



A WireCo® WorldGroup Brand



Electromechanical Cable



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QVS MAKES QUALITY YOUR COMPETITIVE ADVANTAGE

During the Camesa EMC manufacturing process a strict quality control program is enforced. Each cable is given a complete electrical and mechanical test to confirm that it meets or exceeds catalog specification. Our revolutionary new **Quality Verification System** (QVS) uses microscopic enhancement to record minute measurements of wirelines to deliver the data you need to back up quality control claims:



- Comprehensive inspection report with a high level of detail and full traceability from drawing of the wire to installation
- Historical data on every cable throughout the entire length
- Information to help clearly delineate operational malfunctions from quality issues

Currently, other wireline manufacturers utilize a series of quality check points on the manufacturing line that are monitored manually by a machine operator via a computer screen or mechanical process. These check points are there to make sure minimum standards are met for a cable's quality before it is allowed to leave the shop floor and sold to a customer. This has been the standard since the beginning of modern manufacturing of wireline in the 1980s and serves well in catching catastrophic failures in quality.

The drawback to this type of quality control system is that the element of human error is still present in the manufacturing process. At the speeds in which cables are manufactured it is impossible for even the most diligent operator to catch minute inconsistencies and may even miss manufacturing defects entirely.

Camesa's QVS system replaces the reliance on a human operator verifying the quality control system during the manufacturing process by gathering the data from each electronically monitored check point into a central server and continually measuring them against upper and lower manufacturing limits. This not only alleviates the possibility that a length of product is manufactured outside of specification due to a human oversight, but it also creates an electronic record of the entire manufacturing life of a particular cable that is stored and available for review. This QVS report is a fully traceable document unique to each individual SKU authenticating with minute specificity every quality check point along the total length of a wireline.

This is a significant milestone in wireline manufacturing because in today's increasingly complex and stringent environmental and safety conscious oil and gas industry, large oil and gas operators desire their wireline service suppliers (our customers) to have complete traceability not only to their own operations but also to the materials used in their oil and gas wells. In the old quality control system this type of traceability was impossible as there was no central point of data collection that could generate such a report.

Today, with QVS, customers and operators alike can be assured that when they purchase a Camesa cable, they can review any specification along the entire length of a wireline down to the individual foot. Furthermore, this system captures data real time and is available via a live feed portal which allows Camesa representatives to present a live view of the manufacturing floor at any given time.

No other wireline manufacturer even comes close to giving this type of verified quality control, manufacturing transparency, or instantaneous authentication of their products. Added to our already extensive quality control program, it's the verifiable performance you need to gain a competitive advantage.

AUTHORIZED AGENTS, DISTRIBUTORS AND SERVICE CENTERS - WESTERN HEMISPHERE**CAMBRIDGE CABLE SERVICE CO.**

PO Box 5
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HORIZON CABLE SERVICE, INC.

3204 2nd Avenue West
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HORIZON CABLE SERVICE, INC.

715 S. Eastman
Longview, TX 75602
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1225 Barron Way
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Contact: Roy Fehse
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HORIZON CABLE SERVICE, INC.

45 N. Cooley
Oklahoma City, OK 73127
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Fax: +1(505) 325-8168
Contact: Ginger Smith
E-mail: gsmith@howard-supply.com

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GOTCHER WIRELINE SERVICE

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Contact: Floyd Dudley
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THE LINE SHOP

5700 SW 11th Street
Oklahoma City, OK 73128
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Contact: Cullen Falgout
E-mail: Cullen@thelineshop.net

SPLICER CABLE SERVICE & SUPPLY INC.

PO Box 50928
Casper, WY 82605
13667 East Highway 2026
Evansville, WY 82604
Phone: +1(307) 472-3318
Fax: +1(307) 472-0633
Contact: Adam McLaughlin
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WRS

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Contact: Tommy Doiron
E-mail: wirelinerepair@aol.com

AUTHORIZED AGENTS, DISTRIBUTORS AND SERVICE CENTERS - EASTERN HEMISPHERE**EM CABLES SERVICE N.S. LTD.**

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Fax: +44(1) 224-724335
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E-mail: em.cables@virgin.net

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Fax: +20(2) 2517-1594
Contact: Amr Youssef
E-mail: amr.youssef@targetoilfield.net

Cable Features

Cables are armored with special galvanized improved plow steel wires or special alloy wires. Tensile strength of each wire lies in the range of 270 to 330 KPSI. Each plow steel wire .035" in diameter or larger has a coating of zinc in excess of 0.5 oz./sq. ft. of surface area. Wires less than .035" in diameter have in excess of 0.2 oz./sq.ft. of surface area.

No butt welds of the original rod during final drawing process are allowed, and no welds are allowed on monoconductor cables.

No splices of any conductor are allowed in any CAMESA cable.

All armor wires are preformed during the manufacturing process.

Resistance and capacitance values for each conductor within a layer are within 4% of the minimum value measured for that layer.

Each layer of armor wires is coated with a corrosion inhibitor.

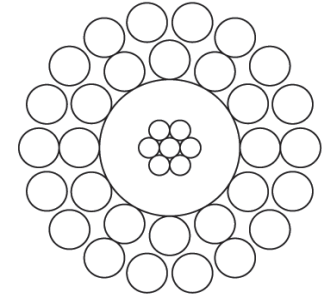
The catalog temperature ratings of CAMESA cables apply for the bottom hole temperatures of ordinary oil/gas well logging situations. "Ordinary" here refers to situations in which borehole temperature increases with depth to a maximum at the bottom of the borehole. Temperature ratings should be lowered when the cable is used in highly deviated wells, in producing or geothermal wells with high temperatures nearer the surface.

All cable diameter values shown in the catalog are nominal and measured under 100-300 lbs. spooling tension onto shipping reel.

Electrical resistance and capacitance values shown in the Camesa catalog are nominal or typical values. All values have been corrected to 20 degrees C.

During the manufacturing process a strict quality control program is enforced. Each cable is given a complete electrical and mechanical test to confirm that it meets or exceeds catalog specification. This CAMESA final inspection report is provided with every cable.

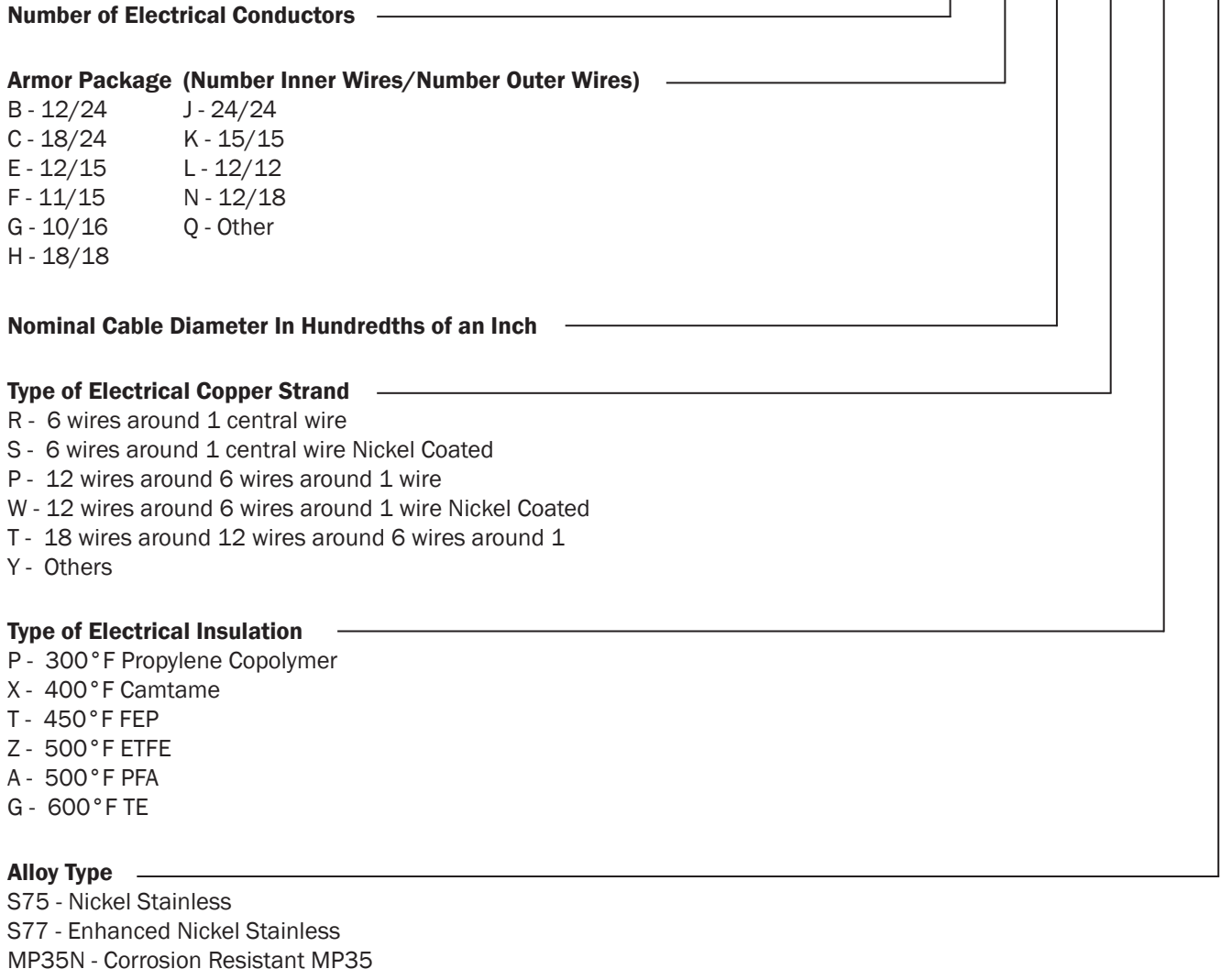
The maximum working tension of any CAMESA cable should not exceed 50% of the published catalog breaking strength.



CABLE TYPE DESIGNATION

Example

1 N 22 S A S75



For a cross reference to Wireline Works products, please see page 45.

