

Industrial Catalog



samson
THE STRONGEST NAME IN ROPE



History of Excellence

With a record of more than 130 years of creating quality and innovative products, Samson is a proven leader in the cordage industry. Today Samson is the leading high-performance cordage company with over 250 employees and more than 200,000 square-feet of synthetic rope manufacturing space. Samson also boasts sales of more high-performance rope products than any other company in the world.

Samson was founded in 1878, and the company's famed trademark depicting Samson slaying a lion was registered in 1884, the oldest active registered trademark in the United States. The company's association with the strength of the biblical character came from its first innovation, the unique concept of incorporating reinforcement cores in braided ropes, significantly improving product performance.

Samson took a huge leap forward in 1957 by inventing the synthetic double-braided rope. Actually two ropes in one, this product covered a braided core rope with a braided sheath. By utilizing high-strength nylon, polyester, and polypropylene fibers in this patented construction, Samson was able to manufacture ropes far stronger, more durable, and easier to handle than the technology of the day, which was 3-strand twisted ropes. This development revolutionized the use of rope in many applications, from the commercial fishing markets of the Pacific Northwest, to the U.S. Navy, to the offshore oil industry. In 1972, Samson's Nystron double braid became the first synthetic-fiber rope used in a single point mooring in the North Sea.

In the 1980s Samson continued to pioneer new technologies, introducing the first high-modulus polyethylene (HMPE) ropes using Spectra® fiber, with strengths 3 to 4 times that of conventional nylon and polyester fiber. In 1995 Samson partnered with DSM Dyneema®, and in 1996 introduced

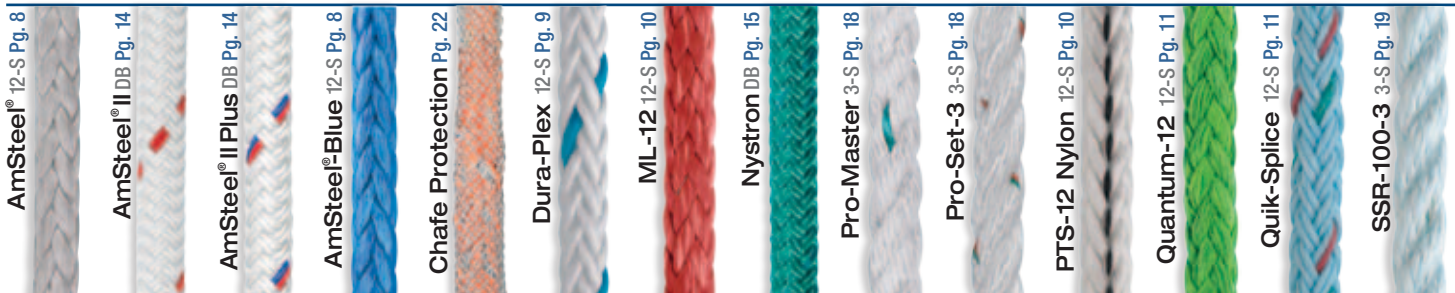
AmSteel®Blue made with Dyneema® fiber. AmSteel®Blue has become the industry standard for many applications, and more of this product is in use around the world than any other high-performance synthetic rope.

Samson has continued to pioneer new technology, utilizing the most advanced fibers, coatings, and constructions. Our investment in research and development is unparalleled in the industry, with PhDs and engineers on staff, and the most advanced testing equipment. This investment has led to the creation of even more innovative products in the 21st century. In recent years, Samson has developed:

- > **DPX™, a proprietary fiber technology, incorporating high-strength Dyneema® fiber with spun polyester to provide a higher coefficient of friction for better grip. From this development came a line of patented DPX™ technology rope products including, Quantum-8, Quantum-12, and DPX™ 75, for use as high-performance working lines.**
- > **A patented heat-resistant coating and rope design, to replace steel wire as emergency tow-off pendants in fire situations.**
- > **A patented reduced-recoil rope, designed for use in applications such as mooring, where recoil upon breaking poses a risk to personnel.**

With its commitment to innovation, service, and quality, Samson continues a deep tradition of providing long-term value to its customers. It's all part of what we call The Samson Advantage. Our customers call it peace of mind.

Product Guide *(listed alphabetically)*



The Samson Advantage: Where people and technology make the difference

TECHNOLOGY

Samson pushes the forefront of fiber, coating, and rope construction technologies to bring unmatched innovations to market.

- > *Most advanced Research & Development team in the industry*
- > *Accurate, reliable product specifications based on rigorous testing and measuring*
- > *Extensive library of technical resources, case studies, and white papers*

PRODUCTS

Samson works closely with customers so they always receive products that are specifically designed to meet the demands of their application.

- > *High performance—lightweight synthetic ropes replace wire rope, chain, or other commodity synthetics*
- > *Cost effective—products improve efficiency, reduce the cost of operations, and provide long-term value*
- > *Safer—easier-to-handle, lighter products mean safer working conditions*

SERVICE

Samson offers world-class service and support wherever you need it. Before you place your order until long after the rope is deployed, Samson sales and engineering staff are on your job site or vessel to provide technical support and customized solutions.

- > *Technical consultation to ensure we supply the product that best suits your needs*
- > *On-site training in usage, inspection, handling, and retirement criteria*
- > *Comprehensive technical support materials: owner's manuals, technical bulletins, inspection and repair instructions, retirement criteria, splicing instructions, and much more at SamsonRope.com*

MANUFACTURING

Both of Samson's state-of-the-art facilities operate the most modern equipment available and are strategically located near major shipping ports.

- > *Plants are ISO certified and utilize LEAN manufacturing principles*
- > *Lafayette, Louisiana facility is easily accessible to the Gulf of Mexico and the offshore engineering community*
- > *Ferndale, Washington facility is easily accessible to all ports off the Pacific, from Alaska to Asia to Australia*

EXPERIENCE

Samson's history dates back more than 130 years, developing safe, easy to handle, and reliable synthetic rope solutions. We have more experience designing and developing strength members using Dyneema® than any other manufacturer in the world. Known for excellence and quality, we have the experience, integrity, and reliability you can count on.

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Industrial Applications

UTILITY

Pulling long lengths of transmission line is tough work. Samson provides the strength and ultra-long lengths to get the job done. Working hand in hand with utility companies to meet the demands of all utility applications, we pioneered the use of high-modulus fibers for high-capacity equipment. Utility professionals turn to our pulling/stringing lines, winch lines, and hand lines to get the job done. To see the full line of utility products, you may request a copy of our Utility brochure through Samson's customer service department, or visit SamsonRope.com/utility.

MINING

In the most arduous of mining applications, Samson high-performance synthetic ropes are there to get the job done safely and efficiently. Whether the job calls for lifting, dumping, or dragging, Samson has synthetic solutions to replace wire. If you have a special problem that requires a custom solution, you can count on our application engineers help to help guide you to the right product.

VEHICLE WINCH LINES

Going off-road has its hazards. When you want to get out of a sticky spot, Samson offers flexible, easy-to-splice winch lines that are as strong as wire, lightweight, abrasion resistant, and easy on the hands.

ARBORIST

Going up a tree is no joke to arborists. That's why they rely on Samson lines to comply with industry standards, provide strength, and that critical margin of safety, which is so important. Arborists also rely on our rigging lines to combine the best versatility, wear resistance, and elongation available to the tree-care industry. To see the full line of arborist products, you may request a copy of our Arborist Catalog through Samson's customer service department, or visit SamsonRope.com/arborist.

SAFETY

Safety should always be the first concern on a worksite. Samson's PTS-3 Nylon vertical lifelines meet or exceed ANSI Z-359.1-2007, California State and Federal OSHA guidelines. We offer all the rope, cordage, and fabricated lifelines you need for a safe worksite.

RESCUE

Rescuers don't want to think about the rope they grab in an emergency, they want to know they can count on it. That's why when there's a high-angle rescue to be done rescuers needing a UL-approved static rappelling line, they rely on Samson Static Rope.

ENTERTAINMENT

In the expensive world of entertainment, equipment failure is not an option. That's why the sports, filmmaking, and stage rigging industries turn to Samson for their rigging needs: camera flying rigs, static lines, stunt rigging, tie downs, and accessory cords.

Utility Applications

Product Name	PAGE NUMBER	Utility Applications										CONSTRUCTION*	FIBER (Core/Cover)	
		Arborist	Entertainment	Mining	Off Road	Rescue	Safety	Hand Lines	Pre-Spliced Winch Lines	Pulling/Stringing Lines	Slings			Winch Lines
AmSteel®	8	●	●	●	●		●	●	●	●	●	12-S	Dyneema® – Innegra™ -S Blend	
AmSteel® II	14							●	●		●	DB	Dyneema® – Innegra™ -S Blend / Polyester	
AmSteel® II Plus	14							●	●		●	DB	Dyneema® / Polyester	
AmSteel®-Blue	8	●	●	●	●		●	●	●	●	●	12-S	Dyneema®	
Dura-Plex	9						●	●				12-S	Polypropylene – Polyester Blend	
ML-12	10								●		●	12-S	Innegra™ -S – Dyneema® Blend	
Nystron	15	●									●	DB	Nylon / Polyester	
Pro-Master	18	●	●									3-S	Ultra Blue Polyolefin-Polyester Blend	
Pro-Set-3	18						●					3-S	Nylon	
PTS-3 Nylon Lifeline	23						●					3-S	Nylon	
PTS-12 Nylon	10										●	12-S	Nylon	
Quantum-12	11		●								●	●	12-S	Dyneema® – Polyester Blend
Quik-Splice	11					●	●	●		●		12-S	Ultra Blue Polyolefin	
SSR-100-3	19		●				●	●				3-S	Ultra Blue Polyolefin – Polyester Blend	
SSR-1200-3	19						●	●				3-S	Ultra Blue Polyolefin – Polyester Blend	
Stable Braid	15	●	●				●	●	●	●	●	DB	Polyester / Polyester	
Static Rope	21	●	●			●	●					DB	Nylon / Polyester	
Super Strong	16										●	DB	Nylon / Nylon	
Tech-12	12	●	●				●				●	12-S	Technora®	
Tenex	12	●								●	●	12-S	Polyester	
Tenex-TEC	13	●									●	12-S	Polyester	
TreeRig Slings (TENEX-TEC)	24	●								●	●	12-S	Polyester	
TreeRig Slings (STABLE BRAID)	24	●								●	●	DB	Polyester/Polyester	
Turbo-75	16										●	DB	Dyneema® / Dyneema®	
Ultra Blue-3	20		●				●					3-S	Ultra Blue Polyolefin	
Ultra-Tech	17		●									DB	Technora® / Polyester	
Validator-12	13		●									12-S	Vectran®	
Validator II	17										●	DB	Vectran® / Polyester	
Vertico	23						●					3-S	Polyester – Ultra Blue Blend	
Whoopie Sling	24	●									●	12-S	Polyester	
Zing-It/Lash-It	20	●										HB	Dyneema®	

*DB = Double Braid, HB = Hollow Braid, 3-S = 3-Strand, 12-S = 12-Strand

● = Class II (high-performance fiber content)

● = Class I (traditional fiber content)

Rope Classification

Class I rope constructions consist of traditional fibers such as olefin, nylon, and polyester. Class II rope constructions consist of high-modulus fibers such as Dyneema®, Technora®, and Vectran®.

High-Performance Synthetic Fiber Ropes

Samson is the industry's leading high-performance cordage company with expertise in fiber, coatings, and construction. The following are some of the fibers Samson works with: Dyneema®, a high-modulus polyethylene (HMPE) fiber that offers maximum strength, minimum weight, and durability; Vectran®, a multifilament polyester-polyarylate fiber spun from liquid crystal polymer (LCP) that offers strength, durability, and dimensional stability; and Technora®, an aromatic-polyamide (aramid) fiber that offers strength, fatigue resistance, and heat resistance. These and other similar synthetic fibers are called high-performance because they significantly outperform standard synthetic fibers such as nylon and polyester.



AmSteel®

A 12-strand braided rope using Dyneema® fiber with our proprietary Samthane urethane coating, AmSteel® yields extremely high strength and low stretch. This rope is flexible, spliceable, and resists flex-fatigue and abrasion. For many applications, AmSteel® performs.



AmSteel® Blue

A 12-strand braided rope made with Dyneema® fiber, AmSteel® Blue yields the maximum in strength-to-weight ratio, and is as strong as and safer than wire rope constructions—yet it is so light it floats. This industry-standard high-performance rope has superior tension-fatigue resistance compared with post-drawn HMPE fiber. AmSteel® Blue has become the go-to high-performance rope for a variety of demanding applications.



AmSteel® II

A double-braided rope that derives its high strength from a braided Dyneema® fiber core, AmSteel® II has extremely low elongation and is lightweight. The braided polyester cover creates a firm rope and serves as abrasion protection to the strength core. For added wear life and color identification, this rope is available with our Samthane coating. AmSteel® II is an excellent value.



AmSteel® II Plus

AmSteel® II Plus is a double-braided rope that derives its high strength from a braided Dyneema® core. The braided polyester cover creates a firm rope and serves as abrasion protection to the strong core. This rope has extremely low elongation and is lightweight. For added wear life and color identification, AmSteel® II Plus is available with our Samthane coating in four colors. Designed specifically for winch and stringing lines, AmSteel® II Plus is as strong as wire, has an increased working load size for size, and a smaller diameter, which means more rope on the winch.



ML-12

ML-12 is Samson's newest 12-strand stringing line. The unique blend of Dyneema® high modulus polyethylene (HMPE) and Innegra™S, a high modulus polypropylene (HMPP), gives ML-12 performance characteristics between traditional polyesters and high-performance 100% Dyneema® stringing lines. Because ML-12 offers lighter weight and higher strength at the same diameter as traditional polyester lines, it can be used on your existing equipment for heavier pulls. Size-for-size, ML-12 is stronger than polyester lines, making it possible to downsize the line on your equipment. You can pull the same load and store much longer lengths on the reel. You will also see reduced elongation compared to traditional polyester lines. When you need to pull a longer job or heavier load, *ML-12 is the perfect powerline.*

Hydro One Proves Samson Synthetic Cordage Pulls More Than Its Weight

“By using AmSteel® II Plus we were able to remove two steps in the process. And we were able to use the AmSteel® II Plus with existing stringing equipment—no special handling or special equipment was necessary the way it is when a very heavy steel bull line is used.”

For more than 100 years, Hydro One has supplied power to Ontario, Canada. Today, they are one of North America's largest transmission and distribution companies with almost 30,000 km (18,600 miles) of transmission lines, 281 transmission stations, 1,015 distribution and regulating stations, and 1.3 million customers. Hydro One's mission is to deliver electricity to their consumers safely, while managing their resources with excellence and innovation. That's why they turned to Samson for solutions to a couple of tough jobs.

“Hydro One has historically used AmSteel® as a rigging line,” says Jeff Pellar, Work Methods Specialist for Hydro One. “It has proven to be very durable and is a highly valued tool.” Their experience with AmSteel®, a 12-strand single braid made with Dyneema® fiber, provided Hydro One with the confidence to explore purchasing long lengths of high-

performance synthetic rope for use as pilot, intermediate, and/or bull lines for stringing conductors.

AmSteel® II Plus: A Cost-Saving and Efficient Solution

The first project Pellar had in mind was a typical job, calling for a helicopter to fly out a pilot line that would then pull an intermediate line that would pull the bull line, which would pull a two-conductor bundle, with pulling tensions of up to 15,000 lb. “Neither the existing pilot line nor the intermediate line had this much pulling capacity,” says Pellar.

Two 30,000-ft lengths of 7/8" Samson AmSteel® II Plus, a lightweight, double braid made with a Dyneema® fiber core and a polyester cover, was selected to replace both the intermediary line and the bull line due to its superior strength-to-weight ratio,

Quantum-12

Quantum-12 utilizes Samson's patented DPX™ fiber technology. Quantum-12 is a lightweight rope that has excellent gripping power without losing the strength-to-weight ratio benefit of HMPE ropes, and it provides superior abrasion and cut resistance. The 12-strand construction gives added flexibility, improved handling, and easy splicing, while the green Samthane coating provides excellent visibility and additional abrasion resistance. This is a rope that won't slip on a winch.

Tech-12

Technora® fiber makes this 12-strand single braid one of the strongest heat-resistant ropes available. It has low stretch and excellent flex-fatigue resistance when compared to ropes made with other high-modulus aramid fibers. Tech-12 has the added benefit of excellent heat resistance, making it a real performer in applications where heat is a problem.

Turbo-75

Turbo-75 has the same firmness and low stretch of wire, but only 1/6th the weight. The durable "turbo-braided" jacket made with Dyneema® is extremely cut and abrasion resistant. It protects the 12-strand single braid core, which is also made with Dyneema®. Both cover and core are coated with a proprietary Samthane coating. Turbo-75 is ideal for tough winch-line applications, where the weight and inflexibility of wire rope is a problem. This is a rugged rope that can handle rugged applications, spools on winches easily, and does not rust or "fish hook" like wire rope.

Ultra-Tech

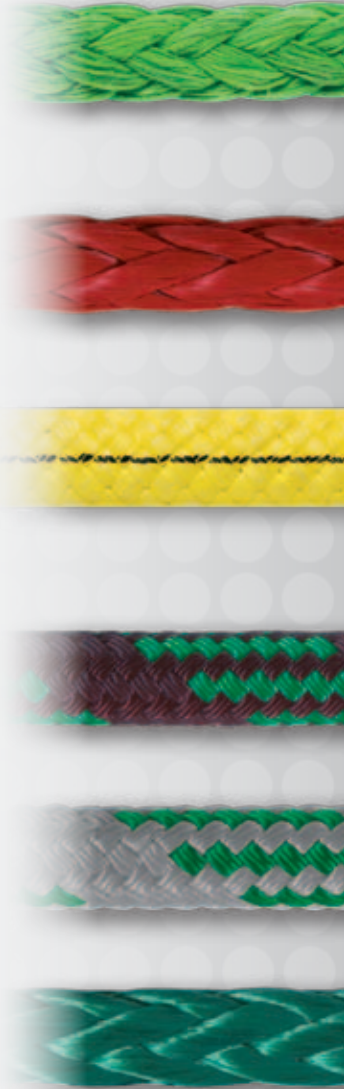
Ultra-Tech has a Technora® core that serves as the strength member of this firm and round, yet flexible rope. Covered with a 24-strand braided polyester cover that protects the core from external wear, Ultra-Tech is extremely strong and heat resistant with negligible creep. Technora® products are also known to have better resistance to flex-fatigue than other high-modulus aramid fibers.

Validator II

Validator II is a firm round rope with very high strength that won't creep under constant load. The double-braid construction consists of an extremely strong Vectran® core rope and an abrasion resistant 24-strand polyester cover. This combination makes an excellent no-creep rope for static heavy loads.

Validator-12

Made with Vectran®, Validator-12 is a 12-strand rope treated with Samthane coating. This rope has superior strength with no creep under a constant load. Validator-12 is the best wire rope replacement in situations where creep is an issue. This durable rope is flexible with a non-rotational construction. It is extremely abrasion resistant and is an excellent choice for wire replacement. Validator-12's ability to secure heavy loads without creep makes it one dependable rope.



which increased the overall pulling capacity for the job. The greater pulling capacity meant that it was a safer pull and a lightweight solution, because AmSteel® II Plus relieved the weight burden by as much as 10 lbs per 100 ft of line compared with the intermediate line.

"By using AmSteel® II Plus we were able to remove two steps in the process. And we were able to use the AmSteel® II Plus with existing stringing equipment—no special handling or special equipment was necessary the way it is when a very heavy steel bull line is used." An added benefit for Hydro One is the ease of splicing AmSteel® II Plus compared with the other product, which Pellar says "is complex to splice and requires special training." Furthermore, Pellar concluded that "tangible cost savings were realized during the installation of conductors on this project due to reduced handling and better utilization of equipment."

AmSteel®: More Than a Rigging Rope

Hydro One's second project called for 500 kV circuits in four-conductor bundles to be pulled simultaneously. This installation, again, called for the use of a pilot line, an intermediate line, and with pulling tensions in excess of 20,000 lb this time, a steel bull line.

Considering the success they had with AmSteel® II Plus, Hydro One turned to Samson again, but chose to replace the pilot and intermediate lines with two 30,000-ft lengths of 5/8" AmSteel®, the same rope they value and rely on for all their rigging.

"Its light weight and low elongation meant that AmSteel® as a pilot line was light enough for a helicopter to fly out and install stringing blocks, but it was also strong enough to pull in the steel bull line attached to the conductor," explains Pellar. "The use of high-performance AmSteel® eliminated the need for the intermediate line, cutting one step out of the overall operation" again demonstrating how Samson stringing lines can save money and make operations more efficient.

"The use of high-performance AmSteel® eliminated the need for the intermediate line, cutting one step out of the overall operation."

12-Strand Single Braids



AmSteel®
PRODUCT CODE: 870

CLASS II
HIGH-PERFORMANCE

Samthane Coating: A family of abrasion-resistant coatings specifically formulated to match end-user requirements and specific rope constructions. Our coatings improve service life, reduce snagging, enhance abrasion resistance, prevent contamination, reduce cutting, and are color coded for identification. (See page 37 for Samthane type descriptions.)

As strong as wire

Features

- > Made with Dyneema® and Innegra™ fiber
- > Samthane coated
- > Highly flex-fatigue resistant
- > Highly abrasion resistant
- > Nonrotational
- > Lightweight
- > Wire rope replacement

Applications

- > Pulling/stringing lines
- > Winch lines
- > Lifting slings
- > Lifelines
- > Event/special effects rigging
- > Camera control line

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
1/4"	3/4"	1.6 lb	7,400 lb	6,700 lb	6 mm	2.4 kg	3,400 kg	3,000 kg
5/16"	1"	2.7 lb	10,500 lb	9,500 lb	8 mm	4.0 kg	4,800 kg	4,300 kg
3/8"	1-1/8"	3.6 lb	15,500 lb	14,000 lb	9 mm	5.4 kg	7,000 kg	6,300 kg
7/16"	1-1/4"	4.2 lb	18,000 lb	16,200 lb	11 mm	6.2 kg	8,200 kg	7,300 kg
1/2"	1-1/2"	6.4 lb	27,500 lb	24,800 lb	12 mm	9.5 kg	12,500 kg	11,200 kg
9/16"	1-3/4"	7.9 lb	34,000 lb	30,600 lb	14 mm	11.8 kg	15,400 kg	13,900 kg
5/8"	2"	10.2 lb	40,700 lb	36,600 lb	16 mm	15.2 kg	18,500 kg	16,600 kg
3/4"	2-1/4"	13.3 lb	52,000 lb	46,800 lb	18 mm	19.8 kg	23,600 kg	21,200 kg
13/16"	2-1/2"	15.8 lb	61,000 lb	54,900 lb	20 mm	23.5 kg	27,700 kg	24,900 kg
7/8"	2-3/4"	19.6 lb	74,000 lb	66,600 lb	22 mm	29.2 kg	33,600 kg	30,200 kg
1"	3"	21.8 lb	90,000 lb	81,000 lb	24 mm	32.4 kg	40,800 kg	36,700 kg
1-1/16"	3-1/4"	29.5 lb	100,000 lb	90,000 lb	26 mm	43.9 kg	45,400 kg	40,800 kg
1-1/8"	3-1/2"	31.9 lb	110,000 lb	99,000 lb	28 mm	47.5 kg	49,900 kg	44,900 kg
1-1/4"	3-3/4"	36.2 lb	125,000 lb	113,000 lb	30 mm	53.9 kg	56,700 kg	51,000 kg
1-5/16"	4"	41.8 lb	135,000 lb	122,000 lb	32 mm	62.2 kg	61,200 kg	55,100 kg
1-1/2"	4-1/2"	51.7 lb	175,000 lb	158,000 lb	36 mm	76.9 kg	79,400 kg	71,400 kg

*Spliced strength



Specific Gravity:
0.98

Elastic Elongation Percentage:
At % of break strength
10% 0.46%
20% 0.70%
30% 0.96%

Splice/Class:
12-Strand Class II

AmSteel®-Blue
PRODUCT CODE: 872

CLASS II
HIGH-PERFORMANCE

Why wire-rope replacement?

Our single-braid ropes made with Dyneema® are size for size as strong as wire, last three times longer, and are only 1/7th the weight. Safe and easy to handle, our Dyneema® ropes increase the line capacity on the winch drum, which means you can reach farther with an increased safety factor.

