



A WireCo® WorldGroup Brand



Electro-Mechanical Cables

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Cable & Product 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.
- ▶ No splices of any conductor are allowed in any Camesa cable.
- ▶ All armor wires are preformed during the manufacturing process.
- ▶ 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 test to confirm that it meets or exceeds catalog specification. A Camesa final inspection report is provided with every cable.
- ▶ The maximum working tension of any Camesa cable should not exceed the published value in the specification sheet.

Cable Type Designation

Example

Number of Electrical Conductors

Armor Package (Number Inner Wires/Number Outer Wires)

B - 12/24 J - 24/24
 C - 18/24 K - 15/15
 E - 12/15 L - 12/12
 F - 11/15 N - 12/18
 G - 10/16 Q - Other
 H - 18/18

Nominal Cable Diameter In Hundredths of an Inch

Type of Electrical Copper Strand

R - 6 wires around 1 central wire
 S - 6 wires around 1 central wire Nickel Coated
 P - 12 wires around 6 wires around 1 wire
 W - 12 wires around 6 wires around 1 wire Nickel Coated
 T - 18 wires around 12 wires around 6 wires around 1
 C - Compacted Copper
 LR- Low Resistance

Type of Electrical Insulation

P - 300°F Poly Propylene
 X - 400°F TPX
 T - 450°F FEP
 Z - 500°F ETFE
 A - 500°F PFA
 G - 600°F ECA

Armor Type

S75 - Nickel Stainless
 S77 - Enhanced Nickel Stainless
 MP35N - Corrosion Resistant MP35
 EHS - Extra High Strength
 EEHS - Extra Extra High Strength

1 N 22 S A S75

Reference Guide for Commonly Used Factors, Calculations

Sinker Bar Weight

The casing in an oil or gas well acts as a big pressure vessel with pressure being exerted equally in all directions. When the tool string and wireline enter the well, this pressure exerts a force on the tool string and wireline pushing against the surfaces of the tool and wireline equally. To overcome this upward force, weight bars (or sinker bars) are required to increase the weight of the tool string allowing gravitational force to pull the tool string into the well.

The formula for calculating the sinker bar weight to be attached to the tool is as follows:

The balance weight needed to overcome well pressure is,

$$F = P \times A$$

Where, P = wellbore pressure (psi), A = cross sectional area of the wireline see table below.

SIZE AND CROSS SECTIONAL AREA (In ²)	
Wireline Type	Cross-Sectional Area
1L18	0.0268
1N22	0.0393
1N25	0.0522
1N29	0.0651
1N32	0.0813
1N38	0.1119
1N42	0.1417

This force or balance weight will counterbalance the wellbore pressure. In order for the wireline to be pulled into the well an additional weight (over balance) needs to be applied. Generally, a factor of about 20% is chosen to overcome other factors such as frictional forces but each operator may have their own rules of thumb in this regard.

Hence, the over balance weight (Ft) is calculated as,

$$F_t = F + (20\% \times F)$$

The sinker bar weight to be attached to the tool of weight T, is calculated as,

$$W = F_t - T$$

H₂S and Partial Pressure Calculations

The damage to the wire is not caused directly by the % of CO₂ or H₂S but is more a function of the "Partial Pressure."

To determine the Partial pressure for H₂S:

$$p_{H_2S} = \text{PPM } H_2S \text{ in gas} \times \text{BHP} / 1,000,000$$

Example: In a well with 3ppm H₂S and a BPH of 6,000psi

$$p_{H_2S} = 3 \times 6,000 / 1,000,000$$

$$p_{H_2S} = 18,000 / 1,000,000$$

$$p_{H_2S} = 0.018 \text{ psi}$$

Under NACE regulations a pH₂S of 0.05psi or greater would determine that you need to choose an alloy wire or seek to protect/inhibit your wire. (Alloy wire is by far the safest option.)

To determine the Partial Pressure for CO₂:

$$p_{CO_2} = \text{CO}_2 \% \times \text{BHP} / 100$$

Example: In a well with 3% CO₂ and a BHP of 2,000psi

$$p_{CO_2} = 3(\%) \times 2000 / 100$$

$$p_{CO_2} = 3(\%) \times 20$$

$$p_{CO_2} = 60 \text{ psi}$$

Under NACE regulations a pCO₂ of 32psi or greater would determine that you need to choose an alloy wire or seek to protect/inhibit your wire. (Alloy wire is by far the safest option.)

WIRELINE FALLBACK CHART		
Tubing Size	Wireline OD	Fall (ft per 1000 ft)
3-1/2"	3/16"	20
3-1/2"	7/32"	25
4-1/2"	3/16"	35
4-1/2"	7/32"	45
5-1/2"	3/16"	50
5-1/2"	7/32"	65
5-1/2"	1/4"	83
5-1/2"	5/16"	100
7"	3/16"	100
7"	7/32"	125
7"	1/4"	130
7"	5/16"	135

CASED HOLE

NAVIGATION

CASED HOLE

1/10"

1/8"

3/16"

7/32"

1/4"

9/32"

5/16"

OPEN HOLE

SOUR SERVICE

GEOTHERMAL

GREASELESS

FIBER OPTIC

DYCAM

SWAB LINES

1N10

1/10" (2.57 mm)

MONOCONDUCTOR



PROPERTIES

Cable Diameter	0.101" +0.004" -0.002"	(2.57mm +0.10mm -0.05mm)
Minimum Sheave Diameter	6"	(15 cm)
Cable Stretch Coefficient	13.1 ft/Kft/Klbs	(14.72 m/Km/5KN)

ELECTRICAL

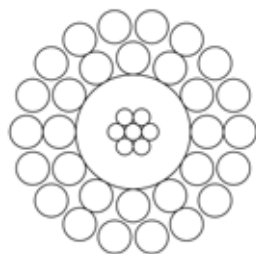
Maximum Conductor Voltage	300 VDC	
Conductor AWG Rating	24	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
Armor Electrical Resistance	22.0 Ω/Kft	(72.2 Ω/Km)

MECHANICAL

Cable Breaking Strength		
Ends Fixed	1,000 lbs	(4.5 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	
	Temperature Rating			Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	in Air	in H ₂ O
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1N10RP	300 149	275 135	250 121	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.
- ▶ **Not for use in oil and gas wells.**



1N12

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

NAVIGATION

CASED HOLE

1/10"

1/8"

3/16"

7/32"

1/4"

9/32"

5/16"

OPEN HOLE

SOUR SERVICE

GEOTHERMAL

GREASELESS

FIBER OPTIC

DYCAM

SWAB LINES

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	(7.3 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	(42.7 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	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1N12RP	300 149	275 135	250 121	Poly	0.0175 0.444	7x0.0085 7x0.216	21.0 69.0	41 134	0.060 1.524	28 42	23 35
1N12RZ	500 250	450 232	400 204	ETFE	0.0175 0.444	7x0.0085 7x0.216	21.0 69.0	48 157	0.060 1.524	29 43	24 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.
- ▶ **Not for use in oil and gas wells.**

NAVIGATION

CASED HOLE

1/10"

1/8"

3/16"

7/32"

1/4"

9/32"

5/16"

OPEN HOLE

SOUR SERVICE

GEO THERMAL

GREASELESS

FIBER OPTIC

DYCAM

SWAB LINES

1L18

3/16" (4.70 mm)

MONOCONDUCTOR



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

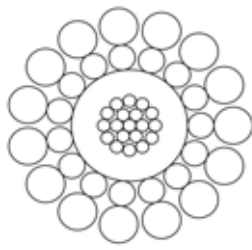
Maximum Conductor Voltage	1,000 VDC	
Conductor AWG Rating	20	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	6.0 Ω/Kft	(19.7 Ω/Km)

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	
	Temperature Rating			Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	in Air	in H ₂ O
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1L18RP	300 149	275 135	250 121	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	450 232	400 260	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.



1K22

7/32" (5.69 mm)
MONOCONDUCTOR

NAVIGATION

CASED HOLE

1/10"

1/8"

3/16"

7/32"

1/4"

9/32"

5/16"

OPEN HOLE

SOUR SERVICE

GEOHERMAL

GREASELESS

FIBER OPTIC

DYCAM

SWAB LINES

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	(2.5 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	4.3 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	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1K22PP	300 149	275 135	250 121	Poly	0.0245 0.622	19x0.0119 19x0.302	4.1 13.5	60 197	0.108 2.743	91 136	75 112
1K22PXZ	420 216	375 191	325 163	TPX	0.0130 0.330	19x0.0119 19x0.302	4.1 13.5	61 200	0.085 2.159	92 137	76 114
				ETFE	0.0115 0.292				0.108 2.743		
1K22PTZ	500 260	450 232	400 204	FEP	0.0130 0.330	19x0.0119 19x0.302	4.1 13.5	58 190	0.085 2.159	95 140	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.
- ▶ 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.
- ▶ 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.

NAVIGATION

CASED HOLE

1/10"

1/8"

3/16"

7/32"

1/4"

9/32"

5/16"

OPEN HOLE

SOUR SERVICE

GEOTHERMAL

GREASELESS

FIBER OPTIC

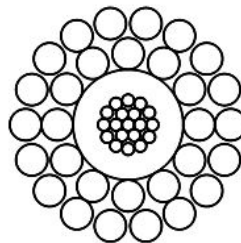
DYCAM

SWAB LINES

1N22

7/32" (5.69 mm)

MONOCONDUCTOR



PROPERTIES

Cable Diameter	0.224" +0.005" - 0.002"	(5.69mm +0.13mm -0.05mm)
Minimum Sheave Diameter	14"	(36 cm)
Cable Stretch Coefficient	2.5 ft/Kft/Klbs	(2.81 m/Km/5KN)

ELECTRICAL

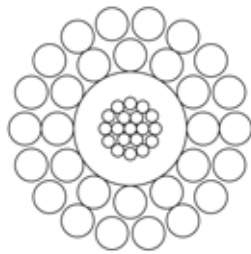
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	16	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	4.4 Ω/Kft	(14.4 Ω/Km)

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	
	Temperature Rating			Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	in Air	in H ₂ O
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1N22PP	300 149	275 135	250 121	Poly	0.0245 0.622	19x0.0119 19x0.302	4.1 13.5	61 200	0.108 2.743	93 139	77 115
1N22PXZ	420 216	375 191	325 163	TPX	0.0130 0.330	19x0.0119 19x0.302	4.1 13.5	61 200	0.085 2.159	94 140	78 116
				ETFE	0.0115 0.292				0.108 2.743		
1N22PTZ	500 260	450 232	400 204	FEP	0.015 0.330	19x0.0119 19x0.302	4.1 13.5	59 194	0.085 2.159	96 143	90 134
				ETFE	0.0245 0.622				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.