Camesa Product Specifications

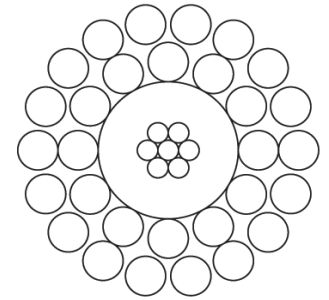
CableType	Size (In)	Nom. Dia. (In)	Max. Temp. F.	Breaking Strength (lbs)	Max. Sug. Working Tension* (lbs)	Weight in Air/Water (lbs/Kft)	Stretch Coeff. (ft/Kft/Klb)	Min. Sheave Dia. (In)	Nom. Resis. (ohm/Kft)	Nom. Cap. (pf/ft)	Max Voltage DC	Arm Res (ohm/Kft)	No. Armor Wires (In/out)	Wire Break Strength (lbs) (In/out)
1N10RP	1/10	0.101	300	1,000	500	19/15	13.1	6	21	51	300	22	12/18	42/42
1N12RP	1/8	0.126	300	1,600	800	28/23	6.5	7	21	41	300	13	12/18	65/65
1N12RZ	1/8	0.126	500	1,600	800	29/24	6.5	7	21	48	300	13	12/18	65/65
1L18RP	3/16	0.185	300	4,000	2,000	65/54	3	14	9.4	53	1000	6	12/12	103/272
1L18RZ	3/16	0.185	500	4,000	2,000	66/55	3	14	9.4	63	1000	6	12/12	103/272
1K22PP	7/32	0.224	300	5,600	2,800	91/75	2.2	14	4	60	1200	4.3	15/15	132/286
1K22PXZ	7/32	0.224	420	5,600	2,800	92/76	2.2	14	4	61	1200	4.3	15/15	132/286
1K22PTZ	7/32	0.224	500	5,600	2,800	94/78	2.2	14	4	58	1200	4.3	15/15	132/286
1K22SA-S75	7/32	0.224	500	4,700	2,350	95/78	2.7	14	6.7	43	1200	16	15/15	111/242
1K22SA-S77	7/32	0.224	500	4,900	2,450	94/80	3	14	6.7	43	1200	18.5	15/15	116/252
1K22SA-MP35N	7/32	0.224	500	5,200	2,600	100/86	2.9	14	6.7	43	1200	22	15/15	125/272
1N22PP	7/32	0.224	300	5,600	2,800	93/77	2.5	13	4.1	58	1200	4.4	12/18	215/215
1N22PXZ	7/32	0.224	420	5,600	2,800	95/80	2.5	13	4.1	59	1200	4.4	12/18	215/215
1N22PTZ	7/32	0.224	500	5,600	2,800	97/80	2.5	13	4.1	58	1200	4.4	12/18	215/215
1N22WG	7/32	0.224	600	5,200	2,600	97/80	2.5	13	4.7	58	1200	4.4	12/18	204/204
1N22SA-S75	7/32	0.224	500	4,700	2,350	98/81	3.1	13	6.7	43	1200	18.1	12/18	181/181
1N22SA-S77	7/32	0.224	500	4,900	2,450	97/81	3.1	13	6.7	43	1200	18.1	12/18	189/189
1N22SA-MP35N	7/32	0.224	500	5,200	2,600	100/86	2.9	13	6.7	43	1200	22	12/18	204/204
1N25PP	1/4	0.258	300	7,000	3,500	121/100	1.9	14	4.1	50	1200	3	12/18	272/272
1N25PXZ	1/4	0.258	420	7,000	3,500	124/101	1.9	14	4.1	53	1200	3	12/18	272/272
1N25PTZ	1/4	0.258	500	7,000	3,500	125/103	1.9	14	4.1	53	1200	3	12/18	272/272
1N25WA-S75	1/4	0.258	500	6,000	3,000	127/102	2.3	14	4.6	53	1200	16.5	12/18	242/242
1N25WA-S77	1/4	0.258	500	6,500	3,250	129/106	2.3	14	4.6	53	1200	10	12/18	252/252
1N29PP-EHS	9/32	0.288	300	10,200	5,100	152/125	1.55	16	2.8	56	1500	2.8	12/18	393/393
1N29PTZ-EHS	9/32	0.288	500	10,200	5,100	157/130	1.55	16	2.8	55	1500	2.8	12/18	393/393
1N29PA-EHS	9/32	0.288	500	10,200	5,100	159/131	1.55	16	2.8	51	1500	2.8	12/18	393/393
1N29WTZ-S75	9/32	0.288	500	7,800	3,900	162/134	1.9	16	4	54	1500	10	12/18	302/302
1N29WTZ-S77	9/32	0.288	500	8,200	4,100	161/133	2	16	3.2	60	1500	10	12/18	317/317
1N32PP	5/16	0.322	300	12,000	6,000	187/155	1.2	18	2.8	46	1500	2.1	12/18	442/442
1N32PXZ	5/16	0.322	420	12,000	6,000	189/157	1.2	18	2.8	47	1500	2.1	12/18	442/442
1N32PTZ	5/16	0.322	500	12,000	6,000	194/160	1.2	18	2.8	45	1500	2.1	12/18	442/442
1N32WG	5/16	0.322	600	12,000	6,000	195/161	1.2	18	3.2	46	1500	2.1	12/18	420/420
1N32PTZ-LR	5/16	0.322	500	12,000	6,000	198/163	1.2	18	2.3	58	1500	2.1	12/18	442/442
1N32WTZ-S75	5/16	0.322	500	9,700	4,850	201/166	1.6	18	3.2	45	1500	11.2	12/18	373/373
1N32WTZ-S77	5/16	0.322	500	9,700	4,850	198/163	1.6	18	3.2	45	1500	11.2	12/18	373/373
1N42PTZ-LR	7/16	0.425	500	19,500	9,750	336/278	0.7	24	2	37.5	1500	1.2	12/18	765/765
3Q37RP	0.377	0.377	300	13,200	6,600	233/192	1.6	19	7.1	47	1200	1.6	16/20	383/469
3Q40PXZ	13/32	0.408	420	15,200	7,600	303/250	0.9	20.4	3.1	90.1	1200	1.5	18/20	383.4/552
3H47PP	0.474	0.474	300	22,000	11,000	369/303	0.61	26	6	44	1200	1.1	18/18	469/910
3H47PXZ	0.474	0.474	420	22,000	11,000	376/310	0.61	26	6	45	1200	1.1	18/18	469/910
3H47PTZ	0.474	0.474	500	22,000	11,000	382/316	0.61	26	6	43	1200	1.1	18/18	469/910
4H18RPP	3/16	0.186	300	3,100	1,550	60/50	4.25	10	22.5	36	300	6.7	18/18	72/130
7H32RP	5/16	0.325	300	9,500	4,750	183/152	1.8	18	15.8	55	1000	2.3	18/18	217/420
7H32RZ	5/16	0.325	500	9,500	4,750	188/157	1.8	18	15.8	67	1000	2.3	18/18	217/420
7Q38RAZB	3/8	0.378	500	13,100	6,550	255/211	1.4	19	9.8	37	1000	1.8	20/20	255/211
7H42RP	7/16	0.426	300	17,600	8,800	309/256	0.75	24	9.8	53	1000	1.2	18/18	403/764
7H42RZ	7/16	0.426	500	17,600	8,800	318/263	0.75	24	9.8	62	1000	1.2	18/18	403/764
7J46RP	15/32	0.464	300	19,100	9,550	321/265	0.77	20	9.8	40	1200	1.3	24/24	357/575
7J46RXZ	15/32	0.464	420	19,100	9,550	340/281	0.77	20	9.8	40	1200	1.3	24/24	357/575
7J46RTZ	15/32	0.464	500	19,100	9,550	341/282	0.77	20	9.8	39	1200	1.3	24/24	357/575
7H47RP-EHS	0.474	0.474	300	24,500	12,250	372/308	0.61	26	9.8	46	1100	1.1	18/18	542/1054
7H47RXZ-EHS	0.474	0.474	420	24,500	12,250	379/313	0.61	26	9.8	48	1100	1.1	18/18	542/1054
7H47RTZ-EHS	0.474	0.474	500	24,500	12,250	392/326	0.61	26	9.8	46	1100	1.1	18/18	542/1054
7Q48RTZ-EHS	0.484	0.484	500	27,100	13,550	412/340	0.61	27	9.8	46	1000	1	16/18	703/1103
7Q49RTZZ-EHS	0.490	0.490	500	25,750	12,875	409/338	0.6	25	9.8	27	1200	1	20/20	532/966
7Q49RTZZ-EEHS	0.490	0.490	500	30,000	15,000	409/338	0.6	25	9.8	27	1200	1	20/20	607/1103

*Maximum Working Tension = 1/2 Breaking Strength

Type Code: P-Polypropylene T-FEP X-Camtane Z-ETFE A-PFA G-TE
 Color: Yellow Clear Blue Orange Clear Clear

Additional cables are available upon request.

Email Camesa-info@wirecoworldgroup.com
www.camesainc.com



**1/10" (2.56 mm)
MONOCONDUCTOR
1N10**

PROPERTIES

Cable Diameter	0.101" +0.004" -0.002"	(2.56mm + 0.10mm -0.05mm)
Minimum Sheave Diameter	6"	(15 cm)
Cable Stretch Coefficient	13.1 ft/Kft/Klbs	(14.72 m/Km/5KN)

ELECTRICAL

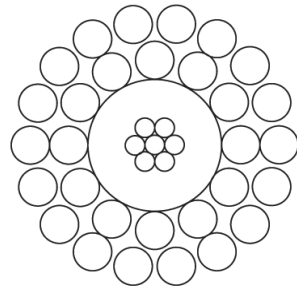
Maximum Conductor Voltage	300 VDC	
Conductor AWG Rating	24	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	22.0 Ω/Kft	(72.2 Ω/Km)

MECHANICAL

Cable Breaking Strength		
Ends Fixed	1,000 lbs	(4.4 KN) Nominal
Maximum Suggested Working Tension	500 lbs	(2.2 KN)
Number and Size of Wires		
Inner Armor	12 x 0.0140"	(0.356 mm)
Outer Armor	18 x 0.0140"	(0.356 mm)
Average Wire Breaking Strength		
Inner Armor	42 lbs	(0.19 KN)
Outer Armor	42 lbs	(0.19 KN)

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1N10RP	300 149	Poly	0.012 0.305	7x0.0085 7x0.216	21.0 69.0	51 167	0.049 1.244	19 28	15 23

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly – Copper strand consists of six wires around one center wire. Conductor resistance is measured at 68 ° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



**1/8" (3.20 mm)
MONOCONDUCTOR
1N12**

PROPERTIES

Cable Diameter	0.126" +0.004" -0.002"	(3.20mm + 0.10mm -0.05mm)
Minimum Sheave Diameter	7"	(18 cm)
Cable Stretch Coefficient	6.5 ft/Kft/Klbs	(7.30 m/Km/5KN)

ELECTRICAL

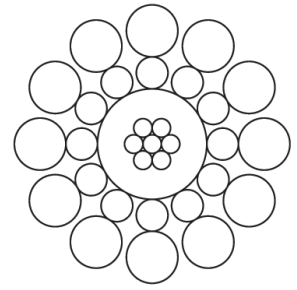
Maximum Conductor Voltage	300 VDC	
Conductor AWG Rating	24	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	13.0 Ω/Kft	(42.6 Ω/Km)

MECHANICAL

Cable Breaking Strength		
Ends Fixed	1,600 lbs	(7.1 KN) Nominal
Maximum Suggested Working Tension	800 lbs	(3.5 KN)
Number and Size of Wires		
Inner Armor	12 x 0.0175"	(0.444 mm)
Outer Armor	18 x 0.0175"	(0.444 mm)
Average Wire Breaking Strength		
Inner Armor	65 lbs	(0.29 KN)
Outer Armor	65 lbs	(0.29 KN)

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1N12RP	300	Poly	0.0175	7x0.0085	21.0	41	0.060	28	23
	149							42	35
1N12RZ	500	ETFE	0.0175	7x0.0085	21.0	48	0.060	29	24
	260							43	36

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly – Copper strand consists of six wires around one center wire. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



**3/16" (4.70 mm)
MONOCONDUCTOR
1L18**

PROPERTIES

Cable Diameter	0.185" +0.004" -0.002"	(4.70mm + 0.10mm -0.05mm)
Minimum Sheave Diameter	14"	(36 cm)
Cable Stretch Coefficient	3.0 ft/Kft/Klbs	(3.37 m/Km/5KN)

ELECTRICAL

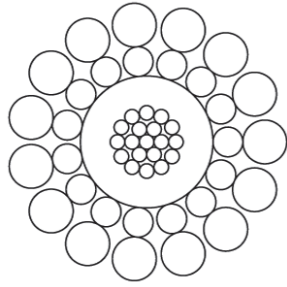
Maximum Conductor Voltage	1,000 VDC	
Conductor AWG Rating	20	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	6.0 Ω/Kft	(19.7 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	4,000 lbs	(17.8 KN)	Nominal
Maximum Suggested Working Tension	2,000 lbs	(8.9 KN)	Nominal
Number and Size of Wires			
Inner Armor	12 x 0.0220"	(0.559 mm)	
Outer Armor	12 x 0.0358"	(0.909 mm)	
Average Wire Breaking Strength			
Inner Armor	103 lbs	(0.46 KN)	
Outer Armor	272 lbs	(1.21 KN)	

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1L18RP	300 149	Poly	0.019 0.483	7x0.0128 7x0.325	9.4 30.8	53 174	0.076 1.930	65 97	54 80
1L18RZ	500 260	ETFE	0.019 0.483	7x0.0128 7x0.325	9.4 30.8	63 207	0.076 1.930	66 99	55 81

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly – Copper strand consists of six wires around one center wire. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



**7/32" (5.69 mm)
MONOCONDUCTOR
1K22**

PROPERTIES

Cable Diameter	0.224" +0.005" - 0.002"	(5.69mm +0.13mm -0.05mm)
Minimum Sheave Diameter	14"	(36cm)
Cable Stretch Coefficient	2.2 ft/Kft/Klbs	(2.50 m/Km/5KN)

ELECTRICAL

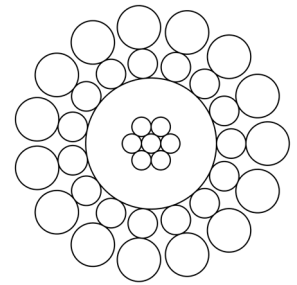
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	16	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 Mega Ω/Km @ 500VDC)
Armor Electrical Resistance	4.3 Ω/Kft	(14.1 Ω/Km)

MECHANICAL

Cable Breaking Strength		
Ends Fixed	5,600 lbs	(24.9 KN) Nominal
Maximum Suggested Working Tension	2,800 lbs	(12.5 KN)
Number and Size of Wires		
Inner Armor	15 x 0.0243"	(0.617 mm)
Outer Armor	15 x 0.0358"	(0.909 mm)
Average Wire Breaking Strength		
Inner Armor	132 lbs	(0.59 KN)
Outer Armor	286 lbs	(1.27 KN)

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1K22PP	300 149	Poly	0.0245 0.622	19x0.0119 19x0.302	4.0 13.1	60 197	0.108 2.743	91 136	75 112
1K22PXZ	420 216	Camtane	0.0130 0.330	19x0.0119 19x0.302	4.0 13.1	61 200	0.085 2.159	92 137	76 114
		ETFE	0.0115 0.292				0.108 2.743		
1K22PTZ	500 260	FEP	0.0130 0.330	19x0.0119 19x0.302	4.0 13.1	58 190	0.085 2.159	94 140	78 116
		ETFE	0.0115 0.292				0.108 2.743		

