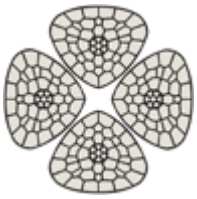
XLT4



- Low torque, high strength
- Can be used with a swivel
- Lower cost than 35x7
- Can be used at design factor of 3.5 to 1

XLT^4 is a revolutionary crane rope design.* “XLT” because it has Extremely Low Torque; “4” because it has the minimum breaking force of a 6-strand XXXXIP (4X) IWRC rope.

What sets XLT^4 apart is its unique design which packs more high tensile steel wire into the rope’s diameter, giving XLT^4 one of the highest strength to diameter ratios ever achieved—with a minimum breaking force 33% higher than standard 6-strand XIP ropes.

Under load, XLT^4 generates near zero torque, matching or surpassing the stability of Category 1 35x7 class rotation-resistant ropes. Yet, thanks to its unique design, XLT^4 is not classified as a “rotation-resistant” rope. It can be used with or without a swivel as a mobile crane hoist rope at design factors as low as 3.5 to 1.

XLT4 Strength and Weights Chart

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)
1/2	0.051	17.7
9/16	0.065	22.3
5/8	0.079	27.4
3/4	1.1	39.2
7/8	1.5	53
1	2.1	68.9
1 1/8	2.6	86.7

And for value, nothing performs like XLT^4. Not only does it cost less than a 35x7 classification rope, its compact construction keeps more steel in contact with sheaves and drums for unmatched resistance to crushing and wear—for lower maintenance, less downtime and longer service life.

XLT^4’s powerful advantages go beyond high strength, low torque and economical cost. With the rope’s high capacity, lifts may be feasible using fewer parts of line—boosting the speed, efficiency and productivity of crane work.

While XLT^4’s unique construction is different in appearance and feel compared to other wire ropes, you’ll be pleasantly surprised by the way it spools and operates. As with any rope, proper installation is key—particularly for the base layers and all layers that do not come off the drum during normal operation. To maximize performance and avoid “pull-in,” the rope must be spooled on the drum under load, ensuring that the rope is both tight against adjacent wraps and tight around the drum. As with any rope, XLT^4 will perform better on a grooved drum. XLT^4 is recommended for all grooved drums and smooth drums with a D/d ratio of 25 or greater.

Although differing in appearance and feel, field experience has shown that XLT^4 presents no problem in terminations using wedge sockets or wire rope clips. XLT^4 requires no special end preparation.

* Patent Pending

Flex-X 19

- Category 2 rotation resistant rope
- More crushing resistance than standard 19 x 7 rope
- Higher strength-to-diameter resistance to bending fatigue
- Exceptional stability

Flex-X 19, a Category 2 rotation resistant rope, is made from 19 strands. Six strands are laid around a core strand in one direction, and then 12 strands are laid around this first operation in the opposite direction. Because of its tightly compacted smooth design, Flex-X 19 offers more crushing resistance than standard 19 x 7 rope, higher strength-to-diameter, resistance to bending fatigue, exceptional stability, reduced wear to sheaves and drums, and improved handling, operating and spooling characteristics.

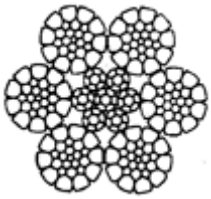
Flex-X 19 has also demonstrated greater fatigue resistance to substantially cut rope expense and extend service life. It's ideal for multipart hoist lines wherever you encounter spooling problems, drum crushing, block twisting or have fast line speeds.

Flex-X 19 Class Bright Strength and Weights Chart

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)
7/16	0.42	11.8
1/2	0.49	15.4
9/16	0.65	19.4
5/8	0.78	23.8
3/4	1.2	34.0
7/8	1.6	46.0
1	2.1	59.8
1 1/8	2.6	75.2
1 1/4	3.0	92.3

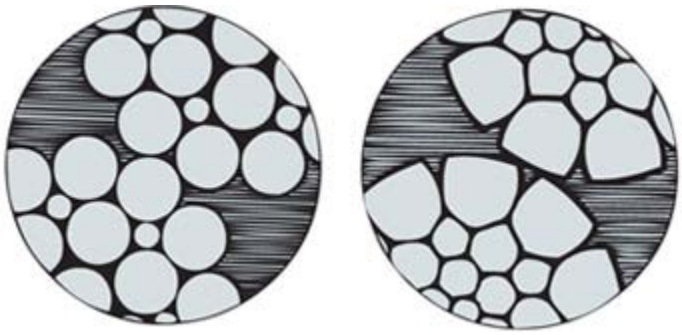
* The minimum breaking force applies only when a test is conducted with both ends fixed. When in use, the minimum breaking force of these ropes may be significantly reduced if one end is free to rotate.