1N25

1/4" (6.55 mm)
MONOCONDUCTOR

NAVIGATION

CASED HOLE

1/10"

1/8"

3/16"

7/32"

1/4"

9/32"

5/16"

OPEN HOLE
SOUR SERVICE
GEOTHERMAL
GREASELESS
FIBER OPTIC
DYCAM
SWAB LINES

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 Mega Ω /Kft @ 500VDC	(457 Mega Ω /Km @ 500VDC)
Armor Electrical Resistance	3.0 Ω /Kft	(9.8 Ω /Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	7,300 lbs	(32.48 KN)	Nominal
Maximum Suggested Working Tension	3,650 lbs	(16.24 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	286 lbs	(1.27 KN)	
Outer Armor	286 lbs	(1.27+ KN)	

Cable Type	Core Description									Cable Weight	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1N25PP	300 149	275 135	250 121	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	375 191	325 163	TPX	0.130 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	450 232	400 204	FEP	0.013 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.
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- ▶ The temperature rating assumes a normal gradient for both temperature and weight.
- ▶ All values shown are nominal or typical values.

NAVIGATION

CASED HOLE

1/10"
1/8"
3/16"
7/32"
1/4"

9/32"

5/16"

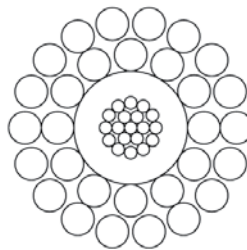
OPEN HOLE
SOUR SERVICE
GEOTHERMAL
GREASELESS
FIBER OPTIC
DYCAM
SWAB LINES

1N29-EHS

9/32" (7.32 mm)

MONOCONDUCTOR

EXTRA HIGH STRENGTH



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

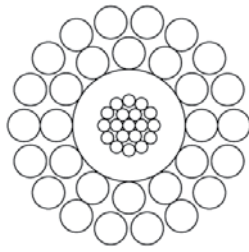
Maximum Conductor Voltage	1,500 VDC	
Conductor AWG Rating	15	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
Armor Electrical Resistance	2.8 Ω/Kft	(9.2 Ω/Km)

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	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1N29PP-EHS	300 149	275 135	250 121	Poly	0.0325 0.826	19x0.0142 19x0.361	2.8 9.2	56 184	0.136 3.454	152 226	126 187
1N29PXZ-EHS	420 216	375 191	325 163	Camtane	0.0135 0.343	19x0.0142 19x0.361	2.8 9.2	55 184	0.098 2.489	155 230	128 190
				ETFE	0.019 0.483				0.136 3.454		
1N29PTZ-EHS	500 260	450 232	400 204	FEP ETFE	0.0135 0.343 0.019 0.483	19x0.0142 19x0.361	2.8 9.2	50 180	0.098 2.489 0.136 3.454	157 234	130 193

- ▶ 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.



1N29-EEHS

9/32" (7.32 mm)
MONOCONDUCTOR
EXTRA EXTRA HIGH STRENGTH

NAVIGATION

CASED HOLE

1/10"

1/8"

3/16"

7/32"

1/4"

9/32"

5/16"

OPEN HOLE
SOUR SERVICE
GEOTHERMAL
GREASELESS
FIBER OPTIC
DYCAM
SWAB LINES

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 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	2.8 Ω/Kft	(9.2 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	10,900 lbs	(48.5 KN)	Nominal
Maximum Suggested Working Tension	5,450 lbs	(24.25 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	420 lbs	(1.87 KN)	
Outer Armor	420 lbs	(1.87 KN)	

Cable Type	Core Description									Cable Weight	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp								
1N29PTZ-EEHS	500	450	400	FEP	0.0135	19x0.0142 7x0.361	2.8	55	0.098	157	130
	260	232	204	ETFE	0.343				2.489		
					0.019				0.136		
					0.483		9.2	180	3.454	234	193

- ▶ 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 – 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.

NAVIGATION

CASED HOLE

1/10"
1/8"
3/16"
7/32"
1/4"
9/32"
5/16"

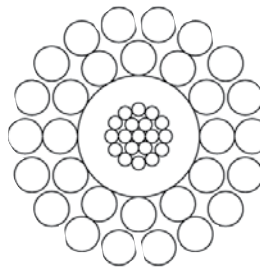
OPEN HOLE

SOUR SERVICE
GEOTHERMAL
GREASELESS
FIBER OPTIC
DYCAM
SWAB LINES

1N32

5/16" (8.18 mm)

MONOCONDUCTOR



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

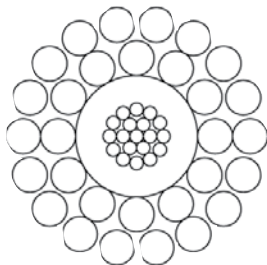
Maximum Conductor Voltage	1,500 VDC	
Conductor AWG Rating	15	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	2.1 Ω/Kft	(6.9 Ω/Km)

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	
	Temperature Rating °F °C			Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	in Air	in H ₂ O
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp		in mm	in mm	Ω/Kft Ω/Km	pf/ft pf/m	in mm	lbs/Kft Kg/Km	
1N32PP	300 149	275 135	250 121	Poly	0.042 1.067	19x0.0142 19x0.361	2.8 9.2	48 158	0.155 3.937	187 278	155 230
1N32PXZ	420 216	375 191	325 163	TPX	0.022 0.559	19x0.0142 19x0.361	2.8 9.2	47 154	0.115 2.921	190 282	157 233
				ETFE	0.020 0.508				0.156 3.937		
1N32PTZ	500 260	450 232	400 204	FEP	0.0245 0.622	19x0.0142 19x0.361	2.8 9.2	46 151	0.120 3.048	194 288	160 238
				ETFE	0.0175 0.445				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.



1N32-EEHS

5/16" (8.18 mm)
MONOCONDUCTOR
EXTRA EXTRA HIGH STRENGTH

NAVIGATION

CASED HOLE

1/10"
1/8"
3/16"
7/32"
1/4"
9/32"

5/16"

OPEN HOLE
SOUR SERVICE
GEOTHERMAL
GREASELESS
FIBER OPTIC
DYCAM
SWAB LINES

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 @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
Armor Electrical Resistance	2.1 Ω/Kft	(6.9 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	14,750 lbs	(65.63 KN)	Nominal
Maximum Suggested Working Tension	7,375 lbs	(32.7 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	564 lbs	(2.5 KN)	
Outer Armor	564 lbs	(2.5 KN)	

Cable Type	Core Description									Cable Weight	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1N32PP-EEHS	300 149	275 135	250 121	Poly	0.042 1.067	19x0.0142 19x0.361	2.8 9.2	48 158	0.155 3.937	187 278	155 230
1N32PTZ-EEHS	500 260	450 232	400 204	FEP	0.0245 0.622	19x0.0142 19x0.361	2.8 9.2	46 151	0.120 3.048	194 288	160 238
				ETFE	0.0175 0.445						

- 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 – 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.

NAVIGATION

CASED HOLE

1/10"

1/8"

3/16"

7/32"

1/4"

9/32"

5/16"

OPEN HOLE

SOUR SERVICE

GEOHERMAL

GREASELESS

FIBER OPTIC

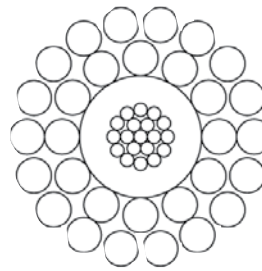
DYCAM

SWAB LINES

1N32-LR

5/16" (8.18 mm)

MONOCONDUCTOR



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 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	2.1 Ω/Kft	(6.9 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	12,000 lbs	(53.4 KN)	Nominal
Maximum Suggested Working Tension	6,000 lbs	(26.7 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	442 lbs	(1.97 KN)	
Outer Armor	442 lbs	(1.97 KN)	

Cable Type	Core Description									Cable Weight	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1N32PTZ-LR	500 260	450 232	400 204	FEP	0.017 0.432	19x0.0172	2.3 7.5	60 197	0.120 3.048	198	164
				ETFE	0.0175 0.444	19x0.437			0.155 3.937	295	244

- ▶ 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.

NAVIGATION

CASED HOLE

OPEN HOLE

.377"

3/16"

3/8"

7/16"

15/32"

.474"

DuraSlam

.49"

.54"

SOUR SERVICE

GEOHERMAL

GREASELESS

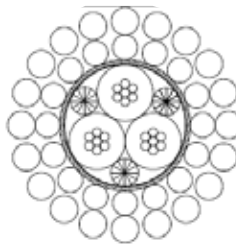
FIBER OPTIC

DYCAM

SWAB LINES

3Q37

0.377" (9.58 mm)
3-CONDUCTOR



PROPERTIES

Cable Diameter	0.377" +0.005" - 0.002"	(9.58mm +0.13mm -0.05mm)
Minimum Sheave Diameter	22"	(56 cm)
Cable Stretch Coefficient	1.6 ft/Kft/Klbs	(1.8 m/Km/5KN)

ELECTRICAL

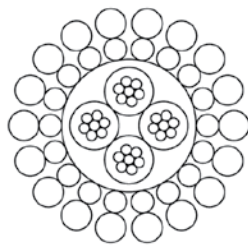
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	18	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
Armor Electrical Resistance	1.7 Ω/Kft	(5.6 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	13,200 lbs	(58.74 KN)	Nominal
Maximum Suggested Working Tension	6,600 lbs	(29.37 KN)	
Number and Size of Wires			
Inner Armor	16 x 0.0425"	(1.08 mm)	
Outer Armor	20 x 0.0470"	(1.19 mm)	
Average Wire Breaking Strength			
Inner Armor	383 lbs	(1.71 KN)	
Outer Armor	469 lbs	(2.09 KN)	

Cable Type	Core Description									Cable Weight		
	Temperature Rating °F °C			Plastic Type	Insulation Thickness	Copper Construction	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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp								lbs/Kft kg/Km	
	3Q37RP	300 149	275 135		250 121	Poly	0.0230 0.584	7x0.0152 7x0.386	7.1 23.3	47 154	0.096 2.438	Dacron

- 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.
- All values shown are nominal or typical values.
- Dacron® does not withstand temperatures exceeding 300 °F. Nomex® is available by customer request at time of order for additional cost.



4H18

3/16" (4.80 mm)
4-CONDUCTOR

NAVIGATION

CASED HOLE
OPEN HOLE
.377"
3/16"
3/8"
7/16"
15/32"
.474"
DuraSlam
.49"
.54"

SOUR SERVICE
GEOTHERMAL
GREASELESS
FIBER OPTIC
DYCAM
SWAB LINES

PROPERTIES

Cable Diameter	0.186" +0.004" - 0.002"	(4.72mm +0.13mm -0.05mm)
Minimum Sheave Diameter	14"	(36 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 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
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	72.6 lbs	(0.32 KN)	
Outer Armor	130.5 lbs	(0.58 KN)	

Cable Type	Core Description										Cable Weight	
	Temperature Rating °F °C			Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	Jacket Type	in Air	in H ₂ O
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp								lbs/Kft Kg/Km	
	4H18RPP	300 149	275 135		250 121	Poly	0.0075 0.191	7x0.0085 7x0.216	22.5 73.8	40 131	0.040 1.016	Poly

- 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.
- Core assembly – Copper strand consists of six wires around one center wire. 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.