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly – Copper strand consists of a total of nineteen wires. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



7/32" (5.69 mm)
MONOCONDUCTOR, CORROSION RESISTANT
1K22 S75

PROPERTIES

Cable Diameter	0.224" +0.005" - 0.002"	(5.69mm + 0.13mm -0.05mm)
Minimum Sheave Diameter	14"	(36 cm)
Cable Stretch Coefficient	2.7 ft/Kft/Klbs	(3.0 m/Km/5KN)

ELECTRICAL

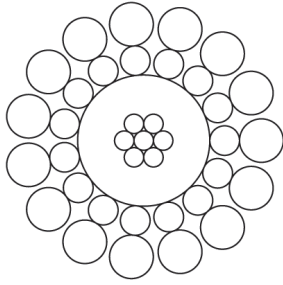
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	18	
Minimum Insulation Resistance	1,500 Mega Ω /Kft @ 500VDC	(457 Mega Ω /Km @ 500VDC)
Armor Electrical Resistance	16.0 Ω /Kft	(52.5 Ω /Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	4,700 lbs	(20.9 KN)	Nominal
Maximum Suggested Working Tension	2,350 lbs	(10.5 KN)	
Number and Size of Wires			
Inner Armor	15 x 0.0243"	(0.617 mm)	
Outer Armor	15 x 0.0358"	(0.909 mm)	
Average Wire Breaking Strength			
Inner Armor	111 lbs	(0.50 KN)	
Outer Armor	242 lbs	(1.10 KN)	

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω /Kft Ω /Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1K22SA-S75	See Below	PFA	0.0305 0.775	7x0.0159 7x0.404	6.7 22.0	43 141	0.108 2.743	95 142	78 117

- Insulation is rated to 500° F. Armor wires are rated to 325° F at low exposure to H₂S + CO₂.
- The armor wires are made of a corrosion resistant alloy steel. Wires are preformed.
- The nickel coated copper wires are made of ASTM B355 Class 10 and they are used to increase corrosion protection.
- Core assembly – Copper strand consists of six wires around one center wire. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The insulation temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



7/32" (5.69 mm)
MONOCONDUCTOR, CORROSION RESISTANT
1K22 S77

PROPERTIES

Cable Diameter	0.224" +0.005" - 0.002"	(5.69mm + 0.13mm -0.05mm)
Minimum Sheave Diameter	14"	(36 cm)
Cable Stretch Coefficient	3.0 ft/Kft/Klbs	(3.4 m/Km/5KN)

ELECTRICAL

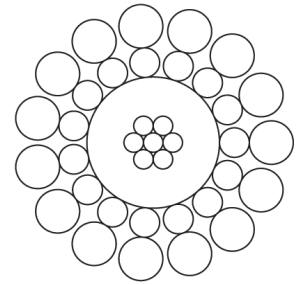
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	18	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 Mega Ω/Km @ 500VDC)
Armor Electrical Resistance	18.5 Ω/Kft	(60.7 Ω/Km)

MECHANICAL

Cable Breaking Strength		
Ends Fixed	4,900 lbs	(21.8 KN) Nominal
Maximum Suggested Working Tension	2,450 lbs	(10.9 KN)
Number and Size of Wires		
Inner Armor	15 x 0.0243"	(0.617 mm)
Outer Armor	15 x 0.0358"	(0.909 mm)
Average Wire Breaking Strength		
Inner Armor	116 lbs	(0.52 KN)
Outer Armor	252 lbs	(1.12 KN)

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Insulation	Type Thickness in mm	Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1K22SA-S77	See Below	PFA	0.0305 0.775	7x0.0159 7x0.404	6.7 22.0	43 141	0.108 2.743	94 140	80 119

- Insulation is rated to 500 °F. Armor wires are rated to 425 ° F at medium levels of H₂S + CO₂.
- The armor wires are made of a corrosion resistant alloy steel. Wires are preformed.
- The nickel coated copper wires are made of ASTMB355 Class 10 and they are used to increase corrosion protection.
- Core assembly – Copper strand consists of six wires around one center wire. Conductor resistance is measured at 68 ° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



7/32" (5.69 mm)
MONOCONDUCTOR, CORROSION RESISTANT
1K22 MP35N

PROPERTIES

Cable Diameter	0.224" +0.005" - 0.002"	(5.69mm + 0.13mm -0.05mm)
Minimum Sheave Diameter	14"	(36 cm)
Cable Stretch Coefficient	2.9 ft/Kft/Klbs	(3.30 m/Km/5KN)

ELECTRICAL

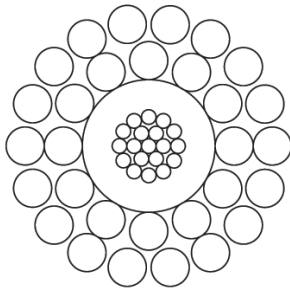
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	18	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	22.0 Ω/Kft	(72.2 Ω/Km)

MECHANICAL

Cable Breaking Strength		
Ends Fixed	5,200 lbs	(23.0 KN) Nominal
Maximum Suggested Working Tension	2,600 lbs	(11.6 KN)
Number and Size of Wires		
Inner Armor	15 x 0.0243"	(0.617 mm)
Outer Armor	15 x 0.0358"	(0.909 mm)
Average Wire Breaking Strength		
Inner Armor	125 lbs	(0.56 KN)
Outer Armor	272 lbs	(1.21 KN)

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1K22SA-MP35N	See Below	PFA	0.0305 0.775	7x0.0159 7x0.404	6.7 22.0	43 141	0.108 2.743	100 149	86 128

- Insulation is rated to 500 °F. Armor wires are rated to 475 °F at 100% levels of H₂S + CO₂.
- The armor wires are made of UNS R30035 (MP35N), a nickel-cobalt corrosion resistant alloy steel. Wires are preformed.
- The nickel coated copper wires are made according to ASTM B355 Class 10 and they are used to increase corrosion protection. Core assembly - Copper strand consists of six wires around one center wire. Conductor resistance is measured at 68 ° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



**7/32" (5.69 mm)
MONOCONDUCTOR
1N22**

PROPERTIES

Cable Diameter	0.224" +0.005" - 0.002"	(5.69mm + 0.13mm -0.05mm)
Minimum Sheave Diameter	13"	(33 cm)
Cable Stretch Coefficient	2.5 ft/Kft/Klbs	(2.81 m/Km/5KN)

ELECTRICAL

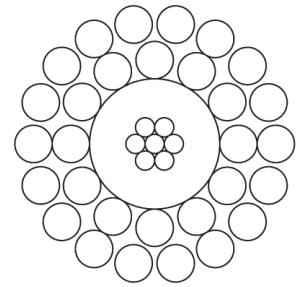
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	16	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	4.4 Ω/Kft	(14.4 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	5,600 lbs	(24.9 KN)	Nominal
Maximum Suggested Working Tension	2,800 lbs	(12.5 KN)	
Number and Size of Wires:			
Inner Armor	12 x 0.0310"	(0.787 mm)	
Outer Armor	18 x 0.0310"	(0.787 mm)	
Average Wire Breaking Strength			
Inner Armor	215 lbs	(0.96 KN)	
Outer Armor	215 lbs	(0.96 KN)	

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1N22PP	300 149	Poly	0.0245 0.622	19x0.0119 19x0.302	4.1 13.5	58 190	0.108 2.743	93 139	77 115
1N22PXZ	420 216	Camtane	0.0130 0.330	19x0.0119 19x0.302	4.1 13.5	59 194	0.085 2.159	95 141	80 119
		ETFE	0.0115 0.292				0.108 2.743		
1N22PTZ	500 260	FEP	0.0130 0.330	19x0.0119 19x0.302	4.1 13.5	58 190	0.085 2.159	96 143	80 119
		ETFE	0.0115 0.292				0.108 2.743		
1N22WG	600 316	TE	0.0245 0.622	19x0.0119 19x0.302	4.7 15.4	58 190	0.108 2.743	97 144	80 119

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- The nickel coated copper wires are made of ASTMB355 Class 10 and they are used to increase corrosion protection.
- Core assembly – Copper strand consists of a total of nineteen wires. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



7/32" (5.69 mm)
MONOCONDUCTOR, CORROSION RESISTANT
1N22 S75

PROPERTIES

Cable Diameter	0.224" +0.005" - 0.002"	(5.69mm + 0.13mm -0.05mm)
Minimum Sheave Diameter	13"	(33 cm)
Cable Stretch Coefficient	3.1 ft/Kft/Klbs	(3.5 m/Km/5KN)

ELECTRICAL

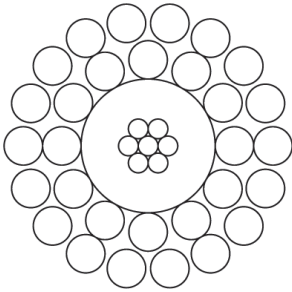
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	18	
Minimum Insulation Resistance	1,500 Mega Ω /Kft @ 500VDC	(457 Mega Ω /Km @ 500VDC)
Armor Electrical Resistance	18.1 Ω /Kft	(59.4 Ω /Km)

MECHANICAL

Cable Breaking Strength		
Ends Fixed	4,700 lbs	(20.9 KN) Nominal
Maximum Suggested Working Tension	2,350 lbs	(10.5 KN)
Number and Size of Wires		
Inner Armor	12 x 0.0310"	(0.787 mm)
Outer Armor	18 x 0.0310"	(0.787 mm)
Average Wire Breaking Strength		
Inner Armor	181 lbs	(0.81 KN)
Outer Armor	181 lbs	(0.81 KN)

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω /Kft Ω /Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1N22SA-S75	See Below	PFA	0.0305 0.775	7x0.0159 7x0.404	6.7 22.0	43 141	0.108 2.743	98 145	81 120

- Insulation is rated to 500° F. Armor wires are rated to 325° F at low levels of H₂S + CO₂.
- The armor wires are made of a corrosion resistant alloy steel. Wires are preformed.
- The nickel coated copper wires are made according to ASTM B355 Class 10 and they are used to increase corrosion protection.
- Core assembly – Copper strand consists of six wires around one center wire. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



**7/32" (5.69 mm)
MONOCONDUCTOR, CORROSION RESISTANT
1N22 S77**

PROPERTIES

Cable Diameter	0.224" +0.005" - 0.002"	(5.69mm + 0.13mm -0.05mm)
Minimum Sheave Diameter	13"	(33 cm)
Cable Stretch Coefficient	3.1 ft/Kft/Klbs	(3.5 m/Km/5KN)

ELECTRICAL

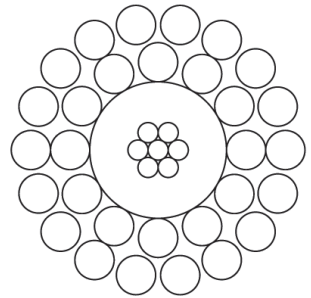
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	18	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	18.1 Ω/Kft	(59.4 Ω/Km)

MECHANICAL

Cable Breaking Strength Ends Fixed	4,900 lbs	(21.8 KN)	Nominal
Maximum Suggested Working Tension	2,450 lbs	(10.9 KN)	
Number and Size of Wires			
Inner Armor	12 x 0.0310"	(0.787 mm)	
Outer Armor	18 x 0.0310"	(0.787 mm)	
Average Wire Breaking Strength			
Inner Armor	189 lbs	(0.84 KN)	
Outer Armor	189 lbs	(0.84 KN)	

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in Mm	in Air	in H ₂ O
								lbs/Kft kg/Km	
1N22SA-S77	See Below	PFA	0.0305 0.7747	7x0.0159 7x0.404	6.7 22.0	43 141	0.108 2.743	97 144	81 119

- Insulation is rated to 500° F. Armor wires are rated to 425° F at medium levels of H₂S + CO₂.
- The armor wires are made of a corrosion resistant alloy steel. Wires are preformed.
- The nickel coated copper wires are made according to ASTM B355 Class 10 and they are used to increase corrosion protection.
- Core assembly - Copper strand consists of six wires around one center wire. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



7/32" (5.69 mm)
MONOCONDUCTOR, CORROSION RESISTANT
1N22 MP35N

PROPERTIES

Cable Diameter	0.224" +0.005" - 0.002"	(5.69mm + 0.13mm -0.05mm)
Minimum Sheave Diameter	13"	(33 cm)
Cable Stretch Coefficient	2.9 ft/Kft/Klbs	(3.30 m/Km/5KN)