Stronger and lighter than wire

Features

- > Made with 100% Dyneema® fiber
- > Samthane coated
- > Maximum strength-to-weight ratio
- > Highly flex-fatigue resistant
- > Highly abrasion resistant
- > Nonrotational
- > 1/7th the weight of wire
- > Same elongation as wire
- > Wire rope replacement

Applications

- > Pulling/stringing lines
- > Climbing/rigging accessories
- > Winch lines
- > Slings
- > Lifelines
- > Camera control lines
- > Event/special effects rigging

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
7/64"	5/16"	0.3 lb	1,600 lb	1,400 lb	2.5 mm	.45 kg	730 kg	650 kg
1/8"	3/8"	0.5 lb	2,500 lb	2,300 lb	3 mm	.74 kg	1,100 kg	1,000 kg
5/32"	15/32"	.75 lb	4,000 lb	3,600 lb	4 mm	1.1 kg	1,800 kg	1,600 kg
1/4"	3/4"	1.6 lb	8,600 lb	7,700 lb	6 mm	2.4 kg	3,900 kg	3,500 kg
5/16"	1"	2.7 lb	13,700 lb	12,300 lb	8 mm	4.0 kg	6,200 kg	5,600 kg
3/8"	1-1/8"	3.6 lb	19,600 lb	17,600 lb	9 mm	5.4 kg	8,900 kg	8,000 kg
7/16"	1-1/4"	4.2 lb	23,900 lb	21,500 lb	11 mm	6.2 kg	10,800 kg	9,800 kg
1/2"	1-1/2"	6.4 lb	34,000 lb	30,600 lb	12 mm	9.5 kg	15,400 kg	13,900 kg
9/16"	1-3/4"	7.9 lb	40,500 lb	36,500 lb	14 mm	11.8 kg	18,400 kg	16,500 kg
5/8"	2"	10.2 lb	52,800 lb	47,500 lb	16 mm	15.2 kg	24,000 kg	21,600 kg
3/4"	2-1/4"	13.3 lb	64,400 lb	58,000 lb	18 mm	19.8 kg	29,200 kg	26,300 kg
7/8"	2-3/4"	19.6 lb	90,800 lb	81,700 lb	22 mm	29.2 kg	41,200 kg	37,100 kg
1"	3"	21.8 lb	109,000 lb	98,100 lb	24 mm	32.4 kg	49,400 kg	44,500 kg
1-1/16"	3-1/4"	27.5 lb	131,000 lb	118,000 lb	26 mm	40.9 kg	59,600 kg	53,600 kg
1-1/8"	3-1/2"	31.9 lb	148,000 lb	133,000 lb	28 mm	47.5 kg	67,100 kg	60,400 kg
1-1/4"	3-3/4"	36.2 lb	165,000 lb	149,000 lb	30 mm	53.9 kg	75,000 kg	67,500 kg
1-5/16"	4"	41.8 lb	184,000 lb	166,000 lb	32 mm	62.2 kg	83,600 kg	75,200 kg
1-3/8"	4-1/8"	45.0 lb	205,000 lb	185,000 lb	34 mm	67.0 kg	93,200 kg	83,900 kg
1-1/2"	4-1/2"	51.7 lb	228,000 lb	205,000 lb	36 mm	76.9 kg	103,000 kg	93,000 kg

*Spliced strength

Specific Gravity:
0.98

Elastic Elongation Percentage:
At % of break strength
10% 0.46%
20% 0.70%
30% 0.96%

Splice/Class:
12-Strand Class II

Dura-Plex

UNCOATED PRODUCT CODE: 360

COATED PRODUCT CODE: 860



A high strength-to-weight combination rope

Features

- > Polyester plied over polyolefin fibers
- > Available with or without Samthane coating
- > Abrasion resistant
- > Flexible
- > Good grip
- > Good knot-holding ability

Applications

- > Hand lines
- > Pilot lines
- > Block lines

Specific Gravity:
1.20

Elastic Elongation Percentage:
At % of break strength
10% 1.6%
20% 2.7%
30% 3.8%

Splice/Class:
12-Strand Class I

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
1/4"	3/4"	1.5 lb	1,800 lb	1,600 lb	6 mm	2.2 kg	820 kg	730 kg
5/16"	1"	2.2 lb	2,600 lb	2,300 lb	8 mm	3.3 kg	1,200 kg	1,100 kg
3/8"	1-1/8"	3.4 lb	3,900 lb	3,500 lb	9 mm	5.1 kg	1,800 kg	1,600 kg
7/16"	1-1/4"	4.6 lb	5,000 lb	4,500 lb	11 mm	6.8 kg	2,300 kg	2,000 kg
1/2"	1-1/2"	5.8 lb	6,700 lb	6,000 lb	12 mm	8.6 kg	3,000 kg	2,700 kg
9/16"	1-3/4"	8.3 lb	9,000 lb	8,100 lb	14 mm	12.4 kg	4,100 kg	3,700 kg
5/8"	2"	11.0 lb	11,600 lb	10,400 lb	16 mm	16.4 kg	5,300 kg	4,700 kg
3/4"	2-1/4"	15.0 lb	14,500 lb	13,100 lb	18 mm	22.3 kg	6,600 kg	5,900 kg
7/8"	2-3/4"	21.5 lb	21,200 lb	19,100 lb	22 mm	32.0 kg	9,600 kg	8,700 kg
1"	3"	24.2 lb	25,000 lb	22,500 lb	24 mm	36.0 kg	11,300 kg	10,200 kg

*Spliced strength



Samson and Morpac Go the Distance

Tacoma Narrows transmission line, which was originally built in 1926, was a challenging project during the summer of 2007. One of the longest crossings in the world, the 6,240-foot line extends the length of the Tacoma Narrows.

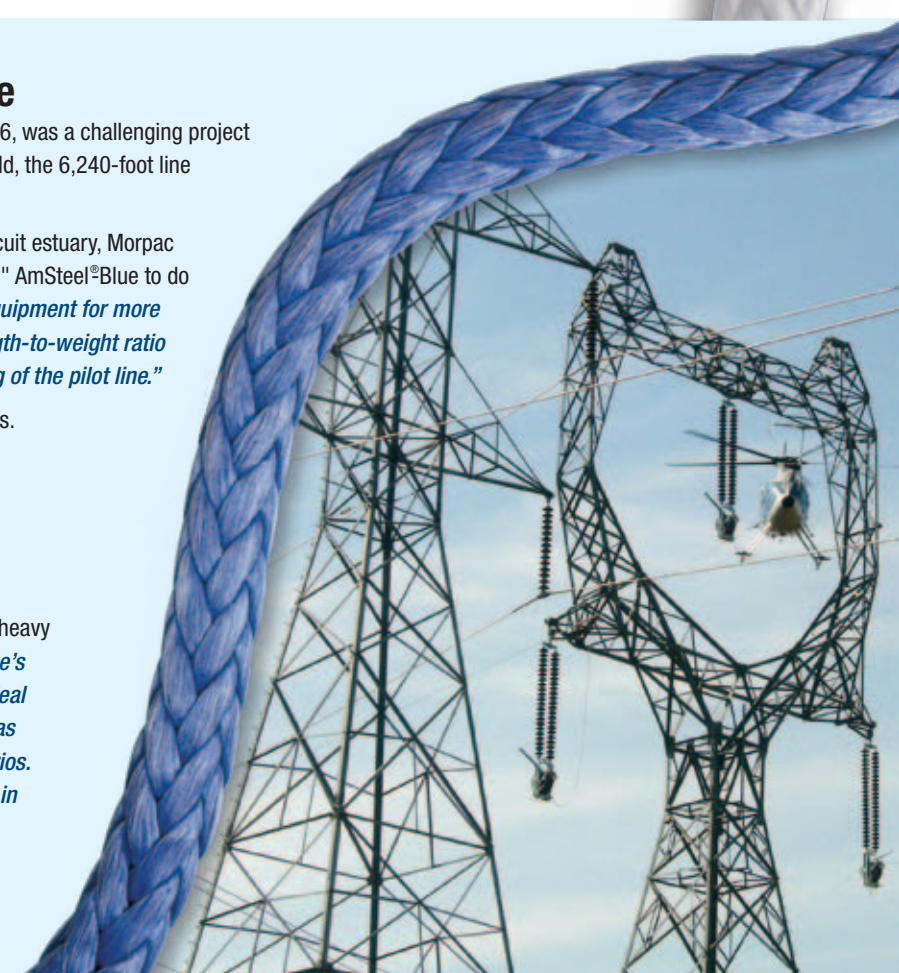
When called on to provide the drum puller for threading the twin circuit estuary, Morpac Industries, Inc., sent a Morgan LH46 3-drum puller loaded with 9/16" AmSteel®Blue to do the job. *"Samson rope has been used on Morgan line-stringing equipment for more than 20 years," says Pete Morgan of Morpac. "The superior strength-to-weight ratio of AmSteel®Blue makes it the ideal choice for helicopter threading of the pilot line."*

Morpac also uses 9/16" Samson Tenex in their 8-part clipping blocks.

AmSteel®Blue Pulls Through for Henkels & McCoy

AmSteel®Blue has been an integral component in Henkels & McCoy heavy transmission jobs. *"Dollar for dollar, pound for pound, AmSteel®Blue's high strength-to-size and-weight ratios are excellent, making it ideal for new installations and reconductor work. Most importantly, it has proven to be DEPENDABLE during the most difficult pulling scenarios. AmSteel®Blue is our first choice when it comes to lead lines used in Henkels & McCoy pulling operations."*

Alan Lippy, Director – T&D
Henkels & McCoy, Inc.



12-Strand Single Braids



PTS-12 Nylon

PRODUCT CODE: 820

The best nylon rope in the industry

Features

- > Samthane coated
- > Firm and round
- > Nonrotational
- > Snag resistant
- > Heat stabilized
- > Flexible
- > High strength
- > Superior wear
- > Excellent shock mitigation

Applications

- > Specialty slings

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
3/16"	9/16"	1.2 lb	1,800 lb	1,600 lb	5 mm	1.8 kg	820 kg	730 kg
1/4"	3/4"	2.0 lb	3,000 lb	2,700 lb	6 mm	3.0 kg	1,400 kg	1,200 kg
5/16"	1"	3.0 lb	4,500 lb	4,100 lb	8 mm	4.5 kg	2,000 kg	1,800 kg
3/8"	1-1/8"	4.0 lb	5,500 lb	5,000 lb	9 mm	6.0 kg	2,500 kg	2,200 kg
7/16"	1-1/4"	5.6 lb	7,000 lb	6,300 lb	11 mm	8.3 kg	3,200 kg	2,900 kg
1/2"	1-1/2"	7.4 lb	10,800 lb	9,700 lb	12 mm	11.0 kg	4,900 kg	4,400 kg
9/16"	1-3/4"	10.4 lb	14,000 lb	12,600 lb	14 mm	15.5 kg	6,400 kg	5,700 kg
5/8"	2"	12.1 lb	16,000 lb	14,400 lb	16 mm	18.0 kg	7,300 kg	6,500 kg
3/4"	2-1/4"	16.1 lb	21,000 lb	18,900 lb	18 mm	24.0 kg	9,500 kg	8,600 kg

*Spliced strength

Specific Gravity:
1.14

Elastic Elongation Percentage:

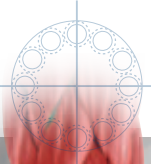
At % of break strength

10% 4.7%

20% 6.9%

30% 7.7%

Splice/Class:
12-Strand Class I



ML-12

PRODUCT CODE: 815

CLASS II
HIGH-PERFORMANCE

New Dyneema® fiber blend is 1.5 times stronger and has significantly reduced elongation compared to polyester stringing lines

Features

- > High strength
- > Light weight
- > Size for size, pulls heavier loads than traditional polyester lines
- > Can be downsized to store longer lengths on reels

Applications

- > Pulling lines
- > Stringing lines

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
7/16"	1-1/4"	4.2 lb	11,500 lb	10,400 lb	11 mm	6.2 kg	5,200 kg	4,700 kg
1/2"	1-1/2"	6.4 lb	16,500 lb	14,900 lb	12 mm	9.5 kg	7,500 kg	6,700 kg
9/16"	1-3/4"	7.9 lb	20,000 lb	18,000 lb	14 mm	11.8 kg	9,100 kg	8,200 kg
5/8"	2"	10.2 lb	25,000 lb	22,500 lb	16 mm	15.2 kg	11,300 kg	10,200 kg
3/4"	2-1/4"	13.3 lb	32,000 lb	28,800 lb	18 mm	19.8 kg	14,500 kg	13,100 kg

*Spliced strength

Specific Gravity:
0.98 (floats)

Elastic Elongation Percentage:

At % of break strength

10% 1.3%

20% 2.0%

30% 2.4%

Splice/Class:
12-Strand Class II



12-Strand Single-Braid Construction

12-strand constructions are extremely strong due to the optimization of strand twist levels and the braid angle of the rope. In addition to the strength of the 12-strand construction, benefits include torque balancing and easy splicing.

CLASS II
HIGH-PERFORMANCE

Quantum-12

PRODUCT CODE: 873



An abrasion resistant rope with the best grip

Features

- > Samson's patented DPX™ fiber technology
- > Samthane coating
- > Excellent grip
- > Highly abrasion resistant
- > Extremely strong
- > Very lightweight
- > Flexible
- > Wire replacement
- > Other colors available upon request

Applications

- > Winch lines
- > Slings

	Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
Specific Gravity: 0.99 (floats)	3/4"	2-1/4"	11.8 lb	45,300 lb	40,800 lb	18 mm	17.6 kg	20,500 kg	18,500 kg
	7/8"	2-3/4"	15.2 lb	62,500 lb	56,300 lb	22 mm	22.6 kg	28,400 kg	25,500 kg
Elastic Elongation Percentage: At % of break strength	1"	3"	21.0 lb	82,500 lb	74,300 lb	24 mm	31.2 kg	37,400 kg	33,700 kg
	1-1/8"	3-1/2"	25.5 lb	105,000 lb	94,500 lb	28 mm	37.9 kg	47,600 kg	42,900 kg
	1-1/4"	3-3/4"	31.0 lb	131,000 lb	118,000 lb	30 mm	46.1 kg	59,400 kg	53,500 kg
	1-5/16"	4"	33.0 lb	146,000 lb	131,000 lb	32 mm	49.1 kg	66,200 kg	59,600 kg
	1-3/8"	4-1/8"	37.5 lb	162,000 lb	146,000 lb	34 mm	55.8 kg	73,500 kg	66,100 kg
	1-1/2"	4-1/2"	44.7 lb	191,000 lb	172,000 lb	36 mm	66.5 kg	86,600 kg	78,000 kg
	10%								
20%									
30%									

*Spliced strength

Splice/Class:
12-Strand Class II

WITH
Dyneema®

Quik-Splice

PRODUCT CODE: 335



Fast and easy splicing in the field

Features

- > Samson's proprietary bi-polymer polyolefin fiber
- > 30 to 35% stronger than standard polypropylene
- > UV stabilized
- > Resists water
- > Water Resistant
- > Abrasion Resistant

Applications

- > Hand lines
- > Pilot lines
- > Light duty pulling lines
- > Block lines

	Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
Specific Gravity: 0.94 (floats)	1/4"	3/4"	1.1 lb	1,400 lb	1,300 lb	6 mm	1.6 kg	640 kg	570 kg
	5/16"	1"	1.7 lb	2,500 lb	2,300 lb	8 mm	2.5 kg	1,100 kg	1,000 kg
Elastic Elongation Percentage: At % of break strength	3/8"	1-1/8"	2.7 lb	3,500 lb	3,200 lb	9 mm	4.0 kg	1,600 kg	1,400 kg
	7/16"	1-1/4"	3.5 lb	4,600 lb	4,100 lb	11 mm	5.2 kg	2,100 kg	1,900 kg
	1/2"	1-1/2"	4.7 lb	6,700 lb	6,000 lb	12 mm	7.0 kg	3,000 kg	2,700 kg
	9/16"	1-3/4"	6.0 lb	7,500 lb	6,800 lb	14 mm	8.9 kg	3,400 kg	3,100 kg
	5/8"	2"	7.8 lb	10,900 lb	9,800 lb	16 mm	11.6 kg	4,900 kg	4,400 kg
	3/4"	2-1/4"	9.7 lb	13,000 lb	11,700 lb	18 mm	14.4 kg	5,900 kg	5,300 kg
	7/8"	2-3/4"	15.2 lb	16,000 lb	14,400 lb	22 mm	22.6 kg	7,300 kg	6,500 kg
	1"	3"	21.0 lb	23,100 lb	20,800 lb	24 mm	31.2 kg	10,500 kg	9,400 kg
	1-1/8"	3-1/2"	24.5 lb	28,600 lb	25,700 lb	28 mm	36.5 kg	13,000 kg	11,700 kg
	1-1/4"	3-3/4"	29.0 lb	31,300 lb	28,200 lb	30 mm	43.2 kg	14,200 kg	12,800 kg
1-1/2"	4-1/2"	41.0 lb	43,800 lb	39,400 lb	36 mm	61.0 kg	19,900 kg	17,900 kg	

*Spliced strength

Splice/Class:
12-Strand Class I

12-Strand Single Braids



Tech-12

PRODUCT CODE: 890

CLASS II
HIGH-PERFORMANCE

Heat Resistance

Heat resistance is a fiber characteristic where there is no strength loss caused by heat.

A strong heat-resistant rope with low creep

Features

- > Technora® fiber
- > Samthane coating
- > Flexible
- > Nonrotational
- > Excellent heat resistance
- > Extremely strong
- > Negligible creep
- > Strong as wire
- > Wire replacement

Applications

- > Pulling lines
- > Slings
- > Guy lines
- > Climbing /rigging accessories
- > Lifelines
- > Event/special effects rigging

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
1/8"	3/8"	0.6 lb	2,800 lb	2,500 lb	3 mm	.89 Kg	1,300 Kg	1,100 Kg
3/16"	9/16"	1.3 lb	5,600 lb	5,000 lb	5 mm	1.9 Kg	2,500 Kg	2,300 Kg
1/4"	3/4"	1.9 lb	8,200 lb	7,300 lb	6 mm	2.8 Kg	3,700 Kg	3,300 Kg
5/16"	1"	3.2 lb	13,000 lb	11,700 lb	8 mm	4.8 Kg	5,900 Kg	5,300 Kg
3/8"	1-1/8"	4.3 lb	18,000 lb	16,200 lb	9 mm	6.4 Kg	8,200 Kg	7,300 Kg
7/16"	1-1/4"	6.7 lb	28,000 lb	25,200 lb	11 mm	10 Kg	12,700 Kg	11,400 Kg
1/2"	1-1/2"	8.0 lb	33,000 lb	29,700 lb	12 mm	11.9 Kg	15,000 Kg	13,500 Kg
5/8"	2"	13.5 lb	43,000 lb	38,700 lb	16 mm	20.1 Kg	19,500 Kg	17,600 Kg
3/4"	2-1/4"	19.3 lb	65,000 lb	58,500 lb	18 mm	28.7 Kg	29,500 Kg	26,500 Kg
7/8"	2-3/4"	25.3 lb	84,000 lb	75,600 lb	22 mm	37.6 Kg	38,100 Kg	34,300 Kg
1"	3"	31.1 lb	102,000 lb	91,800 lb	24 mm	46.3 Kg	46,300 Kg	41,600 Kg

*Spliced strength

Specific Gravity:
1.39

Elastic Elongation Percentage:
At % of break strength
10% 0.63%
20% 0.96%
30% 1.2%

Splice/Class:
12-Strand Class II

Tenex

PRODUCT CODE: 826

The Samson Advantage and Tenex Stringing Lines

Dedicated to bringing you products specifically designed for your needs, Samson consistently provides durable Tenex stringing lines in extremely long lengths — on time, like you need them to be.

Easy splicing in the field

Features

- > High-tenacity polyester fiber
- > Samthane coated
- > High strength-to-weight ratio
- > Single end per carrier
- > Available in long lengths
- > Abrasion resistant
- > Snag resistant
- > Economical

Applications

- > Pulling/stringing lines
- > Climbing/rigging accessories

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
1/4"	3/4"	2.1 lb	3,200 lb.	2,900 lb	6 mm	3.1 kg	1,500 kg	1,300 kg
5/16"	1"	3.2 lb	4,700 lb	4,200 lb	8 mm	4.8 kg	2,100 kg	1,900 kg
3/8"	1-1/8"	4.2 lb	5,800 lb	5,200 lb	9 mm	6.2 kg	2,600 kg	2,400 kg
7/16"	1-1/4"	6.3 lb	9,000 lb	8,100 lb	11 mm	9.4 kg	4,100 kg	3,700 kg
1/2"	1-1/2"	8.5 lb	11,800 lb	10,600 lb	12 mm	12.6 kg	5,400 kg	4,800 kg
9/16"	1-3/4"	10.0 lb	15,000 lb	13,500 lb	14 mm	14.9 kg	6,800 kg	6,100 kg
5/8"	2"	13.1 lb	17,100 lb	15,400 lb	16 mm	19.5 kg	7,800 kg	7,000 kg
3/4"	2-1/4"	17.2 lb	22,400 lb	20,200 lb	18 mm	25.6 kg	10,200 kg	9,100 kg
7/8"	2-3/4"	25.8 lb	32,600 lb	29,300 lb	22 mm	38.4 kg	14,800 kg	13,300 kg
1"	3"	34.5 lb	42,700 lb	38,400 lb	24 mm	51.3 kg	19,400 kg	17,400 kg
1-1/4"	3-3/4"	52.2 lb	57,200 lb	51,500 lb	30 mm	77.7 kg	25,900 kg	23,400 kg
1-5/16"	4"	59.7 lb	69,500 lb	62,600 lb	32 mm	88.8 kg	31,500 kg	28,400 kg
1-1/2"	4-1/2"	71.5 lb	81,700 lb	73,500 lb	36 mm	106 kg	37,100 kg	33,400 kg
1-5/8"	5"	90.3 lb	94,000 lb	84,600 lb	40 mm	134 kg	42,600 kg	38,400 kg
1-3/4"	5-1/2"	105 lb	109,000 lb	98,100 lb	44 mm	157 kg	49,400 kg	44,500 kg

*Spliced strength

Specific Gravity:
1.38

Elastic Elongation Percentage:
At % of break strength
10% 1.4%
20% 2.3%
30% 3.0%

Splice/Class:
12-Strand Class I

Tenex-TEC

PRODUCT CODE: 825



The #1 choice for rope tools

Features

- > High-tenacity polyester fiber
- > Good grip
- > Samthane coated
- > Easy to splice in the field
- > Two ends per carrier
- > Economical
- > Abrasion resistant
- > Snag resistant

Applications

- > Slings
- > Rope tools

Specific Gravity:
1.38

Elastic Elongation Percentage:
At % of break strength
10% 1.4%
20% 2.3%
30% 3.0%

Splice/Class:
12-Strand Class I

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
1/4"	3/4"	2.1 lb	3,200 lb	2,900 lb	6 mm	3.1 kg	1,500 kg	1,300 kg
5/16"	1"	3.2 lb	4,700 lb	4,200 lb	8 mm	4.8 kg	2,100 kg	1,900 kg
3/8"	1-1/8"	4.3 lb	6,100 lb	5,500 lb	9 mm	6.4 kg	2,800 kg	2,500 kg
7/16"	1-1/4"	6.5 lb	9,500 lb	8,600 lb	11 mm	9.7 kg	4,300 kg	3,900 kg
1/2"	1-1/2"	10 lb	13,100 lb	11,800 lb	12 mm	14.9 kg	5,900 kg	5,300 kg
5/8"	2"	14.8 lb	18,800 lb	16,900 lb	16 mm	22.0 kg	8,500 kg	7,700 kg
3/4"	2-1/4"	19.2 lb	24,800 lb	22,300 lb	18 mm	28.5 kg	11,200 kg	10,100 kg
7/8"	2-3/4"	26.7 lb	34,200 lb	30,800 lb	22 mm	39.7 kg	15,500 kg	14,000 kg
1"	3"	34.7 lb	44,500 lb	40,100 lb	24 mm	51.6 kg	20,200 kg	18,200 kg
1-1/4"	3-3/4"	55.0 lb	62,000 lb	55,800 lb	30 mm	81.8 kg	28,100 kg	25,300 kg

*Spliced strength



CLASS II HIGH-PERFORMANCE

Validator-12

PRODUCT CODE: 446



No creep under constant load

Features

- > Vectran fiber
- > Low stretch
- > Samthane coated
- > Abrasion resistant
- > Flexible
- > Extremely durable
- > Nonrotational
- > Heat resistant
- > High strength
- > Wire replacement

Applications

- > Pulling/stringing lines
- > Camera control lines
- > Special effects

Specific Gravity:
1.39

Elastic Elongation Percentage:
At % of break strength
10% 0.49%
20% 0.78%
30% 0.98%

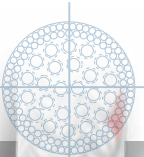
Splice/Class:
12-Strand Class II

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
7/64"	5/16"	0.5 lb	2000 lb	1,800 lb	2.5 mm	.74 kg	910 kg	820 kg
1/8"	3/8"	0.6 lb	2,700 lb	2,400 lb	3 mm	.89 kg	1,200 kg	1,100 kg
3/16"	9/16"	1.3 lb	5,500 lb	5,000 lb	5 mm	1.9 kg	2,500 kg	2,200 kg
1/4"	3/4"	2.2 lb	9,400 lb	8,500 lb	6 mm	3.3 kg	4,300 kg	3,800 kg
5/16"	1"	3.6 lb	14,000 lb	12,600 lb	8 mm	5.4 kg	6,400 kg	5,700 kg
3/8"	1-1/8"	4.6 lb	19,500 lb	17,600 lb	9 mm	6.8 kg	8,800 kg	8,000 kg
7/16"	1-1/4"	6.1 lb	23,500 lb	21,200 lb	11 mm	9.1 kg	10,700 kg	9,600 kg
1/2"	1-1/2"	8.8 lb	35,000 lb	31,500 lb	12 mm	13.1 kg	15,900 kg	14,300 kg
9/16"	1-3/4"	10.8 lb	43,000 lb	38,700 lb	14 mm	16.1 kg	19,500 kg	17,600 kg
5/8"	2"	14.0 lb	55,000 lb	49,500 lb	16 mm	20.8 kg	24,900 kg	22,500 kg

*Spliced strength



Double Braids



AmSteel® II

UNCOATED PRODUCT CODE: 574
COATED PRODUCT CODE: 874

CLASS II
HIGH-PERFORMANCE

A strong, lightweight high-performance rope

Features

- > Braided core of Dyneema®-Innegra™-S fiber blend
- > Braided polyester cover
- > Available with or without Samthane coating
- > Abrasion resistant
- > Low elongation
- > Lightweight

Applications

- > Winch lines
- > Pulling lines
- > Lifting slings
- > Event rigging

Ends Per Carrier

A rope that is made with one end per carrier will have a round construction with large strands. As the ends per carrier are increased, the strands become smaller and the surface of the rope becomes flatter or smoother. The more ends per carrier the better grip on a surface.

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength POUNDS	Samson MBS POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength KILOGRAMS	Samson MBS KILOGRAMS
1/4"	3/4"	2.2 lb	4,500 lb	3,800 lb	6 mm	3.3 kg	2,000 kg	1,700 kg
5/16"	1"	3.5 lb	7,500 lb	6,400 lb	8 mm	5.2 kg	3,400 kg	2,900 kg
3/8"	1-1/8"	4.1 lb	9,800 lb	8,300 lb	9 mm	6.1 kg	4,400 kg	3,800 kg
7/16"	1-1/4"	6.1 lb	11,700 lb	9,900 lb	11 mm	9.1 kg	5,300 kg	4,500 kg
1/2"	1-1/2"	8.6 lb	15,500 lb	13,200 lb	12 mm	12.8 kg	7,000 kg	6,000 kg
9/16"	1-3/4"	10.0 lb	22,000 lb	18,700 lb	14 mm	14.9 kg	10,000 kg	8,500 kg
5/8"	2"	12.6 lb	27,000 lb	23,000 lb	16 mm	18.7 kg	12,200 kg	10,400 kg
3/4"	2-1/4"	16.0 lb	35,000 lb	29,800 lb	18 mm	23.8 kg	15,900 kg	13,500 kg
13/16"	2-1/2"	20.3 lb	40,000 lb	34,000 lb	20 mm	30.2 kg	18,100 kg	15,400 kg
7/8"	2-3/4"	24.8 lb	50,000 lb	42,500 lb	22 mm	36.9 kg	22,700 kg	19,300 kg
1"	3"	29.7 lb	57,000 lb	48,500 lb	24 mm	44.2 kg	25,900 kg	22,000 kg
1-1/16"	3-1/4"	31.7 lb	59,300 lb	50,400 lb	26 mm	47.2 kg	26,900 kg	22,900 kg
1-1/8"	3-1/2"	37.0 lb	72,900 lb	62,000 lb	28 mm	55.1 kg	33,100 kg	28,100 kg
1-1/4"	3-3/4"	42.6 lb	81,000 lb	68,900 lb	30 mm	63.4 kg	36,700 kg	31,200 kg

WITH
Dyneema®



*Spliced strength

Specific Gravity:
1.20

Elastic Elongation Percentage:

At % of break strength
10% 0.50%
20% 0.67%
30% 0.96%

Splice/Class:

Double Braid Class II



AmSteel® II Plus

UNCOATED PRODUCT CODE: 575
COATED PRODUCT CODE: 875

CLASS II
HIGH-PERFORMANCE

A strong, lightweight high-performance rope

Features

- > Polyester cover
- > Braided core of 100% Dyneema fiber
- > Available with or without Samthane coating
- > Low elongation
- > Lightweight
- > Wire rope replacement

Applications

- > Winch lines
- > Pulling lines
- > Lifting slings
- > Event/special effects rigging
- > Camera guy lines

Double-Braid Construction

Double-braid rope consists of an inner braided rope (the core) and a braided rope constructed around its exterior (the cover). For some double-braid constructions, both the core and cover share the load on the rope but not necessarily equally. Other double-braid constructions are core dependent, meaning that the core bears the load while the cover performs other functions such as wear and heat resistance.

