

Fly higher, see farther and do more with a durable, low-weight hybrid cable solution

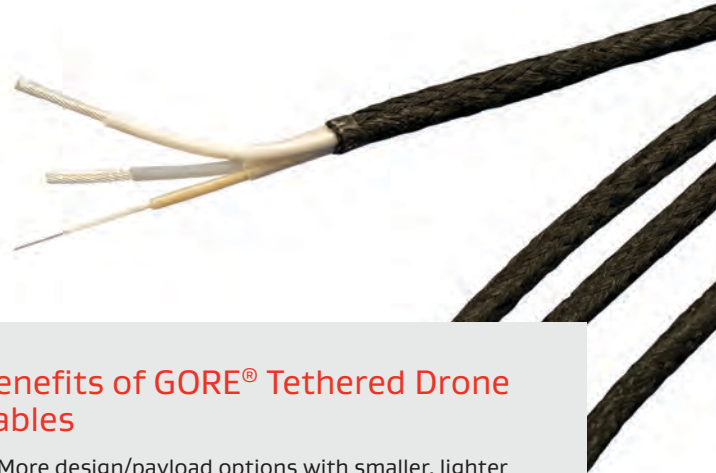
Standard materials used in tethered drone cables pose ongoing challenges for both defense and commercial industries. Traditional durable materials are bulky and heavy often weighing drones down, while lighter weight materials absorb moisture and lack adequate protection to withstand harsh environments. As a result, standard cables limit the altitude that drones can operate, affecting the line of sight or coverage. These challenges can significantly limit opportunities for more payload options and decrease the capability of tethered drones.

Do Not Let Your Tether Hold You Down

GORE® Tethered Drone Cables strike a balance by combining power and fiber optic cables with unique materials in a hybrid solution that yields exceptional benefits. These game-changing cables offer a rugged, small-scale design with high performance that maximizes Tether Management System (TMS) availability, provides increased design options and payload, and enables greater drone operational capability.

Lighter Weight. More Payload. Longer Lengths.

Gore's innovative cable technology considerably reduces size and weight without sacrificing mechanical durability or electrical performance (Figure 1). GORE® Tethered Drone Cables are 20% smaller in size than standard cables constructed with nylon, which also makes them inherently lighter in weight. Therefore, they take up less space inside the TMS, which means more design options and extra payload during operation. These cables also provide greater weight stability in harsh fluids that further increases design options/payload and operating height (Table 1)



Benefits of GORE® Tethered Drone Cables

- More design/payload options with smaller, lighter weight constructions
- Greater weight stability in harsh fluids for higher operating elevations/expanded line of sight
- High-strength materials withstand challenging conditions such as extreme temperatures/repeated reeling
- Proven crush-resistant fiber optic cable that meets ARINC 802-2 requirements
- Durable protection against abrasion/easier handling due to low-friction fiber braid cable jacket
- Deliver continuous high-voltage power and secure, high-bandwidth data transfer