ELECTRICAL

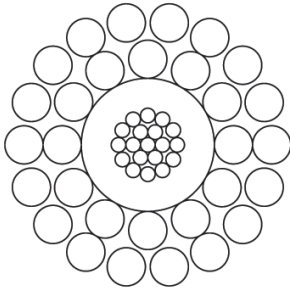
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	18	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	22.0 Ω/Kft	(72.2 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	5,200 lbs	(23.0 KN)	Nominal
Maximum Suggested Working Tension	2,600 lbs	(11.6 KN)	
Number and Size of Wires			
Inner Armor	12 x 0.0310"	(0.787 mm)	
Outer Armor	18 x 0.0310"	(0.787 mm)	
Average Wire Breaking Strength			
Inner Armor	204 lbs	(0.91 KN)	
Outer Armor	204 lbs	(0.91 KN)	

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft	Kg/Km
1N22SA-MP35N	See Below	PFA	0.0305 0.078	7X0.0159 7X0.404	6.7 22.0	43 141	0.108 2.743	100 149	86 128

- Insulation is rated to 500° F. Armor wires are rated to 475° F at 100% levels of H₂S + CO₂.
- The armor wires are made of UNS R30035 (MP35N), a nickel-cobalt corrosion resistant alloy steel. Wires are preformed.
- The nickel coated copper wires are made of ASTMB355 Class 10 and they are used to increase corrosion protection. Core assembly – Copper strand consists of six wires around one center wire. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



**1/4" (6.55 mm)
MONOCONDUCTOR
1N25**

PROPERTIES

Cable Diameter	0.258" +0.005" - 0.002"	(6.55mm + 0.13mm -0.05mm)
Minimum Sheave Diameter	14"	(36 cm)
Cable Stretch Coefficient	1.9 ft/Kft/Klbs	(2.13 m/Km/5KN)

ELECTRICAL

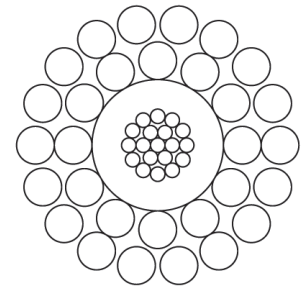
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	16	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	3.0 Ω/Kft	(9.84 Ω/Km)

MECHANICAL

Cable Breaking Strength		
Ends Fixed	7,000 lbs	(31.1 KN) Nominal
Maximum Suggested Working Tension	3,500 lbs	(15.6 KN)
Number and Size of Wires		
Inner Armor	12 x 0.0358"	(0.909 mm)
Outer Armor	18 x 0.0358"	(0.909 mm)
Average Wire Breaking Strength		
Inner Armor	272 lbs	(1.21 KN)
Outer Armor	272 lbs	(1.21 KN)

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1N25PP	300 149	Poly	0.032 0.813	19x0.0119 19x0.302	4.1 13.5	50 164	0.123 3.124	121 180	100 149
1N25PXZ	420 216	Camtane	0.0130 0.330	19x0.0119 19x0.302	4.1 13.5	53 174	0.085 2.159	124 185	101 151
		ETFE	0.019 0.483				0.123 3.124		
1N25PTZ	500 260	FEP	0.0130 0.330	19x0.0119 19x0.302	4.1 13.5	53 174	0.085 2.159	125 186	103 154
		ETFE	0.019 0.483				0.123 3.124		

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly – Copper strand consists of a total of nineteen wires. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



1/4" (6.55 mm)
MONOCONDUCTOR, CORROSION RESISTANT
1N25 S75

PROPERTIES

Cable Diameter	0.258" +0.005" - 0.002"	(6.55mm + 0.13mm - 0.05mm)
Minimum Sheave Diameter	14"	(36 cm)
Cable Stretch Coefficient	2.3 ft/Kft/Klbs	(2.60 m/Km/5KN)

ELECTRICAL

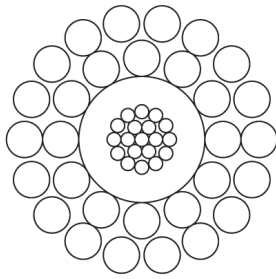
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	16	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	16.5 Ω/Kft	(54.13 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	6,000 lbs	(26.7 KN)	Nominal
Maximum Suggested Working Tension	3,000 lbs	(13.3 KN)	
Number and Size of Wires			
Inner Armor	12 x 0.0358"	(0.909 mm)	
Outer Armor	18 x 0.0358"	(0.909 mm)	
Average Wire Breaking Strength			
Inner Armor	242 lbs	(1.10 KN)	
Outer Armor	242 lbs	(1.10 KN)	

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1N25WA-S75	See Below	PFA	0.032 0.081	19x0.0119 19x0.302	4.6 14.4	53 174	0.123 3.124	127 189	102 154

- Insulation is rated to 500° F. Armor wires are rated to 325° F at low levels of H₂S + CO₂.
- The armor wires are made of a corrosion resistant alloy steel. Wires are preformed.
- The nickel coated copper wires are made according to the ASTM B355 Class 10 and they are used to increase corrosion protection.
- Core assembly – Copper strand consists of nineteen wires. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



1/4" (6.55 mm)
MONOCONDUCTOR, CORROSION RESISTANT
1N25 S77

PROPERTIES

Cable Diameter	0.258" +0.005" - 0.002"	(6.55mm + 0.13mm -0.05mm)
Minimum Sheave Diameter	14"	(36 cm)
Cable Stretch Coefficient	2.3 ft/Kft/Klbs	(2.60 m/Km/5KN)

ELECTRICAL

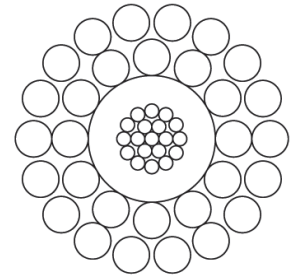
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	16	
Minimum Insulation Resistance	1,500 Mega Ω /Kft @ 500VDC	(457 Mega Ω /Km @ 500VDC)
Armor Electrical Resistance	10.0 Ω /Kft	(32.9 Ω /Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	6,500 lbs	(28.9 KN)	Nominal
Maximum Suggested Working Tension	3,250 lbs	(14.5 KN)	
Number and Size of Wires			
Inner Armor	12 x 0.0358"	(0.909 mm)	
Outer Armor	18 x 0.0358"	(0.909 mm)	
Average Wire Breaking Strength			
Inner Armor	252 lbs	(1.12 KN)	
Outer Armor	252 lbs	(1.12 KN)	

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Insulation	Type Thickness in mm	Copper Construction in mm	Res Typical Ω /Kft Ω /Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1N25WA-S77	See Below	PFA	0.032 0.081	19x0.0119 19x0.302	4.6 15.1	53 174	0.123 3.124	129 191	106 158

- Insulation is rated to 500° F. Armor wires are rated to 425° F at medium levels of H₂S + CO₂.
- The armor wires are made of a corrosion resistant alloy steel. Wires are preformed.
- The nickel coated copper wires are made of ASTMB355 Class 10 and they are used to increase corrosion protection.
- Core assembly – Copper strand consists of a total of nineteen wires. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



**9/32" (7.32 mm)
MONOCONDUCTOR
1N29 – EHS**

PROPERTIES

Cable Diameter	0.288" +0.005" - 0.002"	(7.32mm + 0.13mm -0.05mm)
Minimum Sheave Diameter	16"	(41 cm)
Cable Stretch Coefficient	1.55 ft/Kft/Klbs	(1.74 m/Km/5KN)

ELECTRICAL

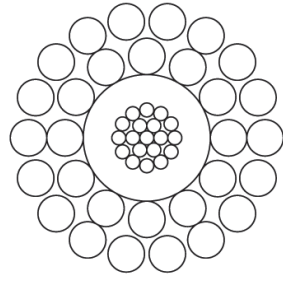
Maximum Conductor Voltage	1,500 VDC	
Conductor AWG Rating	15	
Minimum Insulation Resistance	1,500 Mega Ω /Kft @ 500VDC	(457 Mega Ω /Km @ 500VDC)
Armor Electrical Resistance	2.8 Ω /Kft	(9.2 Ω /Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	10,200 lbs	(45.4 KN)	Nominal
Maximum Suggested Working Tension	5,100 lbs	(22.7 KN)	
Number and Size of Wires			
Inner Armor	12 x 0.0400"	(1.016 mm)	
Outer Armor	18 x 0.0400"	(1.016 mm)	
Average Wire Breaking Strength			
Inner Armor	393 lbs	(1.75 KN)	
Outer Armor	393 lbs	(1.75 KN)	

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω /Kft Ω /Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1N29PP-EHS	300 149	Poly	0.0325 0.826	19.0x0.0142 19.0x0.361	2.8 9.2	56 184	0.136 3.454	152 226	125 187
1N29PTZ-EHS	500 260	FEP	0.0135 0.343	19x0.0142 19x0.361	2.8 9.2	55 177	0.098 2.489	157 234	130 193
		ETFE	0.019 0.483						
1N29PA-EHS	500 260	PFA	0.0325 0.826	19x0.0142 19x0.361	2.8 9.2	51 167	0.136 3.454	159 237	131 196

- The armor wires are Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly – Copper strand consists of a total of nineteen wires. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



9/32" (7.32 mm)
MONOCONDUCTOR, CORROSION RESISTANT
1N29 S75

PROPERTIES

Cable Diameter	0.288" +0.005" - 0.002"	(7.32mm + 0.13mm -0.05mm)
Minimum Sheave Diameter	16"	(41 cm)
Cable Stretch Coefficient	1.9 ft/Kft/Klbs	(2.13 m/Km/5KN)

ELECTRICAL

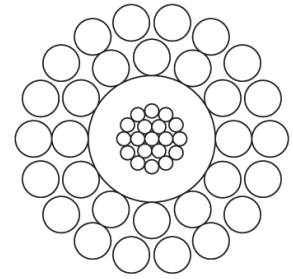
Maximum Conductor Voltage	1,500 VDC	
Conductor AWG Rating	16	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	10.0 Ω/Kft	(32.8 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	7,800 lbs	(34.7 KN)	Nominal
Maximum Suggested Working Tension	3,900 lbs	(17.4 KN)	
Number and Size of Wires			
Inner Armor	12 x 0.0400"	(1.016 mm)	
Outer Armor	18 x 0.0400"	(1.016 mm)	
Average Wire Breaking Strength			
Inner Armor	302 lbs	(1.34 KN)	
Outer Armor	302 lbs	(1.34 KN)	

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1N29WTZ-S75	See Below	FEP	0.017 0.432	19x0.0142 19x0.361	4.0 13.1	54 177	0.098 2.489	161 239	132 198
		ETFE	0.019 0.483				0.136 3.454		

- Insulation is rated to 500° F. Armor wires are rated to 325° F at low levels of H₂S + CO₂.
- The armor wires are made of a corrosion resistant alloy steel. Wires are preformed.
- The nickel coated copper wires are made according to ASTM B355 Class 10 and they are used to increase corrosion protection.
- Core assembly – Copper strand consists of a total of nineteen wires. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



9/32" (7.32 mm)
MONOCONDUCTOR, CORROSION RESISTANT
1N29 S77

PROPERTIES

Cable Diameter	0.288" +0.005" - 0.002"	(7.32mm + 0.13mm -0.05mm)
Minimum Sheave Diameter	16"	(41 cm)
Cable Stretch Coefficient	2.0 ft/Kft/Klbs	(2.13 m/Km/5KN)

ELECTRICAL

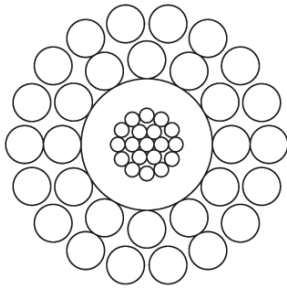
Maximum Conductor Voltage	1,500 VDC	
Conductor AWG Rating	15	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	10.0 Ω/Kft	(32.8 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	8,200 lbs	(36.4 KN)	Nominal
Maximum Suggested Working Tension	4,100 lbs	(18.2 KN)	
Number and Size of Wires			
Inner Armor	12 x 0.0400"	(1.016 mm)	
Outer Armor	18 x 0.0400"	(1.016 mm)	
Average Wire Breaking Strength			
Inner Armor	317 lbs	(1.41 KN)	
Outer Armor	317 lbs	(1.41 KN)	

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1N29WTZ-S77	See Below	FEP	0.0135 0.343	19x0.0142 19x0.361	3.2 10.5	60 197	0.098 2.489	161 240	133 198
		ETFE	0.019 0.483				0.136 3.454		

- Insulation is rated to 500° F. Armor wires are rated to 425° F at low levels of H₂S + CO₂.
- The armor wires are made of a corrosion resistant alloy steel. Wires are preformed.
- The nickel coated copper wires are made according to ASTM B355 Class 10 and they are used to increase corrosion protection.
- Core assembly – Copper strand consists of a total of nineteen wires. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