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
1/4"	3/4"	2.2 lb	5,600 lb	4,800 lb	6 mm	3.3 kg	2,500 kg	2,200 kg
5/16"	1"	3.5 lb	9,300 lb	7,900 lb	8 mm	5.2 kg	4,200 kg	3,600 kg
3/8"	1-1/8"	4.1 lb	12,200 lb	10,400 lb	9 mm	6.1 kg	5,500 kg	4,700 kg
7/16"	1-1/4"	6.1 lb	14,600 lb	12,400 lb	11 mm	9.1 kg	6,600 kg	5,600 kg
1/2"	1-1/2"	8.6 lb	19,400 lb	16,500 lb	12 mm	12.8 kg	8,800 kg	7,500 kg
9/16"	1-3/4"	10.0 lb	27,500 lb	23,400 lb	14 mm	14.9 kg	12,500 kg	10,600 kg
5/8"	2"	12.6 lb	33,800 lb	28,700 lb	16 mm	18.7 kg	15,300 kg	13,000 kg
3/4"	2-1/4"	16.0 lb	43,800 lb	37,200 lb	18 mm	23.8 kg	19,900 kg	16,900 kg
13/16"	2-1/2"	20.3 lb	50,000 lb	42,500 lb	20 mm	30.2 kg	22,700 kg	19,300 kg
7/8"	2-3/4"	24.8 lb	62,500 lb	53,100 lb	22 mm	36.9 kg	28,400 kg	24,100 kg
1"	3"	29.7 lb	71,300 lb	60,600 lb	24 mm	44.2 kg	32,300 kg	27,500 kg
1-1/16"	3-1/4"	31.7 lb	74,000 lb	62,900 lb	26 mm	47.2 kg	33,600 kg	28,500 kg
1-1/8"	3-1/2"	37.0 lb	90,000 lb	76,500 lb	28 mm	55.1 kg	40,800 kg	34,700 kg
1-1/4"	3-3/4"	42.6 lb	101,000 lb	85,900 lb	30 mm	63.4 kg	45,800 kg	38,900 kg

WITH
Dyneema®

*Spliced strength

Specific Gravity:
1.20

Elastic Elongation Percentage:

At % of break strength
10% 0.50%
20% 0.67%
30% 0.96%

Splice/Class:

Double Braid Class II

Nystron

UNCOATED PRODUCT CODE: 591

COATED PRODUCT CODE: 891

Reliable in wet environments

Features

- > Nylon fiber core
- > Polyester cover
- > Available with or without Samthane coating
- > High strength retention
- > Good energy absorption
- > Good shock mitigation
- > Abrasion resistant, especially in wet environments

Applications

- > Winch lines
- > Stringing lines

Specific Gravity:
1.24

Elastic Elongation Percentage:
At % of break strength
10%2.4%
20%4.5%
30%5.9%

Splice/Class:
Double Braid Class I

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
3/8"	1-1/8"	4.4 lb	5,600 lb	4,800 lb	9 mm	6.5 kg	2,500 kg	2,200 kg
7/16"	1-1/4"	5.7 lb	7,400 lb	6,300 lb	11 mm	8.5 kg	3,400 kg	2,900 kg
1/2"	1-1/2"	7.7 lb	10,500 lb	8,900 lb	12 mm	11.5 kg	4,800 kg	4,000 kg
9/16"	1-3/4"	10.0 lb	13,200 lb	11,200 lb	14 mm	14.9 kg	6,000 kg	5,100 kg
5/8"	2"	12.6 lb	16,300 lb	13,900 lb	16 mm	18.7 kg	7,400 kg	6,300 kg
3/4"	2-1/4"	17.3 lb	23,000 lb	19,600 lb	18 mm	25.7 kg	10,400 kg	8,900 kg
7/8"	2-3/4"	19.0 lb	27,000 lb	23,000 lb	22 mm	28.3 kg	12,200 kg	10,400 kg
1"	3"	34.0 lb	37,000 lb	31,500 lb	24 mm	50.6 kg	16,800 kg	14,300 kg
1-1/8"	3-1/2"	39.2 lb	49,800 lb	42,300 lb	28 mm	58.3 kg	22,600 kg	19,200 kg
1-1/4"	3-3/4"	46.9 lb	59,100 lb	50,200 lb	30 mm	69.8 kg	26,800 kg	22,800 kg
1-1/2"	4-1/2"	71.2 lb	86,500 lb	73,500 lb	36 mm	106 kg	39,200 kg	33,400 kg
1-5/8"	5"	76.9 lb	100,000 lb	85,000 lb	40 mm	114 kg	45,400 kg	38,600 kg
2"	6"	114 lb	142,000 lb	121,000 lb	48 mm	170 kg	64,400 kg	54,700 kg

*Spliced strength



UV Resistance and UV Stabilization

UV resistance means that the material properties are unaffected by exposure to ultraviolet rays. UV stabilized means that the fiber has been treated to minimize the effect of degradation caused by ultraviolet rays.

Features

- > Polyester cover and core
- > Torque-free construction
- > Durable
- > Abrasion resistant
- > UV resistant
- > Heat resistance
- > Flex-fatigue resistance
- > Firm flexible
- > Low elongation

Applications

- > Utility rigging
- > Winch lines
- > Winch working lines
- > Pulling/stringing lines
- > Heavy lift slings
- > Rigging lines
- > Stage rigging

Stable Braid

UNCOATED PRODUCT CODE: 506

COATED PRODUCT CODE: 806

Versatile and dependable

Specific Gravity:
1.38

Elastic Elongation Percentage:
At % of break strength
10%1.1%
20%1.7%
30%2.7%

Splice/Class:
Double Braid Class I

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength POUNDS	Samson MBS POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength KILOGRAMS	Samson MBS KILOGRAMS
1/4"	3/4"	2.1 lb	2,300 lb	2,000 lb	6 mm	3.1 kg	1,000 kg	890 kg
5/16"	1"	3.2 lb	3,600 lb	3,100 lb	8 mm	4.8 kg	1,600 kg	1,400 kg
3/8"	1-1/8"	4.5 lb	5,600 lb	4,800 lb	9 mm	6.7 kg	2,500 kg	2,200 kg
7/16"	1-1/4"	6.1 lb	7,700 lb	6,500 lb	11 mm	9.1 kg	3,500 kg	3,000 kg
1/2"	1-1/2"	8.2 lb	10,400 lb	8,800 lb	12 mm	12.2 kg	4,700 kg	4,000 kg
9/16"	1-3/4"	11.0 lb	13,300 lb	11,300 lb	14 mm	16.4 kg	6,000 kg	5,100 kg
5/8"	2"	14.0 lb	16,300 lb	13,900 lb	16 mm	20.8 kg	7,400 kg	6,300 kg
3/4"	2-1/4"	18.0 lb	20,400 lb	17,300 lb	18 mm	26.8 kg	9,300 kg	7,900 kg
7/8"	2-3/4"	27.1 lb	29,900 lb	25,400 lb	22 mm	40.3 kg	13,600 kg	11,500 kg
1"	3"	34.0 lb	39,200 lb	33,300 lb	24 mm	50.6 kg	17,800 kg	15,100 kg
1-1/8"	3-1/2"	45.3 lb	48,200 lb	41,000 lb	28 mm	67.4 kg	21,900 kg	18,600 kg
1-1/4"	3-3/4"	53.9 lb	57,300 lb	48,700 lb	30 mm	80.2 kg	26,000 kg	22,100 kg
1-5/16"	4"	60.8 lb	64,700 lb	55,000 lb	32 mm	90.5 kg	29,300 kg	24,900 kg
1-1/2"	4-1/2"	73.3 lb	75,100 lb	63,800 lb	36 mm	109 kg	34,100 kg	29,000 kg

*Spliced strength

This product meets military specifications; please consult Samson Customer Service for details.





Super Strong

PRODUCT CODE: 472

Pro-Gard Finish

Samson offers Pro-Gard Finish to ensure a maximum working strength and wear life for wet applications.

Excellent in all conditions

Features

- > High-tenacity nylon fiber
- > Pro-Gard finish
- > Firm
- > Flexible
- > Excellent shock mitigation

Applications

- > Winch working lines
- > Heavy lift slings
- > Utility rigging

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
1/4"	3/4"	1.6 lb	2,300 lb	2,000 lb	6 mm	2.4 kg	1,000 kg	890 kg
5/16"	1"	2.6 lb	3,400 lb	2,900 lb	8 mm	3.9 kg	1,500 kg	1,300 kg
3/8"	1-1/8"	3.7 lb	4,900 lb	4,200 lb	9 mm	5.5 kg	2,200 kg	1,900 kg
7/16"	1-1/4"	5.1 lb	6,600 lb	5,600 lb	11 mm	7.6 kg	3,000 kg	2,500 kg
1/2"	1-1/2"	6.6 lb	8,600 lb	7,300 lb	12 mm	9.8 kg	3,900 kg	3,300 kg
9/16"	1-3/4"	9.3 lb	11,900 lb	10,100 lb	14 mm	13.8 kg	5,400 kg	4,600 kg
5/8"	2"	12.0 lb	15,200 lb	12,900 lb	16 mm	17.9 kg	6,900 kg	5,900 kg
3/4"	2-1/4"	15.0 lb	18,800 lb	16,000 lb	18 mm	22.3 kg	8,500 kg	7,200 kg
7/8"	2-3/4"	22.0 lb	29,000 lb	24,700 lb	22 mm	32.7 kg	13,200 kg	11,200 kg
1"	3"	26.0 lb	36,000 lb	30,600 lb	24 mm	38.7 kg	16,300 kg	13,900 kg
1-1/16"	3 1/4"	31.0 lb	40,700 lb	34,600 lb	26 mm	46.1 kg	18,500 kg	15,700 kg
1-1/8"	3-1/2"	36.0 lb	45,000 lb	38,300 lb	28 mm	53.6 kg	20,400 kg	17,400 kg
1-1/4"	3-3/4"	41.0 lb	52,000 lb	44,200 lb	30 mm	61.0 kg	23,600 kg	20,000 kg
1-5/16"	4"	43.5 lb	59,300 lb	50,400 lb	32 mm	64.7 kg	26,900 kg	22,900 kg
1-1/2"	4-1/2"	60.0 lb	75,600 lb	64,300 lb	36 mm	89.3 kg	34,300 kg	29,100 kg

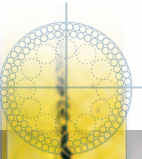
*Spliced strength

This product meets military specifications; please consult Samson Customer Service for details.

Specific Gravity:
1.14

Elastic Elongation Percentage:
At % of break strength
10% 3.0%
20% 5.3%
30% 6.7%

Splice/Class:
Double Braid Class I



Turbo-75

PRODUCT CODE: 864

CLASS II
HIGH-PERFORMANCE

A tough wire-rope replacement

Features

- > Turbo braided jacket with Dyneema® fiber
- > 12-strand single braid core of 100% Dyneema® fiber
- > Cover and core are Samthane coated
- > 1/6th the weight of wire
- > Excellent single-drum spooling capabilities
- > Extremely cut resistant
- > Lightweight
- > Flexible
- > Drum compression resistant
- > Retains shape with use
- > Superior wear characteristics

Applications

- > Winch lines

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
3/4"	2-1/4"	14.0 lb	59,000 lb	53,100 lb	18 mm	20.8 Kg	26,800 Kg	24,100 Kg
7/8"	2-3/4"	19.0 lb	82,000 lb	73,800 lb	22 mm	28.3 Kg	37,200 Kg	33,500 Kg
1"	3"	25.0 lb	97,000 lb	87,300 lb	24 mm	37.2 Kg	44,000 Kg	39,600 Kg
1-1/16"	3-1/4"	27.0 lb	113,000 lb	102,000 lb	26 mm	40.2 Kg	51,300 Kg	46,100 Kg
1-1/8"	3-1/2"	29.5 lb	125,000 lb	113,000 lb	28 mm	43.9 Kg	56,700 Kg	51,000 Kg
1-1/4"	3-3/4"	38.5 lb	150,000 lb	135,000 lb	30 mm	57.3 Kg	68,000 Kg	61,200 Kg
1-5/16"	4"	43.0 lb	165,000 lb	149,000 lb	32 mm	64.0 Kg	74,800 Kg	67,400 Kg
1-3/8"	4-1/8"	48.0 lb	185,000 lb	167,000 lb	34 mm	71.4 Kg	83,900 Kg	75,500 Kg
1-1/2"	4-1/2"	59.5 lb	210,000 lb	189,000 lb	36 mm	88.5 Kg	95,300 Kg	85,700 Kg

*Spliced strength

Specific Gravity:
0.98 (floats)

Elastic Elongation Percentage:
At % of break strength
10% 0.30%
20% 0.50%
30% 0.80%

Splice/Class:
Product Specific Class II

WITH
Dyneema®

CLASS II
HIGH-PERFORMANCE

Ultra-Tech

PRODUCT CODE: 443

A firm, flexible core with external-wear protection

Features

- > 24-strand braided polyester cover
- > Technora® core
- > High strength
- > Heat resistant
- > Minimal creep
- > Low stretch
- > Flexible

Applications

- > Climbing/rigging lines
- > Event/special effects rigging

Specific Gravity:
1.38

Elastic Elongation Percentage:

At % of break strength

10%0.63%

20%0.97%

30%1.24%

Splice/Class:

Double Braid Class II

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
3/16"	9/16"	1.0 lb	2,300 lb	2,000 lb	5 mm	1.5 kg	1,000 kg	890 kg
1/4"	3/4"	2.1 lb	4,800 lb	4,100 lb	6 mm	3.1 kg	2,200 kg	1,900 kg
5/16"	1"	4.0 lb	7,800 lb	6,600 lb	8 mm	6.0 kg	3,500 kg	3,000 kg
3/8"	1-1/8"	4.6 lb	10,000 lb	8,500 lb	9 mm	6.8 kg	4,500 kg	3,900 kg
7/16"	1-1/4"	6.4 lb	14,800 lb	12,600 lb	11 mm	9.5 kg	6,700 kg	5,700 kg
1/2"	1-1/2"	9.8 lb	20,000 lb	17,000 lb	12 mm	14.6 kg	9,100 kg	7,700 kg
5/8"	2"	14.5 lb	42,000 lb	35,700 lb	16 mm	21.6 kg	19,100 kg	16,200 kg
3/4"	2-1/4"	19.7 lb	51,000 lb	43,400 lb	18 mm	29.3 kg	23,100 kg	19,700 kg
7/8"	2-3/4"	27.5 lb	68,000 lb	57,800 lb	22 mm	40.9 kg	30,800 kg	26,200 kg

*Spliced strength

CLASS II
HIGH-PERFORMANCE

Validator II

PRODUCT CODE: 447

No creep under constant load

Features

- > Vectran® core
- > 24-strand polyester cover
- > No creep under constant load
- > Firm and round
- > High strength
- > Wire rope replacement

Applications

- > Winch lines

Specific Gravity:
1.39

Elastic Elongation Percentage:

At % of break strength

10%0.59%

20%0.78%

30%0.98%

Splice/Class:

Double Braid Class II

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
3/16"	9/16"	1.4 lb	3,300 lb	2,800 lb	5 mm	2.1 kg	1,500 kg	1,300 kg
1/4"	3/4"	2.2 lb	5,000 lb	4,300 lb	6 mm	3.3 kg	2,300 kg	1,900 kg
5/16"	1"	3.7 lb	7,000 lb	6,000 lb	8 mm	5.5 kg	3,200 kg	2,700 kg
3/8"	1-1/8"	5.0 lb	11,000 lb	9,400 lb	9 mm	7.4 kg	5,000 kg	4,200 kg
7/16"	1-1/4"	7.0 lb	15,200 lb	12,900 lb	11 mm	10.4 kg	6,900 kg	5,900 kg
1/2"	1-1/2"	9.0 lb	20,000 lb	17,000 lb	12 mm	13.4 kg	9,100 kg	7,700 kg
9/16"	1-3/4"	12.0 lb	26,000 lb	22,100 lb	14 mm	17.9 kg	11,800 kg	10,000 kg
5/8"	2"	14.4 lb	30,000 lb	25,500 lb	16 mm	21.4 kg	13,600 kg	11,600 kg
3/4"	2-1/4"	20.3 lb	45,000 lb	38,300 lb	18 mm	30.2 kg	20,400 kg	17,400 kg
7/8"	2-3/4"	27.0 lb	63,000 lb	53,600 lb	22 mm	40.2 kg	28,600 kg	24,300 kg
1"	3"	35.0 lb	80,000 lb	68,000 lb	24 mm	52.1 kg	36,300 kg	30,800 kg
1-1/8"	3-1/2"	44.0 lb	100,000 lb	85,000 lb	28 mm	65.5 kg	45,400 kg	38,600 kg
1-1/4"	3-3/4"	52.0 lb	123,000 lb	105,000 lb	30 mm	77.4 kg	55,800 kg	47,400 kg
1-5/16"	4"	58.0 lb	135,000 lb	115,000 lb	32 mm	86.3 kg	61,200 kg	52,100 kg
1-3/8"	4-1/8"	63.2 lb	148,000 lb	126,000 lb	34 mm	94.0 kg	67,100 kg	57,100 kg
1-7/16"	4-1/4"	67.7 lb	160,000 lb	136,000 lb	35 mm	101 kg	72,600 kg	61,700 kg
1-1/2"	4-1/2"	74.5 lb	174,000 lb	148,000 lb	36 mm	111 kg	78,900 kg	67,100 kg

*Spliced strength

3-Strand Twisted



Pro-Master

PRODUCT CODE: 168

A firm rope that's soft on the hand

Features

- > High-tenacity polyester fiber
- > Balanced construction
- > Low stretch
- > Excellent knot holding
- > Retains shape with use
- > Remains flexible with use
- > Superior hand and lock-grip holding

Applications

- > Rigging lines
- > Hand lines
- > Block/fall lines
- > Stage counterweight

3-Strand Twisted Construction

Samson 3-strand construction averts a twisted rope's tendency to untwist under load through balanced manufacturing, which includes alternating the twist direction in each stage of the manufacturing process. These ropes have good abrasion resistance and are economical in price.

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
3/8"	1-1/8"	3.7 lb	3,200 lb	2,900 lb	9 mm	5.5 kg	1,500 kg	1,300 kg
1/2"	1-1/2"	6.5 lb	5,700 lb	5,100 lb	12 mm	9.7 kg	2,600 kg	2,300 kg
5/8"	2"	9.6 lb	7,700 lb	6,900 lb	16 mm	14.3 kg	3,500 kg	3,100 kg
3/4"	2-1/4"	13.9 lb	10,000 lb	9,000 lb	18 mm	20.7 kg	4,500 kg	4,100 kg
7/8"	2-3/4"	18.0 lb	14,500 lb	13,100 lb	22 mm	26.8 kg	6,600 kg	5,900 kg
1"	3"	22.0 lb	17,500 lb	15,800 lb	24 mm	32.7 kg	7,900 kg	7,100 kg

*Spliced strength

Specific Gravity:
1.24

Elastic Elongation Percentage:
At % of break strength
10% 2.0%
20% 3.2%
30% 3.9%

Splice/Class:
3-Strand Class I



Pro-Set-3

PRODUCT CODE: 170

Shock mitigation and full-performance flexibility

Features

- > Four-stage construction
- > High-tenacity nylon fiber
- > Heat stabilized
- > Hockle resistant
- > Remains flexible with use
- > High elasticity
- > Excellent shock mitigation
- > Durable

Applications

- > Hand lines
- > Block lines

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
3/16"	9/16"	1.0 lb	1,200 lb	1,100 lb	5 mm	1.5 kg	540 kg	490 kg
1/4"	3/4"	1.5 lb	1,600 lb	1,400 lb	6 mm	2.2 kg	730 kg	650 kg
5/16"	1"	2.5 lb	2,600 lb	2,300 lb	8 mm	3.7 kg	1,200 kg	1,100 kg
3/8"	1-1/8"	3.5 lb	3,600 lb	3,200 lb	9 mm	5.2 kg	1,600 kg	1,500 kg
7/16"	1-1/4"	5.0 lb	4,800 lb	4,300 lb	11 mm	7.4 kg	2,200 kg	2,000 kg
1/2"	1-1/2"	6.5 lb	6,300 lb	5,700 lb	12 mm	9.7 kg	2,900 kg	2,600 kg
9/16"	1-3/4"	8.1 lb	7,900 lb	7,100 lb	14 mm	12.1 kg	3,600 kg	3,200 kg
5/8"	2"	10.5 lb	10,000 lb	9,000 lb	16 mm	15.6 kg	4,500 kg	4,100 kg
3/4"	2-1/4"	14.5 lb	13,500 lb	12,200 lb	18 mm	21.6 kg	6,100 kg	5,500 kg
13/16"	2-1/2"	17.0 lb	15,300 lb	13,800 lb	20 mm	25.3 kg	6,900 kg	6,200 kg
7/8"	2-3/4"	20.0 lb	19,000 lb	17,100 lb	22 mm	29.8 kg	8,600 kg	7,800 kg
1"	3"	26.0 lb	25,000 lb	22,500 lb	24 mm	38.7 kg	11,300 kg	10,200 kg
1-1/16"	3-1/4"	29.0 lb	27,200 lb	24,500 lb	26 mm	43.2 kg	12,300 kg	11,100 kg
1-1/8"	3-1/2"	34.0 lb	32,000 lb	28,800 lb	28 mm	50.6 kg	14,500 kg	13,100 kg
1-1/4"	3-3/4"	40.0 lb	37,500 lb	33,800 lb	30 mm	59.5 kg	17,000 kg	15,300 kg
1-5/16"	4"	45.0 lb	41,500 lb	37,400 lb	32 mm	67.0 kg	18,800 kg	16,900 kg
1-1/2"	4-1/2"	55.0 lb	52,000 lb	46,800 lb	36 mm	81.8 kg	23,600 kg	21,200 kg

*Spliced strength

Specific Gravity:
1.14

Elastic Elongation Percentage:
At % of break strength
10% 5.5%
20% 10.0%
30% 12.1%

Splice/Class:
3-Strand Class I

SSR-100-3

PRODUCT CODE: 200



Features

- > High-strength polyester fiber wrapped over high-tenacity Ultra-Blue fiber
- > Durable
- > Economical
- > Hockle resistant
- > Easily spliced in the field

Durable and economical

Applications

- > Hand lines
- > Block lines

Specific Gravity:
1.18

Elastic Elongation Percentage:
At % of break strength
10% 1.6%
20% 3.5%
30% 4.7%

Splice/Class:
3-Strand Class I

Size Diameter INCHES	Size Diameter MILLIMETERS	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson MBS POUNDS	Samson MBS KILOGRAMS
3/16"	5 mm	9/16"	0.8 lb	1.2 kg	1,000 lb	450 kg	900 lb	410 kg
1/4"	6 mm	3/4"	1.4 lb	2.1 kg	1,800 lb	820 kg	1,600 lb	730 kg
5/16"	8 mm	1"	2.4 lb	3.6 kg	2,800 lb	1,300 kg	2,500 lb	1,100 kg
3/8"	9 mm	1-1/8"	3.9 lb	5.8 kg	4,100 lb	1,900 kg	3,700 lb	1,700 kg
7/16"	11 mm	1-1/4"	4.9 lb	7.3 kg	5,100 lb	2,300 kg	4,600 lb	2,100 kg
1/2"	12 mm	1-1/2"	6.5 lb	9.7 kg	6,900 lb	3,100 kg	6,200 lb	2,800 kg
9/16"	14 mm	1-3/4"	8.5 lb	12.6 kg	9,100 lb	4,100 kg	8,200 lb	3,700 kg
5/8"	16 mm	2"	9.5 lb	14.1 kg	10,000 lb	4,500 kg	9,000 lb	4,100 kg

*Spliced strength

SSR-1200-3

PRODUCT CODE: 220



As strong and durable as polyester, but lighter in weight

Features

- > Compound plied-polyester yarn and Ultra-Blue fiber
- > Higher strength
- > Durable
- > Economical
- > Lighter weight than an all-polyester rope

Applications

- > Hand lines
- > Block lines

Specific Gravity:
1.20

Elastic Elongation Percentage:
At % of break strength
10% 1.5%
20% 3.2%
30% 4.0%

Splice/Class:
3-Strand Class I

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength POUNDS	Samson MBS POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength KILOGRAMS	Samson MBS KILOGRAMS
3/4"	2-1/4"	14.4 lb	14,800 lb	13,300 lb	18 mm	21.4 kg	6,700 kg	6,000 kg
13/16"	2-1/2"	17.3 lb	17,600 lb	15,800 lb	20 mm	25.7 kg	8,000 kg	7,200 kg
7/8"	2-3/4"	20.6 lb	20,900 lb	18,800 lb	22 mm	30.7 kg	9,500 kg	8,500 kg
1"	3"	25.6 lb	25,400 lb	22,900 lb	24 mm	38.1 kg	11,500 kg	10,400 kg
1-1/8"	3-1/2"	33.0 lb	32,800 lb	29,500 lb	28 mm	49.1 kg	14,900 kg	13,400 kg
1-1/4"	3-3/4"	39.4 lb	39,000 lb	35,100 lb	30 mm	58.6 kg	17,700 kg	15,900 kg
1-5/16"	4"	43.3 lb	43,000 lb	38,700 lb	32 mm	64.4 kg	19,500 kg	17,600 kg
1-1/2"	4-1/2"	56.2 lb	54,000 lb	48,600 lb	36 mm	83.6 kg	24,500 kg	22,000 kg
1-5/8"	5"	68.0 lb	65,000 lb	58,500 lb	40 mm	101 kg	29,500 kg	26,500 kg
1-3/4"	5-1/2"	78.4 lb	75,000 lb	67,500 lb	44 mm	117 kg	34,000 kg	30,600 kg
2"	6"	99.0 lb	94,000 lb	84,600 lb	48 mm	147 kg	42,600 kg	38,400 kg
2-1/8"	6-1/2"	111 lb	105,000 lb	94,500 lb	52 mm	166 kg	47,600 kg	42,900 kg
2-1/4"	7"	129 lb	120,000 lb	108,000 lb	56 mm	192 kg	54,400 kg	49,000 kg
2-1/2"	7-1/2"	156 lb	142,000 lb	128,000 lb	60 mm	232 kg	64,400 kg	58,000 kg
2-5/8"	8"	170 lb	156,000 lb	140,000 lb	64 mm	253 kg	70,800 kg	63,700 kg
3"	9"	221 lb	202,000 lb	182,000 lb	72 mm	328 kg	91,600 kg	82,500 kg
3-1/4"	10"	263 lb	240,000 lb	216,000 lb	80 mm	391 kg	109,000 kg	98,000 kg

*Spliced strength

3-Strand Twisted



Ultra Blue-3

PRODUCT CODE: 130

Lighter in weight and more durable than polypropylene

Features

- > Samson's proprietary bi-polymer polyolefin fiber
- > 30 to 35% stronger than standard polypropylene
- > Durable
- > Abrasion Resistant
- > Excellent grip
- > Repels water
- > UV resistant
- > Lightweight
- > Has good dielectric properties

Applications

- > Hand line
- > Pilot lines
- > Block lines
- > Tie-down lines
- > Amusement parks

Ultra Blue Fiber

Samson Ultra-Blue is our proprietary bi-polymer polyolefin. Ropes made with Ultra-Blue are 30% to 35% higher in strength than equivalent polypropylene constructions, increasing the life of these ropes up to three times. They repel water, resist UV degradation, have excellent grip, and are abrasion resistant. These features mean buying a smaller rope without compromising strength and wear life. In the end, you save money—the best feature yet.

