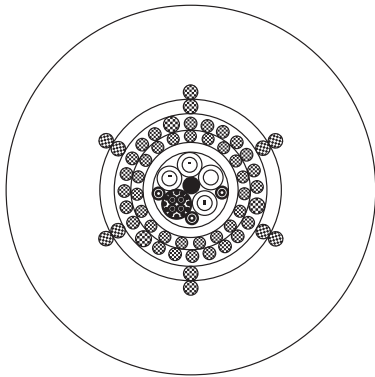
Sheath, Screening and Water Blocking

- Cross linked water block
- Copper laminate tape for grounding
- Tin plated copper braid for grounding and screening
- Polyolefin sheath
- Temperature rating -55 to +100°C
- Water resistant

Armor and Cable Design

- Small size, light weight cable designed to meet customer electrical requirements
- Reduced diameter and weight provides longer length on current handling equipment
- Steel wire armour designed to meet customer working and breaking load requirements
- Torque balanced 2 or 3 layer steel wire armor package
- Pressure injected lubricant to maximize life in the field
- 4000m depth rated





TMS and ROV Power

- Voltages ratings to 3000V AC (3 phase)
- Cross sections from 18 AWG to 10 AWG
- 19 and 37 strand tin plated copper conductors
- 0.2 to 0.5mm dual wall, irradiation cross linked insulation
- Temperature rating -65 to +110°C

TMS and ROV Instrumentation

- Voltages ratings to 2400V AC (3 phase)
- Cross sections from 24 AWG to 18 AWG
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- Controlled impedance components available on request

Fiber Package

- Single mode, multimode or mixed fiber packages
- 1 to 60 fibers
- 0.8 to 5.0mm OD fiber in steel tube
- Sheathed in polyolefin
- Temperature rating -65 to +110°C

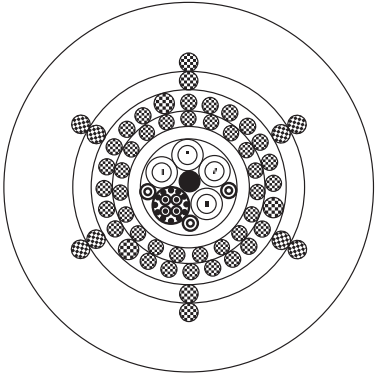
Inner Sheath, Screening and Water Blocking

- Petroleum jelly water block
- Copper laminate tape for grounding
- Tin plated copper braid for grounding and screening
- Polyolefin sheath
- Temperature rating -55 to +100°C
- Water resistant

Cable Design, Armor and Outer Sheath

- Small size, light weight cable designed to meet customer electrical requirements
- Reduced diameter and weight provides longer length on current handling equipment
- Highly flexible design
- Aramid Yarn Armour designed to meet customer working and breaking load requirements
- Design to ensure "locking" of outer jacket and armour
- Neutrally buoyant TPR sheath
- Mechanically resistant TPR sheath
- Excursion lengths to 1000m





TMS and ROV Power

- Voltages ratings to 3000V AC (3 phase)
- Cross sections from 18 AWG to 10 AWG
- 19 and 37 strand tin plated copper conductors
- 0.2 to 0.5mm dual wall, irradiation cross linked insulation
- Temperature rating -65 to +110°C

TMS and ROV Instrumentation

- Voltages ratings to 2400V AC (3 phase)
- Cross sections from 24 AWG to 18 AWG
- 19 strand tin plated copper conductors
- 0.20 to 0.35mm dual wall, irradiation cross linked insulation
- Temperature rating -65 to +110°C
- Constructed as pairs, triples or quads
- Aluminium laminate foil or tin plated copper braid
- Controlled impedance components available on request

Fiber Package

- Single mode, multimode or mixed fiber packages
- 1 to 60 fibers
- 0.8 to 5.0mm OD fiber in steel tube
- Sheathed in polyolefin
- Temperature rating -65 to +110°C

Inner Sheath, Screening and Water Blocking

- Petroleum jelly water block
- Copper laminate tape for grounding
- Tin plated copper braid for grounding and screening
- Polyolefin sheath
- Temperature rating -55 to +100°C
- Water resistant

Cable Design, Armor and Outer Sheath

- Small size, light weight cable designed to meet customer electrical requirements
- Reduced diameter and weight provides longer length on current handling equipment
- Highly flexible design
- Aramid yarn armour designed to meet customer working and breaking load requirements
- Design to ensure “locking” of outer jacket and armour
- Mechanically resistant TPR sheath
- Maximum benefit of small size and light weight design
- Excursion lengths to 2500m





A304287



A304485



A304739



A304763



A304818



A304862



A305532



A305605



A390880

Part Number	Diameter		Breaking Strength		Cdrs.	Optical Fibers	Jacket
	mm	in	kN	lbf			
A304287	38.10	1.500	445	100,000	13	62.5/125/245	Hytrel®
A304485	30.99	1.220	231	52,000	15	-	HDPE
A304739	30.99	1.220	107	24,000	15	-	HDPE
A304763	27.94	1.100	80	18,000	8	62.5/125/245	HDPE
A304818	38.10	1.500	276	62,000	28	-	PE
A304862	27.94	1.110	205	45,000	8	62.5/125/245	Hytrel®
A305532	29.97	1.180	400	90,000	22	-	HDPE
A305605	27.94	1.10	98	22,000	16	62.5/125/245	HDPE
A390880	22.35	.880	204.6	46,000	18	-	Hytrel®

Hytrel is a trademark of E. I. duPont de Nemours and Company.