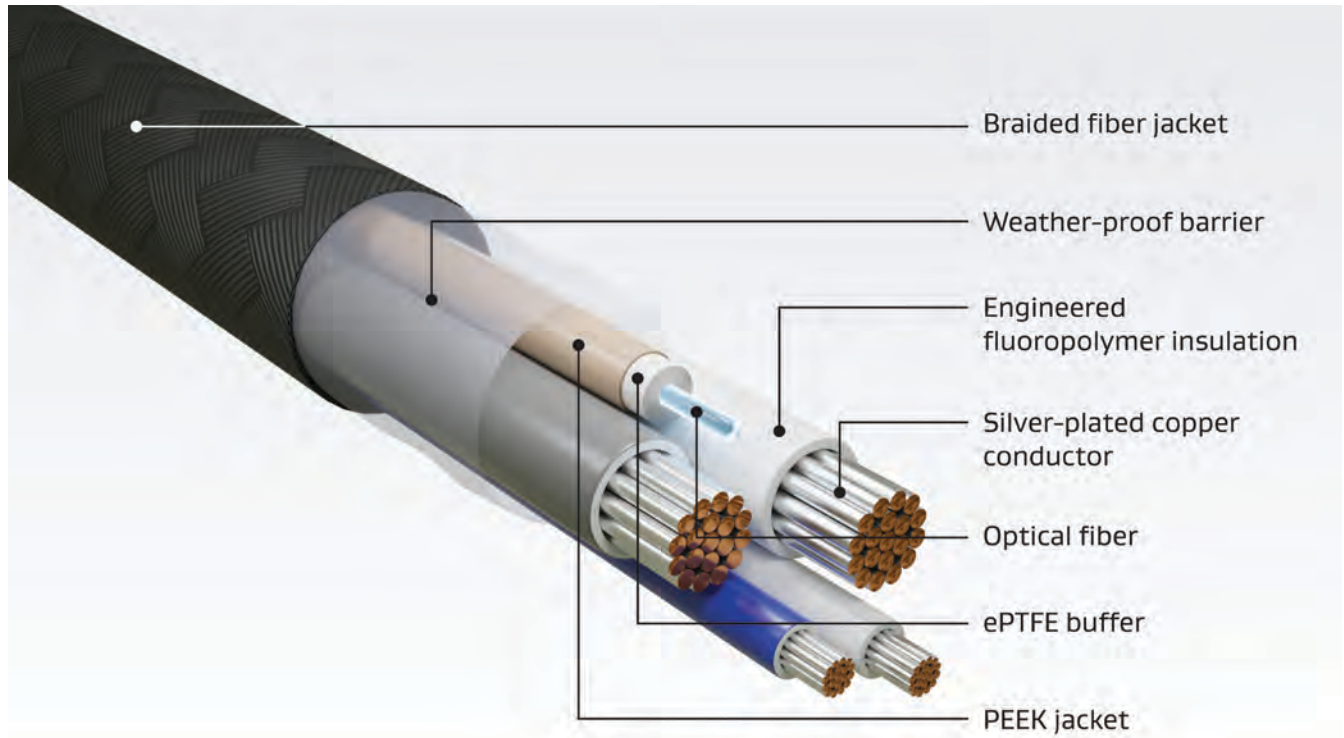
Typical Applications

- Video streaming
- News, events, commercial photography, search/rescue
- Industrial/land inspections
- Telecommunications
- Intelligence, surveillance and reconnaissance (ISR)
- Electro-optical infrared (EO/IR) sensors
- Signals intelligence

GORE® Tethered Drone Cables

For Commercial and Defense Applications

Figure 1: High-Strength Construction



Gore's game-changing cables give you more payload options, allow drones to fly higher, and expand your line of sight or coverage.

Table 1: Cable Properties**Electrical**

Property	Value		
	Power Pair	Data Pair	Fiber Optic
Operating Voltage ^a (Vrms)	600	250	—
Testing Voltage (Vrms)	1500	1500	—
Maximum Optical Loss at 1310 nm (dB/km)	—	—	0.35
Maximum Optical Loss at 1550 nm (dB/km)	—	—	0.20

Mechanical / Environmental

Property	Value		
	Power Pair	Data Pair	Fiber Optic
Jacket Material	Engineered Fluoropolymer Fiber Braid		
Jacket Color	Black		
Insulation Color	Gray / White	Blue / White	Brown
Insulation Wall Thickness mm (in)	0.14 (0.006)	0.14 (0.006)	—
Conductor	Silver-plated Copper	Silver-plated Copper	—
Mode Type (μm)	—	—	Single (900)
Core / Cladding / Coating	—	—	8 / 125 / 245
Coating Type	—	—	High-Temperature Acrylate
Buffer	—	—	ePTFE
Dielectric Material	ePTFE / PTFE		
Crush / Impact Resistance ^b (ARINC 802-3) / kgf/cm (lb/in)	—	—	Pass
Tensile Strength ^b N (lb)		1538 (345)	
16 AWG		1092 (245)	
20 AWG		910 (204)	
24 AWG			
Scrape Abrasion Resistance ^b (Cycles) (SAE AS4373™) / 500 g (1.1 lb)	> 36,000		
Fluid Immersion / Weight Stability ^b (SAE AS4373™ / % Absorption)	Pass < 1 (Salt Water, Diesel) / < 2.5 (Hydraulic)		
Cold Bend Resistance ^b (SAE AS4373™)	Pass		
Temperature Range (°C)	-60 to +200	-60 to +200	-60 to +85 ^c

^a Based on a NEMA HP3 wire.^b Testing based on size 22 AWG.^c Attenuation may increase above 85°C.

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Enhanced Protection. Extended Product Life.

The demanding conditions in which drones operate can severely degrade lightweight cables that compromise on durability causing them to wear out long before the drone. Also, drones operating at high power can be susceptible to failure if materials are not compatible with high temperatures.

Engineered with proven high-strength (Figure 2) and weather-proof materials, GORE® Tethered Drone Cables deliver continuous high-voltage power, secure signals, and un failing data transmission in difficult environments. These cables are designed specifically to withstand crushing, abrasion, repeated reeling, fluctuating temperatures, humidity, rain, snow, and tough terrain.