**5/16" (8.18 mm)
MONOCONDUCTOR
1N32**

PROPERTIES

Cable Diameter	0.322" +0.005" - 0.002"	(8.18mm + 0.13mm -0.05mm)
Minimum Sheave Diameter	18"	(46 cm)
Cable Stretch Coefficient	1.2 ft/Kft/Klbs	(1.35 m/Km/5KN)

ELECTRICAL

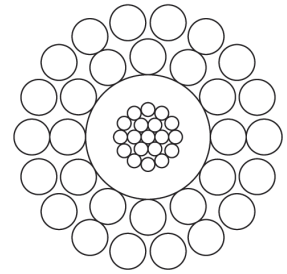
Maximum Conductor Voltage	1,500 VDC	
Conductor AWG Rating	15	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	2.1 Ω/Kft	(6.9 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	12,000 lbs	(53.3 KN)	Nominal
Maximum Suggested Working Tension	6,000 lbs	(26.6 KN)	
Number and Size of Wires			
Inner Armor	12 x 0.0445"	(1.130 mm)	
Outer Armor	18 x 0.0445"	(1.130 mm)	
Average Wire Breaking Strength			
Inner Armor	442 lbs	(1.97 KN)	
Outer Armor	442 lbs	(1.97 KN)	

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1N32PP	300	Poly	0.042	19x0.0142	2.8	46	0.155	187	155
	149		1.067					19x0.361	9.2
1N32PXZ	420	Camtane	0.022	19x0.0142	2.8	47	0.115	189	157
		ETFE	0.560						
1N32PTZ	500	FEP	0.0245	19x0.0142	2.8	45	0.120	194	160
		ETFE	0.622						
1N32WG	600	TE	0.0421	19x0.0142	3.2	46	0.155	195	161
			316					1.067	19x0.361

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly - Copper strand consists of a total of nineteen wires. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



5/16" (8.18 mm)
MONOCONDUCTOR, LOW RESISTANCE
1N32 – LR

PROPERTIES

Cable Diameter	0.322" +0.005" - 0.002"	(8.18mm + 0.13mm - 0.05mm)
Minimum Sheave Diameter	18"	(46 cm)
Cable Stretch Coefficient	1.2 ft/Kft/Klbs	(1.35 m/Km/5KN)

ELECTRICAL

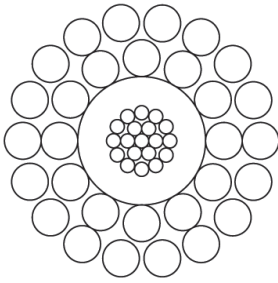
Maximum Conductor Voltage	1,500 VDC	
Conductor AWG Rating	13	
Minimum Insulation Resistance	1,500 Mega Ω /Kft @ 500VDC	(457 Mega Ω /Km @ 500VDC)
Armor Electrical Resistance	2.1 Ω /Kft	(6.9 Ω /Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	12,000 lbs	(53.3 KN)	Nominal
Maximum Suggested Working Tension	6,000 lbs	(26.6 KN)	
Number and Size of Wires			
Inner Armor	12 x 0.0445"	(1.130 mm)	
Outer Armor	18 x 0.0445"	(1.130 mm)	
Average Wire Breaking Strength			
Inner Armor	442 lbs	(1.97 KN)	
Outer Armor	442 lbs	(1.97 KN)	

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω /Kft Ω /Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1N32PTZ-LR	500 260	FEP ETFE	0.017	19x0.0172	2.3	58	0.120	198	163
			0.432	19x0.437	7.5	190	3.048	294	243
			0.018 0.444				0.155 3.937		

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly – Copper strand consists of a total of nineteen wires. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



**5/16" (8.18 mm)
MONOCONDUCTOR, CORROSION RESISTANT
1N32 S75**

PROPERTIES

Cable Diameter	0.322" +0.005" – 0.002"	(8.18mm + 0.13mm -0.05mm)
Minimum Sheave Diameter	18"	(45 cm)
Cable Stretch Coefficient	1.6 ft/Kft/Klbs	(1.8 m/Km/5KN)

ELECTRICAL

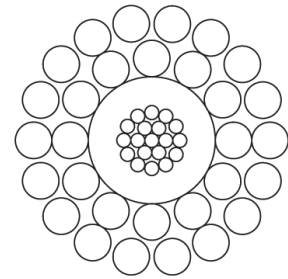
Maximum Conductor Voltage	1,500 VDC	
Conductor AWG Rating	15	
Minimum Insulation Resistance	1,500 Mega Ω /Kft @ 500VDC	(457 Mega Ω /Km @ 500VDC)
Armor Electrical Resistance	11.2 Ω /Kft	(36.7 Ω /Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	9,700 lbs	(43.2 KN)	Nominal
Maximum Suggested Working Tension	4,850 lbs	(21.6 KN)	
Number and Size of Wires			
Inner Armor	12 x 0.0445"	(1.130 mm)	
Outer Armor	18 x 0.0445"	(1.130 mm)	
Average Wire Breaking Strength			
Inner Armor	373.4 lbs	(1.66 KN)	
Outer Armor	373.4 lbs	(1.66 KN)	

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω /Kft Ω /Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1N32WTZ-S75	See Below	FEP	0.0245	19x0.0142	3.2	45	0.120	201	166
			0.622	19x0.361	10.5	148	3.048	299	247
		ETFE	0.0175				0.155		
			0.444				3.937		

- Insulation is rated to 500° F. Armor wires are rated to 325° F at low levels of H₂S + CO₂.
- The armor wires are made of a corrosion resistant alloy steel. Wires are preformed.
- The nickel coated copper wires are made according to ASTM B355 Class 10 and they are used to increase corrosion protection.
- Core assembly – Copper strand consists of a total of nineteen wires. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



5/16" (8.18 mm)
MONOCONDUCTOR, CORROSION RESISTANT
1N32 S77

PROPERTIES

Cable Diameter	0.322" +0.005" - 0.002"	(8.18mm + 0.13mm - 0.05mm)
Minimum Sheave Diameter	18"	(46 cm)
Cable Stretch Coefficient	1.6 ft/Kft/Klbs	(1.8 m/Km/5KN)

ELECTRICAL

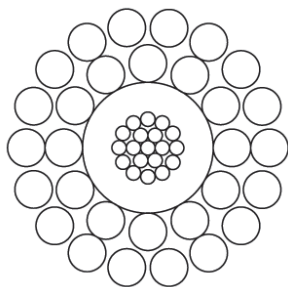
Maximum Conductor Voltage	1,500 VDC	
Conductor AWG Rating	15	
Minimum Insulation Resistance	1,500 Mega Ω /Kft @ 500VDC	(457 Mega Ω /Km @ 500VDC)
Armor Electrical Resistance	11.2 Ω /Kft	(36.7 Ω /Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	10,200 lbs	(45.4 KN)	Nominal
Maximum Suggested Working Tension	5,100 lbs	(22.7 KN)	
Number and Size of Wires			
Inner Armor	12 x 0.0445"	(1.130 mm)	
Outer Armor	18 x 0.0445"	(1.130 mm)	
Average Wire Breaking Strength			
Inner Armor	373.4 lbs	(1.66 KN)	
Outer Armor	373.4 lbs	(1.66 KN)	

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω /Kft Ω /Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1N32WTZ-S77	See Below	FEP	0.0245	19x0.0142	3.2	45	0.120	198	163
			0.622	19x0.361	10.5	148	3.048	294	243
		ETFE	0.0175				0.155		
			0.444				3.937		

- Insulation is rated to 500° F. Armor wires are rated to 425° F at medium levels of H₂S + CO₂.
- The armor wires are made of a corrosion resistant alloy steel. Wires are preformed.
- The nickel coated copper wires are made according to the ASTM B355 Class 10 and they are used to increase corrosion protection.
- Core assembly – Copper strand consists of nineteen wires. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



7/16" (10.80 mm)
MONOCONDUCTOR, LOW RESISTANCE
1N42 – LR

PROPERTIES

Cable Diameter	0.425" +0.006" - 0.002"	(10.80mm + 0.15mm -0.05mm)
Minimum Sheave Diameter	24"	(61 cm)
Cable Stretch Coefficient	0.70 ft/Kft/Klbs	(0.79 m/Km/5KN)

ELECTRICAL

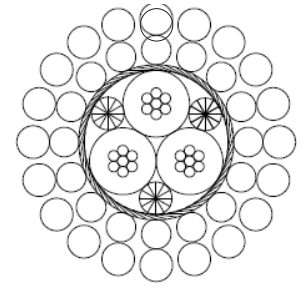
Maximum Conductor Voltage	1,500 VDC	
Conductor AWG Rating	13	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	1.2 Ω/Kft	(3.94 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	19,500 lbs	(86.8 KN)	Nominal
Maximum Suggested Working Tension	9,750 lbs	(43.4 KN)	
Number and Size of Wires			
Inner Armor	12 x 0.0585"	(1.490 mm)	
Outer Armor	18 x 0.0585"	(1.490 mm)	
Average Wire Breaking Strength			
Inner Armor	765 lbs	(3.4 KN)	
Outer Armor	765 lbs	(3.4 KN)	

Cable Type	Core Description							Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	in Air	in H ₂ O
								lbs/Kft Kg/Km	
1N42PTZ-LR	500 260	FEP	0.0255	19x0.0172	2.0	37.5	0.136	336 499	278 413
			0.648	19x0.437	6.6	123	3.454		
		ETFE	0.035 0.890				0.206 5.232		

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly – Copper strand consists of a total of nineteen wires. Conductor resistance is measured at 68° F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- SUPERSEAL, a special pressure seal agent, is applied between armor layers.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



0.377" (9.58 mm)
3-CONDUCTOR
3Q37

PROPERTIES

Cable Diameter	0.377" +0.005" - 0.002"	(9.58mm + 0.13mm - 0.05mm)
Minimum Sheave Diameter	19"	(48 cm)
Cable Stretch Coefficient	1.6 ft/Kft/Klbs	(1.8 m/Km/5KN)

ELECTRICAL

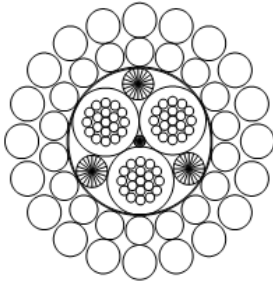
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	18	
Minimum Insulation Resistance	1,500 Mega Ω /Kft @ 500VDC	(457 Mega Ω /Km @ 500VDC)
Armor Electrical Resistance	1.6 Ω /Kft	(5.3 Ω /Km)

MECHANICAL

Cable Breaking Strength		
Ends Fixed	13,200 lbs	(58.7 KN) Nominal
Maximum Suggested Working Tension	6,600 lbs	(29.4 KN)
Number and Size of Wires		
Inner Armor	16 x 0.0425"	(1.079 mm)
Outer Armor	20 x 0.0470"	(1.194 mm)
Average Wire Breaking Strength		
Inner Armor	383 lbs	(1.71 KN)
Outer Armor	469 lbs	(2.08 KN)

Cable Type	Core Description							Cable Weight		
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω /Kft Ω /Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	Tape Type	in Air	in H ₂ O
									lbs/Kft Kg/Km	
3Q37RP	300 149	Poly	0.0230 0.584	7x0.0152 7x0.386	7.1 23.3	47 154	0.096 2.438	Dacron	233 347	192 286

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly – Conductors are bound with conductive tape and voids are filled with conductive paste and string.
- Copper strand consists of a total of seven wires. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration. Conductor resistance is measured at 68° F.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



13/32" (10.19 mm)
3-CONDUCTOR
3Q40

PROPERTIES

Cable Diameter	0.408" +0.005" - 0.002"	(10.36mm + 0.127mm -0.05mm)
Minimum Sheave Diameter	20.4"	(51.8 cm)
Cable Stretch Coefficient	0.90 ft/Kft/Klbs	(1.01 m/Km/5KN)

ELECTRICAL

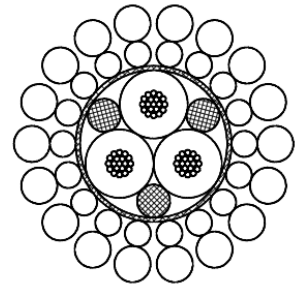
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	15	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	1.5 Ω/Kft	(4.92 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	15,200 lbs	(67.6 KN)	Nominal
Maximum Suggested Working Tension	7,600 lbs	(33.8 KN)	
Number and Size of Wires			
Inner Armor	18 x 0.0425"	(1.08 mm)	
Outer Armor	20 x 0.0510"	(1.30 mm)	
Average Wire Breaking Strength			
Inner Armor	383.4 lbs	(1.706 KN)	
Outer Armor	552 lbs	(2.457 KN)	