Flex-X 6



- Superior performance 6-strand rope
- Increased service life
- Less sheave and drum wear

Flex-X 6 users receive superior performance and increased service life in many applications compared to the ropes they had previously employed. When compared to conventional six strand ropes, Flex-X 6 ropes provide greater surface area and more steel per given diameter. This increases rope stability and strength. This results in a longer service life and less sheave and drum wear.



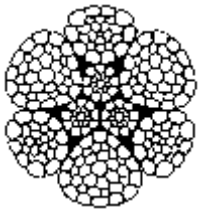
Flex-X® vs. standard rope of similar construction:

Flex-X designs reduce drum scrubbing between the lead line and the previous wrap. The smooth contact creates less interference, less metal loss and wire deformation. The increased surface area of Flex-X can be seen in the comparison of the contact points of a standard 6x26WS and Flex-X as shown.

Flex-X 6 Class Bright Strength and Weights Chart

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)
3/8	0.29	8.8
7/16	0.39	11.9
1/2	0.51	15.3
9/16	0.64	19.3
5/8	0.79	22.7
3/4	1.13	32.4
7/8	1.50	43.8
1	1.97	56.9
1 1/8	2.57	71.5
1 1/4	3.11	87.9

Flex-X 9

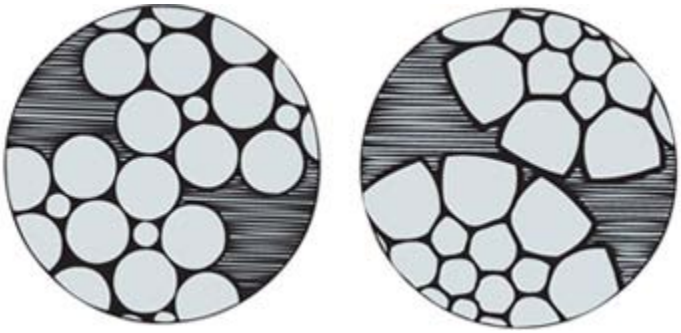


- Crush resistant
- Abrasion resistant
- Greater surface area

Flex-X 9 features compacted strands and swaging for extra drum crushing resistance and increased stability. Its high density strands deliver extra strength and resistance to abrasion. Flex-X 9 is manufactured with a dual compaction process to produce a compact cross-section with minimum voids and greater surface area on outer wires that contact drums, sheaves and the rope, itself during operation. The high-density compacted strands minimize nicking at strand-to-strand contact points. Flex-X 9 was specifically designed for boom hoist applications and tubing line applications where drum crushing is a challenge.

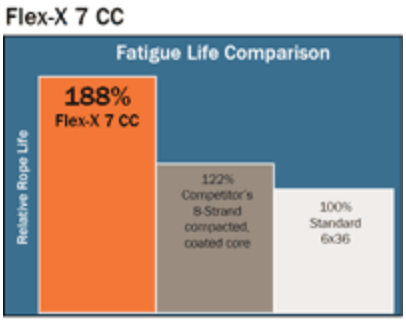
Flex-X® vs. standard rope of similar construction:

Flex-X designs reduce drum scrubbing between the lead line and the previous wrap. The smooth contact creates less interference, less metal loss and wire deformation. The increased surface area of Flex-X can be seen in the comparison of the contact points of a standard 6x26WS and Flex-X as shown.

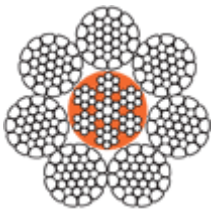


Flex-X 9 Strength and Weights Chart

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)
5/8	0.90	26.2
3/4	1.30	37.4
7/8	1.79	50.6
1	2.33	65.7
1 1/8	2.93	82.7



Flex-X 7 CC



- Premium service life
- Improved fatigue life
- Increased strength

Flex-X 7 CC - a crane rope that guarantees a lift in productivity.

Flex-X 7 CC extended duty crane and hoist rope is designed and manufactured primarily for the container crane industry where repetitive, continuous operations is required. Since its debut, additional research and extensive testing have shown that Flex-X 7 CC delivers the same exceptional fatigue resistance and service life to other applications where bending fatigue is a problem.

Already a preferred rope for container cranes, Flex-X 7 CC is now providing extended service life in carriage operations and other applications where multi-sheave equipment and rigorous duty cycles induce fatigue stresses. Almost any application currently using a 6x36 construction can gain an increase in service life with Flex-X 7 CC.

FLEX-X 7 CC STARTS OUT STRONGER.