NAVIGATION

CASED HOLE

OPEN HOLE

.377"

3/16"

3/8"

7/16"

15/32"

.474"

DuraSlam

.49"

.54"

SOUR SERVICE

GEOTHERMAL

GREASELESS

FIBER OPTIC

DYCAM

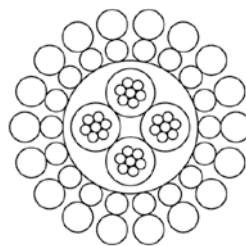
SWAB LINES

4H18-SS

3/16" (4.80 mm)

4-CONDUCTOR

STAINLESS STEEL WIRE



PROPERTIES

Cable Diameter	0.186" +0.004" - 0.002"	(4.72mm +0.13mm -0.05mm)
Minimum Sheave Diameter	14"	(36 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 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
Armor Electrical Resistance	6.7 Ω/Kft	(22.0 Ω/Km)

MECHANICAL

Cable Breaking Strength		
Ends Fixed	2,600 lbs	(11.6 KN) Nominal
Maximum Suggested Working Tension	1,300 lbs	(5.8 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	63.2 lbs	(0.28 KN)
Outer Armor	131.5 lbs	(0.51 KN)

Cable Type	Core Description										Cable Weight	
	Temperature Rating °F °C			Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	Jacket Type	in Air	in H ₂ O
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp									
						in mm	in mm	Ω/Kft Ω/Km	pf/ft pf/m	in mm		lbs/Kft Kg/Km
4H18RPP-SS	300 149	275 135	250 121	Poly	0.0075 0.191	7x0.0085 7x0.216	22.5 73.8	40 131	0.040 1.016	Poly	61 91	50 75

- ▶ The armor wires are high tensile 316 Stainless Steel, 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.
- ▶ Core assembly – Copper strand consists of six wires around one center wire. 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.



7Q38

3/8" (9.60 mm)
7-CONDUCTOR

NAVIGATION

CASED HOLE
OPEN HOLE

.377"

3/16"

3/8"

7/16"

15/32"

.474"

DuraSlam

.49"

.54"

SOUR SERVICE

GEO THERMAL

GREASELESS

FIBER OPTIC

DYCAM

SWAB LINES

PROPERTIES

Cable Diameter	0.378" +0.005" - 0.002"	(9.60mm +0.13mm -0.05mm)
Minimum Sheave Diameter	22"	(56 cm)
Cable Stretch Coefficient	1.4 ft/Kft/Klbs	(1.57 m/Km/5KN)

ELECTRICAL

Maximum Conductor Voltage	1,100 VDC	
Conductor AWG Rating	20	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
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		
	Temperature Rating °F °C			Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	Jacket Type	in Air	in H ₂ O
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp		in mm	in mm	Ω/Kft Ω/Km	pf/ft pf/m	in mm		lbs/Kft Kg/Km	
7Q38RAZB	500 260	450 232	400 204	PFA	0.0160 0.4064	7x0.0128 7x0.325	9.8 32.2	39 121	0.070 1.778	ETFE	256 387	211 315

- ▶ 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.
- ▶ Center conductor construction is 7x0.0128". 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.

NAVIGATION

CASED HOLE

OPEN HOLE

.377"

3/16"

5/16"

3/8"

7/16"

15/32"

.474"

DuraSlam

.49"

.54"

SOUR SERVICE

GEOTHERMAL

GREASELESS

FIBER OPTIC

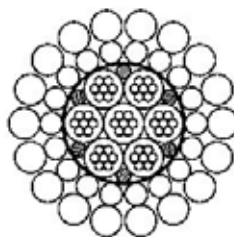
DYCAM

SWAB LINES

7H42

7/16" (10.82 mm)

7-CONDUCTOR



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

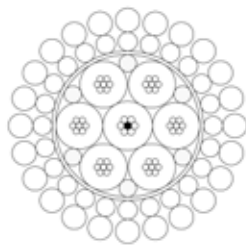
Maximum Conductor Voltage	1,000 VDC	
Conductor AWG Rating	20	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
Armor Electrical Resistance	1.2 Ω/Kft	(3.9 Ω/Km)

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	404 lbs	(1.80 KN)	
Outer Armor	765 lbs	(3.40 KN)	

Cable Type	Core Description									Cable Weight		
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp								lbs/Kft Kg/Km	
7H42RP	300 149	275 135	250 121	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	450 232	400 204	ETFE	0.0180 0.457	7x0.0128 7X0.325	9.8 32.2	62 203	0.074 1.880	Dacron	316 471	261 389

- ▶ 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 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.
- ▶ Dacron® does not withstand temperatures exceeding 300°F. Nomex® is available by customer request at time of order for additional cost.



7J46

15/32" (11.79 mm)
7-CONDUCTOR

NAVIGATION

CASED HOLE
OPEN HOLE

.377"

3/16"

3/8"

7/16"

15/32"

.474"

DuraSlam

.49"

.54"

SOUR SERVICE

GEOHERMAL

GREASELESS

FIBER OPTIC

DYCAM

SWAB LINES

PROPERTIES

Cable Diameter	0.464" +0.005" - 0.002"	(11.79mm +0.13mm -0.05mm)
Minimum Sheave Diameter	26"	(66 cm)
Cable Stretch Coefficient	0.77 ft/Kft/Klbs	(0.87 m/Km/5KN)

ELECTRICAL

Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	20	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
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	(1.59 KN)	
Outer Armor	575 lbs	(2.56 KN)	

Cable Type	Core Description									Cable Weight		
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp								lbs/Kft Kg/Km	
7J46RP	300 149	275 135	250 121	Poly	0.029 0.737	7x0.0128 7X0.325	9.8 32.2	40 131	0.096 2.438	Dacron	321 478	265 395
7J46RXZ	420 216	375 191	325 163	Camtane	0.016 0.406	7x0.0128 7x0.325	9.8 32.2	40 131	0.070 1.778	Dacron	340 507	281 419
				ETFE	0.0115 0.330				0.096 2.438			
7J46RTZ	500 260	450 232	400 204	FEP	0.016 0.406	7x0.0128 7X0.325	9.8 32.2	39 128	0.061 1.778	Dacron	341 507	382 419
				ETFE	0.0115 0.330				0.096 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 capacitance 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.
- ▶ Dacron® does not withstand temperatures exceeding 300° F. Nomex® is available by customer request at time of order for additional cost.

NAVIGATION

CASED HOLE

OPEN HOLE

.377"

3/16"

5/16"

3/8"

7/16"

15/32"

.474"

DuraSlam

.49"

.54"

SOUR SERVICE

GEOTHERMAL

GREASELESS

FIBER OPTIC

DYCAM

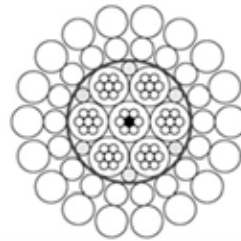
SWAB LINES

7H47-EHS

0.474" (12.04 mm)

7-CONDUCTOR

Slammer



PROPERTIES

Cable Diameter	0.474" +0.005" - 0.002"	(12.04mm +0.13mm -0.05mm)
Minimum Sheave Diameter	32"	(81 cm)
Cable Stretch Coefficient	0.63 ft/Kft/Klbs	(0.71 m/Km/5KN)

ELECTRICAL

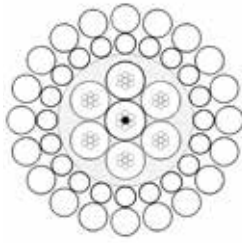
Maximum Conductor Voltage	1,100 VDC	
Conductor AWG Rating	20	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
Armor Electrical Resistance	1.1 Ω/Kft	(3.6 Ω/Km)

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		
	Temperature Rating °F °C			Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	Tape Type	in Air	in H ₂ O
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp		in mm	in mm	Ω/Kft Ω/Km	pf/ft pf/m	in mm		lbs/Kft Kg/Km	
7H47RP-EHS	300 149	275 135	250 121	Poly	0.023 0.584	7x0.0128 7x0.325	9.8 32.2	46 151	0.084 2.134	Dacron	372 554	308 458
7H47RXZ-EHS	420 216	375 191	325 163	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	Dacron	385 573	318 474
7H47RTZ-EHS	500 260	450 232	400 204	FEP ETFE	0.0115 0.292 0.0115 0.292	7x0.0128 7x0.325	9.8 32.2	46 151	0.061 1.549 0.084 2.134	Dacron	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 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 capacitance 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.
- ▶ Dacron® does not withstand temperatures exceeding 300° F. Nomex® is available by customer request at time of order for additional cost.



7Q49-EHS

0.490" (12.45 mm)
7-CONDUCTOR
DuraSlam

NAVIGATION

CASED HOLE

OPEN HOLE

.377"

3/16"

3/8"

7/16"

15/32"

.474"

DuraSlam

.49"

.54"

SOUR SERVICE

GEOHERMAL

GREASELESS

FIBER OPTIC

DYCAM

SWAB LINES

PROPERTIES

Cable Diameter	0.490" +0.006" - 0.002"	(12.45mm +0.15mm -0.05mm)
Minimum Sheave Diameter	25"	(64 cm)
Cable Stretch Coefficient	0.60 ft/Kft/Klbs	(0.67 m/Km/5KN)

ELECTRICAL

Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	20	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500 VDC)
Armor Electrical Resistance	1.0 Ω/Kft	(3.3 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	25,750 lbs	(114.6 KN)	Nominal
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		
	Temperature Rating °F °C			Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	Jacket Type	in Air	in H ₂ O
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp		in mm	in mm	Ω/Kft Ω/Km	pf/ft pf/m	in mm		lbs/Kft Kg/Km	
7Q49RTZZ-EHS	500	450	400	FEP	0.0130	7x0.0128	9.8	27	0.064	ETFE	409	338
	260	232	204	ETFE	0.330 0.0100 0.254	7x0.325	32.2	89	1.626 0.084 2.134		609	503

- ▶ 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.
- ▶ Center conductor construction is 7x0.0142" 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.

NAVIGATION

CASED HOLE

OPEN HOLE

.377"

3/16"

3/8"

7/16"

15/32"

.474"

DuraSlam

.49"

.54"

SOUR SERVICE

GEOTHERMAL

GREASELESS

FIBER OPTIC

DYCAM

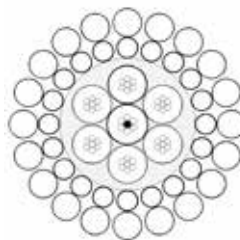
SWAB LINES

7Q49-EEHS

0.490" (12.45 mm)

7-CONDUCTOR

DuraSlam



PROPERTIES

Cable Diameter	0.490" +0.006" - 0.002"	(12.45mm +0.15mm -0.05mm)
Minimum Sheave Diameter	36"	(91 cm)
Cable Stretch Coefficient	0.61 ft/Kft/Klbs	(0.69 m/Km/5KN)

ELECTRICAL

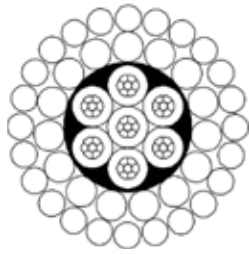
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	20	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500 VDC)
Armor Electrical Resistance	1.0 Ω/Kft	(3.3 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	30,000 lbs	(133.5 KN)	Nominal
Maximum Suggested Working Tension	15,000 lbs	(66.8 KN)	
Number and Size of Wires			
Inner Armor	20 x 0.0460"	(1.17 mm)	
Outer Armor	20 x 0.0620"	(1.58 mm)	
Average Wire Breaking Strength			
Inner Armor	603 lbs	(2.7 KN)	
Outer Armor	1,095 lbs	(4.9 KN)	

Cable Type	Core Description									Cable Weight		
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp								lbs/Kft Kg/Km	
7Q49RXZZ-EEHS	420 216	375 191	325 121	Camtane ETFE	0.0130 0.330 0.0100 0.254	7x0.0128 7x0.325	9.8 32.2	28 92	0.064 1.626 0.084 2.134	ETFE	405 603	335 498
7Q49RTZZ-EEHS	500 260	450 232	400 204	FEP ETFE	0.0130 0.330 0.0100 0.254	7x0.0128 7x0.325	9.8 32.2	27 89	0.064 1.626 0.084 2.134	ETFE	408 607	337 502

- ▶ 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.
- ▶ 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 7x0.0142" 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.