The single-mode fiber optic cable meets ARINC 802-3 requirements and is proven to provide a high level of crush resistance with low insertion loss — ensuring a secure data link from the drone to the ground support equipment (GSE). The fiber can serve as a low-loss coaxial cable for applications that transmit and receive data such as temporary cell towers, rural network connectivity, mesh drone networks, and line-of-sight communications. It can also be used as a downlink for continuous video streaming to provide situational awareness and coverage for emergency response, news and events, aerial photography, and border patrol.

In addition, Gore's patent-pending fiber braid cable jacket is low friction and resists abrasion induced during operation or by the TMS. This low-friction jacket also makes it easier to handle our cables compared to standard nylon cables.

Greater Weight Stability

Every gram of weight saved on a drone allows for more payload flexibility, increased height above ground level (AGL) during operation, and greater drone responsiveness. Therefore, Gore has developed a unique cable jacket material that considerably reduces weight pickup after exposure to harsh contaminants and fluids to ensure optimal system performance and mission-critical success.

Using AS4373 Method 601, Gore compared its cable to a standard cable constructed with a nylon braid to determine weight stability after immersion in harsh fluids. Results showed that the initial weight of the cable built with nylon increased significantly by 13% in hydraulic fluid and more than 7.5% in salt water (Figure 3). However, Gore's cable showed a significant reduction in weight pickup in these harsh fluids. In particular, less than 1% in salt water, which translates to 90% less weight pickup than standard nylon cables.

Ultimately, GORE Tethered Drone Cables maximize TMS availability and drone capability, increase design options and payload, enable drones to fly higher, expand line of sight or coverage, and operate over the drone's lifetime.

Proven Track Record

For decades, Gore's products have been used successfully in many aerospace and defense applications — from the first moon landing to today's International Space Station, commercial airliners, fighter jets, combat vehicles, and naval platforms. Gore has been a trusted partner to the aerospace industry delivering cables and materials with an optimal blend of durability, reliability, and flexibility.