Cable Type	Core Description							Cable Weight		
	Temp Rating	Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	Tape Type	in Air	in H ₂ O
	°F °C		in mm	in mm	Ω/Kft Ω/Km	pf/ft pf/m	in mm		lbs/Kft Kg/Km	
3Q40PXZ	420 216	Camtame	0.0085	19x0.0142	3.1	90.1	0.088	Nomex	303	250
		ETFE	0.009	19x0.361	10.17	295.6	2.235			
			0.229				2.692			

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly-- Copper strand consists of a total of nineteen wires around one center wire. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration. Conductor resistance is measured at 68° F.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



0.474" (12.04 mm)
3-CONDUCTOR
3H47

PROPERTIES

Cable Diameter	0.474" +0.005" - 0.002"	(12.04mm + 0.13mm -0.05mm)
Minimum Sheave Diameter	26"	(66 cm)
Cable Stretch Coefficient	0.61 ft/Kft/Klbs	(0.69 m/Km/5KN)

ELECTRICAL

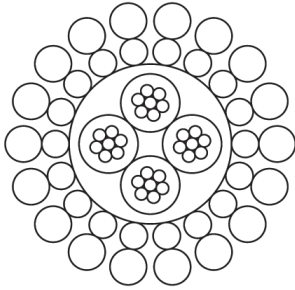
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	18	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	1.1 Ω/Kft	(3.6 Ω/Km)

MECHANICAL

Cable Breaking Strength		
Ends Fixed	22,000 lbs	(97.9 KN) Nominal
Maximum Suggested Working Tension	11,000 lbs	(48.9 KN)
Number and Size of Wires		
Inner Armor	18 x 0.0470"	(1.194 mm)
Outer Armor	18 x 0.0655"	(1.664 mm)
Average Wire Breaking Strength		
Inner Armor	469 lbs	(2.09 KN)
Outer Armor	910 lbs	(4.05 KN)

Cable Type	Core Description							Cable Weight		
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	Tape Type	in Air	in H ₂ O
									lbs/Kft Kg/Km	
3H47PP	300 149	Poly	0.037 0.940	19x0.0100 19x0.254	6.0 19.7	44 144	0.124 3.150	Dacron	369 549	303 451
3H47PXZ	420 216	Camtame ETFE	0.015 0.381 0.022 0.559	19x0.0100 19x0.254	6.0 19.7	45 148	0.088 2.032 0.124 3.150	Nomex	376 560	310 461
3H47PTZ	500 260	FEP ETFE	0.015 0.381 0.022 0.559	19x0.0100 19x0.254	6.0 19.7	43 141	0.080 2.032 0.124 3.150	Nomex	382 568	316 470

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly – Conductors are bound with conductive tape and voids are filled with conductive paste and string.
- Copper strand consists of a total of nineteen wires. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration. Conductor resistance is measured at 68° F.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



3/16" (4.80 mm) 4-CONDUCTOR 4H18

PROPERTIES

Cable Diameter	0.186" +0.004" - 0.002"	(4.80 mm + 0.10mm -0.05mm)
Minimum Sheave Diameter	10"	(25 cm)
Cable Stretch Coefficient	4.25 ft/Kft/Klbs	(4.78 m/km/5KN)

ELECTRICAL

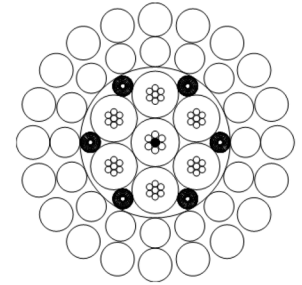
Maximum Conductor Voltage	300 VDC	
Conductor AWG Rating	23	
Minimum Insulation Resistance	1,500 MegΩ/Kft @ 500VDC	(457 MegΩ/Km @ 500VDC)
Armor Electrical Resistance	6.7 Ω/Kft	(22.0 Ω/Km)

MECHANICAL

Cable Breaking Strength		
Ends Fixed	3,100 lbs	(13.8 KN) Nominal
Maximum Suggested Working Tension	1,550 lbs	(6.9 KN)
Number and Size of Wires		
Inner Armor	18 x 0.0185"	(0.470 mm)
Outer Armor	18 x 0.0248"	(0.630 mm)
Average Wire Breaking Strength		
Inner Armor	72 lbs	(0.32 KN)
Outer Armor	130 lbs	(0.58 KN)

Cable Type	Core Description								Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	Jacket Type	in Air	in H ₂ O
									lbs/Kft Kg/Km	
4H18RPP	300 149	Poly	0.0075 0.191	7x0.0085 7x0.216	22.5 73.8	36 118	0.040 1.116	Poly	60 89	50 74

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly – Copper strand consists of six wires around one center wire. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration. Conductor resistance is measured at 68° F.
- The temperature rating assumes a normal gradient for both temperature and weight.
- All values shown are nominal or typical values.



**5/16" (8.3mm)
7-CONDUCTOR
7H32**

PROPERTIES:

Cable Diameter	0.325" +0.005" - 0.002"	(8.25mm + 0.13mm - 0.05mm)
Minimum Sheave Diameter	18"	(45 cm)
Cable Stretch Coefficient	1.8 ft/Kft/Klbs	(2.02 m/km/5KN)

ELECTRICAL

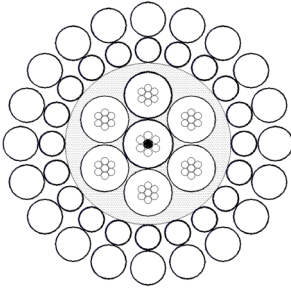
Maximum Conductor Voltage	1000 VDC	
Conductor AWG Rating	22	
Minimum Insulation Resistance	1,500 MegΩ/Kft @ 500VDC	(457 MegΩ/Km @ 500VDC)
Armor Electrical Resistance	2.3 Ω/Kft	(7.5 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	9,500 lbs	(42 KN)	Nominal
Maximum Suggested Working Tension	4,750 lbs	(21 KN)	
Number and Size of Wires			
Inner Armor	18 x 0.0320"	(0.81 mm)	
Outer Armor	18 x 0.0445"	(1.13 mm)	
Average Wire Breaking Strength			
Inner Armor	217 lbs	(0.97 KN)	
Outer Armor	420 lbs	(1.99 KN)	

Cable Type	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res. Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	Tape Type	Cable Weight	
									in Air	in H ₂ O
									lbs/Kft Kg/Km	
7H32RP	300 149	Poly	0.013 0.33	7x0.0100 7x0.254	15.8 51.8	55 180	0.056 1.42	Dacron	183 272	152 226
7H32RZ	500 260	ETFE	0.013 0.33	7x0.0100 7x0.254	15.8 51.8	67 220	0.056 1.42	Nomex	188 280	157 234

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly – Conductors are bound with conductive tape and voids are filled with conductive filler and string.
- Conductors are “Water Blocked” to reduce water and gas migration. Conductor resistance is measured at 68° F.
- The temperature rating assumes a normal gradient for both temperature and weight.
- Center conductor construction is 7x0.0100”. The typical resistance is reduced by approximately 5 to 10% and the capacitance is increased by approximately 5 to 10% in comparison to the outer conductors.
- All values shown are nominal or typical values.



**3/8" (9.60mm)
7-CONDUCTOR, CORE JACKETED
7Q38**

PROPERTIES

Cable Diameter	0.378" +0.005" - 0.002"	(9.60mm + 0.13mm -0.05mm)
Minimum Sheave Diameter	19"	(48 cm)
Cable Stretch Coefficient	1.4 ft/Kft/Klbs	(1.57 m/km/5KN)

ELECTRICAL

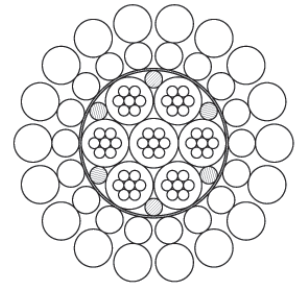
Maximum Conductor Voltage	1000 VDC	
Conductor AWG Rating	20	
Minimum Insulation Resistance	1,500 MegΩ/Kft @ 500VDC	(457 MegΩ/Km @ 500VDC)
Armor Electrical Resistance	1.8 Ω/Kft	(5.9 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	13,100 lbs	(58.29 KN)	Nominal
Maximum Suggested Working Tension	6,550 lbs	(29.15 KN)	
Number and Size of Wires			
Inner Armor	20 x 0.0358"	(0.909 mm)	
Outer Armor	20 x 0.0470"	(1.194 mm)	
Average Wire Breaking Strength			
Inner Armor	286 lbs	(1.27 KN)	
Outer Armor	494 lbs	(2.19 KN)	

Cable Type		Core Description							Cable Weight	
	Temp Rating	Plastic Type	Insulation Thickness	Copper Construction	Res. Typical	Cap. Typical	O.D. Each	Core Jacket	in Air	in H ₂ O
	°F °C								in mm	in mm
7Q38RAZB	500 260	PFA	0.0160 0.4064	7x0.0128 7x0.325	9.8 32.2	37 121	0.070 1.778	ETFE	255 379	211 313

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Conductors are "Water Blocked" to reduce water and gas migration. Conductor resistance is measured at 68° F.
- The temperature rating assumes a normal gradient for both temperature and weight.
- SUPERSEAL, a pressure seal agent is applied between armor layers.
- Center conductor construction is 7x0.0128". The typical capacitance is decreased by approximately 5 to 10% in comparison to the outer conductors.
- All values shown are nominal or typical values.



**7/16" (10.82mm)
7-CONDUCTOR
7H42**

PROPERTIES

Cable Diameter	0.426" +0.005" - 0.002"	(10.82mm + 0.13mm -0.05mm)
Minimum Sheave Diameter	24"	(61 cm)
Cable Stretch Coefficient	0.75 ft/Kft/Klbs	(0.84 m/km/5KN)

ELECTRICAL

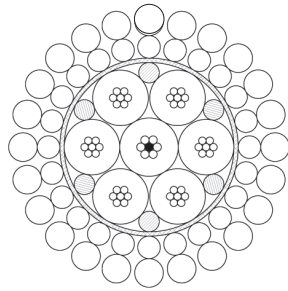
Maximum Conductor Voltage	1000 VDC	
Conductor AWG Rating	20	
Minimum Insulation Resistance	1,500 MegΩ/Kft @ 500VDC	(457 MegΩ/Km @ 500VDC)
Armor Electrical Resistance	1.2 Ω/Kft	(3.9 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	17,600 lbs	(78.3 KN)	Nominal
Maximum Suggested Working Tension	8,800 lbs	(39.2 KN)	
Number and Size of Wires			
Inner Armor	18 x 0.0425"	(1.080 mm)	
Outer Armor	18 x 0.0585"	(1.490 mm)	
Average Wire Breaking Strength			
Inner Armor	403.6 lbs	(1.80 KN)	
Outer Armor	764.6 lbs	(3.4 KN)	

Cable Type	Core Description								Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res. Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	Tape Type	in Air	in H ₂ O
									lbs/Kft Kg/Km	
7H42RP	300 149	Poly	0.018 0.457	7x0.0128 7x0.325	9.8 32.2	53 174	0.074 1.880	Dacron	309 460	256 380
7H42RZ	500 260	ETFE	0.018 0.457	7x0.0128 7x0.325	9.8 32.2	62 203	0.074 1.880	Nomex	318 473	263 391

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly – Conductors are bound with conductive tape and voids are filled with conductive paste and string.
- Conductors are “Water Blocked” to reduce water and gas migration. Conductor resistance is measured at 68° F.
- The temperature rating assumes a normal gradient for both temperature and weight.
- Center conductor construction is 7x0.0128”. The typical capacitance is decreased by approximately 5 to 10% in comparison to the outer conductors.
- All values shown are nominal or typical values.