7Q54-EEHS

0.548" (13.92 mm)

7-CONDUCTOR

DuraSlam

NAVIGATION

CASED HOLE

OPEN HOLE

.377"

3/16"

3/8"

7/16"

15/32"

.474"

DuraSlam

.49"

.54"

SOUR SERVICE

GEOTHERMAL

GREASELESS

FIBER OPTIC

DYCAM

SWAB LINES

PROPERTIES

Cable Diameter	0.548" ±0.005"	(13.92mm ±0.13mm)
Minimum Sheave Diameter	36"	(92 cm)
Cable Stretch Coefficient	0.5 ft/Kft/Klbs	(0.56 m/Km/5KN)

ELECTRICAL

Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	17	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
Armor Electrical Resistance	0.79 Ω/Kft	(2.59 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	40,000 lbs	(178 KN)	Nominal
Maximum Suggested Working Tension	20,000 lbs	(89 KN)	
Number and Size of Wires			
Inner Armor	15 x 0.0680"	(1.727 mm)	
Outer Armor	24 x 0.0585"	(1.486 mm)	
Average Wire Breaking Strength			
Inner Armor	1,317 lbs	(5.9 KN)	
Outer Armor	975 lbs	(4.3 KN)	

Cable Type	Core Description									Cable Weight		
	Temperature Rating °F °C			Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	Jacket Type	in Air	in H ₂ O
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp		in mm	in mm	Ω/Kft Ω/Km	pf/ft pf/m	in mm		lbs/Kft Kg/Km	
7Q54CTZZ-LR-EEHS	500 260	450 232	400 204	FEP ETFE	0.0110 0.279 0.0105 0.267	0.049 Comp. 1.245 Comp.	5.4 112	34 112	0.071 1.811 0.092 2.344	M-ETFE 0.306 7.772	532 792	440 654

- ▶ 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 seven compacted copper wires.
- ▶ Conductor resistance is measured at 68 deg. F.
- ▶ The temperature rating assumes a normal gradient for both temperature and weight.
- ▶ All values shown are nominal or typical values.



SOUR SERVICE

S-75

S-77

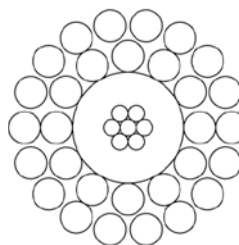
MP35

NAVIGATION

CASED HOLE
OPEN HOLE
SOUR SERVICE
7/32"
1/4"
9/32"
5/16"
GEOTHERMAL
GREASELESS
FIBER OPTIC
DYCAM
SWAB LINES

1N22-S75

7/32" (5.69 mm)
MONOCONDUCTOR
CORROSION RESISTANT



PROPERTIES

Cable Diameter	0.224" +0.005" - 0.002"	(5.69mm +0.13mm -0.05mm)
Minimum Sheave Diameter	14"	(36 cm)
Cable Stretch Coefficient	3.12ft/Kft/Klbs	(3.51 m/Km/5KN)

ELECTRICAL

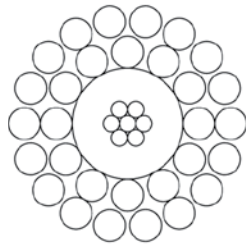
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	18	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
Armor Electrical Resistance	18.1 Ω/Kft	(61 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	4,700 lbs	(20.9 KN)	Nominal
Maximum Suggested Working Tension	2,350 lbs	(10.45 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	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1N22SA-S75	500 260	450 232	400 204	PFA	0.0305 0.775	7x0.0159 7x0.404	6.7 22.0	43 141	0.108 2.743	98 146	81 120

- ▶ While insulation is rated to 1-hour exposure of 500°F, alloy armor wires may have reduced corrosion resistance at temperatures above 350°F.
- ▶ The armor wires are made of corrosion resistant alloy steel suitable for low level H₂S and CO₂ environments.
- ▶ Conductor has nickel plated wires adhering to ASTM B355 Class 10 for increased corrosion resistance.
- ▶ 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.



1N22-S77

7/32" (5.69 mm)
MONOCONDUCTOR
CORROSION RESISTANT

NAVIGATION

CASED HOLE
OPEN HOLE
SOUR SERVICE
7/32"
1/4"
9/32"
5/16"
GEOTHERMAL
GREASELESS
FIBER OPTIC
DYCAM
SWAB LINES

PROPERTIES

Cable Diameter	0.224" +0.005" - 0.002"	(5.69mm +0.13mm -0.05mm)
Minimum Sheave Diameter	14"	(36 cm)
Cable Stretch Coefficient	3.09ft/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 @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
Armor Electrical Resistance	18.9 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	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1N22SA-S77	500 260	450 232	400 204	PFA	0.0305 0.775	7x0.0159 7x0.404	6.7 22	43 141	0.108 2.743	97 144	80 119

- ▶ While insulation is rated to 1-hour exposure of 500°F, alloy armor wires may have reduced corrosion resistance at temperatures above 400°F.
- ▶ The armor wires are made of corrosion resistant alloy steel suitable for moderate H₂S and CO₂ environments.
- ▶ Conductor has nickel plated wires adhering to ASTM B355 Class 10 for increased corrosion resistance.
- ▶ 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.

NAVIGATION

CASED HOLE
OPEN HOLE
SOUR SERVICE
7/32"
1/4"
9/32"
5/16"
GEOTHERMAL
GREASELESS
FIBER OPTIC
DYCAM
SWAB LINES

1N22-MP35N

7/32" (5.69 mm)
MONOCONDUCTOR



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	(3.3 m/Km/5KN)

ELECTRICAL

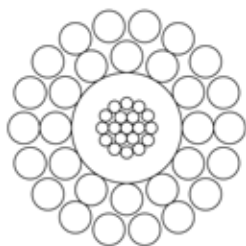
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	18	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
Armor Electrical Resistance	22.0 Ω/Kft	(72 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	5,200 lbs	(23.14 KN)	Nominal
Maximum Suggested Working Tension	2,600 lbs	(11.57 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	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1N22SA-MP35N	500 260	450 232	400 204	PFA	0.0305 0.075	7x0.0159 7x0.404	6.7 22	43 141	0.108 2.743	101 150	84 124

- ▶ While insulation is rated to 1-hour exposure of 500°F, alloy armor wires may have reduced corrosion resistance at temperatures above 450°F.
- ▶ The armor wires are made of corrosion resistant alloy steel suitable for extreme H₂S and CO₂ environments.
- ▶ Conductor has nickel plated wires adhering to ASTM B355 Class 10 for increased corrosion resistance.
- ▶ 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.



1N25-S75

1/4" (6.55 mm)
MONOCONDUCTOR
CORROSION RESISTANT

NAVIGATION

CASED HOLE
 OPEN HOLE
 SOUR SERVICE
 7/32"
 1/4"
 9/32"
 5/16"
 GEOTHERMAL
 GREASELESS
 FIBER OPTIC
 DYCAM
 SWAB LINES

PROPERTIES

Cable Diameter	0.258" +0.005" - 0.002"	(6.55mm +0.13mm -0.05mm)
Minimum Sheave Diameter	14"	(36 cm)
Cable Stretch Coefficient	2.28 ft/Kft/Klbs	(2.562 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	13.9 Ω/Kft	(45.6 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	6,200 lbs	(26.7 KN)	Nominal
Maximum Suggested Working Tension	3,100 lbs	(13.8 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	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1N25WA-S75	500 260	450 232	400 204	PFA	0.032 0.813	19x0.0119 19x0.302	4.6 15.1	53 174	0.123 3.124	131 194	108 161

- ▶ While insulation is rated to 1-hour exposure of 500°F, alloy armor wires may have reduced corrosion resistance at temperatures above 350°F.
- ▶ The armor wires are made of corrosion resistant alloy steel suitable for low level H₂S and CO₂ environments.
- ▶ Conductor has nickel plated wires adhering to ASTM B355 Class 10 for increased corrosion resistance.
- ▶ 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.

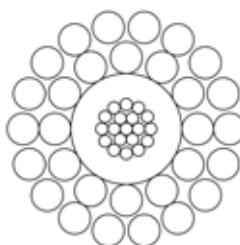
NAVIGATION

CASED HOLE
OPEN HOLE
SOUR SERVICE
7/32"
1/4"
9/32"
5/16"
GEOTHERMAL
GREASELESS
FIBER OPTIC
DYCAM
SWAB LINES

1N25-S77

1/4" (6.55 mm)

**MONOCONDUCTOR
CORROSION RESISTANT**



PROPERTIES

Cable Diameter	0.258" +0.005" - 0.002"	(6.55mm +0.13mm -0.05mm)
Minimum Sheave Diameter	14"	(36 cm)
Cable Stretch Coefficient	2.27 ft/Kft/Klbs	(2.55 m/Km/5KN)

ELECTRICAL

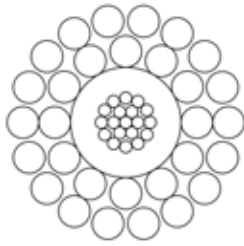
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	16	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
Armor Electrical Resistance	14.1 Ω/Kft	(46.3 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	6,500 lbs	(29.8 KN)	Nominal
Maximum Suggested Working Tension	3,250 lbs	(14.46 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	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1N25WA-S77	500 260	450 232	400 204	PFA	0.032 0.0813	19x0.0119 19x0.302	4.6 15.1	53 174	0.123 3.124	129 191	106 158

- ▶ While insulation is rated to 1-hour exposure of 500°F, alloy armor wires may have reduced corrosion resistance at temperatures above 400°F.
- ▶ The armor wires are made of corrosion resistant alloy steel suitable for moderate H₂S and CO₂ environments.
- ▶ Conductor has nickel plated wires adhering to ASTM B355 Class 10 for increased corrosion resistance.
- ▶ 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.