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
1/4"	3/4"	1.1 lb	1,700 lb	1,500 lb	6 mm	1.6 kg	770 kg	690 kg
5/16"	1"	2.1 lb	2,600 lb	2,300 lb	8 mm	3.1 kg	1,200 kg	1,100 kg
3/8"	1-1/8"	2.6 lb	3,700 lb	3,300 lb	9 mm	3.9 kg	1,700 kg	1,500 kg
7/16"	1-1/4"	3.1 lb	4,600 lb	4,100 lb	11 mm	4.6 kg	2,100 kg	1,900 kg
1/2"	1-1/2"	4.5 lb	6,100 lb	5,500 lb	12 mm	6.7 kg	2,800 kg	2,500 kg
9/16"	1-3/4"	6.3 lb	8,400 lb	7,600 lb	14 mm	9.4 kg	3,800 kg	3,400 kg
5/8"	2"	8.0 lb	10,600 lb	9,500 lb	16 mm	11.9 kg	4,800 kg	4,300 kg
3/4"	2-1/4"	10.2 lb	12,000 lb	10,800 lb	18 mm	15.2 kg	5,400 kg	4,900 kg
7/8"	2-3/4"	15.8 lb	18,000 lb	16,200 lb	22 mm	23.5 kg	8,200 kg	7,300 kg
1"	3"	18.6 lb	22,600 lb	20,300 lb	24 mm	27.7 kg	10,300 kg	9,200 kg
1-1/8"	3-1/2"	24.7 lb	26,600 lb	23,900 lb	28 mm	36.8 kg	12,100 kg	10,900 kg
1-1/4"	3-3/4"	28.9 lb	33,000 lb	29,700 lb	30 mm	43.0 kg	15,000 kg	13,500 kg
1-5/16"	4"	32.5 lb	37,000 lb	33,300 lb	32 mm	48.4 kg	16,800 kg	15,100 kg
1-1/2"	4-1/2"	41.2 lb	42,000 lb	37,800 lb	36 mm	61.3 kg	19,100 kg	17,100 kg

*Spliced strength

Specific Gravity:
0.94

Elastic Elongation Percentage:
At % of break strength
10%2.0%
20%4.8%
30%6.8%

Splice/Class:
3-Strand Class I

Hollow Braid

Lash-It

PRODUCT CODE: 811

CLASS II
HIGH-PERFORMANCE

All-purpose accessory cord

Features

- > Single braid
- > Dyneema® fiber
- > Samthane coating
- > High strength-to-weight ratio
- > Low stretch
- > Lightweight
- > Abrasion resistant

Applications

- > Climbing and rigging accessories
- > Throwing line



WITH
Dyneema®

Size Diameter MILLIMETERS	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Standard Package Lengths
1.75 mm	0.22 lb	500 lb	180 ft tube
1.75 mm	0.72 lb	500 lb	600 ft reel
2.2 mm	0.29 lb	650 lb	180 ft tube
2.2 mm	0.96 lb	650 lb	600 ft reel

*Unspliced strength

Zing-It

PRODUCT CODE: 811

CLASS II
HIGH-PERFORMANCE

Excellent throwing line with high visibility

Features

- > Single braid
- > Dyneema® fiber
- > Samthane coating
- > High strength-to-weight ratio
- > Low stretch
- > Lightweight
- > Abrasion resistant

Applications

- > Climbing and rigging accessories
- > Throwing line



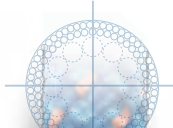
WITH
Dyneema®

Size Diameter MILLIMETERS	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Standard Package Lengths
1.75 mm	0.22 lb	500 lb	180 ft tube
1.75 mm	1.20 lb	500 lb	1,000 ft reel
2.2 mm	0.29 lb	650 lb	180 ft tube
2.2 mm	1.600 lb	650 lb	1,000 ft reel

*Unspliced strength

Static Rope

PRODUCT CODE: 484



Meets or exceeds NFPA 1983 standards

Features

- > Kernmantle braid
- > High tenacity nylon core
- > Polyester cover
- > Abrasion-resistant
- > Excellent shock mitigation
- > Retains shape with use

Applications

- > High-angle rescue
- > Static rappelling
- > Lifelines
- > Stunts
- > Specialty rigging
- > Block and fall lines

Specific Gravity:
1.24

Elastic Elongation Percentage:
At % of break strength
10%3.2%
20%4.5%
30%6.0%

Splice/Class:
Not Spliceable Class I

Size Diameter INCHES	Size Circ. INCHES	Weight Per 100 Ft. POUNDS	Samson Avg. Strength* POUNDS	Samson MBS* POUNDS	Size Diameter MILLIMETERS	Weight Per 100 M KILOGRAMS	Samson Avg. Strength* KILOGRAMS	Samson MBS* KILOGRAMS
3/8"	1-1/8"	4.2 lb	5,700 lb	4,800 lb	9.5 mm	6.2 kg	2,600 kg	2,200 kg
7/16"	1-1/4"	6.0 lb	8,200 lb	7,000 lb	11 mm	8.9 kg	3,700 kg	3,200 kg
1/2"	1-1/2"	8.0 lb	11,000 lb	9,400 lb	13 mm	11.9 kg	5,000 kg	4,200 kg
5/8"	2"	11.2 lb	13,500 lb	11,500 lb	15.5 mm	16.7 kg	6,100 kg	5,200 kg

*Unspliced strength



Demystifying Elongation, Stretch, and Creep

There's a full discussion of the various forms of elongation in synthetic ropes—elastic elongation, hysteresis, permanent elongation while working, permanent elongation after relaxed, and creep—in the technical section at the back of this catalog, but...what do you need to know about elongation? What happens when a synthetic rope is placed under a load?

The first time a new rope is loaded, the braid compacts slightly, and depending on the construction, small helical changes take place. The result is a permanent extension that will not change over the life of the rope. By cycling the rope under a load a number of times before you use it, this constructional elongation can be eliminated.

Elastic elongation (EE) is a characteristic of the fibers(s) used in the construction, and is the portion of the extension that is immediately recoverable when the load is released. Elastic elongation is expressed as a percentage of the length at a standard load based on a percentage (10%, 20%, or 30%) of the breaking strength. Elastic elongation can only be reduced by moving up to a larger diameter line, a line with higher breaking strength, or a line with lower measured elasticity.

There is another form of elongation, called elastic hysteresis, that is not recovered immediately when a load is released, but over hours or even days.

CREEP

Creep is the most misunderstood concept of rope elongation. It is defined as fiber deformation (elongation) caused by molecular slippage when a rope is under a constant, static loading situation for periods of weeks—not hours or minutes.

Some fibers such as polypropylene and HMPE exhibit the characteristics of creep, but if minor fluctuations occur in the rate and frequency of load levels, these characteristics are negligible.

Not all high-modulus fibers have the same creep characteristics. An exceptionally low creep fiber like Vectran® results in a line that performs well under constant load, like Samson's Validator II and Validator 12.



WITH
Dyneema®

DC Gard

PRODUCT CODE: 706

CLASS II
HIGH-PERFORMANCE

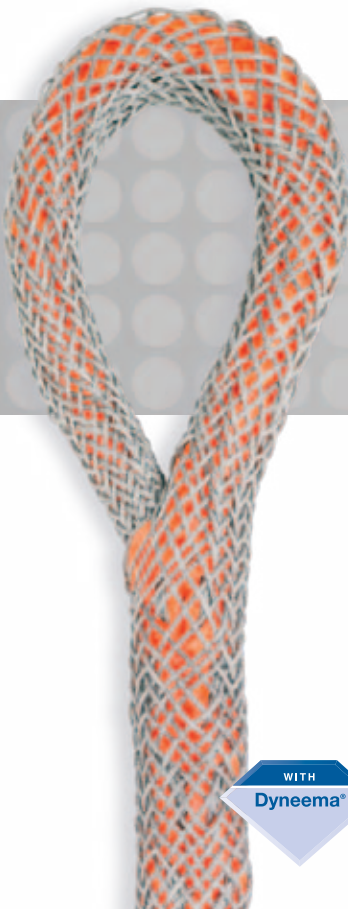
Maximum additional abrasion resistance

Features

- > Made with Dyneema® fiber
- > Light and flexible
- > Cut and abrasion resistant
- > Superior durability
- > Must be removed for rope inspection
- > Fully repairable in the field
- > Available in small to large sizes

DC Gard Size	Fits Size Diameter * INCHES	Fits Size Circ. INCHES	Fits Size Diameter * MILLIMETERS	Fits Size Circ. MILLIMETERS
SIZE C	1" – 1-1/4"	3" – 3-1/2"	24 – 30 mm	72 – 84 mm
SIZE D	1-5/16" – 1-3/4"	3-3/4" – 5-1/2"	32 – 44 mm	90 – 132 mm
SIZE E	1-7/8" – 2-1/2"	5-3/4" – 6-1/2"	46 – 60 mm	138 – 156 mm
SIZE F	2-5/8" – 3-1/8"	7" – 8-3/4"	64 – 76 mm	168 – 210 mm

*Contact Customer Service to calculate size for installing over splice. Also available to fit spliced areas of larger diameter ropes.



WITH
Dyneema®

Dynalene

PRODUCT CODE: 975

CLASS II
HIGH-PERFORMANCE

Added abrasion resistance and easy inspection

Features

- > Made with Dyneema® fiber
- > Lightweight
- > Cut and abrasion resistant
- > Excellent durability
- > Allows rope inspection without removal
- > Fully repairable in the field
- > Available in small to extra large sizes

Dynalene Size	Fits Size Diameter * INCHES	Fits Size Circ. INCHES	Fits Size Diameter * MILLIMETERS	Fits Size Circ. MILLIMETERS
SMALL	7/8" – 1-1/4"	2-3/4" – 3-3/4"	22 – 30 mm	66 – 90 mm
MEDIUM	1-5/16" – 1-5/8"	4" – 5"	32 – 40 mm	96 – 120 mm
LARGE	1-3/4" – 3"	5-1/2" – 9"	44 – 72 mm	132 – 216 mm

PTS-3 Nylon & 3-Strand Vertico Vertical Lifelines

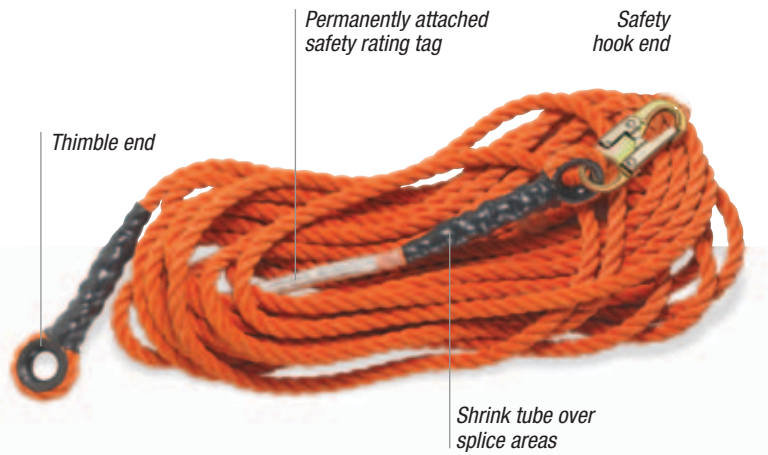
All lifelines are supplied with a permanently attached safety rating tag, and shrink tube over splice areas. All plain ends are heat sealed and protected with shrink tube.

Lifelines are 5/8" in diameter and come in 25' to 750' lengths, (50' increments from 100' on).

Terminations are available in the following configurations:

- > **Thimble one end**
- > **Safety hook one end**
- > **Thimble both ends**
- > **Safety hook one end, thimble other**
- > **Safety hook both ends**

PTS-3 Nylon and Vertico are available in prespliced fabricated lifelines or in unspliced bulk lengths of 600', 1,200', and 2,400'. Bulk rope is supplied with no splices, no tags, and no hardware.



PTS-3 Nylon FIRM LAY LIFELINE

PRODUCT CODE: 660

Conforms to ANSI Z-359.1-2007 and meets California OSHA and federal OSHA requirements

Features

- > Premium heat-set nylon
- > High visibility orange Samthane coating
- > Abrasion and snag resistant
- > Extended wear resistance
- > Firm yet flexible
- > Excellent shock mitigation



Diameter INCHES	Min. Break Strength POUNDS
5/8"	10,800 lb

Specific Gravity: 1.14

Elastic Elongation Percentage:
At % of break strength
10% 8.3%
20% 12.1%
30% 17.0%

Rope stabilized from 200D? Ropes cycled 50 times at each percent of average break strength.

Splice/Class:
3-Strand Class I

3-Strand Vertico FIRM LAY LIFELINE

PRODUCT CODE: 230

Conforms to ANSI Z-359.1-1992 and meets California OSHA and federal OSHA requirements

Features

- > High strength continuous filament polyester surface yarns wrapped over high tenacity Ultra Blue fiber
- > Excellent wear
- > High strength-to-weight ratio



Diameter INCHES	Min. Break Strength POUNDS
5/8"	9,400 lb

Specific Gravity: 1.18

Elastic Elongation Percentage:
At % of break strength
10% 1.6%
20% 3.5%
30% 4.7%

Rope stabilized from 200D? Ropes cycled 50 times at each percent of average break strength.

Splice/Class:
3-Strand Class I

Whoopie Slings

PRODUCT CODE: 689

FEATURES

- > A permanent eye splice at one end and an adjustable eye at the other
- > Adapts to varying loads
- > Snug lifting control
- > Minimizes the number of fixed length slings required
- > Three sizes to choose from
- > Permanently tagged with capacity

Adjustable, load-rated two-eye lifting slings. The sling has a permanent eye splice at one end, and an adjustable eye at the other that allows it to adapt to loads of various sizes. The adjustment allows snug lifting control and minimizes the number of fixed length slings required. Each sling is permanently tagged with its capacity, polybagged and shipped in a carton.



Adjustable lifting slings allow snug lifting control and minimize the number of fixed lengths slings required.

Size Diameter INCHES	Color	Unit Weight POUNDS	Adjustment Length FEET	Permanent Eye Size INCHES	Single Leg POUNDS	Choker POUNDS	Basket POUNDS
1/2 in	Blue	1.2 lb	2.5–4 ft	5 in	2,200 lb	1,760 lb	4,400 lb
5/8 in	Red	1.7 lb	3–5 ft	6 in	3,200 lb	2,560 lb	6,400 lb
3/4 in	Orange	2.8 lb	3.5–6 ft	7 in	4,200 lb	3,380 lb	8,400 lb

*Rated capacities are for slings in vertical lift use and spliced in accordance with Samson factory procedure

Rated Capacities*

1/2" (12 mm) diameter
2.5–4 ft. length, 5" permanent eye



5/8" (16 mm) diameter
3–5 ft. length, 6" permanent eye



3/4" (18 mm) diameter
3.5–6 ft. length, 7" permanent eye



TABLE 1. SLING ANGLE AND LOAD ANGLE FACTOR.

Sling Angle (from vertical)	0°	15°	30°	45°	60°	75°
Load Angle Factor	1.00	.966	.866	.707	.50	.259

For angles other than vertical, multiply by the "Load Angle Factor" in the table shown to obtain the reduced rating based on the calculated sling lift angle.



TreeRig Slings

TENEX-TEC PRODUCT CODE: 825
STABLE BRAID PRODUCT CODE: 691

FEATURES

- > Fabricated with Samson Stable Braid and Tenex-TEC
- > Eye splice on one end
- > Commonly used to lash a block in place to establish a false crotch

Also known as a "Dead Eye," Samson TreeRig Slings are fabricated from Samthane coated Stable Braid and Tenex-TEC with an eye on one end. These slings are commonly used to lash a block in place to establish a false crotch. Tie block with a girth hitch for best results.



TENEX-TEC TREERIG 8" EYE-SPLICE

PRODUCT CODE: 825

Size DIAMETER	COLOR	Length FEET
1/2"	Blue	10', 12', 15'
5/8"	Red	6', 8', 10', 12', 16', 20'
3/4"	Orange	8', 12', 15', 18', 20'
7/8"	Green	10', 14', 20'
1"	Yellow	12', 16', 20'

STABLE BRAID TREERIG 6" EYE-SPLICE

PRODUCT CODE: 691

Size DIAMETER	COLOR	Length FEET
9/16"	Yellow	6', 8', 10', 14', 20'
5/8"	Red	6', 8', 10', 14', 20'
3/4"	Orange	8', 10', 14', 20'
7/8"	Green	10', 14', 20'

Tenex-TEC Rope Tools

MAKE YOUR OWN ROPE TOOLS USING TENEX-TEC:

Professional arborists have found Tenex-TEC to be the perfect product for producing endless loop slings, spider leg balancers, loopies, and eye-and-eye tails.

USAGE GUIDELINES FOR SLINGS:

Slings are specialized rope configurations designed to assist lifting operations. While the type and configuration of slings varies widely, some basic loading information applies to all types.

When using a sling in a vertical lift situation, there is no strength reduction in the rating of the sling. However, as soon as a lift angle is introduced, there is a significant impact to the sling's strength rating and that impact increases with the size of the angle. When using slings always consider the lift angle and use the following chart to obtain the corresponding strength rating reduction for your lifting operation.

TABLE 2. SLING ANGLE AND LOAD ANGLE FACTOR.

Sling Angle (from vertical)	0°	15°	30°	45°	60°	75°
Load Angle Factor	1.00	.966	.866	.707	.50	.259

For angles other than vertical, multiply by the "Load Angle Factor" in the table shown to obtain the reduced rating based on the calculated sling lift angle.

Prespliced Winch Lines

Winch lines can be prespliced with one or two eyes in the listed products, lengths, and sizes.

Winch Lines	Lengths FEET	Diameters INCHES
AMSTEEL®	50'-175'	3/8" - 1-1/8"
AMSTEEL®-BLUE	50'-175'	3/8" - 1-1/8"
AMSTEEL® II PLUS (Coated and Uncoated)	50'-175'	1/2" - 1-1/4"
AMSTEEL® II (Coated and Uncoated)	50'-175'	1/2" - 1-1/4"
STABLE BRAID (Coated and Uncoated)	50'-175'	1/2" - 1-1/4"



Technical Tips

Winding on a Winch

LEVEL WINDING: Using the appropriate amount of tension, wind the rope evenly, without spaces across the drum of the winch.

The next level should wind over the previous layer of rope and follow the valley between turns on the previous level. This pattern is followed for all layers of rope, with each layer of turns slightly offset from the layer below.



LEVEL WINDING



CROSS WINDING First Cross



CROSS WINDING Second Cross



CROSS WINDING Level Layer

CROSS WINDING: When the rope is placed under load it can dive, or push into, the previously wrapped level below it. To avoid diving, cross winding is recommended.

When cross winding, start with two layers of level wound rope using the appropriate back tension. At the end of the second layer, pull the rope quickly across the drum, allow it to wind one full turn at the side of the drum, then quickly pull it back to the opposite side of the drum. This will force the rope to cross in the middle, and form a barrier that will prevent the rope from diving into the lower layers of the drum when placed under load. Follow the cross wound layer with two layers of level wound turns, then form another cross. Repeat this pattern until the length of rope is fully spooled onto the winch.

Winding Rope on the Winch Drum

The first layer (wrap) around the winch drum should be put on closely and tightly. The initial winding tension (load) should be approximately 50 pounds. This will prevent subsequent wraps from slipping down between turns when tension is applied. Samson winch lines tend to self-level. Important: Samson recommends at least four wraps* always be left on winch drum.

***IMPORTANT NOTE:** Due to their low coefficient of friction and high strength, AmSteel® and AmSteel®-Blue lines must be worked with at least eight wraps on the drum at all times.

Nylite Connector Assembly

PRODUCT CODE: 964

SPOOLS, SHIELDS, AND SHACKLE ASSEMBLY

Easily installed into or removed from a premade soft eye. Nylite spool is only 1/7th the weight of steel. Connectors will not deform or rupture from repeated loadings. The shackle takes advantage of the high-strength Nylite connector and synthetic rope.

WORKING DETAILS

- > Working loads listed are in tons (2,000 lb).
- > Working loads, as given, are based on pin-bore relationship provided by use of the Nylite Shackle. When using a nonstandard pin, the working load as given DOES NOT APPLY.
- > The HP aluminum spool is available for use with high-performance Class II ropes in sizes -1 through -5.
- > Aluminum spools are not recommended for continuous use in submerged marine environments.
- > All working load values are based on a 4:1 safety factor.
- > Assembly ratings are based on the use of designated spools and shackles. Spools used in conjunction with other hardware are not rated by Samson.



The working load limit (WLL) is stamped on each shackle.



NYLITE SHIELDS Product Code: 969
Nylite shields are designed for use with specific rope, spool, and shackle sizes. See the chart at right for information.



SHACKLES
Product Code: 961

-1 and -2 shackles are Electrolytic Zinc coated per ASTM B633-07 SC2 Type III.
Sizes -3 through -9 shackles are hot-dip galvanized per ASTM A123.

Assembly rating is based on use of designated spool and shackle. Spools used in conjunction with other hardware are not rated by Samson.

NYLITE SPOOLS

Nylite spools are available in standard and high-performance (HP) options. Standard spools are lighter than steel and recommended for use with Class I ropes. HP aluminum spools allow size-for-size use with Class II high-performance ropes.

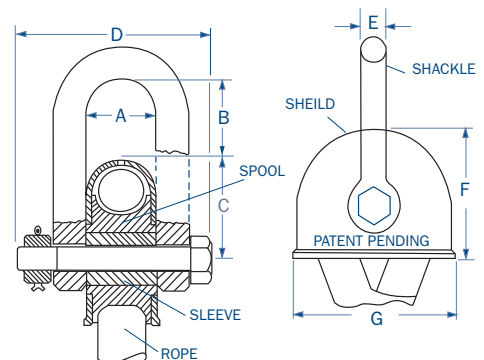


HP Aluminum Spool
(available in sizes -1 to -5)

Nylite Spool
(available in sizes -1 to -9)

Size	Spool Inside Dia.	Spool Outside Dia.	Pin Diameter*	A	B	C	D	E	F	G
-1	0.46 in.	1.50 in.	0.44 in.	0.88 in.	1.08 in.	1.11 in.	2.41 in.	0.38 in.	1.99 in.	2.34 in.
-2	0.58 in.	1.75 in.	0.56 in.	1.13 in.	1.21 in.	1.38 in.	3.11 in.	0.50 in.	2.38 in.	2.88 in.
-3	0.64 in.	2.25 in.	0.63 in.	1.38 in.	1.61 in.	1.77 in.	3.54 in.	0.56 in.	3.02 in.	3.70 in.
-4	0.89 in.	3.00 in.	0.88 in.	1.75 in.	1.90 in.	2.29 in.	4.70 in.	0.75 in.	3.79 in.	4.71 in.
-5	1.02 in.	3.75 in.	1.00 in.	2.13 in.	2.15 in.	2.85 in.	5.55 in.	0.88 in.	4.85 in.	5.95 in.
-6	1.54 in.	5.00 in.	1.50 in.	2.63 in.	3.14 in.	3.80 in.	7.75 in.	1.37 in.	6.30 in.	7.85 in.
-7	1.75 in.	6.25 in.	1.63 in.	3.25 in.	3.75 in.	4.80 in.	8.90 in.	1.50 in.	7.93 in.	9.89 in.
-8	2.00 in.	7.25 in.	1.75 in.	3.75 in.	4.13 in.	5.61 in.	10.13 in.	1.75 in.	9.24 in.	11.47 in.
-9	2.25 in.	9.00 in.	2.00 in.	4.63 in.	5.06 in.	6.95 in.	12.15 in.	2.00 in.	11.45 in.	14.28 in.

*Sizes -1 to -5 are supplied with jam nuts and cotter pins. Larger sizes have cotter pins and standard nuts.