**15/32" (11.79mm)
7-CONDUCTOR
7J46**

PROPERTIES

Cable Diameter	0.464" +0.005" - 0.002"	(11.79mm + 0.13mm - 0.05mm)
Minimum Sheave Diameter	20"	(51 cm)
Cable Stretch Coefficient	0.77 ft/Kft/Klbs	(0.87 m/km/5KN)

ELECTRICAL

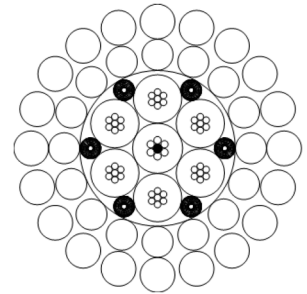
Maximum Conductor Voltage	1200 VDC	
Conductor AWG Rating	20	
Minimum Insulation Resistance	1,500 MegΩ/Kft @ 500VDC	(457 MegΩ/Km @ 500VDC)
Armor Electrical Resistance	1.3 Ω/Kft	(4.3 Ω/Km)

MECHANICAL

Cable Breaking Strength		
Ends Fixed	19,100 lbs	(85.0 KN) Nominal
Maximum Suggested Working Tension	9,550 lbs	(42.5 KN)
Number and Size of Wires		
Inner Armor	24 x 0.0390"	(0.991 mm)
Outer Armor	24 x 0.0495"	(1.257 mm)
Average Wire Breaking Strength		
Inner Armor	357 lbs	(1.58 KN)
Outer Armor	575 lbs	(2.56 KN)

Cable Type	Temp Rating °F °C	Plastic Type	Core Description						Cable Weight	
			Insulation Thickness in mm	Copper Construction in mm	Res. Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	Tape Type	in Air	in H ₂ O
									lbs/Kft Kg/Km	
7J46RP	300 149	Poly	0.029	7x0.0128	9.8	40	0.096	Dacron	321	265
			0.737	7x0.325	32.2	131	2.438		478	395
7J46RXZ	420 216	Camtane	0.016	7x0.0128	9.8	40	0.070	Nomex	340	281
			0.406	7x0.325	32.2	131	1.778		507	419
		ETFE	0.013				0.096			
			0.330				2.438			
7J46RTZ	500 260	FEP	0.016	7x0.0128	9.8	39	0.070	Nomex	341	282
			0.406	7x0.325	32.2	128	1.778		507	419
		ETFE	0.013				0.096			
			0.330				2.438			

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly – Conductors are bound with conductive tape and voids are filled with conductive paste and string.
- Conductors are "Water Blocked" to reduce water and gas migration. Conductor resistance is measured at 68° F.
- The temperature rating assumes a normal gradient for both temperature and weight.
- Center conductor construction is 6x0.0142" with a non-conductive center member. The typical resistance is reduced by approximately 5 to 10% and the capacitance is increased by approximately 5 to 10% in comparison to the outer conductors.
- All values shown are nominal or typical values.



0.474" (12.0mm)
7-CONDUCTOR, EXTRA HIGH STRENGTH
7H47 – EHS

PROPERTIES

Cable Diameter	0.474" +0.005" - 0.002"	(12.04mm + 0.13mm -0.05mm)
Minimum Sheave Diameter	26"	(66 cm)
Cable Stretch Coefficient	0.61 ft/Kft/Klbs	(0.69 m/km/5KN)

ELECTRICAL

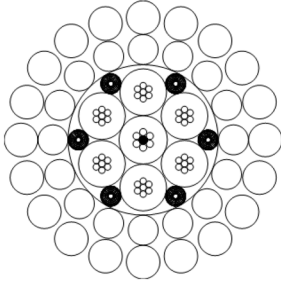
Maximum Conductor Voltage	1100 VDC	
Conductor AWG Rating	20	
Minimum Insulation Resistance	1,500 MegΩ/Kft @ 500VDC	(457 MegΩ/Km @ 500VDC)
Armor Electrical Resistance	1.1 Ω/Kft	(3.6 Ω/Km)

MECHANICAL

Cable Breaking Strength		
Ends Fixed	24,500 lbs	(109 KN) Nominal
Maximum Suggested Working Tension	12,250 lbs	(55 KN)
Number and Size of Wires		
Inner Armor	18 x 0.0470"	(1.194 mm)
Outer Armor	18 x 0.0655"	(1.664 mm)
Average Wire Breaking Strength		
Inner Armor	542 lbs	(2.4 KN)
Outer Armor	1,054 lbs	(4.7 KN)

Cable Type	Core Description								Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res. Typical Ω/Kft Ω/km	Cap. Typical pf/ft pf/m	O.D. Each in mm	Tape Type	in Air	in H ₂ O
									lbs/Kft Kg/Km	
7H47RP-EHS	300 149	Poly	0.023 0.58	7x0.0128 7x0.325	9.8 32.2	46 151	0.084 2.13	Dacron	372 554	308 458
7H47RXZ-EHS	420 216	Camtane ETFE	0.0115 0.292 0.0115 0.292	7x0.0128 7x0.325	9.8 32.2	48 157	0.061 1.549 0.084 2.134	Nomex	379 564	313 465
7H47RTZ-EHS	500 260	FEP ETFE	0.0115 0.292 0.0115 0.292	7x0.0128 7x0.325	9.8 32.2	46 151	0.063 1.60 0.084 2.13	Nomex	392 583	326 485

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly – Conductors are bound with conductive tape and voids are filled with conductive filler and string.
- Conductors are "Water Blocked" to reduce water and gas migration. Conductor resistance is measured at 68° F.
- The temperature rating assumes a normal gradient for both temperature and weight.
- Center conductor construction is 6x0.0142" with a non-conductive center member. The typical resistance is reduced by approximately 5 to 10% and the capacitance is increased by approximately 5 to 10% in comparison to the outer conductors.
- All values shown are nominal or typical values.



0.484" (12.29 mm)
7-CONDUCTOR, EXTRA HIGH STRENGTH
7Q48 – EHS

PROPERTIES

Cable Diameter	0.484" +0.006" - 0.003"	(12.29mm + 0.15mm -0.076mm)
Minimum Sheave Diameter	27"	(69 cm)
Cable Stretch Coefficient (Nominal)	0.61 ft/Kft/Klbs	(0.69 m/km/5KN)

ELECTRICAL

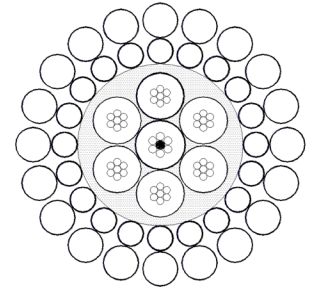
Maximum Conductor Voltage	1000 VDC	
Conductor AWG Rating	20	
Minimum Insulation Resistance	1,500 MegΩ/Kft @ 500VDC	(457 MegΩ/Km @ 500VDC)
Armor Electrical Resistance	1.00 Ω/Kft	(3.3 Ω/Km)

MECHANICAL

Cable Breaking Strength		
Ends Fixed	27,100 lbs	(120.6 KN) Nominal
Maximum Suggested Working Tension	13,550 lbs	(60.3 KN)
Number and Size of Wires		
Inner Armor	16 x 0.0535"	(1.36 mm)
Outer Armor	18 x 0.0670"	(1.70 mm)
Average Wire Breaking Strength		
Inner Armor	703 lbs	(3.1 KN)
Outer Armor	1103 lbs	(4.9 KN)

Cable Type	Core Description								Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res. Typical Ω/kft Ω/km	Cap. Typical pf/ft pf/m	O.D. Each in mm	Tape Type	in Air	in H ₂ O
									lbs/kft	kg/km
7Q48RTZ-EHS	500 260	FEP	0.0115	7x0.0128	9.8	46	0.061	Nomex	412 613	340 506
		ETFE	0.292	7x0.325	32.2	151	1.549			
			0.0105 0.267				2.083			

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Manufacturer recommends to maintain tension profile at all times, or conductor crushing can occur, and conductor failure is not always immediate. If the tension profile is changed, it should be corrected immediately.
- Core assembly – Conductors are stranded and covered with ETFE plastic jacket.
- Conductors are "Water Blocked" to reduce water and gas migration. Conductor resistance is measured at 68° F.
- The temperature rating assumes a normal gradient for both temperature and weight.
- Center conductor construction is 6x0.0142" with a non-conductive center member. The typical resistance is reduced by approximately 5 to 10% and the capacitance is increased by approximately 5 to 10% in comparison to the outer conductors.
- All values shown are nominal or typical values.



0.490" (12.45 mm)
7-CONDUCTOR, EXTRA HIGH STRENGTH
7Q49 – EHS

PROPERTIES

Cable Diameter	0.490" +0.006" - 0.003"	(12.45mm + 0.15mm - 0.076mm)
Minimum Sheave Diameter	25"	(64 cm)
Cable Stretch Coefficient (Nominal)	0.60 ft/Kft/Klbs	(0.67 m/km/5KN)

ELECTRICAL

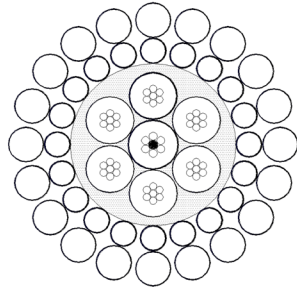
Maximum Conductor Voltage	1200 VDC	
Conductor AWG Rating	20	
Minimum Insulation Resistance	1,500 MegΩ/Kft @ 500 VDC	(457 MegΩ/Km @ 500 VDC)
Armor Electrical Resistance	1.00 Ω/Kft	(3.3 Ω/Km)

MECHANICAL

Cable Breaking Strength		
Ends Fixed	25,750 lbs	(114.6 KN)
Maximum Suggested Working Tension	12,875 lbs	(57.3 KN)
Number and Size of Wires		
Inner Armor	20 x 0.0460"	(1.17 mm)
Outer Armor	20 x 0.0620"	(1.57 mm)
Average Wire Breaking Strength		
Inner Armor	532 lbs	(2.4 KN)
Outer Armor	966 lbs	(4.3 KN)

Cable Type	Core Description								Cable Weight	
	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	Core Jacket	in Air	in H ₂ O
									lbs/Kft Kg/Km	
7Q49RTZZ-EHS	500 260	FEP	0.0130	7x0.0128	9.8	27	0.064	ETFE	409	338
			0.330	7x0.325	32.2	89	1.626		609	503
		ETFE	0.0100				0.084		2.134	
			0.254							

- The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly – Conductors are stranded and covered with ETFE plastic jacket.
- Conductors are "Water Blocked" to reduce water and gas migration. Conductor resistance is measured at 68° F.
- The temperature rating assumes a normal gradient for both temperature and weight.
- Center conductor construction is 6x0.0142" with a non-conductive center member. The typical resistance is reduced by approximately 5 to 10% and the capacitance is increased by approximately 5 to 10% in comparison to the outer conductors.
- All values shown are nominal or typical values.
- CRUSH RESISTANT. Can withstand 10:1 tension differentials.



0.490" (12.45 mm)
7-CONDUCTOR, EXTRA-EXTRA HIGH STRENGTH
7Q49 – EEHS

Cable Diameter	0.490" +0.006" - 0.002"	(12.45mm + 0.15mm -0.051mm)
Minimum Sheave Diameter	25"	(64 cm)
Cable Stretch Coefficient (Nominal)	0.60 ft/Kft/Klbs	(0.67 m/km/5KN)

ELECTRICAL

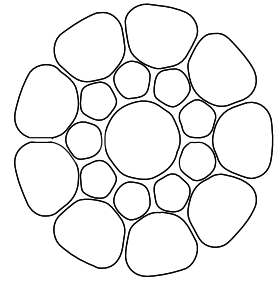
Maximum Conductor Voltage	1200 VDC	
Conductor AWG Rating	20	
Minimum Insulation Resistance	1,500 MegΩ/Kft @ 500 VDC	(457 MegΩ/Km @ 500 VDC)
Armor Electrical Resistance	1.00 Ω/Kft	(3.3 Ω/Km)

MECHANICAL

Cable Breaking Strength Ends Fixed	30,000 lbs	(131.8 KN)
Maximum Suggested Working Tension	15,000 lbs	(65.9 KN)
Number and Size of Wires		
Inner Armor	20 x 0.0460"	(1.17 mm)
Outer Armor	20 x 0.0620"	(1.57 mm)
Average Wire Breaking Strength		
Inner Armor	607 lbs	(2.7 KN)
Outer Armor	1103 lbs	(4.9 KN)

Cable Type	Temp Rating °F °C	Plastic Type	Insulation Thickness in mm	Core Description					Cable Weight	
				Copper Construction in mm	Res Typical Ω/Kft Ω/Km	Cap. Typical pf/ft pf/m	O.D. Each in mm	Core Jacket	in Air	in H ₂ O
									lbs/Kft Kg/Km	
7Q49RTZZ-EEHS	500 260	FEP	0.0130	7x0.0128	9.8	27	0.064	ETFE	409	338
			0.330	7x0.325	32.2	85	1.626		609	503
		ETFE	0.0100				0.084			
			0.254				2.134			

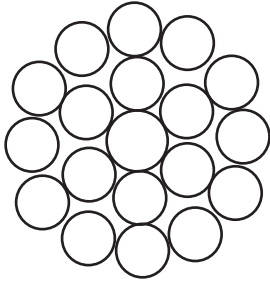
- The armor wires are high tensile, Galvanized Extra, Extra Improved Plow Steel (GEEIPS), and coated with anti-corrosion compound for protection during shipping and storing. Wires are preformed.
- Core assembly – Conductors are stranded and covered with ETFE plastic jacket.
- Conductors are “water blocked” to reduce water and gas migration. Conductor resistance is measured at 68° F.
- The temperature rating assumes a normal gradient for both temperature and weight.
- Center conductor construction is 6x0.0142” with a non-conductive center member. The typical resistance is reduced by approximately 5 to 10% and the capacitance is increased by approximately 5 to 10% in comparison to the outer conductors.
- All values shown are nominal or typical values.
- CRUSH RESISTANT. Can withstand 10:1 tension differentials.