1N29-S75

9/32" (7.32 mm)
MONOCONDUCTOR
CORROSION RESISTANT

NAVIGATION

CASED HOLE
OPEN HOLE
SOUR SERVICE
7/32"
1/4"
9/32"
5/16"
GEOTHERMAL
GREASELESS
FIBER OPTIC
DYCAM
SWAB LINES

PROPERTIES

Cable Diameter	0.288" +0.005" - 0.002"	(7.32mm +0.13mm -0.05mm)
Minimum Sheave Diameter	16"	(41 cm)
Cable Stretch Coefficient	1.88 ft/Kft/Klbs	(2.112 m/Km/5KN)

ELECTRICAL

Maximum Conductor Voltage	1,500 VDC	
Conductor AWG Rating	16	
Minimum Insulation Resistance	1,500 Mega Ω /Kft @ 500 VDC	(457 Mega Ω /Km @ 500VDC)
Armor Electrical Resistance	11.2 Ω /Kft	(36.8 Ω /Km)

MECHANICAL

Cable Breaking Strength		
Ends Fixed	7,800 lbs	(34.7 KN) Nominal
Maximum Suggested Working Tension	3,900 lbs	(17.35 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		
	Temperature Rating °F °C			Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	in Air	in H ₂ O
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp		in mm	in mm	Ω/Kft Ω/Km	pf/ft pf/m	in mm	lbs/Kft Kg/Km	
1N29WTZ-S75	500 260	450 232	400 204	FEP	0.017 0.432	19x0.0128 19x0.325	4.0 13.1	48 157	0.098 2.489	161 239	133 198
				ETFE	0.019 0.483			0.136 3.454			

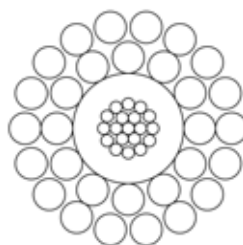
- ▶ While insulation is rated to 1-hour exposure of 500 °F, alloy armor wires may have reduced corrosion resistance at temperatures above 350 °F.
- ▶ The armor wires are made of corrosion resistant alloy steel suitable for low level H₂S and CO₂ environments.
- ▶ Conductor has nickel plated wires adhering to ASTM B355 Class 10 for increased corrosion resistance.
- ▶ 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.

NAVIGATION

CASED HOLE
OPEN HOLE
SOUR SERVICE
7/32"
1/4"
9/32"
5/16"
GEOTHERMAL
GREASELESS
FIBER OPTIC
DYCAM
SWAB LINES

1N29-S77

9/32" (7.32 mm)
MONOCONDUCTOR
CORROSION RESISTANT



PROPERTIES

Cable Diameter	0.288" +0.005" - 0.002"	(7.32mm +0.13mm -0.05mm)
Minimum Sheave Diameter	16"	(41 cm)
Cable Stretch Coefficient	1.87ft/Kft/Klbs	(2.101 m/Km/5KN)

ELECTRICAL

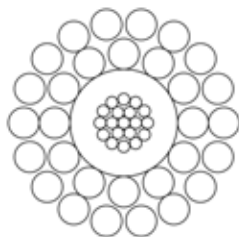
Maximum Conductor Voltage	1,500 VDC	
Conductor AWG Rating	16	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	11.3 Ω/Kft	(37.1 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	8,100 lbs	(36.0 KN)	Nominal
Maximum Suggested Working Tension	4,050 lbs	(18.0 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	314 lbs	(1.40 KN)	
Outer Armor	314 lbs	(1.40 KN)	

Cable Type	Core Description									Cable Weight	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1N29WTZ-S77	500 260	450 232	400 204	FEP	0.017 0.432	19x0.0128 19x0.325	4.0 13.1	48 157	0.098 2.489	159 236	131 195
				ETFE	0.019 0.483				0.136 3.454		

- ▶ While insulation is rated to 1-hour exposure of 500°F, alloy armor wires may have reduced corrosion resistance at temperatures above 400°F.
- ▶ The armor wires are made of corrosion resistant alloy steel suitable for moderate H₂S and CO₂ environments.
- ▶ Conductor has nickel plated wires adhering to ASTM B355 Class 10 for increased corrosion resistance.
- ▶ 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.



1N32-S75

5/16" (8.18 mm)
MONOCONDUCTOR
CORROSION RESISTANT

NAVIGATION

CASED HOLE
OPEN HOLE
SOUR SERVICE
7/32"
1/4"
9/32"
5/16"
GEOTHERMAL
GREASELESS
FIBER OPTIC
DYCAM
SWAB LINES

PROPERTIES

Cable Diameter	0.322" +0.005" - 0.002"	(8.18mm +0.13mm -0.05mm)
Minimum Sheave Diameter	18"	(46 cm)
Cable Stretch Coefficient	1.59 ft/Kft/Klbs	(1.787 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	9.0 Ω/Kft	(29.5 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	9,700 lbs	(43.16 KN)	Nominal
Maximum Suggested Working Tension	4,850 lbs	(21.58 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	
	Temperature Rating °F °C			Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	in Air	in H ₂ O
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp		in mm	in mm	Ω/Kft Ω/Km	pf/ft pf/m	in mm	lbs/Kft Kg/Km	
1N32WTZ-S75	500 260	450 232	400 204	FEP	0.0245 0.622	19x0.0142 19x0.361	3.2 10.5	45 148	0.120 3.048	201 299	166 247
				ETFE	0.0175 0.444				0.155 3.937		

- ▶ While insulation is rated to 1-hour exposure of 500°F, alloy armor wires may have reduced corrosion resistance at temperatures above 350°F.
- ▶ The armor wires are made of corrosion resistant alloy steel suitable for low level H₂S and CO₂ environments.
- ▶ Conductor has nickel plated wires adhering to ASTM B355 Class 10 for increased corrosion resistance.
- ▶ 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.

NAVIGATION

CASED HOLE

OPEN HOLE

SOUR SERVICE

7/32"

1/4"

9/32"

5/16"

GEOTHERMAL

GREASELESS

FIBER OPTIC

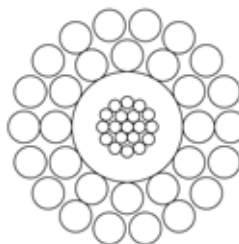
DYCAM

SWAB LINES

1N32-S77

5/16" (8.18 mm)

**MONOCONDUCTOR
CORROSION RESISTANT**



PROPERTIES

Cable Diameter	0.322" +0.005" - 0.002"	(8.18mm +0.13mm -0.05mm)
Minimum Sheave Diameter	18"	(46 cm)
Cable Stretch Coefficient	1.58 ft/Kft/Klbs	(1.775 m/Km/5KN)

ELECTRICAL

Maximum Conductor Voltage	1,500 VDC	
Conductor AWG Rating	15	
Minimum Insulation Resistance	1,500 Mega Ω /Kft @ 500 VDC	(457 Mega Ω /Km @ 500VDC)
Armor Electrical Resistance	9.1 Ω /Kft	(29.9 Ω /Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	10,000 lbs	(44.50 KN)	Nominal
Maximum Suggested Working Tension	5,000 lbs	(22.25 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	388.8 lbs	(1.73 KN)	
Outer Armor	388.8 lbs	(1.73 KN)	

Cable Type	Core Description									Cable Weight	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1N32WTZ-S77	500 260	450 232	400 204	FEP	0.0245 0.622	19x0.0142 19x0.361	3.2 10.5	45 148	0.120 3.048	198 294	163 243
				ETFE	0.0175 0.444				0.155 3.937		

- ▶ While insulation is rated to 1-hour exposure of 500 °F, alloy armor wires may have reduced corrosion resistance at temperatures above 400 °F.
- ▶ The armor wires are made of corrosion resistant alloy steel suitable for moderate H₂S and CO₂ environments.
- ▶ Conductor has nickel plated wires adhering to ASTM B355 Class 10 for increased corrosion resistance.
- ▶ 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.

NAVIGATION

CASED HOLE
OPEN HOLE
SOUR SERVICE
GEOTHERMAL

7/32"

5/16"

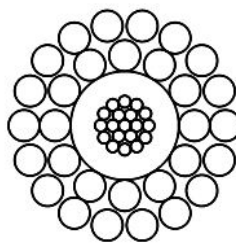
15/32"

GREASELESS
FIBER OPTIC
DYCAM
SWAB LINES

1N22

7/32" (5.69 mm)
MONOCONDUCTOR

GeoSteam™



PROPERTIES

Cable Diameter	0.224" +0.005" - 0.002"	(5.69mm +0.13mm -0.05mm)
Minimum Sheave Diameter	14"	(36 cm)
Cable Stretch Coefficient	2.5 ft/Kft/Klbs	(2.81 m/Km/5KN)

ELECTRICAL

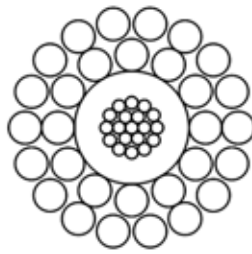
Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	16	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	4.4 Ω/Kft	(14.4 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	5,600 lbs	(24.9 KN)	Nominal
Maximum Suggested Working Tension	2,800 lbs	(12.45 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	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1N22WG	600 316	550 288	500 260	ECA	0.0245 0.662	19x0.0119 19x0.302	4.7 15.4	55 190	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.
- ▶ Conductor has nickel plated wires adhering to ASTM B355 Class 10 for increased corrosion resistance.
- ▶ 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.



1N32

5/16" (8.18 mm)
MONOCONDUCTOR

GeoSteam™

NAVIGATION

CASED HOLE
OPEN HOLE
SOUR SERVICE
GEOTHERMAL
7/32"
5/16"
15/32"
GREASELESS
FIBER OPTIC
DYCAM
SWAB LINES

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 @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
Armor Electrical Resistance	2.1 Ω/Kft	(6.9 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	12,000 lbs	(53.4 KN)	Nominal
Maximum Suggested Working Tension	6,000 lbs	(26.7 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	442 lbs	(1.97 KN)	
Outer Armor	442 lbs	(1.97 KN)	

Cable Type	Core Description									Cable Weight	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1N32WG	600 316	550 288	500 260	ECA	0.0421 1.067	19x0.0142 19x0.361	3.2 10.5	46 151	0.155 3.937	195 290	161 240

- ▶ 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.
- ▶ Conductor has nickel plated wires adhering to ASTM B355 Class 10 for increased corrosion resistance.
- ▶ 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.

NAVIGATION

CASED HOLE
OPEN HOLE
SOUR SERVICE
GEOTHERMAL

7/32"

5/16"

15/32"

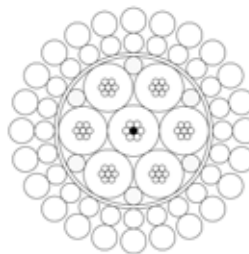
GREASELESS
FIBER OPTIC
DYCAM
SWAB LINES

7J46

15/32" (11.79 mm)

7-CONDUCTOR

GeoSteam™



PROPERTIES

Cable Diameter	0.464" +0.005" - 0.002"	(11.79mm +0.13mm -0.05mm)
Minimum Sheave Diameter	26"	(66 cm)
Cable Stretch Coefficient	0.77 ft/Kft/Klbs	(0.87 m/Km/5KN)

ELECTRICAL

Maximum Conductor Voltage	1,200 VDC	
Conductor AWG Rating	20	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
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	(1.51 KN)	
Outer Armor	575 lbs	(2.56 KN)	

Cable Type	Core Description										Cable Weight	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp								lbs/Kft Kg/Km	
7J46SGG	600 316	550 288	500 260	ECA	0.0290 0.737	7x0.0128 7x0.325	11.1 36.4	40 131	0.096 2.438	ECA	363 540	300 446

- ▶ 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 and cables are post-tensioned.
- ▶ The Nickel coated copper wires are made of ASTM3555 Class 10 and they are used to increase corrosion protection conductors.
- ▶ Core assembly – Copper strand consists of six wires around one center wire and are “water blocked” to reduce water and gas migration. Conductor resistance is measured at 68 deg. 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.