CLASS I ASSEMBLY Nylite Assembly with Nylon Spool

Shackle Type	Size	Shield Color	Fits Rope Diameter		Fits Rope Circumference		Samson Minimum Eye Size INCHES	Product Code	Assembly Working Load TONS	Weight Each POUNDS	Fits Rope Diameter		Fits Rope Circumference		Samson Minimum Eye Size MM	Assembly Working Load TONS	Weight Each KG
			MIN.	MAX.	MIN.	MAX.					MIN.	MAX.	MIN.	MAX.			
Zinc Plated	-1	Blue	3/8"	1/2"	1-1/8"	1-1/2"	2-3/16"	964-0320	1.1 tons	0.50 lb	9 mm	12 mm	27 mm	36 mm	56.6 mm	1.1 tons	0.23 kg
Zinc Plated	-2	Red	9/16"	5/8"	1-3/4"	2"	2-3/4"	964-0400	1.6 tons	1.0 lb	14 mm	16 mm	42 mm	48 mm	68.0 mm	1.6 tons	0.45 kg
Galvanized	-3	Green	3/4"	13/16"	2-1/4"	2-1/2"	3-3/4"	964-0520	2.5 tons	1.6 lb	18 mm	20 mm	54 mm	60 mm	92.0 mm	2.5 tons	0.73 kg
Galvanized	-4	Orange	7/8"	1-1/16"	2-3/4"	3-1/4"	4-7/8"	964-0680	4.5 tons	3.8 lb	22 mm	26 mm	66 mm	78 mm	124 mm	4.5 tons	1.7 kg
Galvanized	-5	Black	1-1/8"	1-5/16"	3-1/2"	4"	6-1/8"	964-0840	7.5 tons	6.2 lb	28 mm	32 mm	84 mm	96 mm	156 mm	7.5 tons	2.8 kg
Galvanized	-6	Yellow	1-1/2"	1-3/4"	4-1/2"	5-1/2"	7-5/8"	964-1120	12.5 tons	19.0 lb	36 mm	44 mm	108 mm	132 mm	194 mm	12.5 tons	8.6 kg
Galvanized	-7	Black	2"	2-1/4"	6"	7"	9-3/4"	964-1440	20.0 tons	24.0 lb	48 mm	56 mm	144 mm	168 mm	248 mm	20.0 tons	10.9 kg
Galvanized	-8	Black	2-1/2"	2-5/8"	7-1/2"	8"	11-1/4"	964-1680	25.0 tons	38.0 lb	60 mm	64 mm	180 mm	192 mm	286 mm	25.0 tons	17.2 kg
Galvanized	-9	Black	2-3/4"	3 1/4"	8-1/2"	10"	14"	964-2080	35.0 tons	64.0 lb	68 mm	80 mm	204 mm	240 mm	356 mm	35.0 tons	29.0 kg

-1 and -2 shackles are Electrolytic Zinc coated per ASTM B633-07 SC2 Type III. Sizes -3 through -9 shackles are hot-dip galvanized per ASTM A123.

CLASS II ASSEMBLY Nylite Assembly with HP Aluminum Spool

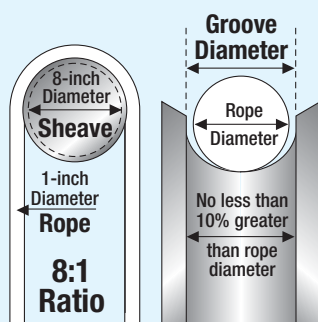
Shackle Type	Size	Shield Color	Fits Rope Diameter		Fits Rope Circumference		Samson Minimum Eye Size INCHES	Product Code	Assembly Working Load TONS	Weight Each POUNDS	Fits Rope Diameter		Fits Rope Circumference		Samson Minimum Eye Size MM	Assembly Working Load TONS	Weight Each KG
			MIN.	MAX.	MIN.	MAX.					MIN.	MAX.	MIN.	MAX.			
Zinc Plated	-1	Blue	3/8"	1/2"	1-1/8"	1-1/2"	2-3/16"	964-0321	2.7 tons	0.53 lb	9 mm	12 mm	27 mm	36 mm	56.6 mm	2.7 tons	1.2 kg
Zinc Plated	-2	Red	9/16"	5/8"	1-3/4"	2"	2-3/4"	964-0401	4.8 tons	1.1 lb	14 mm	16 mm	42 mm	48 mm	68.0 mm	4.8 tons	2.3 kg
Galvanized	-3	Green	3/4"	13/16"	2-1/4"	2-1/2"	3-3/4"	964-0521	5.8 tons	1.8 lb	18 mm	20 mm	54 mm	60 mm	92.0 mm	5.8 tons	3.9 kg
Galvanized	-4	Orange	7/8"	1-1/16"	2-3/4"	3-1/4"	4-7/8"	964-0681	11.5 tons	4.1 lb	22 mm	26 mm	66 mm	78 mm	124 mm	11.5 tons	9.1 kg
Galvanized	-5	Black	1-1/8"	1-5/16"	3-1/2"	4"	6-1/8"	964-0841	14.0 tons	6.8 lb	28 mm	32 mm	84 mm	96 mm	156 mm	14.0 tons	14.9 kg

-1 and -2 shackles are Electrolytic Zinc coated per ASTM B633-07 SC2 Type III. Sizes -3 through -5 shackles are hot-dip galvanized per ASTM A123.

Technical Tips

Boom-Sheave Recommendations

To assure maximum efficiency and safety, the boom-sheave diameter should be no less than eight times the rope's diameter. The sheave's groove diameter should be no less than 10% greater than the rope diameter, and the groove should be round in shape, not "V" shaped.



TWISTED / PLAITED:
10 times rope diameter

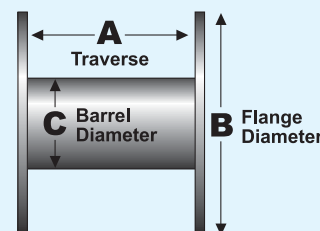
BRAIDED:
8 times rope diameter

Rope Capacity of a Winch Drum

The formula for determining the length of rope that will fit on a winch drum is

$$\text{Length to be stored (feet)} = \frac{A(B^2 - C^2)}{15.3 (\text{rope dia.})^2}$$

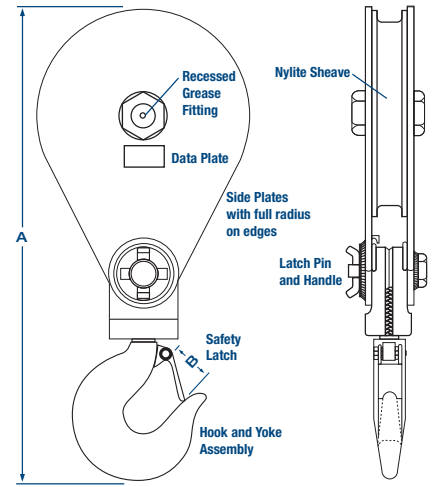
(Where A, B, C, and rope diameter are expressed in inches and length (L) is expressed in feet.)



Snatch Block

PRODUCT CODE: 915

- > Maximizes a two-part lifting system
- > Doesn't over-stress synthetic rope
- > Exclusive high-strength sheave reduces weight while providing proper radius and groove shape to eliminate rope wear
- > Swivel plate with locking bolt for easy and fast changeover
- > Hook swivels under no- or low-load conditions
- > Hook opening with latch (B) is 1.5"
- > Overall length (A) 23.0"

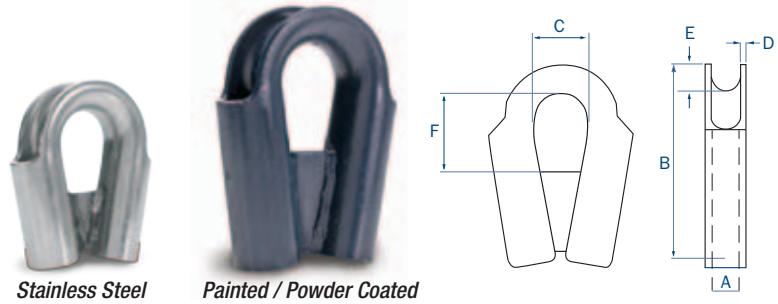


Size INCHES	Working LOAD	Weight (LBS. EACH)
7/8"-1-1/8"	8 ton	33 lb

Blue Line Thimble

PRODUCT CODE: 930

The Blue Line Thimble is compatible with Samson's high-performance, high-modulus synthetic fiber rope products such as AmSteel®Blue, Force-8, and DPX™-75. The tubular gusseted design creates a high-strength thimble that protects the rope and maintains the proper bending radius when connected to mating hardware.



Stainless Steel

Painted / Powder Coated

Size Range Diameter INCHES	Size Range Circumference INCHES	Thimble Weight POUNDS	A INCHES	B INCHES	C INCHES	D INCHES	E INCHES	F INCHES	Size Range Diameter MILLIMETERS	Size Range Circumference MILLIMETERS	Thimble Weight KILOGRAMS	A mm	B mm	C mm	D mm	E mm	F mm
3/8 - 7/16 in.	1-1/8 - 1-1/4 in.	0.8 lb	0.8 in.	0.5 in.	3.3 in.	0.9 in.	0.2 in.	0.3 in.	9 - 11 mm	27 - 33 mm	0.4 kg	12 mm	84 mm	23 mm	4.0 mm	8 mm	24 mm
1/2* in.	1-1/2 in.	1.1 lb	0.6 in.	3.7 in.	1.1 in.	0.2 in.	0.4 in.	1.2 in.	12 mm	36 mm	0.5 kg	15 mm	95 mm	27 mm	5.0 mm	10 mm	31 mm
9/16 in.	1-3/4 in.	1.2 lb	0.7 in.	3.9 in.	1.1 in.	0.2 in.	0.4 in.	1.5 in.	14 mm	42 mm	0.6 kg	17 mm	100 mm	27 mm	5.0 mm	10 mm	38 mm
5/8* in.	2 in.	1.4 lb	0.8 in.	4.4 in.	1.3 in.	0.2 in.	0.5 in.	1.8 in.	16 mm	48 mm	0.7 kg	19 mm	112 mm	32 mm	5.0 mm	12 mm	46 mm
3/4 in.	2-1/4 in.	2.0 lb	0.9 in.	4.9 in.	1.4 in.	0.2 in.	0.6 in.	1.9 in.	18 mm	54 mm	0.9 kg	22 mm	125 mm	35 mm	5.0 mm	15 mm	47 mm
13/16 - 7/8* in.	2-1/2 - 2-3/4 in.	2.8 lb	1.0 in.	5.9 in.	1.8 in.	0.3 in.	0.6 in.	2.4 in.	20 - 22 mm	60 - 66 mm	1.3 kg	25 mm	150 mm	45 mm	6.3 mm	16 mm	61 mm
1* in.	3 in.	3.6 lb	1.1 in.	6.2 in.	1.8 in.	0.3 in.	0.6 in.	2.2 in.	24 mm	72 mm	1.6 kg	28 mm	157 mm	45 mm	7.0 mm	16 mm	56 mm
1-1/16* in.	3-1/4 in.	4.5 lb	1.2 in.	6.7 in.	1.9 in.	0.3 in.	0.7 in.	2.7 in.	26 mm	78 mm	2.0 kg	30 mm	170 mm	47 mm	7.0 mm	18 mm	68 mm
1-1/8 - 1-5/16 in.	3-1/2 - 4 in.	5.8 lb	1.4 in.	7.5 in.	2.4 in.	0.3 in.	0.9 in.	2.9 in.	28 - 32 mm	84 - 96 mm	2.6 kg	35 mm	190 mm	60 mm	7.0 mm	22 mm	73 mm
1-3/8 - 1-1/2* in.	4-1/8 - 4-1/2 in.	7.5 lb	1.8 in.	9.0 in.	2.8 in.	0.3 in.	1.1 in.	3.7 in.	34 - 36 mm	102 - 108 mm	3.4 kg	45 mm	228 mm	70 mm	7.0 mm	27 mm	94 mm
1-5/8 - 1-11/16 in.	5 - 5-1/4 in.	10.3 lb	2.0 in.	10.0 in.	3.0 in.	0.3 in.	1.2 in.	3.8 in.	40 - 42 mm	120 - 126 mm	4.7 kg	50 mm	255 mm	75 mm	7.0 mm	31 mm	97 mm
1-3/4 - 2* in.	5-1/2 - 6 in.	10.8 lb	2.2 in.	10.6 in.	3.2 in.	0.3 in.	1.4 in.	3.9 in.	44 - 48 mm	132 - 144 mm	4.9 kg	55 mm	268 mm	80 mm	7.5 mm	35 mm	99 mm

*These sizes also available in stainless steel

Bronze Thimble

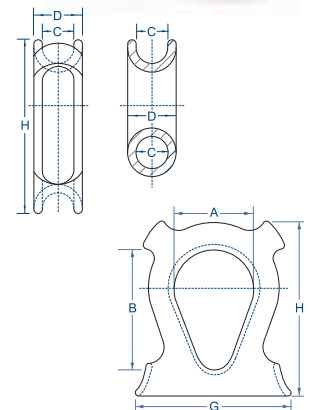
PRODUCT CODE: 920

Bronze Rope Thimbles are made from a high strength, noncorrosive, nonsparking nickle-aluminum bronze alloy. This rope thimble was developed primarily for use with nylon, manila, polypropylene, and polyvinyl chloride ropes. Four rings or "keepers" secure the rope from jumping out of the thimble. Seventeen sizes are available in rope-diameter sizes from 3/8" to 4-3/4".



Rope Diameter INCHES	Rope Circumference INCHES	A	B	C	D	G	H	T	Shackle Size INCHES	Estimated Weight POUNDS
3/8 - 7/16 in.	1-1/8 - 1-1/4 in.	3/8 in.	7/8 in.	9/16 in.	9/16 in.	3/4 in.	2-1/16 in.	2-7/16 in.	0.2 lb	0.09 kg
1/2 - 9/16 in.	1-1/2 - 1-3/4 in.	3/8 in.	1 in.	11/16 in.	11/16 in.	29/32 in.	2-3/8 in.	2-13/16 in.	0.4 lb	0.18 kg
5/8 in.	2 - 2-1/4 in.	1/2 in.	1-1/8 in.	7/8 in.	7/8 in.	1-1/8 in.	3-1/8 in.	3-1/2 in.	0.6 lb	0.27 kg
13/16 - 15/16 in.	2-1/2 - 2-3/4 in.	5/8 in.	1-1/4 in.	1-1/16 in.	1-1/16 in.	1-3/8 in.	3-3/4 in.	4-3/16 in.	0.9 lb	0.41 kg
1 in.	3 in.	3/4 in.	1-5/8 in.	1-3/16 in.	1-3/16 in.	1-9/16 in.	4-1/4 in.	4-11/16 in.	1.6 lb	0.73 kg
1-1/8 - 1-1/4 in.	3-1/2 - 3-3/4 in.	7/8 in.	1-7/8 in.	1-7/16 in.	1-7/16 in.	1-27/32 in.	5-1/16 in.	5-3/16 in.	2.1 lb	1 kg
1-5/16 in.	4 in.	7/8 in.	2-1/8 in.	1-1/2 in.	1-1/2 in.	1-15/16 in.	5-1/2 in.	5-13/16 in.	2.6 lb	1.2 kg
1-1/2 in.	4-1/2 in.	1 in.	2-3/8 in.	1-11/16 in.	1-11/16 in.	2-5/32 in.	6-1/4 in.	6-1/2 in.	3.7 lb	1.7 kg
1-5/8 in.	5 in.	1-1/8 in.	2-5/8 in.	1-13/16 in.	1-13/16 in.	2-5/16 in.	6-3/4 in.	7-1/16 in.	4.8 lb	2.2 kg
1-3/4 in.	5-1/2 in.	1-1/4 in.	2-7/8 in.	2 in.	2 in.	2-17/32 in.	7-3/8 in.	7-3/4 in.	6.8 lb	3.1 kg
2 in.	6 in.	1-1/4 in.	3-1/8 in.	2-1/4 in.	2-1/4 in.	2-13/16 in.	8-3/8 in.	8-5/8 in.	7.7 lb	3.5 kg
2-1/8 in.	6-1/2 in.	1-3/8 in.	3-1/2 in.	2-3/8 in.	2-3/8 in.	2-31/32 in.	9 in.	9-1/8 in.	9.5 lb	4.3 kg
2-1/4 in.	7 in.	1-1/2 in.	3-7/8 in.	2-1/2 in.	2-1/2 in.	3-1/8 in.	9-3/8 in.	9-5/8 in.	11 lb	5 kg
2-5/8 in.	8 in.	1-5/8 in.	4-3/8 in.	2-7/8 in.	2-7/8 in.	3-5/8 in.	10-5/8 in.	10-3/4 in.	16.5 lb	7.5 kg
2-3/4 - 2-7/8 in.	9 in.	2 in.	4-7/8 in.	3-1/4 in.	3-1/4 in.	4-1/8 in.	11-3/4 in.	12-1/8 in.	25 lb	11.3 kg
3 - 3-1/4 in.	10 in.	2 in.	5-3/8 in.	3-1/2 in.	3-1/2 in.	4-1/2 in.	13-1/8 in.	13-7/8 in.	38 lb	17.2 kg
3-3/4 in.	12 in.	— in.	8 in.	4 in.	4 in.	5-3/8 in.	14-5/8 in.	15-1/2 in.	60 lb	27.2 kg
4-3/4 in.	15 - 16 in.	— in.	9 in.	6-3/8 in.	6-3/8 in.	8-3/8 in.	22-7/8 in.	21-1/2 in.	225 lb	102 kg

Dimensions are approximate — within standard foundry practice.



What is a Fid Length?

The "fid length" of a rope is calculated as 21 times the rope diameter. For example, the fid length for a 4" diameter rope is 84". However, the length of a fid may or may not have a 1:1 correlation with the fid length for a given rope diameter. To keep fids to a manageable length, they may be scaled to the actual fid length of a given rope diameter. Our tubular fids are scaled 100%, meaning that the overall length of the tool is equal to the actual fid length for the corresponding rope diameter. Our wire fids are half the scale, meaning that the length of the tool is half the actual fid length for the corresponding rope diameter.

The "short section" length is calculated as a percentage of the fid length. For sizes 1/4" to 1/2", the short section is 37.5% of the fid length. For 9/16" to 3/4", the short section is 25% of the fid length.

Tubular Fid

A different sized splicing fid is required for each size rope. When ordering be sure to specify the proper size fid (see chart).

Product Code	Dimensions Fid Size/Rope Dia.	Total Fid Length	Short Fid Section Length	Pusher	Product Code
901	1/4 in.	5-1/2 in.	2-1/16 in.	Small	913
901	5/16 in.	6-3/4 in.	2-1/2 in.	Small	913
901	3/8 in.	7-3/4 in.	2-7/8 in.	Small	913
901	7/16 in.	9-1/2 in.	3-9/16 in.	Small	913
901	1/2 in.	11 in.	4-1/8 in.	Small	913
901	9/16 in.	12-1/4 in.	3-5/8 in.	Large	914
901	5/8 in.	14 in.	4-1/8 in.	Large	914
901	3/4 in.	16 in.	4-3/4 in.	Large	914
901	7/8 in.	19 in.	4-3/4 in.	Large	914
901	1 in.	21 in.	5-1/4 in.	Large	914



Wire Fid

Product Code	Fid Size/Rope Dia.	Total Fid Length	Short Fid Section Length
905	1-1/8 in.	12-1/4 in.	3 in.
905	1-1/4 in.	13-1/4 in.	3-1/4 in.
905	1-5/16 in.	14 in.	3-1/2 in.
905	1-1/2 in.	16 in.	4 in.
905	1-5/8 in.	17-1/2 in.	4-1/2 in.
905	1-3/4 in.	19 in.	4-3/4 in.
905	2 in.	21 in.	5-1/4 in.
905	2-1/8 in.	23 in.	5-3/4 in.
905	2-1/4 in.	25 in.	6 in.
905	2-1/2 in.	26 in.	6-1/2 in.
905	2-5/8 in.	28 in.	7 in.
905	2-3/4 in.	30 in.	7-1/2 in.
905	3 in.	32 in.	8 in.
905	3-1/4 in.	35 in.	8-3/4 in.

*Dimensions and Lengths are to 1/2 scale



Selma Fid

- > Made from highly polished stainless steel
- > Patented worldwide
- > Available in sets only
- > Used to splice single braid lines from 1/8" to 9/16" or double braid and 3-strand rope up to 1-1/8" diameter

Product Code	Kit Size	Includes Fid #s	Rope Diameter
903	Set of 5	4, 5.5, 7.5, 10, 13	1/8"– 9/16" (single braid) up to 1-1/8" diameter (double braid or 3-strand)

Pusher

Product Code	Rope Size	Diameter
913	Small	1/4"–1/2"
914	Large	9/16"–1"

SPLICING INSTRUCTIONS

As depicted in this catalog (page 5), our rope constructions are stated as Class I and Class II ropes (see glossary of terms) and each type of rope class requires unique splicing procedures.

Splicing and Knots

Splices should be used instead of knots whenever possible because knots can decrease rope strength up to fifty percent. When splices are used, always use the manufacturer's recommended splicing procedures. When knots are used, be sure to take into consideration the knot's corresponding reduction to the rope strength and adjust your working load accordingly.

For decades, Samson has been known for supplying the most comprehensive splice instructions in the industry. Our Splicing Manual and DVDs are no exception, get your copy today.



Splicing Manual & DVDs

Call customer service +1 360.384.4669 to order your copy or available for download at SamsonRope.com.

SPLICING KITS

The Samson **Splice Training Kit** comes complete with a fid, pusher, instructions for a double braid eye splice, and two lengths of double braided ropes.



The Samson **Splicing Kit** comes with five aluminum tubular fids (size range 1/4" through 1/2" diameter).



12-Strand

CLASS II
HIGH-PERFORMANCE

Average Strength

Size Diameter INCHES	Size Diameter MILLIMETERS	Size Circ. INCHES	AmSteel®		AmSteel®-Blue		ML-12		Quantum-12		Tech-12		Validator-12	
			Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS
3/16"	5 mm	9/16"	5,400 lb	2,400 kg	5,400 lb	2,400 kg	—	—	—	—	5,600 lb	2,500 kg	5,500 lb	2,500 kg
1/4"	6 mm	3/4"	7,400 lb	3,400 kg	8,600 lb	3,900 kg	—	—	—	—	8,200 lb	3,700 kg	9,400 lb	4,300 kg
5/16"	8 mm	1"	10,500 lb	4,800 kg	13,700 lb	6,200 kg	—	—	—	—	13,000 lb	5,900 kg	14,000 lb	6,400 kg
3/8"	9 mm	1-1/8"	15,500 lb	7,000 kg	19,600 lb	8,900 kg	—	—	—	—	18,000 lb	8,200 kg	19,500 lb	8,800 kg
7/16"	11 mm	1-1/4"	18,000 lb	8,200 kg	23,900 lb	10,800 kg	11,500 lb	5,200 kg	—	—	28,000 lb	12,700 kg	23,500 lb	10,700 kg
1/2"	12 mm	1-1/2"	27,500 lb	12,500 kg	34,000 lb	15,400 kg	16,500 lb	7,500 kg	—	—	33,000 lb	15,000 kg	35,000 lb	15,900 kg
9/16"	14 mm	1-3/4"	34,000 lb	15,400 kg	40,500 lb	18,400 kg	20,000 lb	9,100 kg	—	—	—	—	43,000 lb	19,500 kg
5/8"	16 mm	2"	40,700 lb	18,500 kg	52,800 lb	24,000 kg	25,000 lb	11,300 kg	—	—	43,000 lb	19,500 kg	55,000 lb	24,900 kg
3/4"	18 mm	2-1/4"	52,000 lb	23,600 kg	64,400 lb	29,200 kg	32,000 lb	14,500 kg	45,300 lb	20,500 kg	65,000 lb	29,500 kg	—	—
13/16"	20 mm	2-1/2"	61,000 lb	27,700 kg	—	—	—	—	—	—	—	—	—	—
7/8"	22 mm	2-3/4"	74,000 lb	33,600 kg	90,800 lb	41,200 kg	—	—	62,500 lb	28,400 kg	84,000 lb	38,100 kg	—	—
1"	24 mm	3"	90,000 lb	40,800 kg	109,000 lb	49,400 kg	—	—	82,500 lb	37,400 kg	102,000 lb	46,300 kg	—	—
1-1/8"	28 mm	3-1/2"	110,000 lb	49,900 kg	148,000 lb	67,100 kg	—	—	105,000 lb	47,600 kg	—	—	—	—
1-1/4"	30 mm	3-3/4"	125,000 lb	56,700 kg	165,000 lb	75,000 kg	—	—	131,000 lb	59,400 kg	—	—	—	—
1-5/16"	32 mm	4"	135,000 lb	61,200 kg	184,000 lb	83,600 kg	—	—	146,000 lb	66,200 kg	—	—	—	—
1-1/2"	36 mm	4-1/2"	175,000 lb	79,400 kg	228,000 lb	103,000 kg	—	—	191,000 lb	86,600 kg	—	—	—	—

Weight Per 100 feet / 100 meters

Size Diameter INCHES	Size Diameter MILLIMETERS	Size Circ. INCHES	AmSteel®		AmSteel®-Blue		ML-12		Quantum-12		Tech-12		Validator-12	
			Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS
3/16"	5 mm	9/16"	1.0 lb	1.5 kg	1.0 lb	1.5 kg	—	—	—	—	1.3 lb	1.9 kg	1.3 lb	1.9 kg
1/4"	6 mm	3/4"	1.6 lb	2.4 kg	1.6 lb	2.4 kg	—	—	—	—	1.9 lb	2.8 kg	2.2 lb	3.3 kg
5/16"	8 mm	1"	2.7 lb	4.0 kg	2.7 lb	4.0 kg	—	—	—	—	3.2 lb	4.8 kg	3.6 lb	5.4 kg
3/8"	9 mm	1-1/8"	3.6 lb	5.4 kg	3.6 lb	5.4 kg	—	—	—	—	4.3 lb	6.4 kg	4.6 lb	6.8 kg
7/16"	11 mm	1-1/4"	4.2 lb	6.2 kg	4.2 lb	6.2 kg	4.2 lb	6.2 kg	—	—	6.7 lb	10.0 kg	6.1 lb	9.1 kg
1/2"	12 mm	1-1/2"	6.4 lb	9.5 kg	6.4 lb	9.5 kg	6.4 lb	9.5 kg	—	—	8.0 lb	11.9 kg	8.8 lb	13.1 kg
9/16"	14 mm	1-3/4"	7.9 lb	11.8 kg	7.9 lb	11.8 kg	7.9 lb	11.8 kg	—	—	—	—	10.8 lb	16.1 kg
5/8"	16 mm	2"	10.2 lb	15.2 kg	10.2 lb	15.2 kg	10.2 lb	15.2 kg	—	—	13.5 lb	20.1 kg	14.0 lb	20.8 kg
3/4"	18 mm	2-1/4"	13.3 lb	19.8 kg	13.3 lb	19.8 kg	13.3 lb	19.8 kg	11.8 lb	17.6 kg	19.3 lb	28.7 kg	—	—
13/16"	20 mm	2-1/2"	15.8 lb	23.5 kg	—	—	—	—	—	—	—	—	—	—
7/8"	22 mm	2-3/4"	19.6 lb	29.2 kg	19.6 lb	29.2 kg	—	—	15.2 lb	22.6 kg	25.3 lb	37.6 kg	—	—
1"	24 mm	3"	21.8 lb	32.4 kg	21.8 lb	32.4 kg	—	—	21.0 lb	31.2 kg	31.1 lb	46.3 kg	—	—
1-1/8"	28 mm	3-1/2"	31.9 lb	47.5 kg	31.9 lb	47.5 kg	—	—	25.5 lb	37.9 kg	—	—	—	—
1-1/4"	30 mm	3-3/4"	36.2 lb	53.9 kg	36.2 lb	53.9 kg	—	—	31.0 lb	46.1 kg	—	—	—	—
1-5/16"	32 mm	4"	41.8 lb	62.2 kg	41.8 lb	62.2 kg	—	—	33.0 lb	49.1 kg	—	—	—	—
1-1/2"	36 mm	4-1/2"	51.7 lb	76.9 kg	51.7 lb	76.9 kg	—	—	44.7 lb	66.5 kg	—	—	—	—