Figure 2: Tensile Strength of GORE® Tethered Drone Cables

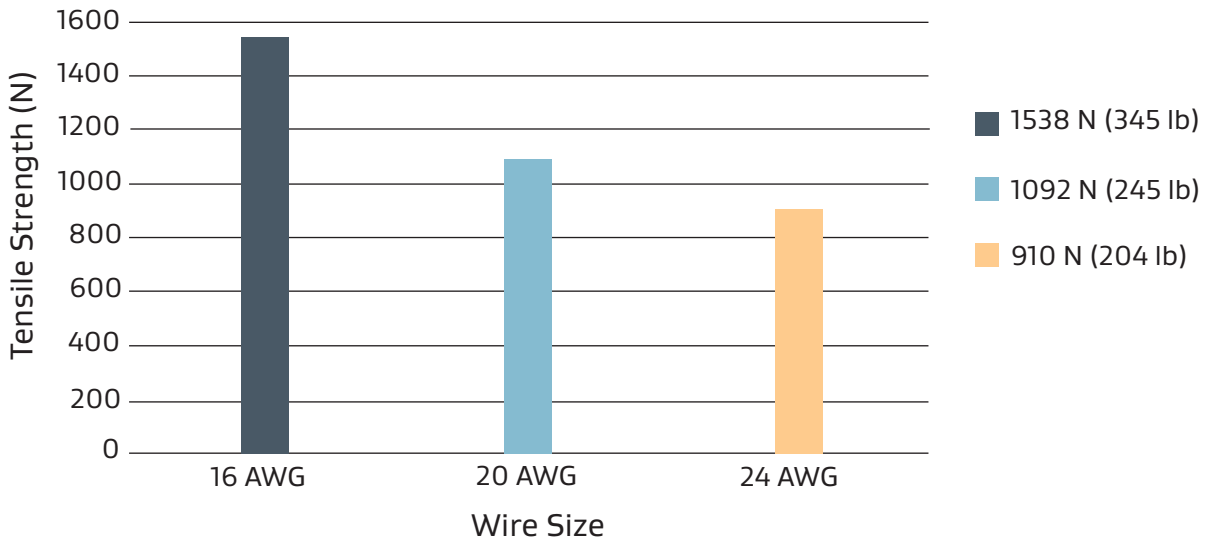
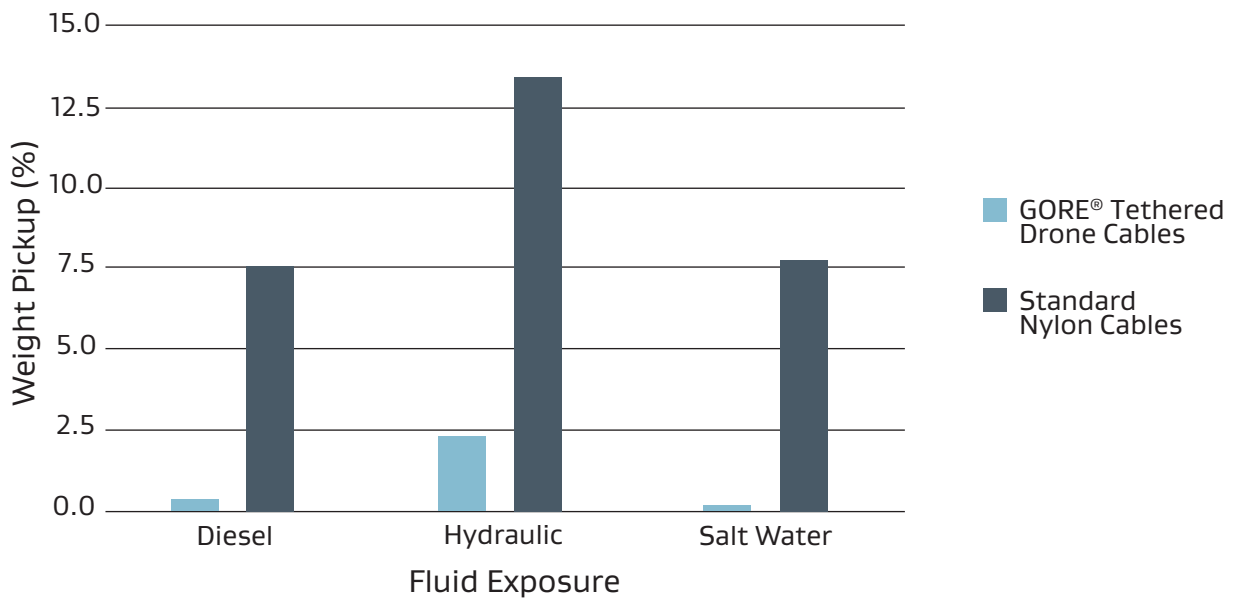


Figure 3: Comparison of Weight Stability After Fluid Immersion

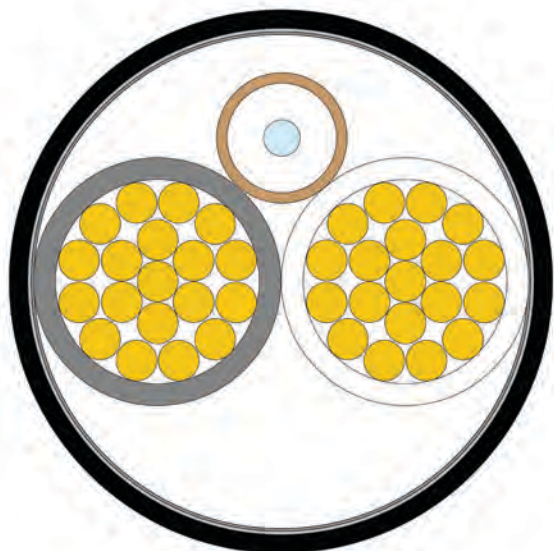


GORE® Tethered Drone Cables

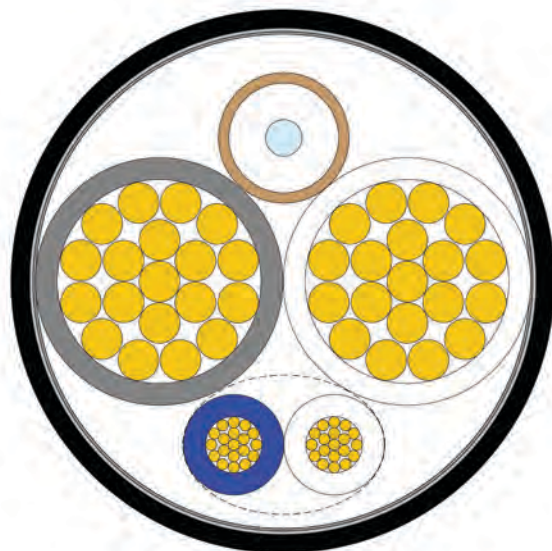
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Table 2: Cable Properties