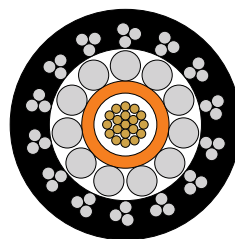
GREASELESS

ECOSEAL®

NAVIGATION

CASED HOLE
OPEN HOLE
SOUR SERVICE
GEOTHERMAL
GREASELESS
EcoSeal
FIBER OPTIC
DYCAM
SWAB LINES

1Q36-EHS ECOSEAL® 0.359" (9.12 mm) MONOCONDUCTOR



PROPERTIES

Cable Diameter	0.359" +0.004" - 0.002"	(9.12mm +0.05mm -0.05mm)
Cable Armor Diameter	0.315" +0.005" - 0.002"	(8.00mm +.127mm -0.05mm)
Minimum Sheave Diameter	26"	(66 cm)
Cable Stretch Coefficient	1.55 ft/Kft/Klbs	(1.74 m/Km/5KN)
Cable Coefficient of Friction	0.2	

ELECTRICAL

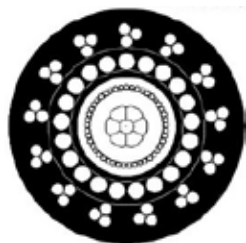
Maximum Conductor Voltage	1,500 VDC	
Conductor AWG Rating	15	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
Armor Electrical Resistance	4.5 Ω/Kft	(14.76 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	8,500 lbs	(40.0 KN)	Nominal
Maximum Suggested Working Tension	5,000 lbs	(24.0 KN)	
Number and Size of Wires			
Inner Armor	11 x 0.0470"	(1.194 mm)	
Outer Armor	14 x 3W Symmetrical Strand .0430"	(1.092 mm)	
Average Wire Breaking Strength			
Inner Armor	542 lbs	(2.4 KN)	
Outer Armor	191 lbs	(0.85 KN)	

Cable Type	Core Description										Cable Weight						
	Temperature Rating °F °C			Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	Jacket O.D. M-ETFE	in Air	in H ₂ O					
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp								in mm	in mm	Ω/Kft Ω/Km	pf/ft pf/m	in mm	in mm	lbs/Kft Kg/Km
1Q36PTZ-EHStZZ	400 204	375 191	350 177	FEP	0.0135 0.343	19x0.0142 19x0.361	2.8 9.2	54 177	0.098 2.489	0.356 9.042	171 232	141 168					
				ETFE	0.019 0.483				0.136 3.454								

- ▶ The EcoSeal® features a "double-seal" technology consisting of an inner polymer sleeve between the inner and outer armors, and a specially formulated outer polymer jacket.
- ▶ Core assembly – Copper strand consists of nineteen wires around one center wire. 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.
- ▶ Not recommended for use in any sour and / or corrosive environment.



2Q37-EHS ECOSEAL® 0.374" (9.50 mm) COAXIAL CABLE

NAVIGATION

CASED HOLE
OPEN HOLE
SOUR SERVICE
GEOTHERMAL
GREASELESS
EcoSeal
FIBER OPTIC
DYCAM
SWAB LINES

PROPERTIES

Jacketed Cable Diameter	0.374" ±0.005"	(9.50mm ±0.13mm)
Cable Armor Diameter	0.337" +0.005" -0.002"	(8.56 mm +0.13 -0.05 mm)
Minimum Sheave Diameter	26"	(66 cm)
Cable Stretch Coefficient	2.1 ft/Kft/Klbs	(2.36m/Km/5KN)
Cable Coefficient of Friction	0.2	

ELECTRICAL

Maximum Conductor Voltage	1,500 VDC Central Conductor 1,000 VDC Server Conductor	
Conductor AWG Rating	14 Central Conductor 16 Server Conductor	
Minimum Insulation Resistance	1.5 GΩ/kft @500 VDC	(5.0 GΩ/kft @500 VDC)
Armor Electrical Resistance	3.4 Ω/Kft	(11.3 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	8,200 lbs	(36.5 KN)	Nominal
Maximum Suggested Working Tension	5,000 lbs	(22.2 KN)	
Number and Size of Wires			
Inner Armor	21 x 0.028"	(0.711 mm)	
Outer Armor	14 x 3W Strand 0.043"	(1.092 mm)	
Average Wire Breaking Strength			
Inner Armor	210 lbs	(0.94 KN)	
Outer Armor	318 lbs	(1.41 KN)	

Cable Type	Core Description									Jacket	Cable Weight	
	Temperature Rating °F °C			Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	Type	in Air	in H ₂ O
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp								lbs/Kft Kg/Km	
	2Q37CTZZ-EHStZZ	400 204	375 191		350 177	FEP	0.025 0.635	Compacted 0.067 (7 wires) 1.702 (7 wires)	2.8 9.2	54 177	0.117 2.972	M-ETFE
ETFE				0.013 0.330		4.1 13.3	175 575		0.159 4.038			
M-ETFE				0.012 0.305		45 x 0.0080 45 x 0.203			0.183 4.648			

- ▶ The EcoSeal® features a "double-seal" technology consisting of an inner polymer sleeve between the inner and outer armors, and a specially formulated outer polymer jacket.
- ▶ Core assembly – Copper strand consists of a total of seven wires and then a coaxial arrangement 45 x 0.0080. Conductor resistance is measured at 68 deg. F. Voids in the copper strand are filled with a water-blocking agent to reduce water and gas migration.
- ▶ The temperature rating assumes a normal gradient for both temperature and weight.
- ▶ All values shown are nominal or typical values.
- ▶ Not recommended for use in any sour and / or corrosive environment.



FIBER OPTIC

NAVIGATION

CASED HOLE
OPEN HOLE
SOUR SERVICE
GEOTHERMAL
GREASELESS
FIBER OPTIC

1/4"
5/16"
.36"
DYCAM
SWAB LINES

1Q25-F0

1/4" (6.55 mm)

MONOCONDUCTOR FIBER OPTIC



PROPERTIES

Cable Diameter	0.249" +0.005" - 0.002"	(6.32mm +0.13mm -0.05mm)
Minimum Sheave Diameter	16"	(41 cm)
Cable Stretch Coefficient	1.8 ft/Kft/Klbs	(2.02 m/Km/5KN)

ELECTRICAL

Maximum Conductor Voltage	1,000 VDC	
Conductor AWG Rating	19	
Minimum Insulation Resistance	1,500 Mega Ω /Kft @ 500VDC	(457 Mega Ω /Km @ 500VDC)
Armor Electrical Resistance	3.3 Ω /Kft	(10.8 Ω /Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	6,600 lbs	(29.37 KN)	Nominal
Maximum Suggested Working Tension	3,300 lbs	(14.68 KN)	
Number and Size of Wires			
Inner Armor	12 x 0.0310"	(0.787 mm)	
Outer Armor	14 x 0.0425"	(1.080 mm)	
Average Wire Breaking Strength			
Inner Armor	204 lbs	(0.91 KN)	
Outer Armor	383 lbs	(1.71 KN)	

Cable Type	Core Description									Cable Weight	
	Temperature Rating °F °C			Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	in Air	in H ₂ O
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp		in mm	in mm	Ω/Kft Ω/Km	pf/ft pf/m	in mm	lbs/Kft Kg/Km	
1Q25YZ-F0	500 260	450 232	400 204	FEP	0.023 0.584	18x0.0085	8.5 27.9	78 256	0.109 2.770	117 175	97 144

- ▶ Number, type and temperature rating of fiber optic elements is dependent on customer request.
- ▶ While insulation is rated to 1-hour exposure of 500 °F, the fiber optic element in the cable will dictate the maximum operating temperature for the cable.
- ▶ Fiber in metal tube (FIMT): stainless steel OD of 0.046 in. (1.17 mm). Extra fiber length (EFL) is specified by customer request and subject to manufacturing capabilities.
- ▶ Attenuation increase in the fiber optic under loaded conditions may vary.
- ▶ The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with an anticorrosion compound for protection during shipping and storing. Wires are preformed.
- ▶ 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.
- ▶ All values shown are nominal or typical values.



1Q25-F0-S75

1/4" (6.35 mm)

MONOCONDUCTOR

FIBER OPTIC

CORROSION RESISTANT

NAVIGATION

CASED HOLE
OPEN HOLE
SOUR SERVICE
GEOTHERMAL
GREASELESS
FIBER OPTIC
1/4"
5/16"
.36"
DYCAM
SWAB LINES

PROPERTIES

Cable Diameter	0.249" +0.005" - 0.002"	(6.32mm +0.13mm -0.05mm)
Minimum Sheave Diameter	16"	(41 cm)
Cable Stretch Coefficient	2.0 ft/Kft/Klbs	(2.3 m/Km/5KN)

ELECTRICAL

Maximum Conductor Voltage	1,000 VDC	
Conductor AWG Rating	19	
Minimum Insulation Resistance	1,500 Mega Ω /Kft @ 500VDC	(457 Mega Ω /Km @ 500VDC)
Armor Electrical Resistance	15.6 Ω /Kft	(51.2 Ω /Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	5,900 lbs	(26.25 KN)	Nominal
Maximum Suggested Working Tension	2,950 lbs	(13.13 KN)	
Number and Size of Wires			
Inner Armor	12 x 0.0310"	(0.787 mm)	
Outer Armor	14 x 0.0425"	(1.080 mm)	
Average Wire Breaking Strength			
Inner Armor	181 lbs	(0.81 KN)	
Outer Armor	341 lbs	(1.50 KN)	

Cable Type	Core Description								Cable Weight		
	Temperature Rating °F °C			Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	in Air	in H ₂ O
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp		in mm	in mm	Ω/Kft Ω/Km	pf/ft pf/m	in mm	lbs/Kft Kg/Km	
1Q25YZ-F0-S75	500 260	450 232	400 204	FEP	0.023 0.584	18x0.0085	9.9 32.5	82 269	0.109 2.770	122 181	101 150

- ▶ Number, type and temperature rating of fiber optic elements is dependent on customer request.
- ▶ While insulation is rated to 1-hour exposure of 500°F, the fiber optic element in the cable will dictate the maximum operating temperature for the cable.
- ▶ Fiber in metal tube (FIMT): stainless steel OD of 0.046 in. (1.17 mm). Extra fiber length (EFL) is specified by customer request and subject to manufacturing capabilities.
- ▶ Attenuation increase in the fiber optic under loaded conditions may vary.
- ▶ While insulation is rated to 1-hour exposure of 500°F, alloy armor wires may have reduced corrosion resistance at temperatures above 350°F.
- ▶ The armor wires are made of corrosion resistant alloy steel suitable for low level H₂S and CO₂ environments.
- ▶ Conductor has nickel plated wires adhering to ASTM B355 Class 10 for increased corrosion resistance.
- ▶ All values shown are nominal or typical values.