Elastic Elongation

EE at Percent Avg. Break	AmSteel®	AmSteel®-Blue	ML-12	Quantum-12	Tech-12	Validator-12
10%	0.46%	0.46%	1.30%	0.65%	0.63%	0.49%
20%	0.70%	0.70%	2.00%	0.75%	0.96%	0.78%
30%	0.96%	0.96%	2.40%	0.90%	1.20%	0.98%

12-Strand

Average Strength

Size Diameter INCHES	Size Diameter MILLIMETERS	Size Circ. INCHES	Dura-Plex		PTS-12 Nylon		Tenex		Tenex-TEC		Quik-Splice	
			Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS
3/16"	5 mm	9/16"	—	—	1,800 lb	820 kg	—	—	—	—	—	—
1/4"	6 mm	3/4"	1,800 lb	820 kg	3,000 lb	1,400 kg	3,200 lb	1,500 kg	3,200 lb	1,500 kg	1,400 lb	640 kg
5/16"	8 mm	1"	2,600 lb	1,200 kg	4,500 lb	2,000 kg	4,700 lb	2,100 kg	4,700 lb	2,100 kg	2,500 lb	1,100 kg
3/8"	9 mm	1-1/8"	3,900 lb	1,800 kg	5,500 lb	2,500 kg	5,800 lb	2,600 kg	6,100 lb	2,800 kg	3,500 lb	1,600 kg
7/16"	11 mm	1-1/4"	5,000 lb	2,300 kg	7,000 lb	3,200 kg	9,000 lb	4,100 kg	9,500 lb	4,300 kg	4,600 lb	2,100 kg
1/2"	12 mm	1-1/2"	6,700 lb	3,000 kg	10,800 lb	4,900 kg	11,800 lb	5,400 kg	13,100 lb	5,900 kg	6,700 lb	3,000 kg
9/16"	14 mm	1-3/4"	9,000 lb	4,100 kg	14,000 lb	6,400 kg	15,000 lb	6,800 kg	—	—	7,500 lb	3,400 kg
5/8"	16 mm	2"	11,600 lb	5,300 kg	16,000 lb	7,300 kg	17,100 lb	7,800 kg	18,800 lb	8,500 kg	10,900 lb	4,900 kg
3/4"	18 mm	2-1/4"	14,500 lb	6,600 kg	21,000 lb	9,500 kg	22,400 lb	10,200 kg	24,800 lb	11,200 kg	13,000 lb	5,900 kg
13/16"	20 mm	2-1/2"	—	—	—	—	—	—	—	—	—	—
7/8"	22 mm	2-3/4"	21,200 lb	9,600 kg	—	—	32,600 lb	14,800 kg	34,200 lb	15,500 kg	16,000 lb	7,300 kg
1"	24 mm	3"	25,000 lb	11,300 kg	—	—	42,700 lb	19,400 kg	44,500 lb	20,200 kg	23,100 lb	10,500 kg
1-1/8"	28 mm	3-1/2"	—	—	—	—	—	—	—	—	28,600 lb	13,000 kg
1-1/4"	30 mm	3-3/4"	—	—	—	—	57,200 lb	25,900 kg	62,000 lb	28,100 kg	31,300 lb	14,200 kg
1-5/16"	32 mm	4"	—	—	—	—	69,500 lb	31,500 kg	—	—	—	—
1-1/2"	36 mm	4-1/2"	—	—	—	—	81,700 lb	37,100 kg	—	—	43,800 lb	19,900 kg

Weight Per 100 feet / 100 meters

Size Diameter INCHES	Size Diameter MILLIMETERS	Size Circ. INCHES	Dura-Plex		PTS-12 Nylon		Tenex		Tenex-TEC		Quik-Splice	
			Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS
3/16"	5 mm	9/16"	—	—	1.2 lb	1.8 kg	—	—	—	—	—	—
1/4"	6 mm	3/4"	1.5 lb	2.2 kg	2.0 lb	3.0 kg	2.1 lb	3.1 kg	2.1 lb	3.1 kg	1.1 lb	1.6 kg
5/16"	8 mm	1"	2.2 lb	3.3 kg	3.0 lb	4.5 kg	3.2 lb	4.8 kg	3.2 lb	4.8 kg	1.7 lb	2.5 kg
3/8"	9 mm	1-1/8"	3.4 lb	5.1 kg	4.0 lb	6.0 kg	4.2 lb	6.2 kg	4.3 lb	6.4 kg	2.7 lb	4.0 kg
7/16"	11 mm	1-1/4"	4.6 lb	6.8 kg	5.6 lb	8.3 kg	6.3 lb	9.4 kg	6.5 lb	9.7 kg	3.5 lb	5.2 kg
1/2"	12 mm	1-1/2"	5.8 lb	8.6 kg	7.4 lb	11.0 kg	8.5 lb	12.6 kg	10.0 lb	14.9 kg	4.7 lb	7.0 kg
9/16"	14 mm	1-3/4"	8.3 lb	12.4 kg	10.4 lb	15.5 kg	10.0 lb	14.9 kg	—	—	6.0 lb	8.9 kg
5/8"	16 mm	2"	11.0 lb	16.4 kg	12.1 lb	18.0 kg	13.1 lb	19.5 kg	14.8 lb	22.0 kg	7.8 lb	11.6 kg
3/4"	18 mm	2-1/4"	15.0 lb	22.3 kg	16.1 lb	24.0 kg	17.2 lb	25.6 kg	19.2 lb	28.5 kg	9.7 lb	14.4 kg
13/16"	20 mm	2-1/2"	—	—	—	—	—	—	—	—	—	—
7/8"	22 mm	2-3/4"	21.5 lb	32.0 kg	—	—	25.8 lb	38.4 kg	26.7 lb	39.7 kg	15.2 lb	22.6 kg
1"	24 mm	3"	24.2 lb	36.0 kg	—	—	34.5 lb	51.3 kg	34.7 lb	51.6 kg	21.0 lb	31.2 kg
1-1/8"	28 mm	3-1/2"	—	—	—	—	—	—	—	—	24.5 lb	36.5 kg
1-1/4"	30 mm	3-3/4"	—	—	—	—	52.2 lb	77.7 kg	55.0 lb	81.8 kg	29.0 lb	43.2 kg
1-5/16"	32 mm	4"	—	—	—	—	59.7 lb	88.8 kg	—	—	—	—
1-1/2"	36 mm	4-1/2"	—	—	—	—	71.5 lb	106 kg	—	—	41.0 lb	61.0 kg

Elastic Elongation

EE at Percent Avg. Break	Dura-Plex	PTS-12 Nylon	Tenex	Tenex-TEC	Quik-Splice
10%	1.60%	4.70%	1.40%	1.40%	1.10%
20%	2.70%	6.90%	2.30%	2.30%	1.90%
30%	3.80%	7.7%	3.00%	3.00%	2.60%

Double Braid



Average Strength

Size Diameter INCHES	Size Diameter MILLIMETERS	Size Circ. INCHES	AmSteel® II		AmSteel® II Plus		Turbo-75		Ultra-Tech		Validator II	
			Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS
3/16"	5 mm	9/16"	—	—	—	—	—	—	2,300 lb	1,000 kg	3,300 lb	1,500 kg
1/4"	6 mm	3/4"	4,500 lb	2,000 kg	5,600 lb	2,500 kg	—	—	4,800 lb	2,200 kg	5,000 lb	2,300 kg
5/16"	8 mm	1"	7,500 lb	3,400 kg	9,300 lb	4,200 kg	—	—	7,800 lb	3,500 kg	7,000 lb	3,200 kg
3/8"	9 mm	1-1/8"	9,800 lb	4,400 kg	12,200 lb	5,500 kg	—	—	10,000 lb	4,500 kg	11,000 lb	5,000 kg
7/16"	11 mm	1-1/4"	11,700 lb	5,300 kg	14,600 lb	6,600 kg	—	—	14,800 lb	6,700 kg	15,200 lb	6,900 kg
1/2"	12 mm	1-1/2"	15,500 lb	7,000 kg	19,400 lb	8,800 kg	—	—	20,000 lb	9,100 kg	20,000 lb	9,100 kg
9/16"	14 mm	1-3/4"	22,000 lb	10,000 kg	27,500 lb	12,500 kg	—	—	—	—	26,000 lb	11,800 kg
5/8"	16 mm	2"	27,000 lb	12,200 kg	33,800 lb	15,300 kg	—	—	42,000 lb	19,100 kg	30,000 lb	13,600 kg
3/4"	18 mm	2-1/4"	35,000 lb	15,900 kg	43,800 lb	19,900 kg	59,000 lb	26,800 kg	51,000 lb	23,100 kg	45,000 lb	20,400 kg
13/16"	20 mm	2-1/2"	40,000 lb	18,100 kg	50,000 lb	22,700 kg	—	—	—	—	—	—
7/8"	22 mm	2-3/4"	50,000 lb	22,700 kg	62,500 lb	28,400 kg	82,000 lb	37,200 kg	68,000 lb	30,800 kg	63,000 lb	28,600 kg
1"	24 mm	3"	57,000 lb	25,900 kg	71,300 lb	32,300 kg	97,000 lb	44,000 kg	—	—	80,000 lb	36,300 kg
1-1/8"	28 mm	3-1/2"	72,900 lb	33,100 kg	90,000 lb	40,800 kg	125,000 lb	56,700 kg	—	—	100,000 lb	45,400 kg
1-1/4"	30 mm	3-3/4"	81,000 lb	36,700 kg	101,000 lb	45,800 kg	150,000 lb	68,000 kg	—	—	123,000 lb	55,800 kg
1-5/16"	32 mm	4"	—	—	—	—	165,000 lb	74,800 kg	—	—	135,000 lb	61,200 kg
1-1/2"	36 mm	4-1/2"	—	—	—	—	210,000 lb	95,300 kg	—	—	174,000 lb	78,900 kg

Weight Per 100 feet / 100 meters

Size Diameter INCHES	Size Diameter MILLIMETERS	Size Circ. INCHES	AmSteel® II		AmSteel® II Plus		Turbo-75		Ultra-Tech		Validator II	
			Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS
3/16"	5 mm	9/16"	—	—	—	—	—	—	1.0 lb	1.5 kg	1.4 lb	2.1 kg
1/4"	6 mm	3/4"	2.2 lb	3.3 kg	2.2 lb	3.3 kg	—	—	2.1 lb	3.1 kg	2.2 lb	3.3 kg
5/16"	8 mm	1"	3.5 lb	5.2 kg	3.5 lb	5.2 kg	—	—	4.0 lb	6.0 kg	3.7 lb	5.5 kg
3/8"	9 mm	1-1/8"	4.1 lb	6.1 kg	4.1 lb	6.1 kg	—	—	4.6 lb	6.8 kg	5.0 lb	7.4 kg
7/16"	11 mm	1-1/4"	6.1 lb	9.1 kg	6.1 lb	9.1 kg	—	—	6.4 lb	9.5 kg	7.0 lb	10.4 kg
1/2"	12 mm	1-1/2"	8.6 lb	12.8 kg	8.6 lb	12.8 kg	—	—	9.8 lb	14.6 kg	9.0 lb	13.4 kg
9/16"	14 mm	1-3/4"	10.0 lb	14.9 kg	10.0 lb	14.9 kg	—	—	—	—	12.0 lb	17.9 kg
5/8"	16 mm	2"	12.6 lb	18.7 kg	12.6 lb	18.7 kg	—	—	14.5 lb	21.6 kg	14.4 lb	21.4 kg
3/4"	18 mm	2-1/4"	16.0 lb	23.8 kg	16.0 lb	23.8 kg	14.0 lb	20.8 kg	19.7 lb	29.3 kg	20.3 lb	30.2 kg
13/16"	20 mm	2-1/2"	20.3 lb	30.2 kg	20.3 lb	30.2 kg	—	—	—	—	—	—
7/8"	22 mm	2-3/4"	24.8 lb	36.9 kg	24.8 lb	36.9 kg	19.0 lb	28.3 kg	27.5 lb	40.9 kg	27.0 lb	40.2 kg
1"	24 mm	3"	29.7 lb	44.2 kg	29.7 lb	44.2 kg	25.0 lb	37.2 kg	—	—	35.0 lb	52.1 kg
1-1/8"	28 mm	3-1/2"	37.0 lb	55.1 kg	37.0 lb	55.1 kg	29.5 lb	43.9 kg	—	—	44.0 lb	65.5 kg
1-1/4"	30 mm	3-3/4"	42.6 lb	63.4 kg	42.6 lb	63.4 kg	38.5 lb	57.3 kg	—	—	52.0 lb	77.4 kg
1-5/16"	32 mm	4"	—	—	—	—	43.0 lb	64.0 kg	—	—	58.0 lb	86.3 kg
1-1/2"	36 mm	4-1/2"	—	—	—	—	59.5 lb	88.5 kg	—	—	74.5 lb	111 kg

Elastic Elongation

EE at Percent Avg. Break	AmSteel® II	AmSteel® II Plus	Turbo-75	Ultra-Tech	Validator II
10%	0.50%	0.50%	0.30%	0.63%	0.59%
20%	0.67%	0.67%	0.50%	0.97%	0.78%
30%	0.96%	0.96%	0.80%	1.24%	0.98%

Double Braid

Average Strength

Size Diameter INCHES	Size Diameter MILLIMETERS	Size Circ. INCHES	Nystron		Stable Braid		Super Strong	
			Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS
3/16"	5 mm	9/16"	—	—	—	—	—	—
1/4"	6 mm	3/4"	—	—	2,300 lb	1,000 kg	2,300 lb	1,000 kg
5/16"	8 mm	1"	—	—	3,600 lb	1,600 kg	3,400 lb	1,500 kg
3/8"	9 mm	1-1/8"	5,600 lb	2,500 kg	5,600 lb	2,500 kg	4,900 lb	2,200 kg
7/16"	11 mm	1-1/4"	7,400 lb	3,400 kg	7,700 lb	3,500 kg	6,600 lb	3,000 kg
1/2"	12 mm	1-1/2"	10,500 lb	4,800 kg	10,400 lb	4,700 kg	8,600 lb	3,900 kg
9/16"	14 mm	1-3/4"	13,200 lb	6,000 kg	13,300 lb	6,000 kg	11,900 lb	5,400 kg
5/8"	16 mm	2"	16,300 lb	7,400 kg	16,300 lb	7,400 kg	15,200 lb	6,900 kg
3/4"	18 mm	2-1/4"	23,000 lb	10,400 kg	20,400 lb	9,300 kg	18,800 lb	8,500 kg
13/16"	20 mm	2-1/2"	—	—	—	—	—	—
7/8"	22 mm	2-3/4"	27,000 lb	12,200 kg	29,900 lb	13,600 kg	29,000 lb	13,200 kg
1"	24 mm	3"	37,000 lb	16,800 kg	39,200 lb	17,800 kg	36,000 lb	16,300 kg
1-1/8"	28 mm	3-1/2"	49,800 lb	22,600 kg	48,200 lb	21,900 kg	45,000 lb	20,400 kg
1-1/4"	30 mm	3-3/4"	59,100 lb	26,800 kg	57,300 lb	26,000 kg	52,000 lb	23,600 kg
1-5/16"	32 mm	4"	—	—	64,700 lb	29,300 kg	59,300 lb	26,900 kg
1-1/2"	36 mm	4-1/2"	86,500 lb	39,200 kg	75,100 lb	34,100 kg	75,600 lb	34,300 kg

Weight Per 100 feet / 100 meters

Size Diameter INCHES	Size Diameter MILLIMETERS	Size Circ. INCHES	Nystron		Stable Braid		Super Strong	
			Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS
3/16"	5 mm	9/16"	—	—	—	—	—	—
1/4"	6 mm	3/4"	—	—	2.1 lb	3.1 kg	1.6 lb	2.4 kg
5/16"	8 mm	1"	—	—	3.2 lb	4.8 kg	2.6 lb	3.9 kg
3/8"	9 mm	1-1/8"	4.4 lb	6.5 kg	4.5 lb	6.7 kg	3.7 lb	5.5 kg
7/16"	11 mm	1-1/4"	5.7 lb	8.5 kg	6.1 lb	9.1 kg	5.1 lb	7.6 kg
1/2"	12 mm	1-1/2"	7.7 lb	11.5 kg	8.2 lb	12.2 kg	6.6 lb	9.8 kg
9/16"	14 mm	1-3/4"	10.0 lb	14.9 kg	11.0 lb	16.4 kg	9.3 lb	13.8 kg
5/8"	16 mm	2"	12.6 lb	18.7 kg	14.0 lb	20.8 kg	12.0 lb	17.9 kg
3/4"	18 mm	2-1/4"	17.3 lb	25.7 kg	18.0 lb	26.8 kg	15.0 lb	22.3 kg
13/16"	20 mm	2-1/2"	—	—	—	—	—	—
7/8"	22 mm	2-3/4"	19.0 lb	28.3 kg	27.1 lb	40.3 kg	22.0 lb	32.7 kg
1"	24 mm	3"	34.0 lb	50.6 kg	34.0 lb	50.6 kg	26.0 lb	38.7 kg
1-1/8"	28 mm	3-1/2"	39.2 lb	58.3 kg	45.3 lb	67.4 kg	36.0 lb	53.6 kg
1-1/4"	30 mm	3-3/4"	46.9 lb	69.8 kg	53.9 lb	80.2 kg	41.0 lb	61.0 kg
1-5/16"	32 mm	4"	—	—	60.8 lb	90.5 kg	43.5 lb	64.7 kg
1-1/2"	36 mm	4-1/2"	71.2 lb	106 kg	73.3 lb	109 kg	60.0 lb	89.3 kg

Elastic Elongation

EE at Percent Avg. Breakt	Nystron	Stable Braid	Super Strong
10%	2.40%	1.10%	3.00%
20%	4.50%	1.70%	5.30%
30%	5.90%	2.70%	6.70%

3-Strand

Average Strength

Size Diameter INCHES	Size Diameter MILLIMETERS	Size Circ. INCHES	Pro-Master		Pro-Set-3		SSR-100-3		SSR-1200-3		Ultra-Blue-3	
			Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS	Samson Avg. Strength POUNDS	Samson Avg. Strength KILOGRAMS
3/16"	5 mm	9/16"	—	—	1,200 lb	540 kg	1,000 lb	450 kg	—	—	—	—
1/4"	6 mm	3/4"	—	—	1,600 lb	730 kg	1,800 lb	820 kg	—	—	1,700 lb	770 kg
5/16"	8 mm	1"	—	—	2,600 lb	1,200 kg	2,800 lb	1,300 kg	—	—	2,600 lb	1,200 kg
3/8"	9 mm	1-1/8"	3,200 lb	1,500 kg	3,600 lb	1,600 kg	4,100 lb	1,900 kg	—	—	3,700 lb	1,700 kg
7/16"	11 mm	1-1/4"	—	—	4,800 lb	2,200 kg	5,100 lb	2,300 kg	—	—	4,600 lb	2,100 kg
1/2"	12 mm	1-1/2"	5,700 lb	2,600 kg	6,300 lb	2,900 kg	6,900 lb	3,100 kg	—	—	6,100 lb	2,800 kg
9/16"	14 mm	1-3/4"	—	—	7,900 lb	3,600 kg	9,100 lb	4,100 kg	—	—	8,400 lb	3,800 kg
5/8"	16 mm	2"	7,700 lb	3,500 kg	10,000 lb	4,500 kg	10,000 lb	4,500 kg	—	—	10,600 lb	4,800 kg
3/4"	18 mm	2-1/4"	10,000 lb	4,500 kg	13,500 lb	6,100 kg	—	—	14,800 lb	6,700 kg	12,000 lb	5,400 kg
13/16"	20 mm	2-1/2"	—	—	15,300 lb	6,900 kg	—	—	17,600 lb	8,000 kg	—	—
7/8"	22 mm	2-3/4"	14,500 lb	6,600 kg	19,000 lb	8,600 kg	—	—	20,900 lb	9,500 kg	18,000 lb	8,200 kg
1"	24 mm	3"	17,500 lb	7,900 kg	25,000 lb	11,300 kg	—	—	25,400 lb	11,500 kg	22,600 lb	10,300 kg
1-1/8"	28 mm	3-1/2"	—	—	32,000 lb	14,500 kg	—	—	32,800 lb	14,900 kg	26,600 lb	12,100 kg
1-1/4"	30 mm	3-3/4"	—	—	37,500 lb	17,000 kg	—	—	39,000 lb	17,700 kg	33,000 lb	15,000 kg
1-5/16"	32 mm	4"	—	—	41,500 lb	18,800 kg	—	—	43,000 lb	19,500 kg	34,000 lb	16,800 kg
1-1/2"	36 mm	4-1/2"	—	—	52,000 lb	23,600 kg	—	—	54,000 lb	24,500 kg	42,000 lb	19,100 kg

Weight Per 100 feet / 100 meters

Size Diameter INCHES	Size Diameter MILLIMETERS	Size Circ. INCHES	Pro-Master		Pro-Set-3		SSR-100-3		SSR-1200-3		Ultra-Blue-3	
			Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS	Weight Per 100 Ft. POUNDS	Weight Per 100 M KILOGRAMS
3/16"	5 mm	9/16"	—	—	1.0 lb	1.5 kg	0.8 lb	1.2 kg	—	—	—	—
1/4"	6 mm	3/4"	—	—	1.5 lb	2.2 kg	1.4 lb	2.1 kg	—	—	1.1 lb	1.6 kg
5/16"	8 mm	1"	—	—	2.5 lb	3.7 kg	2.4 lb	3.6 kg	—	—	2.1 lb	3.1 kg
3/8"	9 mm	1-1/8"	3.7 lb	5.5 kg	3.5 lb	5.2 kg	3.9 lb	5.8 kg	—	—	2.6 lb	3.9 kg
7/16"	11 mm	1-1/4"	—	—	5.0 lb	7.4 kg	4.9 lb	7.3 kg	—	—	3.1 lb	4.6 kg
1/2"	12 mm	1-1/2"	6.5 lb	9.7 kg	6.5 lb	9.7 kg	6.5 lb	9.7 kg	—	—	4.5 lb	6.7 kg
9/16"	14 mm	1-3/4"	—	—	8.1 lb	12.1 kg	8.5 lb	12.6 kg	—	—	6.3 lb	9.4 kg
5/8"	16 mm	2"	9.6 lb	14.3 kg	10.5 lb	15.6 kg	9.5 lb	14.1 kg	—	—	8.0 lb	11.9 kg
3/4"	18 mm	2-1/4"	13.9 lb	20.7 kg	14.5 lb	21.6 kg	—	—	14.4 lb	21.4 kg	10.2 lb	15.2 kg
13/16"	20 mm	2-1/2"	—	—	17.0 lb	25.3 kg	—	—	17.3 lb	25.7 kg	—	—
7/8"	22 mm	2-3/4"	18.0 lb	26.8 kg	20.0 lb	29.8 kg	—	—	20.6 lb	30.7 kg	15.8 lb	23.5 kg
1"	24 mm	3"	22.0 lb	32.7 kg	26.0 lb	38.7 kg	—	—	25.6 lb	38.1 kg	18.6 lb	27.7 kg
1-1/8"	28 mm	3-1/2"	—	—	34.0 lb	50.6 kg	—	—	33.0 lb	49.1 kg	24.7 lb	36.8 kg
1-1/4"	30 mm	3-3/4"	—	—	40.0 lb	59.5 kg	—	—	39.4 lb	58.6 kg	28.9 lb	43.0 kg
1-5/16"	32 mm	4"	—	—	45.0 lb	67.0 kg	—	—	43.3 lb	64.4 kg	32.5 lb	48.4 kg
1-1/2"	36 mm	4-1/2"	—	—	55.0 lb	81.8 kg	—	—	56.2 lb	83.6 kg	41.2 lb	61.3 kg

Elastic Elongation

EE at Percent Avg. Break	Pro-Master	Pro-Set-3	SSR-100-3	SSR-1200-3	Ultra-Blue-3
10%	2.00%	5.50%	1.60%	1.50%	2.00%
20%	3.20%	10.0%	3.50%	3.20%	4.80%
30%	3.90%	12.1%	4.70%	4.00%	6.80%

A LEGACY OF INNOVATION BUILT ON A COMMITMENT TO TECHNOLOGY

We maintain one of the most advanced research and development organizations in the industry

Samson is fully equipped with the latest laboratory facilities, abrasion testing equipment, and one of the highest capacity tensile testers (1.1 million pounds) of any rope manufacturer worldwide. Staffed by fiber technologists and engineers dedicated to the development of more efficient and stronger ropes, Samson continues to lead the industry in technological developments of fibers, coatings, and constructions. The staff works directly with the leading fiber manufacturers to explore and assess the properties of new fibers in development. This partnership with our fiber suppliers is a key to innovation, research, and development.