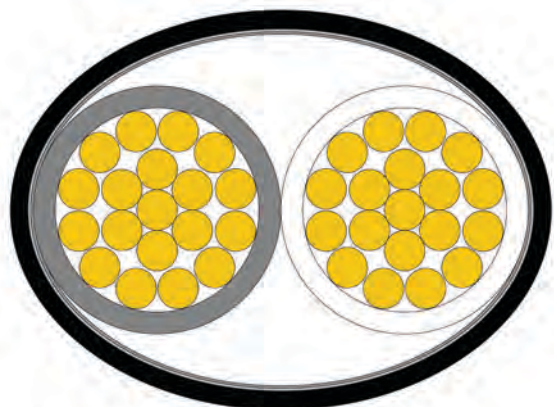
Gore Part Number	Construction	Nominal Outer Diameter mm (in)	Minimum Bend Radius mm(in)	Nominal Weight kg/km (lbs/100 ft)	Max Conductor DC Resistance (Ohms/1000 ft)
RCN9164	Power Pair: 16 AWG (19/29) Fiber: 1 Single Mode (900 micron)	3.8 (.148)	38 (1.48)	33.32 (2.23)	4.5
RCN9166	Power Pair: 20 AWG (19/32) Fiber: 1 Single Mode (900 micron)	2.9 (.117)	29 (1.17)	17.89 (1.20)	9.1
RCN9168	Power Pair: 24 AWG (19/36) Fiber: 1 Single Mode (900 micron)	2.3 (.092)	23 (0.92)	10.29 (0.69)	23.6
RCN9186	Power Pair: 16 AWG (19/29)	3.8 (.148)	38 (1.48)	32.0 (2.15)	4.5
RCN9188	Power Pair: 20 AWG (19/32)	2.9 (.117)	29 (1.17)	16.7 (1.12)	9.1
RCN9190	Power Pair: 24 AWG (19/36)	2.2 (.087)	22 (0.87)	8.9 (0.60)	23.6
RCN9217	Power Pair: 16 AWG (19/29) Data Pair: 28 AWG (19/40) Fiber: 1 Single Mode (900 micron)	3.8 (.148)	38 (1.48)	35.7 (2.40)	4.5
RCN9218	Power Pair: 20 AWG (19/32) Data Pair: 28 AWG (19/40) Fiber: 1 Single Mode (900 micron)	3.2 (.127)	32 (1.27)	20.8 (1.40)	9.1
RCN9219	Power Pair: 24 AWG (19/36) Data Pair: 28 AWG (19/40) Fiber: 1 Single Mode (900 micron)	2.9 (.117)	29 (1.17)	12.3 (0.83)	23.6
RCN9175	Power Pair: 16 AWG (19/29) Fiber: 2 Single Mode (900 micron)	3.8 (.148)	38 (1.48)	32.7 (2.20)	4.5
RCN9152	Power Pair: 20 AWG (19/32) Fiber: 2 Single Mode (900 micron)	3.0 (.120)	30 (1.20)	19.3 (1.30)	9.4



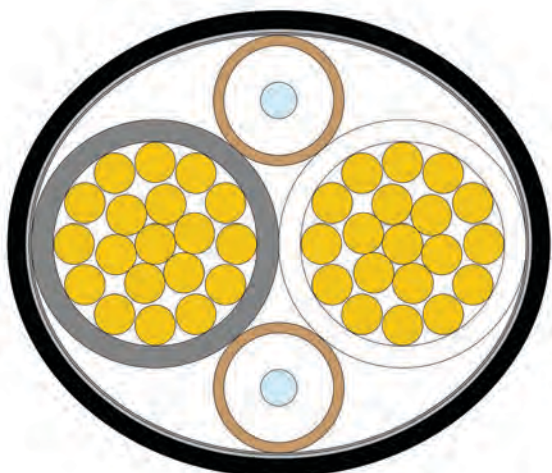
RCN9164 through RCN9168



RCN9217 through RCN9219



RCN9186 through RCN9190



RCN9152 & RCN9175

Ordering Information

GORE® Tethered Drone Cables are available through several distributors in a variety of standard sizes (Table 2). Visit [gore.com/cable-distributors](https://www.gore.com/cable-distributors) for the list of distributors. For information regarding Gore's sample products and lead times, visit [gore.com/tethered-drone-cable-sample](https://www.gore.com/tethered-drone-cable-sample).

For more information or to discuss specific characteristic limits and application needs, please contact a Gore representative.

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