NAVIGATION

CASED HOLE
OPEN HOLE
SOUR SERVICE
GEOTHERMAL
GREASELESS
FIBER OPTIC

1/4"

5/16"

.36"

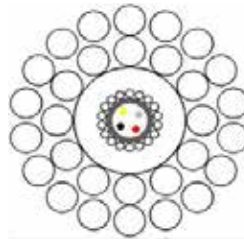
DYCAM

SWAB LINES

1N32-F0

5/16" (8.18 mm)

MONOCONDUCTOR FIBER OPTIC



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

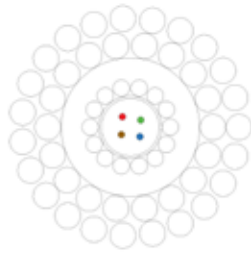
Maximum Conductor Voltage	1,500 VDC	
Conductor AWG Rating	16	
Minimum Insulation Resistance	1,500 Mega Ω /Kft @ 500VDC	(457 Mega Ω /Km @ 500VDC)
Armor Electrical Resistance	2.1 Ω /Kft	(6.9 Ω /Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	12,000 lbs	(53.4 KN)	Nominal
Maximum Suggested Working Tension	6,000 lbs	(24.0 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	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1N32YZ-F0	500 260	450 232	400 204	ETFE	0.0322 0.818	18x0.0128 18x0.325	3.7 12.13	86 282	0.155 3.937	190 283	157 234

- ▶ Number, type and temperature rating of fiber optic elements is dependent on customer request.
- ▶ While insulation is rated to 1-hour exposure of 500 °F, the fiber optic element in the cable will dictate the maximum operating temperature for the cable.
- ▶ Fiber in metal tube (FIMT): stainless steel OD of 0.065 in. (1.65 mm). Extra fiber length (EFL) is specified by customer request and subject to manufacturing capabilities.
- ▶ Attenuation increase in the fiber optic under loaded conditions may vary.
- ▶ The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with an anticorrosion compound for protection during shipping and storing. Wires are preformed.
- ▶ 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.
- ▶ All values shown are nominal or typical values.



1Q36-F0

0.36" (0.91 mm)
MONOCONDUCTOR

NAVIGATION

CCASED HOLE
OPEN HOLE
SOUR SERVICE
GEOTHERMAL
GREASELESS
FIBER OPTIC
1/4"
5/16"
.36"
DYCAM
SWAB LINES

PROPERTIES

Cable Diameter	0.357" +0.005" - 0.002"	(9.07mm +0.13mm -0.05mm)
Minimum Sheave Diameter	22"	(56 cm)
Cable Stretch Coefficient	1.0 ft/Kft/Klbs	(1.12 m/Km/5KN)

ELECTRICAL

Maximum Conductor Voltage	1,500 VDC Central Conductor	
Conductor AWG Rating	11	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	1.9 Ω/Kft	(6.09 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	13,100 lbs	(60.07 KN)	Nominal
Maximum Suggested Working Tension	6,550 lbs	(30.04 KN)	
Number and Size of Wires			
Inner Armor	18 x 0.039"	(0.991 mm)	
Outer Armor	24 x 0.039"	(0.991 mm)	
Average Wire Breaking Strength			
Inner Armor	357lbs	(1.59 KN)	
Outer Armor	357 lbs	(1.59 KN)	

Cable Type	Core Description									Cable Weight	
	Temperature 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
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							lbs/Kft Kg/Km	
1Q36YZ-F0	500 260	450 232	400 204	ETFE	0.032 0.800	14x0.0253 14x0.643	1.26 4.12	139 457	0.208 5.27	228 341	189 282

- ▶ Number, type and temperature rating of fiber optic elements is dependent on customer request.
- ▶ While insulation is rated to 1-hour exposure of 500 °F, the fiber optic element in the cable will dictate the maximum operating temperature for the cable.
- ▶ Fiber in metal tube (FIMT): stainless steel OD of 0.094 in. (2.4 mm). Extra fiber length (EFL) is specified by customer request and subject to manufacturing capabilities.
- ▶ Attenuation increase in the fiber optic under loaded conditions may vary.
- ▶ The armor wires are high tensile, Galvanized Extra Improved Plow Steel (GEIPS), and coated with an anticorrosion compound for protection during shipping and storing. Wires are preformed.
- ▶ 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.
- ▶ All values shown are nominal or typical values.

NAVIGATION

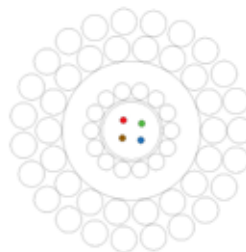
CASED HOLE
OPEN HOLE
SOUR SERVICE
GEOTHERMAL
GREASELESS
FIBER OPTIC

1/4"
5/16"
.36"

DYCAM
SWAB LINES

1Q36-F0-S75

0.36" (0.91 mm)
MONOCONDUCTOR



PROPERTIES

Cable Diameter	0.357" +0.005" - 0.002"	(9.07mm +0.13mm -0.05mm)
Minimum Sheave Diameter	22"	(56 cm)
Cable Stretch Coefficient	1.25 ft/Kft/Klbs	(1.43 m/Km/5KN)

ELECTRICAL

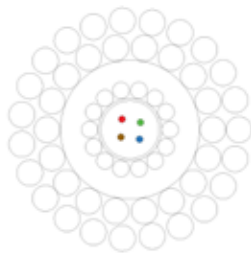
Maximum Conductor Voltage	1,500 VDC	
Conductor AWG Rating	11	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500VDC	(457 MegaΩ/Km @ 500VDC)
Armor Electrical Resistance	10.4 Ω/Kft	(34.1 Ω/Km)

MECHANICAL

Cable Breaking Strength			
Ends Fixed	10,200 lbs	(45.4 KN)	Nominal
Maximum Suggested Working Tension	5,100 lbs	(23.4 KN)	
Number and Size of Wires			
Inner Armor	18 x 0.039"	(0.991 mm)	
Outer Armor	23 x 0.039"	(0.991 mm)	
Average Wire Breaking Strength			
Inner Armor	286.7 lbs	(1.28 KN)	
Outer Armor	286.7 lbs	(1.28 KN)	

Cable Type	Core Description									Cable Weight	
	Temperature Rating °F °C			Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	in Air	in H ₂ O
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp		in mm	in mm	Ω/Kft Ω/Km	pf/ft pf/m	in mm	lbs/Kft Kg/Km	
1Q36YZ-F0-S75	500 260	450 232	400 204	ETFE	0.032 0.800	14x0.0253 14x0.643	1.43 4.68	144 472	0.208 5.27	243 361	201 298

- ▶ Number, type and temperature rating of fiber optic elements is dependent on customer request.
- ▶ While insulation is rated to 1-hour exposure of 500°F, the fiber optic element in the cable will dictate the maximum operating temperature for the cable.
- ▶ Fiber in metal tube (FIMT): stainless steel OD of 0.094 in. (2.4 mm). Extra fiber length (EFL) is specified by customer request and subject to manufacturing capabilities.
- ▶ Attenuation increase in the fiber optic under loaded conditions may vary.
- ▶ While insulation is rated to 1-hour exposure of 500°F, alloy armor wires may have reduced corrosion resistance at temperatures above 350°F.
- ▶ The armor wires are made of corrosion resistant alloy steel suitable for low level H₂S and CO₂ environments.
- ▶ Conductor has nickel plated wires adhering to ASTM B355 Class 10 for increased corrosion resistance.
- ▶ All values shown are nominal or typical values.



1Q36-F0-S77

**0.36" (9.068 mm)
MONOCONDUCTOR**

NAVIGATION

CASED HOLE
OPEN HOLE
SOUR SERVICE
GEOTHERMAL
GREASELESS
FIBER OPTIC
1/4"
5/16"
.36"
DYCAM
SWAB LINES

PROPERTIES

Cable Diameter	0.357" +0.005" - 0.002"	(9.068mm +0.13mm -0.05mm)
Minimum Sheave Diameter	22"	(56 cm)
Cable Stretch Coefficient	1.27 ft/Kft/Klbs	(1.43 m/Km/5KN)

ELECTRICAL

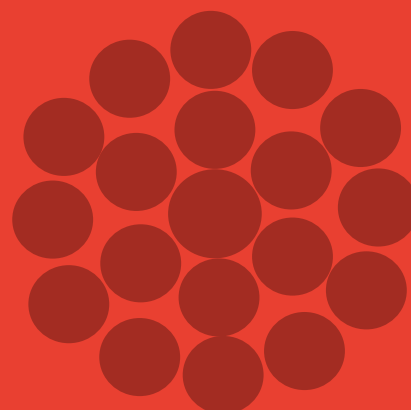
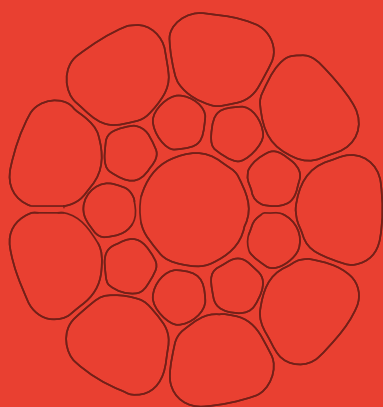
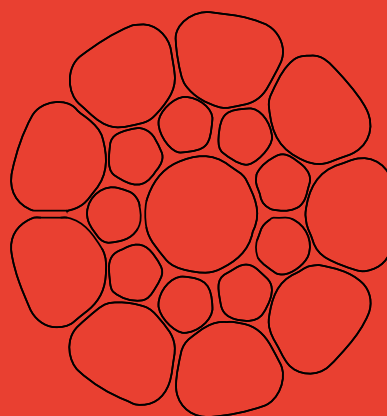
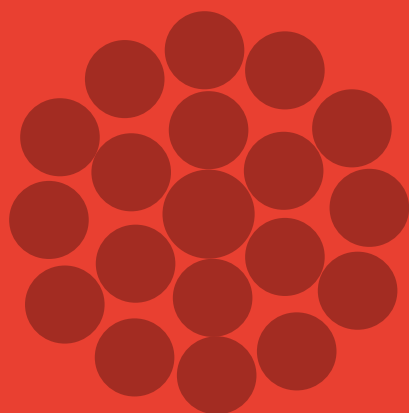
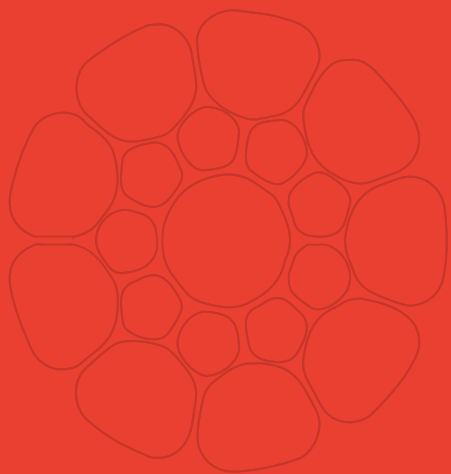
Maximum Conductor Voltage	1,500 VDC	
Conductor AWG Rating	11	
Minimum Insulation Resistance	1,500 MegaΩ/Kft @ 500 VDC	(457 MegaΩ/Km @ 500 VDC)
Armor Electrical Resistance	8.85 Ω/Kft	(29.05 Ω/Km)