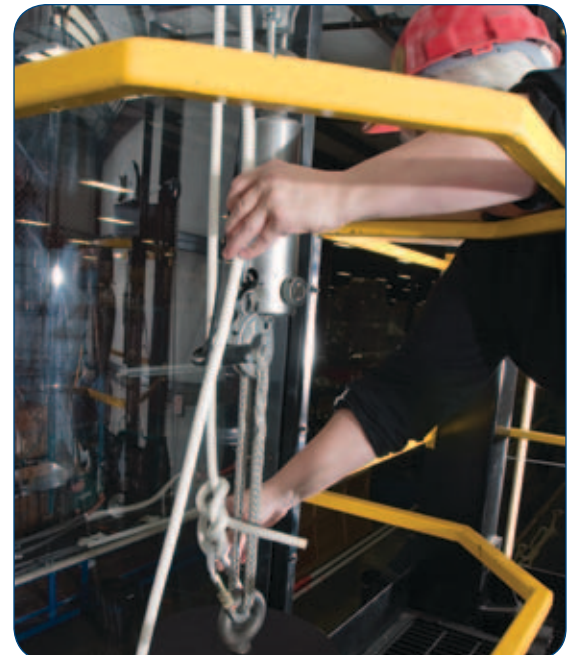
The engineering staff also works closely with field sales personnel and application engineers. This interactive relationship allows us to be responsive to the operational needs of our customers. From on-site assistance with installation of new products, to evaluation of product performance and the development of safety standards, the application engineer is an integral part of the field sales team.

All new product development as well as production of existing products is subject to stringent inspection, testing, and documentation. Our plants are ISO certified and equipped with certified test equipment to assess the characteristics of both raw materials and finished goods.

SAMSON'S TESTING METHODOLOGY COVERS:

- > Determination of diameter
- > Determination of lay/pitch, picks per inch
- > Linear density
- > Breaking force
- > Initial elongation (uncycled elongation)
- > Cycled elongation
- > Wet testing
- > Stiffness
- > Abrasion resistance
- > Sampling of test specimens
- > Reporting procedures

More information on testing of high performance ropes is available for downloading at SamsonRope.com. Go to the Technical Resources section directly from the home page.



FIBER CHARACTERISTICS

TABLE 3. COMPARISON OF FIBER CHARACTERISTICS

GENERIC FIBER TYPE	NYLON	POLYESTER	POLYPROPYLENE	HMPE	LCP	ARAMID	PBO
Tenacity (g/den) ¹	7.5 – 10.5	7 – 10	6.5	32 (SK-60) 40 (SK-75)	23 – 26	28	42
Elongation ²	15 – 28%	12 – 18%	18 – 22%	3.6%	3.3%	4.6%	2.5%
Coefficient of Friction ³	.12 – .15	.12 – .15	.15 – .22	.05 – .07	.12 – .15	.12 – .15	.18
Melting Point	425°– 490° F	480°– 500° F	330° F	300° F	625° F	930° F*	1200° F*
Critical Temperature ⁴	325° F	350° F	250° F	150° F	300° F	520° F	750° F
Specific Gravity	1.14	1.38	.91	.98	1.40	1.39	1.56
Creep ⁵	Negligible	Negligible	Application Dependent	Application Dependent	Negligible	Negligible	Negligible

* Char temperature – does not melt

¹ **TENACITY** is the measurement of the resistance of fiber to breaking.

² **ELONGATION** refers to percent elongation of fiber at break.

³ **COEFFICIENT OF FRICTION** is based on reluctance to slip or slide.


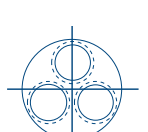

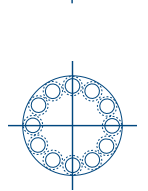

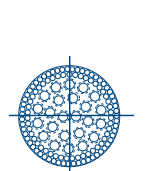

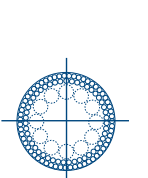
⁴ **CRITICAL TEMPERATURE** is defined as the point at which degradation is caused by temperature alone.

⁵ **CREEP** is defined as a material's slow deformation that occurs while under load over a long period of time. Creep is mostly nonreversible. For some synthetic ropes, permanent elongation and creep are mistaken for the same property and used interchangeably when in fact creep is only one of the mechanisms that can cause permanent elongation.

ROPE CONSTRUCTION

All sizes stated are nominal diameters and do not reflect exact dimensions. Weights depicted are average net rope weights relaxed and standard tolerances are ± 5% unless agreed to in writing.

All Samson ropes are categorized for testing purposes as *Class I* or *Class II* ropes. Class I ropes are manufactured from polyolefin, nylon and or polyester fiber. Class II ropes are manufactured from high-modulus fiber (i.e., Dyneema®, Zylon®, Technora®, Vectran®).

 <p>3-STRAND</p>		<p><i>Pro-Master, Pro-Set-3 pg.18</i> <i>SSR-100-3, SSR-1200-3 pg.19</i> <i>Ultra Blue-3 pg.20</i></p>
 <p>12-STRAND</p>		<p><i>AmSteel®, AmSteel®Blue pg.8</i> <i>Dura-Plex, pg.9</i> <i>PTS-12 Nylon, ML-12 pg.10</i> <i>Quantum-12, Quik-Splice pg.11</i> <i>Tech-12, Tenex, pg.12</i> <i>Tenex-TEC, Validator-12 pg.13</i></p>
 <p>DOUBLE BRAID</p>		<p><i>AmSteel® II, AmSteel® II Plus pg.14</i> <i>Nystron, Stable Braid pg.15</i> <i>Super Strong, Turbo-75 pg.16</i> <i>Ultra-Tech, Validator II pg.17</i></p>
 <p>PARALLEL CORE & SPECIALTY BRAID</p>		<p><i>Static Rope pg.21</i></p>

COATINGS AND FINISHES

Samthane

Samthane coatings are a family of abrasion resistant coatings specifically formulated for specific rope constructions and their applications. The advantages of Samthane coatings and some of the common coatings are outlined below.

ADVANTAGES:

- > Improved service life
- > Reduced snagging
- > Enhanced abrasion resistance
- > Protection from contamination
- > Reduced cutting damage
- > Color coding for identification



SAMTHANE (TYPE A)

A spliceable coating used on polyester double braids, Samthane Type A greatly enhances abrasion resistance and makes splicing used rope much easier. It is available in a variety of colors for easy identification, tracking time in service, keying colors to specific operations, etc. Splicing done on ropes coated with Type A uses the same tools and techniques for splicing uncoated rope. Coating adds approximately 3% to 5% to the weight of the line.

SAMTHANE (TYPE F)

Samthane Type F is a spliceable coating specially formulated for olefin/polyester blend ropes and the cores of many Class II core-dependent double braids. The physical properties of Samthane Type F are the same as for Samthane Type A coating. Coating adds approximately 3% to 5% to the weight of the line.

SAMTHANE (TYPE C)

A non-spliceable jacketing type coating, Samthane Type C is usually applied to specific sections of a line that will be subjected to extreme abrasion. The coating is very tough, with excellent resistance to cutting and chafing. It is usually applied to a thickness of 1/8" or more, which has a stiffening effect on the rope. This coating is applied to prespliced ropes and may also be used for thimble encapsulation.

SAMTHANE (TYPE S)

Samthane Type S is a spliceable coating used on high-performance, olefin, and polyester fiber ropes. This coating adds firmness and greatly improves wear life. The coating adds approximately 3% to 5% to the weight of the line.



ELONGATION (STRETCH)

Defining Elastic Elongation

In order to establish definitions involving stretch in ropes, it is necessary to review the terms used to define its basic components.

ELASTIC ELONGATION (EE)

Elastic elongation refers to the portion of stretch or extension of a rope that is immediately recoverable after the load on the rope is released. The rope's tendency to recover is a result of the fiber(s) rather than the rope construction. Each type of synthetic fiber inherently displays a unique degree of elasticity. Relatively speaking, high-performance fiber has extremely low elasticity compared to nylon fiber.

ELASTIC HYSTERESIS

Elastic hysteresis refers to a recoverable portion of stretch or extension over a period of time after a load is released. In measuring elastic recovery, it is the portion that occurs immediately when a load is removed. However, a remaining small percentage of elastic recovery occurs gradually over a period of hours or days. Elastic hysteresis is measured in a length/time scale.

PERMANENT EXTENSION (PE) AFTER RELAXATION

Permanent extension after relaxation refers to the portion of extension that prevents the rope from returning to its original length due to construction deformation such as compacting of braid and helical changes and some plastic deformation of the yarn fibers.

PE WHILE WORKING

Permanent extension while working is the amount of extension that exists when stress is removed but no time is given for hysteretic recovery. It includes the nonrecoverable and hysteretic extension as one value and represents any increase in the length of a rope in a constant working situation, such as during repeated surges in towing or other similar cyclical operations. The percentage of PE over the working load range is generally in order of four or six percent for braided ropes and two to three times as much for plaited. However, it varies slightly with different fibers and rope constructions. In some applications, such as subsurface mooring or devices that demand precise depth location and measurement, allowances must be made for this factor.

CREEP

A material's slow deformation that occurs while under load over a long period of time. Creep is mostly nonreversible. For some synthetic ropes, permanent elongation and creep are mistaken for the same property and used interchangeably when in fact creep is only one of the mechanisms that can cause permanent elongation.

CONSTRUCTIONAL ELONGATION

The elongation of a loaded rope that results from compaction as the fibers and strands align and adjust.

SPLICE SETTING

The elongation of a spliced rope caused by the adjustment and settling of the strands in the splice.

COMPONENTS OF STRETCH ON A LOADED ROPE

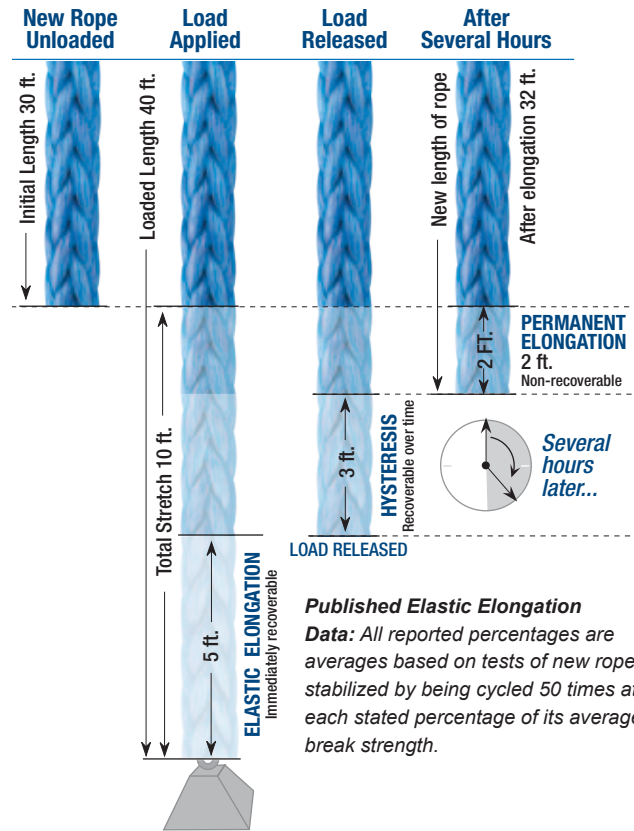


TABLE 4. ELASTIC ELONGATION FOR ALL PRODUCTS.
Percent of elastic elongation at percent of break strength.

Sorted lowest to highest EE at 20%	10%	20%	30%
Turbo-75	0.30%	0.50%	0.80%
AmSteel® II	0.50%	0.67%	0.96%
AmSteel® II Plus	0.50%	0.67%	0.96%
AmSteel® Blue	0.46%	0.70%	0.96%
AmSteel®	0.46%	0.70%	0.96%
Validator SKB	0.49%	0.72%	0.92%
Progen II	0.50%	0.74%	1.01%
Validator-12	0.49%	0.78%	0.98%
Validator II	0.59%	0.78%	0.98%
Proton-8	0.58%	0.87%	0.96%
Tech-12	0.63%	0.96%	1.20%
Ultra-Tech	0.63%	0.97%	1.24%
Ultra-Lite	0.65%	1.00%	1.29%
Stable Braid	1.1%	1.7%	2.7%
Quik-Splice	1.1%	1.9%	2.6%
ML-12	1.3%	2.0%	2.4%
Whoopie Sling	1.4%	2.3%	3.0%
Tenex	1.4%	2.3%	3.0%
Tenex-TEC	1.4%	2.3%	3.0%
Dura-Plex	1.6%	2.7%	3.8%
SSR-1200-3	1.5%	3.2%	4.0%
Pro-Master	2.0%	3.2%	3.9%
SSR-100-3	1.6%	3.5%	4.7%
Vertico	1.6%	3.5%	4.7%
Static Rope	3.2%	4.5%	6.0%
Nystron	2.4%	4.5%	5.9%
Ultra Blue-3	2.0%	4.8%	6.8%
Super Strong	3.0%	5.3%	6.7%
PTS-12 Nylon	4.7%	6.9%	7.7%
Pro-Set-3	5.5%	10.0%	12.1%
PTS-3 Nylon	7.8%	11.3%	15.9%

ROPE SELECTION

SELECT THE RIGHT ROPE FOR THE JOB

Selecting a rope involves evaluating a combination of factors. Some of these factors are straightforward like comparing rope specifications. Others are not easily quantified, like color preference or how a rope feels in your hand. Cutting corners, reducing sizes, or strengths on an initial purchase creates unnecessary replacements, potentially dangerous conditions, and increases long-term costs. Fiber and construction being equal, a larger rope outlasts a smaller rope because of the greater surface wear distribution. Similarly, a stronger rope outlasts a weaker one because it will be used at a lower percentage of its break strength with less chance of being overstressed. The following areas should be considered in your rope selection.

STRENGTH

When given a choice between ropes, select the strongest of any given size. A load of 200 pounds represents 2% of the strength of a rope with a breaking strength of 10,000 pounds. The same load represents 4% of the strength of a rope that has a breaking strength of 5,000 pounds. The weaker rope is having to work harder and as a result will have to be retired sooner. Braided ropes are stronger than twisted ropes of the same size and fiber type.

Note carefully the quoted breaking strengths of the various Samson products. These are average breaking strengths. Published breaking strengths are determined by standard cordage testing and do not cover conditions such as sustained loads or shock loading. These strengths are attained under laboratory conditions. Remember also, that this is a breaking strength—not a recommended working load.

ELONGATION

It is well accepted that ropes with lower elongation under load will give you better load control—a big help at complicated job sites. However, ropes with lower elongation that are shock loaded, like a lowering line, can fail without warning even though it appears to be in good shape. Low elongating ropes should be selected with the highest possible strength. Both twisted ropes and braided ropes are suitable for rigging. Twisted rope has lower strength and more stretch. Braided rope has higher strength and lower stretch.

SHOCK LOADING

Working loads as described herein are not applicable when rope has been subjected to shock loading. Whenever a load is picked up, stopped, moved, or swung there is an increased force caused by the dynamic nature of the movement. The force increases as these actions occur more rapidly or suddenly, which is known as “shock loading.” Examples of applications where shock loading occurs include ropes used as a tow line, picking up a load on a slack line, or using rope to stop a falling object. In extreme cases, the force put on the rope may be two, three, or more times the normal load involved. Shock-loading effects are greater on a low elongation rope such as polyester than on a high-elongation rope such as nylon, and greater on a short rope than on a long one.

For example, the shock load on a winch line that occurs when a 5,000-lb object is lifted vertically with a sudden jerk may “weigh” 30,000 lb under the dynamic force. If the winch line is rated in the 30,000-lb break-strength range, it is very likely to break.

Where shock loads, sustained loads, or where life, limb, or valuable property is involved, it is recommended that an increased working load factor be used.

It is recommended that a lower working load factor be selected with only expert knowledge of conditions and professional estimates of risk; if the rope has been inspected and found to be in good condition; and if the rope has not been subject to shock loads, excessive use, elevated temperatures, or extended periods under load.

For dynamic loading applications that involve severe exposure conditions, or for recommendations on special applications, consult the manufacturer.

FIRMNESS

Select ropes that are firm and round and hold their shape during use. Soft or mushy ropes will snag easily and abrade quickly causing accelerated strength loss. Because the fibers are in a straighter line, which improves strength but compromises durability, loose or mushy rope will almost always have higher break strengths than a similar rope that is firm and holds its shape.

CONSTRUCTION AND ABRASION

It is important to choose the right rope construction for your application, because it affects resistance to normal wear and abrasion. Braided ropes have a round, smooth construction that tends to flatten out somewhat on a bearing surface. This distributes the wear over a much greater area, as opposed to the crowns of a 3-strand or, to a lesser degree, on an 8-strand rope.

ASSIGNED WORKING LOAD FACTORS

Assigned working load factors vary in accordance with the different safety practices and policies of utilities and industrial users. However, our recommendation, and one that is fairly well accepted in the industry, is a minimum 5:1 working load factor. Thus, your maximum workload should be approximately 1/5th, or 20%, of the quoted breaking strength. This factor provides greater safety and extends the service life of the winch line.

Assume that you have seven identical ropes, each with a 30,000-lb breaking strength and you work these ropes daily with each rope lifting a different load, as shown in Table 5.

Table 5 shows that the higher the working load factor, the greater the service life and the lower the replacement factor. Therefore, the working load factor directly reflects the economy of the purchase.

TABLE 5. Working loads for seven ropes with breaking strengths of 30,000 lb.

	Breaking Strength	Working Load*	Working Load Factor	Number of Lifts
1	30,000 lb	5,000 lb	6:1	1,000
2	30,000 lb	6,000 lb	5:1	750
3	30,000 lb	7,500 lb	4:1	500
4	30,000 lb	10,000 lb	3:1	300
5	30,000 lb	15,500 lb	2:1	100
6	30,000 lb	20,000 lb	1.5:1	25
7	30,000 lb	28,000 lb	1.1:1	5

***Relative values only.** *The higher the working load factor the greater the service life, and, of course, the lower the replacement factor. Thus, a working load factor also directly reflects an economy factor; if you always lifting the same weight, then the stronger the rope, the higher the working load factor, and the longer the rope will last.*

IMPORTANT NOTE: It is important to note that many industries are subject to state and federal regulation on workload limits that supersede the manufacturer’s recommendation. It is the responsibility of the rope user to be aware of and adhere to those laws and regulations.

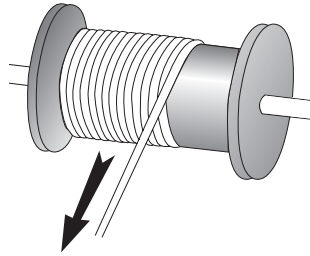
ROPE HANDLING AND USAGE

DIELECTRIC PROPERTIES

Based on rope industry practices, dielectric property testing is conducted on clean, new rope samples and holds true only under such ideal conditions. Dirt, grease, other foreign matter, and moisture (including humidity) will alter the nonconductivity/conductivity of any synthetic rope or material. No rope manufacturer can attest to a rope's dielectric properties under actual operating conditions.

REMOVING ROPE FROM A REEL OR COIL

Synthetic-fiber ropes are normally shipped on reels for maximum protection while in transit. The rope should be removed from the reel by pulling it off the top while the reel is free to rotate. This can be accomplished by passing a pipe through the center of the reel and jacking it up until the reel is free from the deck. Rope should never be taken from a reel lying on its side. If the rope is supplied on a coil, it should always be uncoiled from the inside so that the first turn comes off the bottom in a counter-clockwise direction.



ROPE STORAGE: COILING, FLAKING, AND BAGGING

Great care must be taken in the stowage and proper coiling of 3-strand ropes to prevent the natural built-in twist of the line from developing kinks and hockles. Braided ropes on the other hand have no built-in twist and are far more resistant to kinking. Even if kinks do develop, they cannot develop further into hockles.

Three-strand and braided ropes should be coiled in a clockwise



direction (or in the direction of the lay of the rope) and uncoiled in a counter-clockwise direction to avoid kinks. An alternate and perhaps better method is to flake out the line in a figure eight. This avoids putting twist in the line in either direction and lessens the risk of kinking.



Figure 8

Coiling — Twisting Ropes

WINCH LINES AND WINCHING OPERATIONS

SHARP CUTTING EDGES

Samson winch lines should not be exposed to sharp edges and surfaces such as metal burrs on winch drums, sheaves, shackles, thimbles, wire slings, etc. Our winch lines are made from synthetic fibers and, as such, can be cut or damaged by sharp edges. When installing winch lines on old truck units, great care must be exercised to assure that the rope is not coming in contact with hardware that has been scored and chewed by previously used wire lines. Sheaves, shackles, thimbles, etc., should be replaced in most cases. Other metal surfaces should be carefully examined and dressed if necessary.

ATTACHING LINE TO A WINCH DRUM

There are various methods of attaching a winch line to a winch drum: using a wedge or plug and set-screw in the main body of the drum, or using a "U" bolt through the side of the flange. Another method involves welding a round plug to the winch drum. The soft eye at the end of the winch line is placed over the plug and held in place with a flat keeper. The attachment method should not have a sharp edge that will cut the line under load. If possible, it is advisable to have an eye splice in both ends of the winch line so that it can be reversed in the event of damage to one end; however, this is not always possible, depending upon the method of attachment to the winch drum and whether or not a closed thimble is spliced into the eye. If an eye is not used at the drum end, then this end should be tightly whipped with a strong twine.

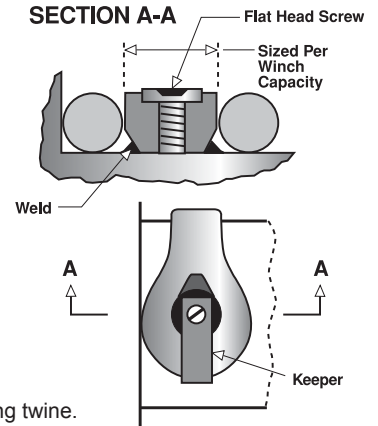


TABLE 6. Effect of rope diameter on drum capacity.

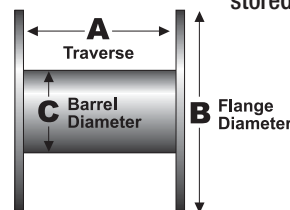
Rope Diameter	Feet on Drum
1/2"	510'
5/8"	325'
3/4"	225'
7/8"	165'
1"	125'
1-1/8"	100'

(values based on a 2' drum)

ROPE CAPACITY OF A WINCH DRUM

The formula for determining the length of rope that will fit on a winch drum is

$$\text{Length to be stored (feet)} = \frac{A(B^2 - C^2)}{15.3 (\text{rope dia.})^2}$$



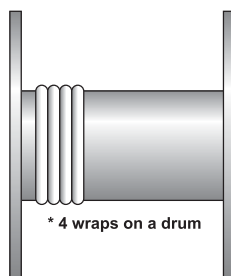
(Where A, B, C, and rope diameter are expressed in inches and length (L) is expressed in feet.)

WINDING ROPE ON THE WINCH DRUM

The first layer (wrap) around the winch drum should be put on closely and tightly. The initial winding tension (load) should be approximately 50 pounds. This will prevent subsequent wraps from slipping down between turns when tension is applied.

Samson winch lines tend to self-level. Important: Samson recommends at least four wraps* always be left on winch drum.

***IMPORTANT NOTE: Due to their low coefficient of friction AmSteel® and AmSteel®Blue lines must be worked with at least eight wraps on the drum at all times.**



DANGER TO PERSONNEL

Persons should be warned against the serious danger of standing in line with a rope under tension. Should the rope separate, it may recoil with considerable force. In all cases where any such risks are present, or where there is any question about the load involved or the condition of use, the working load should be substantially reduced and the rope properly inspected before every use.

AVOID KINKING AND HOCKLING

The continuous use of 3-strand and 4-strand lines on one side of a winch or windlass is a common abuse that can render a line useless in a short time. Repeated hauling of a line over a winch in a counterclockwise direction will extend the lay of the rope and simultaneously shorten the twist of each strand. As this action continues, kinks (or hockles) will develop. Once hockles appear, they cannot be removed and the rope is permanently damaged.

If, on the other hand, the line is continuously hauled over a winch in a clockwise direction, the rope lay is shortened and the rope becomes stiff and readily kinks.

To avoid detrimental conditions, the direction of turns over the winch should be alternated regularly. Clockwise turns are recommended for the initial use of a new line. If this practice is observed, the original rope balance will be maintained and the lines will have a much longer useful life.

Excessive turns can cause kinking in any rope but hockles can occur only in the basic "twisted" ropes (3-strand, 4-strand, and wire rope). Braided and plaited ropes cannot be hockled; their inter-locking strand construction prevents the unlaying. Strands run in both directions creating a torque-free balance thus eliminating any inherent tendency toward twist or rotation. Swivels can be used safely but are seldom necessary. One word of caution here: when marrying a braided line to a twisted line (and also to wire rope) the twisted line can impart its twist to the braided line if the ropes are married without a swivel in between.

A braided or plaited rope, being torque-free, can have twist induced by constant working on winches. If a twist develops, it can easily be removed by "counter-rotating" when the rope is relaxed.

EYE SPLICES

The standard eye splice cannot be pulled out under tension; however, it can be pulled out by hand when the winch line is in a relaxed state. To prevent such tampering, it is recommended that lock stitching or tight seizing be applied to the base or throat of the splice.

Lock stitching may also prove advantageous on some splices to prevent no-load opening due to mishandling. The material required is one fid length of nylon whipping twine approximately the same size diameter as the strands in the rope you are lock stitching. The strands cut from the rope you are lock stitching may also be used, but whipping twine is preferable. You may download lock-stitch instructions from our website **SamsonRope.com** or call customer service to receive them by mail.

Eye splices at the end of winch lines (if not put in at the factory) should be done in strict accordance with the steps and procedures outlined in Samson splicing instructions. These splicing methods can be easily learned and executed by line crews and shop personnel. Assistance in splicing instruction is available through the Samson Technical Representative in your area. Splicing Training Kits, manuals, and tools can be ordered through your local Samson Distributor or direct from the factory. Instructions are also available on-line at **SamsonRope.com**.

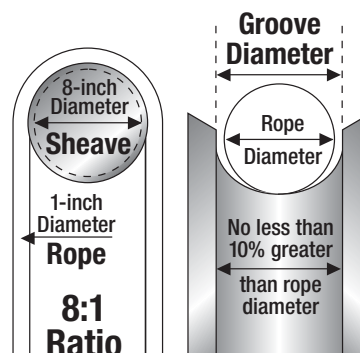
KNOTS AND WINCH LINES

Splicing is, by far, the strongest and most efficient means of attachment. Knots should never be tied in a winch line if it can be in any way avoided because knots can reduce the strength of any rope (or wire) by as much as 50%. Also, avoid sharp bends in the line where possible because this will also greatly reduce strength.