DYCAM

	3/16"	7/32"
CONSTRUCTION	1x19 (1-9-9)	1x19 (1-9-9)
Outside diameter	.188"(4.78 mm)	.219"(5.56 mm)
Center wire diameter	.056"(1.42 mm)	.066"(1.68 mm)
<i>Inner Layer - Right lay</i>		
Number of wires	9	9
Wire diameter	.027"(0.69 mm)	.032"(.81 mm)
<i>Outer Layer - Right lay</i>		
Number of wires	9	9
Wire diameter	.049"(1.24 mm)	.056"(1.42 mm)
MECHANICAL CHARACTERISTICS		
Breaking strength	6,400 lbs (28.44 kN)	8,600 lbs (38.25 kN)
Center Wire	700 lbs (3.11 kN)	972 lbs (4.33 kN)
Inner Wire	163 lbs (0.72 kN)	229 lbs (1.02 kN)
Outer Wire	509 lbs (2.26 kN)	700 lbs (3.11 kN)
Maximum suggested working tension	3,200 lbs (14.23 kN)	4,300 lbs (19.13 kN)
Weight	87.7 lb/Kft (130.56 kg/km)	116.5 lb/Kft (173.4 kg/km)
Diameter tolerance	+2%	+2%
Calculated stretch coefficient	2.17 ft/Kft/Klb	1.28 ft/Kft/Klb
	1/4"	5/16"
CONSTRUCTION	1X19 (1-9-9)	1X19 (1-9-9)
Outside diameter	.250"(6.35 mm)	.313" (7.9 mm)
Center wire diameter	.076"(1.93 mm)	.096"(2.43 mm)
<i>Inner Layer - Right lay</i>		
Number of wires	9	9
Wire diameter	.038"(0.97 mm)	.045" (1.14 mm)
<i>Outer Layer - Right lay</i>		
Number of wires	9	9
Wire diameter	.066"(1.68 mm)	.080" (2.03 mm)
MECHANICAL CHARACTERISTICS		
Breaking strength	11,000 lbs (48.93 kN)	15,900 lbs (70.73 kN)
Center Wire	1,289 lbs (5.73 kN)	2,057 lbs (9.15 kN)
Inner Wire	322 lbs (1.43 kN)	452 lbs (2.01 kN)
Outer Wire	923 lbs (4.11 kN)	1,356 lbs (6.03 kN)
Maximum suggested working tension	5,500 lbs (24.47 kN)	7,950 lbs (35.36 kN)
Weight	162 lbs/Kft. (241.7 kg/km)	275.8 lb/Kft (410.4 kg/km)
Diameter tolerance	± 2%	+2%
Calculated stretch coefficient	0.87 ft/Kft/Klb	0.80 ft/Kft/Klb

- The armor wires are Galvanized Improved Plow Steel (GIPS), with anti-corrosion compound for protection during shipping and storing.



SWAB LINES

	3/16"	7/32"
CONSTRUCTION	1x16 (1-6-9)	1x16 (1-6-9)
Outside diameter	.188"(4.78 mm)	.219"(5.56 mm)
Center wire diameter	.036"(0.91 mm)	.042"(1.1 mm)
<i>Inner Layer - Left lay</i>		
Number of wires	6	6
Wire diameter	.032"(0.81 mm)	.038"(0.97 mm)
<i>Outer Layer - Right lay</i>		
Number of wires	9	9
Wire diameter	.044"(1.12 mm)	.054"(1.37 mm)
MECHANICAL CHARACTERISTICS		
Breaking strength	4,600 lbs (20.46 kN)	6,800 lbs (30.25 kN)
Center Wire	289 lbs (1.29 kN)	394 lbs (1.75 kN)
Inner Wire	229 lbs (1.02 kN)	322 lbs (1.43 kN)
Outer Wire	432 lbs (1.92 kN)	651 lbs (2.90 kN)
Maximum suggested working tension	2,300 lbs (10.23 kN)	3,400 lbs (15.12 kN)
Weight	70.6 lb/Kft (105.2 kg/km)	104.2 lb/Kft (155.0 kg/km)
Diameter tolerance	± 2%	± 2%
Calculated stretch coefficient	2.85 ft/Kft/Klb	1.80 ft/Kft/Klb
	1/4"	5/16"
CONSTRUCTION	1x19 (1-6-12)	1x19 (1-6-12)
Outside diameter	.250"(6.35 mm)	.313"(7.94 mm)
Center wire diameter	.058"(1.47 mm)	.072"(1.83 mm)
<i>Inner Layer - Left lay</i>		
Number of wires	6	6
Wire diameter	.048"(1.22 mm)	.062"(1.57 mm)
<i>Outer Layer - Right lay</i>		
Number of wires	12	12
Wire diameter	.048"(1.22 mm)	.062"(1.57 mm)
MECHANICAL CHARACTERISTICS		
Breaking strength	8,300 lbs (36.92 kN)	13,900 lbs (61.83 kN)
Center Wire	751 lbs (3.34 kN)	1,157 lbs (5.15 kN)
Inner Wire	514 lbs (2.29 kN)	858 lbs (3.82 kN)
Outer Wire	514 lbs (2.29 kN)	858 lbs (3.82 kN)
Maximum suggested working tension	4,150 lbs (18.46 kN)	6,950 lbs (30.92 kN)
Weight	127.1 lb/Kft (189.1 kg/km)	207.6 lb/Kft (308.9 kg/km)
Diameter tolerance	± 2%	± 2%
Calculated stretch coefficient	1.70 ft/Kft/Klb	1.10 ft/Kft/Klb

- The armor wires are Galvanized Improved Plow Steel (GIPS), with anti-corrosion compound for protection during shipping and storing.

Electromechanical Cable Warranty

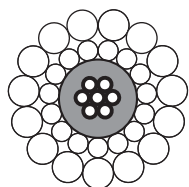
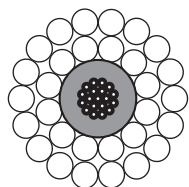
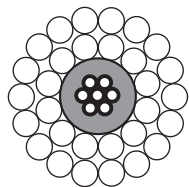
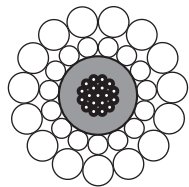
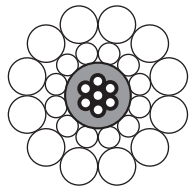
Limited Warranty:

Seller warrants that the Products manufactured by WireCo WorldGroup Inc. ("Seller") will be free from defects in material and workmanship and meet Seller's published specifications at the time of shipment under normal use and regular service and maintenance for a period of one year from the date of shipment of the Products by Seller, unless otherwise specified by Seller in writing. THIS IS THE SOLE AND EXCLUSIVE WARRANTY GIVEN BY SELLER WITH RESPECT TO THE PRODUCTS AND IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ARISING BY OPERATION OF LAW OR OTHERWISE, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHETHER OR NOT THE PURPOSE OR USE HAS BEEN DISCLOSED TO SELLER IN SPECIFICATIONS, DRAWINGS OR OTHERWISE, AND WHETHER OR NOT SELLER'S PRODUCTS ARE SPECIFICALLY DESIGNED AND/OR MANUFACTURED BY SELLER FOR BUYER'S USE OR PURPOSE. This warranty does not extend to any losses or damages due to misuse, accident, abuse, neglect, normal wear and tear, negligence (other than Seller's), unauthorized modification or alteration, use beyond rated capacity, unsuitable power sources or environmental conditions, cosmetic damages, improper installation, repair, handling, maintenance or application or misused, abused, or operated on mechanical equipment improperly designed or maintained or which are used, supplied for use or made available for use in any nuclear application of which Seller has not been notified in writing by Buyer at the time of Buyer's offer for the Products sold hereunder or any other cause not the fault of Seller. To the extent that Buyer or its agents has supplied specifications, information, representation of operating conditions or other data to Seller in the selection or design of the Products and the preparation of Seller's quotation, and in the event that actual operating conditions or other conditions differ from those represented by Buyer, any warranties or other provisions contained herein which are affected by such conditions shall be null and void. If within thirty (30) days after Buyer's discovery of any warranty defects within the warranty period, Buyer notifies Seller thereof in writing, Seller shall, at its option and as Buyer's exclusive remedy, repair, correct or replace F.O.B. point of manufacture, or credit the purchase price on a prorated basis for, that portion of the Products found by Seller to be defective. Failure by Buyer to give such written notice within the applicable time period shall be deemed an absolute and unconditional waiver of Buyer's claim for such defects. All costs of dismantling, reinstallation and freight and the time and expense of Seller's personnel and representatives for site travel and diagnosis under this warranty shall be borne by Buyer unless accepted in writing by Seller. Products repaired or replaced during the warranty period shall be covered by the foregoing warranty for the remainder of the original warranty period or ninety (90) days from the date of shipment, whichever is longer. Buyer assumes all other responsibility for any loss, damage, or injury to persons or property arising out of, connected with, or resulting from the use of Products, either alone or in combination with other products/components.

THE SOLE AND EXCLUSIVE REMEDY OF BUYER FOR BREACH OF ANY WARRANTY SHALL BE LIMITED TO REPAIR, CORRECTION OR REPLACEMENT OR CREDIT ADJUSTMENT ON A PRORATED BASIS OF THE PURCHASE PRICE FOR PRODUCTS PROVEN TO HAVE FAILED TO MEET THE SPECIFICATION OR TO HAVE BEEN DEFECTIVE IN MATERIAL OR WORKMANSHIP AT THE TIME OF DELIVERY AT SELLER'S OPTION. SELLER SHALL NOT BE LIABLE FOR DAMAGES CAUSED BY DELAY IN PERFORMANCE. IN NO EVENT, REGARDLESS OF THE FORM OF THE CLAIM OR CAUSE OF ACTION (WHETHER BASED IN CONTRACT, INFRINGEMENT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE), SHALL SELLER'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXCEED THE PRICE PAID BY BUYER FOR THE SPECIFIC PRODUCTS PROVIDED BY SELLER GIVING RISE TO THE CLAIM OR CAUSE OF ACTION. BUYER AGREES THAT IN NO EVENT SHALL SELLER'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXTEND TO INCLUDE INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES.

Cross Reference

If you have previously purchased Wireline Works cables, please use the chart here to determine the corresponding Camesa cable.



Wireline Works Cable Type	Camesa Cable Type
1-S-185-PD	1L18RP
1-S-185-TD	1L18RZ
1-Z-224-PH	1K22PP
1-Z-224-FTH	1K22PTZ
1-Z-224-AD-NS	1K22SA-S75
1-Z-224-AD-S77	1K22SA-S77
1-Z-224-AD-MP35	1K22SA-MP35N
1-R-224-PH	1N22PP
1-R-224-FTH	1N22PTZ
1-R-224-AD-NS	1N22SA-S75
1-R-224-AD-S77	1N22SA-S77
1-R-224-AD-MP35	1N22SA-MP35N
1-R-258-PH	1N25PP
1-R-258-FTH	1N25PTZ
1-R-258-AD-NS	1N25WA-S75
1-R-258-AD-S77	1N25WA-S77
1-R-288-PH	1N29PP-EHS
1-R-288-FTH	1N29PTZ-EHS
1-R-288-AH	1N29PA-EHS
1-R-288-AD-NS	1N29WTZ-S75
1-R-288-AD-S77	1N29WTZ-S77
1-R-322-PH	1N32PP
1-R-322-FTH	1N32PTZ
1-R-322-FTH-NS	1N32WTZ-S75
1-R-322-FTH-S77	1N32WTZ-S77
1-R-380-PH	1N38PP
1-R-380-FTH	1N38PTZ
1-R-425-PH	1N42PP
1-R-425-FTH	1N42PTZ-LR

Notes

Notes



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EXCEPTIONAL GLOBAL SUPPORT

We are dedicated to being number one in customer service and support. We understand the daily challenges you face in the oil field and are fully prepared to provide the best products and support to meet those challenges.

In 2005, Camesa became part of WireCo WorldGroup – a company deep in resources and global services. As the only manufacturer in the world that is QPL qualified, API certified, and registered to both ISO 9001:2000 and AS-9100 Quality Systems, WireCo WorldGroup is the global leader in manufacturing and distributing wire rope, wire rope assemblies and electromechanical cable. Furthermore, Camesa is fully certified by the American Petroleum Institute (API). With a trusted team of support staff and with inventories at locations around the world, Camesa is here for you, 24 hours a day, 7 days a week.