MECHANICAL

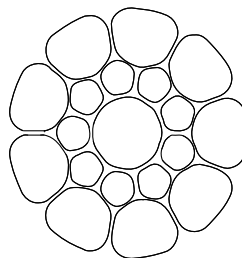
Cable Breaking Strength			
Ends Fixed	10,100 lbs	(44.94 KN)	Nominal
Maximum Suggested Working Tension	5,050 lbs	(22.47 KN)	
Number and Size of Wires			
Inner Armor	18 x 0.039"	(0.991 mm)	
Outer Armor	23 x 0.039"	(0.991 mm)	
Average Wire Breaking Strength			
Inner Armor	280 lbs	(1.25 KN)	
Outer Armor	280 lbs	(1.25 KN)	

Cable Type	Core Description									Cable Weight	
	Temperature Rating °F °C			Plastic Type	Insulation Thickness	Copper Construction	Res Typical	Cap. Typical	O.D. Each	in Air	in H ₂ O
	1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp		in mm	in mm	Ω/Kft Ω/Km	pf/ft pf/m	in mm	lbs/Kft Kg/Km	
1Q36YZ-F0-S77	500 260	450 232	400 204	ETFE	0.032 0.800	14x0.0253 19x0.643	1.43 4.68	144 472	0.208 5.27	233 347	193 287

- ▶ Number, type and temperature rating of fiber optic elements is dependent on customer request.
- ▶ While insulation is rated to 1-hour exposure of 500°F, the fiber optic element in the cable will dictate the maximum operating temperature for the cable.
- ▶ Fiber in metal tube (FIMT): stainless steel OD of 0.094 in. (2.4 mm). Extra fiber length (EFL) is specified by customer request and subject to manufacturing capabilities.
- ▶ Attenuation increase in the fiber optic under loaded conditions may vary.
- ▶ While insulation is rated to 1-hour exposure of 500°F, alloy armor wires may have reduced corrosion resistance at temperatures above 400°F.
- ▶ The armor wires are made of corrosion resistant alloy steel suitable for low level H2S and CO2 environments.
- ▶ Conductor has nickel plated wires adhering to ASTM B355 Class 10 for increased corrosion resistance.
- ▶ All values shown are nominal or typical values.

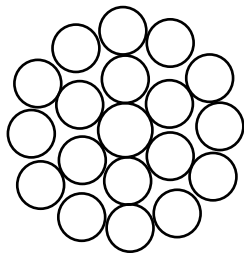


DYCAM & SWAB LINES



	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
Minimum sheave diameter	20" (50.80 cm)	22" (55.88 cm)
	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
Minimum sheave diameter	26" (66.04 cm)	32" (81.28 cm)

- 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
Minimum sheave diameter	18" (45.72 cm)	22" (55.88 cm)
	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
Minimum sheave diameter	19" (48.26 cm)	25" (63.50 cm)

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

	Cable Type	Size (In)	Temperature Rating (°F)			Breaking Strength (lbs)	Working Tension* (lbs)	Weight in Air/Water (lbs/Kft)	Stretch Coeff. (ft/Kft/Klb)	Nom. Resis. (Ω/Kft)	Arm Res (Ω/Kft)	Wire Break Strength (lbs) (In/Out)
			1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							
CASED HOLE	1N10RP	1/10	300°	275°	250°	1,000	500	19/15	13.1	21	22	42/42
	1N12RP	1/8	300°	275°	250°	1,600	800	28/23	6.5	21	13	65/65
	1N12RZ	1/8	500°	450°	400°	1,600	800	29/24	6.5	21	13	65/65
	1L18RP	3/16	300°	275°	250°	4,000	2,000	65/54	3.0	9.4	6.0	103/272
	1L18RZ	3/16	500°	450°	400°	4,000	2,000	66/55	3.0	9.4	6.0	103/272
	1K22PP	7/32	300°	275°	250°	5,600	2,800	91/75	2.2	4.1	4.3	132/286
	1K22PXZ	7/32	420°	375°	325°	5,600	2,800	92/76	2.2	4.1	4.3	132/286
	1K22PTZ	7/32	500°	450°	400°	5,600	2,800	95/78	2.2	4.1	4.3	132/286
	1N22PP	7/32	300°	275°	250°	5,600	2,800	93/77	2.5	4.1	4.4	215/215
	1N22PXZ	7/32	420°	375°	325°	5,600	2,800	94/78	2.5	4.1	4.4	215/215
	1N22PTZ	7/32	500°	450°	400°	5,600	2,800	96/90	2.5	4.1	4.4	215/215
	1N25PP	1/4	300°	275°	250°	7,300	3,650	121/100	1.9	4.1	3.0	286/286
	1N25PXZ	1/4	420°	375°	325°	7,300	3,650	124/101	1.9	4.1	3.0	286/286
	1N25PTZ	1/4	500°	450°	400°	7,300	3,650	125/103	1.9	4.1	3.0	286/286
	1N29PP-EHS	9/32	300°	275°	250°	10,200	5,100	152/126	1.55	2.8	2.8	393/393
	1N29PXZ-EHS	9/32	420°	375°	325°	10,200	5,100	155/128	1.55	2.8	2.8	393/393
	1N29PTZ-EHS	9/32	500°	450°	400°	10,200	5,100	157/130	1.55	2.8	2.8	393/393
	1N29PTZ-EEHS	9/32	500°	450°	400°	10,900	5,450	157/130	1.55	2.8	2.8	420/420
	1N32PP	5/16	300°	275°	250°	12,000	6,000	187/155	1.2	2.8	2.1	442/442
	1N32PXZ	5/16	420°	375°	325°	12,000	6,000	190/157	1.2	2.8	2.1	442/442
	1N32PTZ	5/16	500°	450°	400°	12,000	6,000	194/160	1.2	2.8	2.1	442/442
	1N32PP-EEHS	5/16	300°	275°	250°	14,750	7,375	187/155	1.2	2.8	2.1	564/564
	1N32PTZ-EEHS	5/16	500°	450°	400°	14,750	7,375	194/160	1.2	2.8	2.1	564/564
	1N32PTZ-LR	5/16	500°	450°	400°	12,000	6,000	198/164	1.2	2.3	2.1	442/442
OPEN HOLE	3Q37RP	.377	300°	275°	250°	13,200	6,600	233/192	1.6	7.1	1.7	383/469
	4H18RPP	3/16	300°	275°	250°	3,100	1,550	60/49	4.25	22.5	6.7	73/130
	4H18RPP-SS	3/16	300°	275°	250°	2,600	1,300	61/50	4.25	22.5	6.7	63/132
	7Q38RAZB	3/8	500°	450°	400°	13,100	6,550	256/211	1.4	9.8	1.8	286/494
	7H42RP-EHS	7/16	300°	275°	250°	17,600	8,800	309/256	0.75	9.8	1.2	404/765
	7H42RZ-HS	7/16	500°	450°	400°	17,600	8,800	316/261	0.75	9.8	1.2	404/765
	7J46RP	15/32	300°	275°	250°	19,100	9,550	321/265	0.77	9.8	1.3	357/575
	7J46RXZ	15/32	420°	375°	325°	19,100	9,550	340/281	0.77	9.8	1.3	357/575
	7J46RTZ	15/32	500°	450°	400°	19,100	9,550	341/382	0.77	9.8	1.3	357/575
	7H47RP-EHS	.474	300°	275°	250°	24,500	12,250	372/308	0.63	9.8	1.1	542/1054
	7H47RXZ-EHS	474	420°	375°	325°	24,500	12,250	385/318	0.63	9.8	1.1	542/1054
	7H47RTZ-EHS	474	500°	450°	400°	24,500	12,250	392/326	0.63	9.8	1.1	542/1054
DURASLAM	7Q49RXZZ-EEHS	.490	420°	375°	325°	30,000	15,000	405/335	0.61	9.8	1.0	603/1095
	7Q49RTZZ-EEHS	.490	500°	450°	400°	30,000	15,000	408/337	0.61	9.8	1.0	603/1095
	7Q54CTZZ-LR-EEHS	.548	500°	450°	400°	40,000	20,000	532/440	0.50	5.4	0.79	1317/975

Cable Type	Size (In)	Temperature Rating (° F)			Breaking Strength (lbs)	Working Tension* (lbs)	Weight in Air/Water (lbs/Kft)	Stretch Coeff. (ft/Kft/Klb)	Nom. Resis. (Ω/Kft)	Arm Res (Ω/Kft)	Wire Break Strength (lbs) (In/Out)
		1 hr. Max Temp	8 hr. Max Temp	Cont. Max Temp							
1N22SA-S75	7/32	500°	450°	400°	4,700	2,350	98/81	3.12	6.7	18.1	181/181
1N22SA-S77	7/32	500°	450°	400°	4,900	2,450	97/80	3.09	6.7	18.9	189/189
1N22SA-MP35N	7/32	500°	450°	400°	5,200	2,600	101/84	2.9	6.7	22.0	202/204
1N25WA-S75	1/4	500°	450°	400°	6,200	3,100	131/108	2.28	4.6	13.9	242/242
1N25WA-S77	1/4	500°	450°	400°	6,500	3,250	129/106	2.27	4.6	14.1	129/106
1N29WTZ-75	9/32	500°	450°	400°	7,800	3,900	161/133	1.88	4.0	11.2	302/302
1N29WTZ-77	9/32	500°	450°	400°	8,100	4,050	159/131	1.87	4.0	11.3	314/314
1N32WTZ-75	5/16	500°	450°	400°	9,700	4,850	201/166	1.59	3.2	9.0	373/373
1N32WTZ-77	5/16	500°	450°	400°	10,000	5,000	198/163	1.58	3.2	9.1	388/388
1N22WG	7/32	600°	550°	500°	5,600	2,800	97/80	2.5	4.7	4.4	215/215
1N32WG	5/16	600°	550°	500°	12,000	6,000	195/161	1.2	3.2	2.1	442/442
7J46SGG	15/32	600°	550°	500°	19,100	9,550	363/300	0.77	11.1	1.3	357/575
1Q36PTZ-EHSZZ	.359	400°	375°	350°	8,500	5,000	171/141	1.55	2.8	4.5	542/191
2Q37CTZ-EHSZZ	.374	400°	375°	350°	8,200	5,000	167/138	2.1	4.1	3.4	210/318
1Q25-FO	1/4	500°	450°	400°	6,600	3,300	117/97	1.8	8.5	3.3	204/383
1Q25YZ-FO-S75	1/4	500°	450°	400°	5,900	2,950	122/101	2.0	9.9	15.6	181/341
1N32YZ-FO	5/16	500°	450°	400°	12,000	6,000	190/157	1.2	3.7	2.1	442/442
1Q36YZ-FO	.360	500°	450°	400°	13,100	6,550	228/189	1.0	1.26	1.9	357/357
1Q36YZ-FO-S75	.360	500°	450°	400°	10,200	5,100	243/201	1.25	1.43	10.4	286/286
1Q36YZ-FO-S77	.360	500°	450°	400°	10,100	5,050	233/193	1.27	1.43	8.86	280/280
FIBER OPTIC											
ECOSEAL											
GEOSTEAM											
SOUR SERVICE											



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