BOOM-SHEAVE RECOMMENDATIONS

To assure maximum efficiency and safety, the boom-sheave diameter should be no less than eight times the rope's diameter. The sheave's groove diameter should be no less than 10%

greater than the rope diameter, and the groove should be round in shape, not "V" shaped.



TWISTED / PLAITED:
10 times rope diameter

BRAIDED:
8 times rope diameter

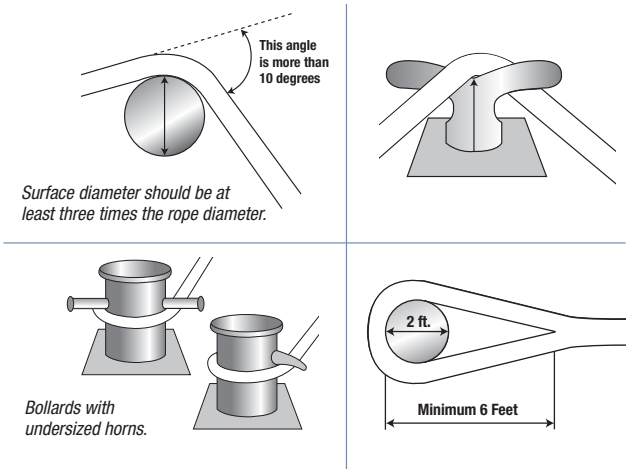
BENDING RADIUS

Any sharp bend in a rope under load decreases its strength substantially and may cause premature damage or failure. In sizing the radius of bits, fairleads and chocks for best performance the following guidelines are offered:

Where a rope bends more than 10 degrees around bits or chocks or, for that matter, is bending across any surface, the diameter of that surface should not be less than 3 times the diameter of the rope. Stated another way, the diameter of the surface should be at least three times the rope diameter. A 4-to-1 ratio (or larger) would be better yet because the durability of the rope increases substantially as the diameter of the surface over which it is worked increases.

On a cleat when the rope does not bend radially around, the barrel of the cleat can be one half the rope circumference (minimum).

The ratio of the length of an eye splice to the diameter of the object over which the eye is to be placed (for example, bollard, bitt, cleat, etc.) should be a minimum 3-to-1 relationship and preferably 5-to-1. In other words, if you have a bollard 2 feet in diameter the eye splice should be 6 or 10 feet in length. By using this ratio the angle of the 2 legs of the eye splice at its throat will not be so severe as to cause a parting or tearing action at this point (thimbles are normally designed with a 3-to-1 ratio).



ABRASION PROTECTION OF LINE

With their outer jacket of polyester, Stable Braid, AmSteel® II, Validator SKB, and Progen II have a relatively high degree of resistance to abrasion and melting. However, all synthetics are subject to melting if subjected to enough friction and heat; therefore, such practices as surging on a gypsy-head winch, hard rendering around poles, or over cross-arms, etc., should be avoided whenever possible.

USE OF SLINGS WITH WINCH LINES

The winch line itself should not be used as a choker to pick up a pole or other objects. The hook attached on the end of the winch line can cut deeply into the rope itself. We recommend a separate line, sling or strap be used as the choker and not the winch line itself.

TEMPERATURE

Friction can be your best friend or worst enemy if it is not managed properly. Friction takes place anytime two surfaces come in contact. Mild friction, sometimes referred to as grip is a good characteristic, especially in winching applications. However, by definition, friction creates heat, the greater the friction, the greater the heat buildup. Heat is an enemy to synthetic fiber and elevated temperatures can drastically reduce the strength and/or cause rope melt-through.

High temperatures can be achieved when checking ropes on a cable or running over stuck or non-rolling sheaves or rollers. Each rope's construction and fiber type will yield a different coefficient of friction (resistance to slipping) in a new and used state. It is important to understand the operational demands, and take into account the size, rope construction, and fiber type to minimize heat buildup.

Never let ropes under tension rub together or move relative to one another. Enough heat to melt the fibers can buildup and cause the rope to fail quickly: as if it had been cut with a knife.

Always be aware of areas of heat buildup and take steps to minimize it; under no circumstances let any rope come in contact with an exhaust muffler or any other hot object. The strength of a used rope can be determined by testing, but the rope is destroyed in the process so the ability to determine the retirement point before it fails in service is essential. That ability is based on a combination of education in rope use and construction along with good judgment and experience. Remember, you almost always get what you pay for in the form of performance and reliability.

TABLE 7. The critical and melting temperatures for synthetic fibers.

FIBER TYPE	CRITICAL TEMP.	MELTING TEMP.
Dyneema®	150° F	300° F
Polypropylene	250° F	330° F
Nylon	325° F	425–490° F
Polyester	350° F	480–500° F
Technora®	520° F	930° F*

*While the term "melting" does not apply to this fiber, it does undergo extreme degradation in these temperatures, and they char.

STRENGTH DEGRADATION FROM ULTRAVIOLET LIGHT

Prolonged exposure of synthetic ropes to ultraviolet (UV) radiation of sunlight causes varying degrees of strength degradation.

Polyester fibers are the least affected by UV exposure, and the resulting strength degradation of exposed fibers is negligible. Nylon is more susceptible to strength loss due to ultraviolet rays, but with both polyester and nylon, the degree of susceptibility to UV damage is dependent on the type of fiber and the various UV inhibitors with which the fiber manufacturer treats them (i.e., Samthane coating).

Polyolefin and PBO fibers are severely affected by ultraviolet exposure, especially in their natural, undyed, and/or uncovered states.

HARMFUL CHEMICALS

Certain chemicals break down synthetic fibers. Sulfuric acids, alkalis, and chlorinate hydrocarbons over 160° F are to be avoided, while strong cleaning agents or bleaches may be harmful. If you are unsure about the effect of a specific chemical, contact our customer service department for more information.

AVOID SHOCK LOADING

Shock loading of any line, synthetic, manila, or wire, produces a drastically different set of physical properties and results as compared with normal loading. Shock loading is a jerking or snatching of a line, or a very sudden change in tension such as from a relaxed state or low load to one of high load. A sudden drop off a platform as short a distance as four inches actually doubles the rope's load. Similarly, an over wrap "falling off" the winch drum can result in a 50% shock load. This results in accelerated wear of the rope. For more information about working load factors and shock loading, turn to page 39.

FATIGUE

Synthetic fibers have memory: they remember and retain the effects of being overloaded and shock loaded. This why winch line procedures are so important to reducing the danger of shock loading, which prolongs the life of the rope and reduces premature down grading. If there is reason to believe that a line has been shock loaded above its recommended working load, it should be logged. If a number of these instances occur, the line should be inspected and rotated.

END-FOR-ENDING

It is recommended that every winch line be rotated end-for-end on a periodic basis. This will vary high stress and wear points and extend useful life. The recommended end-for-ending period is six months, at which time visual inspection and washing can also be done.

ROPE INSPECTION AND RETIREMENT

One of the most frequently asked questions is: "When should I retire my rope?" The most obvious answer is before it breaks.

But, without a thorough understanding of how to inspect it and without knowing the load history, you are left making an educated guess. Unfortunately, there are no definitive rules nor are there industry guidelines to establish when a rope should be retired because there are so many variables that affect rope strength. Factors like load history, bending radius, abrasion, chemical exposure or some combination of those factors, make retirement decisions difficult. Inspecting your rope should be a continuous process of observation before, during, and after each use. In synthetic fiber ropes, the amount of strength loss due to abrasion and/or flexing is directly related to the amount of broken fiber in the rope's cross section. After each use, look and feel along every inch of the rope length inspecting for damage as listed below.

VISUAL INSPECTION

The load-bearing capacity of double braid ropes such as Stable Braid is divided equally between the inner core and the outer cover. If upon inspection, there are cut strands or significant abrasion damage the rope must be retired because the strength of the entire rope is decreased.

Core-dependent double braids such as AmSteel® II have 100% of their load-bearing capacity handled by the core alone. For these ropes, the jacket can sustain damage without compromising the strength of the load-bearing member. Inspection of core-dependent double braids can be misleading because it is difficult to see the core.

In the case of 12-strand single braids such as AmSteel® and AmSteel®Blue, each of the 12-strands carries approximately 8.33%, or 1/12th, of the load. If upon inspection, there are cut strands or significant abrasion damage to the rope, the rope must be retired or the areas of damage removed and the rope repaired with the appropriate splice.

Details on visual inspection are located on pages 46–47.

ABRASION

When a 12-strand single braid rope such as AmSteel®Blue is first put into service, the outer filaments of the rope will quickly fuzz up. This is the result of these filaments breaking, which actually forms a protective cushion and shield for the fibers underneath. This condition should stabilize, not progress. If the surface roughness increases, excessive abrasion is taking place and strength is being lost.

When inspecting the rope, look closely at both the inner and outer fibers. When either is worn, the rope is obviously weakened. Open the strands and look for powdered fiber, which is one sign of internal wear. Estimate the internal wear to estimate total fiber abrasion. If total fiber loss is 20%, then it is safe to assume that the rope has lost 20% of its strength as a result of abrasion.

As a general rule for braided ropes, when there is 25% or more wear from abrasion, or the fiber is broken or worn away, the rope should be retired from service. For double braid ropes, 50% wear on the cover is the retirement point, and with 3-strand ropes, 10% or more wear is accepted as the retirement point.

GLOSSY OR GLAZED AREAS

Glossy or glazed areas are signs of heat damage with more strength loss than the amount of melted fiber indicates. Fibers adjacent to the melted areas are probably damaged from excessive heat even though they appear normal. It is reasonable to assume that the melted fiber has damaged an equal amount of adjacent unmelted fiber.

DISCOLORATION

With use, all ropes get dirty. Be on the lookout for areas of discoloration that could be caused by chemical contamination. Determine the cause of the discoloration and replace the rope if it is brittle or stiff.

INCONSISTENT DIAMETER

Inspect for flat areas, bumps or lumps. This can indicate core or internal damage from overloading or shock loads and is usually sufficient reason to replace the rope.

INCONSISTENT TEXTURE

Inconsistent texture or stiff areas can indicate excessive dirt or grit embedded in the rope or shock load damage and is usually reason to replace the rope.

RESIDUAL STRENGTH TESTING

Samson offers customers residual strength testing of our ropes, which is critical in determining retirement criteria. Periodic testing of samples taken from ropes currently in service ensures that retirement criteria are updated to reflect the actual conditions of service.

Samson has established test methods that comply with industry standard methods like CI-1500, with more stringent specifications and testing instructions to eliminate wide tolerances or generalized procedures, resulting in more consistent, reliable data for our customers, and more accurate assessment of retirement criteria.

Samson offers customers residual strength testing of our ropes. Periodic testing of samples taken from ropes currently in service ensures that retirement criteria are updated to reflect the actual conditions of service.

Samson R&D maintains the largest-capacity testing machine for synthetic rope in the industry, capable of testing rope to failure up to 1.1 million pounds. The machine is fully computer controlled, provides automated cycle loading, and precise elongation measurements. All data is acquired, stored, calculations performed, and reports generated automatically for an efficient evaluation of your rope's condition.

Glossary of Terms

ABRASION RESISTANCE: The ability of a fiber or rope to withstand surface wear and rubbing due to motion against other fibers or rope components (internal abrasion), or a contact surface such as wraps on a winch drum (external abrasion), which can be a portion of the rope itself.

BLOCK CREEL: A method of rope making. A given length of rope is produced from a rope-making machine where all the subcomponents of the rope structure are continuous without splices. The term arises from filling all creels or bobbins to maximum (block creels) and ends the rope-making process when the first one is empty.

BRAID: *n.* A rope or textile structure formed by a braiding process. *v.* The intertwining of strands in a braiding process to produce a tubular rope structure.

BRAID, DOUBLE: A rope constructed from an inner hollow braided rope (core) that has another hollow braided rope constructed around its exterior (cover). Core and cover may be either plain or twill braid and both share any load on the rope, but not necessarily in equal amounts. Also called “braid-on-braid.”

BRAID, HOLLOW (Also: Braid, Single Braid, Diamond): A single braid rope construction of either plain or twill braid. The center is hollow. On the surface all strands are parallel to the axis.

BRAID, SOLID: A cylindrical braid in which each strand alternately passes under and over one or more of the other strands of the rope while all strands are rotating around the axis with the same direction of rotation. On the surface, all strands appear to be parallel to the axis.

BRAIDER SPLICE: In a braided rope, the continuation of a single interrupted strand (or multiple strands) with another identical strand that is braided from the same carrier. The interrupted and replacement strands are arranged in parallel over some distance, and are buried, or tucked, into the braid to secure them into the braid. To maintain maximum strength, the strands should overlap one another for a sufficient distance.

BREAKING LENGTH: A convenient term for comparing the strength-to-weight ratio of textile structures from one product to another. The calculated length of a specimen whose weight is equal to the breaking load.

BREAKING STRENGTH: For cordage, the nominal force (or load) that would be expected to break or rupture a single specimen in a tensile test conducted under a specified procedure. On a group of like specimens it may be expressed as an average or as a minimum based on statistical analysis.

Note: Breaking force refers to an external force applied to an individual specimen to produce rupture, whereas breaking strength preferably should be restricted to the characteristic average force required to rupture several specimens of a sample. While the breaking strength is numerically equal to the breaking force for an individual specimen, the average breaking force observed for two or more specimens of a specific sample is referred to or used as the breaking strength of the sample.

BREAKING STRENGTH, MINIMUM: Cordage Institute standard. A value based on a statistically significant number of breaking load tests and the standard deviation used to establish the minimum value.

CLASS I ROPE: Rope constructions produced with non-high-modulus fibers that impart the strength and stretch characteristics to the rope that have tenacities of 15 grams/denier (gpd) or less and a total stretch at break of 6% or greater. Typical Class I ropes are produced with traditional fibers such as: olefin (polypropylene or polyethylene), nylon, and polyester. These fibers can be used in combination or singularly in the various rope constructions such as: 3-strand, 8-strand, 12-strand braids, double braids, or core-dependent braids.

CLASS II ROPE: Rope constructions produced with high modulus fibers that impart the strength and stretch characteristics to the rope that have tenacities greater than 15 grams/denier (gpd) and a total stretch at break of less than 6%. Typical Class II ropes are produced with: HMPE (Dyneema® fiber or Spectra®), Aramid (Technora® or Kevlar®), LCP (Vectran®), PBO (ZYLON®) and carbon fibers. These fibers can be used in combination or singularly in the various ropes constructions such as: 3-strand, 8-strand, 12-strand, double braids, or core-dependent braids.

CORE-DEPENDENT BRAIDS: Braided-cover rope constructions that utilize an internal core member or members to create the desired strength and stretch characteristics of the rope. The primary function of the external cover braid is to contain the core or cores and create the desired degree of rope firmness. Based on the fiber or combination of fibers used in the cover braid, the following characteristics of the rope can be altered: coefficient of friction, wear resistance, specific gravity, and heat resistance due to friction. Core-dependent braided ropes typically have internal strength members produced with parallel bundled fiber cores, a single braid core, multiple braid cores, or multiple 3-strand cores. This type of rope construction can be produced with traditional fibers, high-modulus fibers, or combinations of both fiber groups, and offers the potential of creating a wide range of design parameters.

CYCLE LENGTH: The length along the axis required for a strand to make one revolution around the rope.

DEGRADATION: The loss of desirable physical properties by a textile material due to some process of physical or chemical phenomenon.

DENIER: The system used internationally for the numbering of silk and man-made filament yarns, with the exception of glass yarns. It is the primary unit for determining the size of a yarn and is based on its linear density. Officially, it is defined as the number unit weights of 0.05 grams per 450-meter length. Denier is equivalent numerically to the number of grams per 9,000 meters. In the English numbering system, 1 denier equals 4,464,528 yards to the pound. Denier is also used to indicate the thickness of a man-made fiber staple. For example, a staple is said to be 3 denier if 1,488,176 linear yards of the (continuous) staple would weigh one pound. The metric equivalent is Tex, the grams mass of 10,000 meters of yarn.

DYNAMIC LOAD (for cordage): Any rapidly applied load that increases the load significantly above the normal static load when lifting or suspending a weight. Dynamic effects are greater on a low elongation rope such as manila than on a higher elongation rope such as nylon, and greater on a shorter rope than on a longer one. Also, any rapidly applied load to cordage that may change its properties significantly when compared to slowly applied loads.

EXTRUSION: For polymer filaments. The process of producing filaments by forcing a polymer through a die.

FATIGUE: The tendency of a material to weaken or fail during alternate tension-tension or tension-compression cycles. In cordage, particularly at loads well below the breaking strength, this degradation is often caused by internal abrasion of the fibers and yarns, but may also be caused by fiber damage due to compression. Some fibers develop cracks or splits that cause failure, especially at relatively high loads.

FIBER: A long, fine, very flexible structure that may be woven, braided, or twisted into a variety of fabrics, twine, cordage, or rope.

FINISH: An oil, emulsion, lubricant, or the like, applied to fibers to prevent damage during textile processing or to improve performance during use of the product.

HYDROLYSIS: The attack of the water ions on polymeric molecules, which results in polymer chain scission and loss of the fiber's physical properties.

LAIID ROPES: Ropes made by twisting three or more strands together with the twist direction opposite that of the strands.

LAY LENGTH: The actual distance required to make one complete revolution around the axis of any element in a strand, cord, or rope.

LIQUID CRYSTAL POLYMER (LCP): A thermoplastic multifilament yarn spun from a proprietary liquid crystal polymer. LCP fiber is five times stronger than steel and ten times stronger than aluminum for its weight. It has excellent chemical resistance and no creep.

MONOFILAMENT: A yarn consisting of one or more heavy, coarse, continuous filaments produced by the extrusion of a polymeric material suitable for fiber production.

MULTIFILAMENT: A yarn consisting of many fine continuous filaments produced by the spinning of a polymeric material suitable for fiber production.

NAPPING: A process that raises the surface fibers of a fabric, cord, or rope by means of rapid passage over metal surfaces.

NOMINAL SIZE: A designation that has been determined by the measurement of another property. For rope, diameter is considered a nominal property and is based upon the measurement of the linear density of the rope in accordance with some standard.

NYLON (PA) FIBER: A manufactured fiber in which the fiber-forming substance (polyamide) is characterized by recurring amide groups as an integral part of the polymer chain. The two principal types of nylon fiber used in rope production are type 6.6 and type 6. The number in the type designation is indicative of the number of carbon atoms separating the acid and amine groups in the polymer chain.

pH: Value indicating the acidity or alkalinity of a material. A pH of 7.0 is neutral; less than 7.0 is acidic, and more than 7.0 is basic.

POLYESTER (PET) FIBER: A manufactured fiber in which the fiber-forming substance (polyester) is characterized by a long chain polymer having 85% by weight of an ester of a substituted aromatic carboxylic acid.

POLYETHYLENE (PE): A polyolefin resin, produced from the polymerization of ethylene gas, and used in the production of manufactured fiber. Polyethylene is similar to polypropylene in its properties but has a higher specific gravity and a lower melting point.

POLYETHYLENE, EXTENDED CHAIN: A polyolefin fiber that is characterized by the gel spinning at a very high rate for narrow molecular weight distribution to produce an extremely high tenacity material. The strength of the fiber is approximately 10 times that of steel on a weight-for-weight basis.

POLYMER: A long-chain molecule from which man-made fibers are derived; produced by linking together molecular units called monomers.

POLYPROPYLENE (PP): A polyolefin resin, produced from the polymerization of propylene gas, and used in the production of manufactured fiber. Polypropylene may be extruded into a number of fiber forms for use by the ropemaker.

ROPE, EIGHT-STRAND PLAITED: A rope of which the strands are generally plaited in pairs, and mainly used for marine purposes.

ROPE, FIBER: A compact but flexible, torsionally balanced structure produced from strands that are laid, plaited, or braided together to produce a product that serves to transmit a tensile force between two points. Generally greater than 3/16" diameter.

SPECIFIC GRAVITY: Ratio of the mass of a material to the mass of an equal volume of water.

SPLICE: The joining of two ends of yarn, strands, or cordage by intertwining or inserting these ends into the body of the product. An eye splice may be formed by using a similar process joining one end into the body of the product.

STRAND: The largest individual element used in the final rope-making process and obtained by joining and twisting (or braiding) together several yarns or groups of yarns.

STAPLE: The staple length of natural fibers varies from less than 1" for some cotton fibers to several feet for some hard fibers. Man-made fibers are cut to a definite length, usually about 1-1/2" but occasionally down to 1", so they can be processed on the cotton, woolen, and worsted systems. The term staple (fiber) is used in the textile industry to distinguish natural or cut length of man-made fibers from filament.

TENSILE STRENGTH, MINIMUM (Also: Breaking Strength, Minimum): A value based on a large number of breaking-force tests that is two standard deviations below the mean.

TORQUE: A force or a combination of forces that produces or tends to produce a twisting or rotating motion. When used in describing the performance or characteristic of yarn, the term torque refers to the character that tends to make it turn on itself as a result of twisting.

TWIST: The number of turns about the axis applied to a fiber, yarn, strand, or rope over a given length to combine the individual elements into a larger and stronger structure. The direction of rotation about the axis denoted as "S" (left hand) or "Z" (right hand) twist.

TWIST, BALANCED: In a plied yarn or cord, an arrangement of twist that will not cause the yarn or cord to twist on itself when held in the form of an open loop.

TWISTING: The process of combining two or more parallel textile elements by controlling the lineal and rotational speeds of the material to produce a specific twist level.

WORKING LOAD LIMIT: The working load that must not be exceeded for a particular application as established by an engineer or supervisor, or regulatory or standards setting agency.

YARN: A generic term for a continuous strand of textile fibers, filaments, or material in a form suitable for intertwining to form a textile structure via any one of a number of textile processes.

YARN, SINGLE: The simplest textile structure available for processing into rope, twine, or cordage.

YARN, PLIED: A yarn formed by twisting together two or more single yarns in one operation in a direction opposite to the twist direction of the single yarns to produce a balanced structure.

Rope Retirement Checklist

Inspection and Retirement Checklist*

Any rope that has been in use for any period of time will show normal wear and tear. Some characteristics of a used rope will not reduce strength while others will. In addition while to others will. Below we have defined normal conditions that should be inspected on a regular basis.

*REFERENCES Cordage Institute International, *International Guideline CI2001-04, Fiber-Rope Inspection and Retirement Criteria: Guidelines to Enhance Durability and the Safer Use of Rope*, 2004.

If upon inspection you find any of these conditions, you must consider the following:

- > the length of the rope,
- > the time it has been in service,
- > the type of work it does,
- > where the damage is, and
- > the extent of the damage
- > before deciding to repair or retire it.

In general, it is recommended to:

- > Repair the rope if the observed damage is in localized areas.
- > Retire the rope if the damage is over extended areas.

SINGLE BRAID Inspection and Retirement

As a rope is used, it will undergo normal changes such as constructional elongation and splice setting (see page 38 for definitions). Compression and pulled strands are rope conditions that do not reduce the strength of the rope and can easily be corrected.

COMPRESSION *Not a permanent characteristic*



- WHAT**
- > Visible sheen
 - > Stiffness reduced by flexing the rope
 - > Not to be confused with melting
 - > Often seen on winch drums
- CAUSE** > Fiber setting
- CORRECTIVE ACTION**
Flex the rope to remove compression

PULLED STRAND *Not a permanent characteristic*



- WHAT**
- > Strand pulled away from the rest of the rope
 - > Is not cut or otherwise damaged
- CAUSE** > Snagging on equipment or surfaces
- CORRECTIVE ACTION**
Work back in to rope

REDUCED VOLUME *Repair or retire*



- WHAT** > 25% reduction
- CAUSE**
- > Abrasion
 - > Sharp edges and surfaces
 - > Cyclic tension wear

MELTED OR GLAZED FIBER *Repair or retire*



- WHAT**
- > Fused fibers
 - > Visibly charred and melted fibers, yarns, and/or strands
 - > Extreme stiffness
 - > Unchanged by flexing
- CAUSE** > Exposure to excessive heat, shock load, or a sustained high load

DISCOLORATION *Repair or retire*



- WHAT**
- > Fused fibers
 - > Brittle fibers
 - > Stiffness
- CAUSE** > Chemical contamination

INCONSISTENT DIAMETER *Repair or retire*



- WHAT**
- > Flat areas
 - > Lumps and bumps
- CAUSE**
- > Shock loading
 - > Broken internal strands

DOUBLE BRAID and CORE-DEPENDENT DOUBLE BRAID Inspection and Retirement

There are two types of double braid rope. For the purpose of this discussion consider the following:

- > Double braid has the cover integrated with the core, and
- > Core-dependent double braid has a cover only for abrasion protection and the core bears the weight of the load.

If the cover is damaged on a double braid, the strength of the rope has been compromised. If the cover on a core-dependent double braid has been damaged, the strength of the rope may not be compromised and close inspection of the line is necessary to make the determination.

CUT STRANDS *Repair or retire*



- WHAT** > Three or more adjacent cut strands
- CAUSE** > Abrasion
> Sharp edges and surfaces
> Cyclic tension wear

REDUCED VOLUME *Repair or retire*



- WHAT** > 50% volume reduction
- CAUSE** > Abrasion
> Sharp edges and surfaces
> Cyclic tension wear

MELTED OR GLAZED FIBER *Repair or retire*



- WHAT** > Fused fibers
> Visibly charred and melted fibers, yarns, and/or strands
> Extreme stiffness
> Unchanged by flexing
- CAUSE** > Exposure to excessive heat

DISCOLORATION *Repair or retire*



- WHAT** > Fused fibers
> Brittle fibers
> Stiffness
- CAUSE** > Chemical contamination

INCONSISTENT DIAMETER *Repair or retire*



- WHAT** > Flat areas
> Lumps and bumps
- CAUSE** > Shock loading
> Broken internal strands

RETIRE THE ROPE WHEN IT'S TIME

Regular inspection of the lines will help determine when the rope will need to be retired.

Internal abrasion can be determined by pulling one strand away from the others and looking for powdered or broken fiber filaments (Fig. 1 and Fig. 2).



Fig. 1 Inspect for internal abrasion.



Fig. 2 Inspect for internal abrasion.



Fig. 3 Compare surface yarns with internal yarns.

To determine the extent of outer fiber damage from abrasion, a single yarn in all abraded areas should be examined. The diameter of the abraded yarn should then be compared to a portion of the same yarn or an adjacent yarn of the same type that has been protected by the strand crossover area and is free from abrasion damage (Fig. 3).



Samson
THE STRONGEST NAME IN ROPE

2090 Thornton Street
Ferndale, WA 98248

Phone: +1 800.227.7673

or +1 360.384.4669

Fax: +1 360.384.0572

SamsonRope.com

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