A300092



A301199



A301359



A304585



A304874

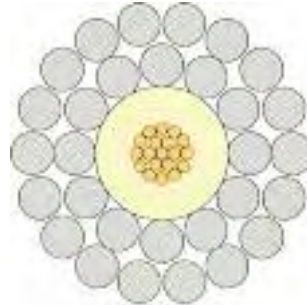
Part Number	Diameter		Breaking Strength		Weight in Air		Description	Voltage Rating
	mm	in	kN	lbf	kg/km	lbs/kft		
A300092	15.11	.595	29.4	6,600	454	305	Multi-conductor	Yes
A301199	7.37	.290	30.2	6,800	198	133	Armored Coax	No
A301359	13.92	.548	8.9	2,000	270	181	Multi-conductor	Yes
A304874	6.53	.257	23.1	5,200	124	83	Armored Coax	No
A304585	11.18	.440	16.9	3,800	189	127	Multi-conductor	Yes



A210100



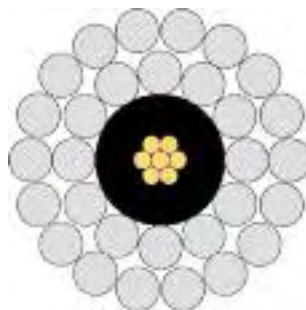
A210124



A216314



A216375



A310255

Part Number	Diameter		Breaking Strength		Weight in Air		Cdr. Resistance		Voltage Rating	Stock Item
	mm	in	kN	lbf	kg/km	lbs/kft	Ohm/km	Ohm/kft		
A210100	2.56	.101	4.4	1,000	8	19	82.7	25.2	600	Yes
A210124	3.12	.123	6.7	1,500	40	27	82.7	25.2	700	Yes
A216314	8.03	.316	49.8	11,200	272	183	9.5	2.9	1,800	Yes
A216375	9.53	.375	64.9	14,600	376	253	9.5	2.9	2,000	Yes
A310255	6.40	.252	28.0	6,300	170	14	23	7.0	2,400	Yes



Part Number	Diameter		Breaking Strength		Weight in Air		Cdrs.	Voltage Rating	Stock Item
	mm	in	kN	lbf	kg/km	lbs/kft			
A240185	4.72	.186	14.7	3,300	89	60	4	400	Yes
A240250	6.35	.250	25.8	5,800	159	107	4	600	Yes
A270250	6.35	.250	25.8	5,800	161	108	7	500	Yes
A276374	9.45	.372	56.9	12,800	362	243	7	600	No
A276422	10.82	.426	81.4	18,300	464	312	7	1,000	No
A27643	11.7	.462	81.4	18,300	485	326	7	1,200	Yes
A279319	8.28	.326	48.9	11,000	272	183	7	600	No
A301592	8.89	.322	43.1	9,700	269	181	7	500	Yes



A301241



A301243



A301301



A301521



A302799



A303613



A304874



A320327



A390480

Part Number	Diameter		Breaking Strength		Weight in Water		Voltage Rating	Zo Ohm	Loop Resistance		Stock Item
	mm	in	kN	lbf	kg/km	lbs/kft			Ohm/km	Ohm/kft	
A301241	17.27	.680	177.9	40,000	823	553	3,000	45	6.7	2.1	Yes
A301243	8.99	.354	48.9	11,000	255	171	1,000	47	30.9	9.4	No
A301301	12.65	.498	89.0	20,000	448	301	1,000	30	N/A	N/A	Yes
A301521	14.10	.555	89.0	20,000	494	332	3,000	50	N/A	N/A	No
A302799	11.43	.450	71.2	16,000	379	255	1,900	40	16.7	5.1	Yes
A303613	11.00	.433	85.0	19,100	388	261	1,500	45	22.4	6.8	Yes
A304874	6.53	.257	23.1	5,200	124	83	1,800	42	52.5	16.0	No
A320327	8.18	.322	42.7	9,600	222	149	1,200	39	33.5	10.2	Yes
A390480	12.17	.479	85.0	19,000	469	315	600	35	66.6	20.3	Yes



Part Number	Diameter		Breaking Strength		Weight in Air		Description	Voltage Rating
	mm	in	kN	lbf	kg/km	lbs/kft		
A301435	16.46	.648	89.0	20,000	708	476	3 - Coax; 3 - Conductor	1,000
A302687	14.10	.555	42.3	9,500	490	329	4 - #12 AWG Conductor	600
A330555	14.10	.555	35.6	8,000	452	304	3 - #14 AWG Conductor	600
A340555	14.10	.555	35.6	8,000	436	293	4 - #16 AWG Conductor	600
A370555	14.10	.555	35.6	8,000	473	318	7 - #16 AWG Conductor	600

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