When comparing strength, you'll see that Flex-X 7 CC provides a significant increase. Actual test results show this differential increases throughout the fatigue life of the rope. In fact, Flex-X 7 CC rope still has 103% of the standard rope's original strength at the point where standard rope experiences complete fatigue failure. For more information, review our product flyer.

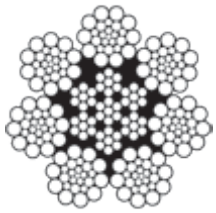
FLEX-X 7 CC LASTS LONGER.

Flex-X 7 CC's longer service life results in lower maintenance costs due to fewer rope changes. In addition, fatigue tests have shown that Flex-X 7 CC will outperform competitors' premium 8-strand compacted, coated core ropes by 60% or more. These tests have also shown that Flex-X 7 CC outlasts standard ropes by up to 88%.

Flex-X 7 CC Strength and Weights Chart

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)
1/2	0.50	15.3
9/16	0.63	19.3
5/8	0.80	22.7
3/4	1.1	32.4
7/8	1.6	43.8
1	2.0	56.9
1 1/8	2.5	71.5
1 1/4	3.1	87.9
1 3/8	3.8	106

7-Flex



- Improved resistance to bending fatigue over general purpose ropes

Good resistance to wear and fatigue are required for trip ropes on mining shovels. 7-Flex and 7-Flex PFV have the best characteristics to maximize rope service life in this application. The 7-Flex construction offers improved resistance to bending fatigue and the PFV plastic-impregnated feature further enhances service life and make the operation cleaner.

7-Flex 7x19 Class XIP IWRC Strength and Weights Chart

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)
5/16	0.18	5.27
3/8	0.26	7.55
7/16	0.35	10.2
1/2	0.46	13.3
9/16	0.59	16.8
5/8	0.72	20.6
3/4	1.04	29.4
7/8	1.42	39.8
1	1.85	51.7
1 1/8	2.34	65.0
1 1/4	2.89	79.9
1 3/8	3.50	96.0
1 1/2	4.16	114

7-Flex PFV

- Reduce wire-contact stress
- Keep lubrication inside
- Provide greater wear area
- Reduce internal abrasion

Combining the advantages of PFV, a high-grade thermoplastic material, extruded into a 7-Flex lubricated wire rope, provides additional advantages over non PFV ropes.

Through our process, the finished rope has the strand valleys between strands and interstices equally filled with plastic, which seals the lubricant and assures a balanced rope when finished. This also has proven in many applications to give you longer service life and cleaner operation than conventional wire ropes.

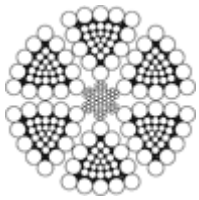
On the inside, you'll find our 7-Flex wire rope that withstands the tough pressures of your demanding jobs while the PFV cushions the strands, distributes internal stresses, keeps in wire rope lubricant and keeps out dirt and debris. PFV also helps shed water and dirt, giving you a clean, smooth surface to make it easy to pass over sheaves and onto drums. This smooth surface works to clean and polish as it extends the service life of your sheaves and drums, while also reducing your cleanup requirements and your maintenance costs.

PFV doesn't melt or soften from the heat of normal operating temperatures. It's also virtually unaffected by sunlight and cold weather. The result is longer service life from your wire rope. It's a Union wire rope, Tested, Tough & True.

7-Flex PFV Strength and Weights Chart

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)
5/16	0.19	5.27
3/8	0.27	7.55
7/16	0.37	10.2
1/2	0.49	13.3
9/16	0.61	16.8
5/8	0.76	20.6
3/4	1.09	29.4
7/8	1.49	39.8
1	1.94	51.7
1 1/8	2.46	65.0
1 1/4	3.03	79.9
1 3/8	3.67	96.0
1 1/2	4.31	114

Flattened Strand IWRC



- Crush-resistant
- More rope surface contact with sheaves
- More steel in cross section than standard round strand rope of equal size

Also called triangular strand, flattened strand ropes perform exceptionally well on certain installations, especially those involving heavy loads where the speed of operation is slow, where adequate diameter sheaves and drums are used, or where a crush resistant rope is required.

Their distinguishing physical feature is their relatively flat exposed surfaces of strands. As a result, the rope exterior is more nearly a smooth, continuous circle than that of regular round strand wire rope. Flattened strand ropes are made with two layers of 12 wires around a triangular-shaped center. We offer a 6x30 Style G using a six-wire center as the standard construction.

The advantages of flattened strand ropes

The flattened shape forms a bearing surface with more contact points on each strand than a round strand rope. With more sheave contact, weight and wear on the rope are distributed more uniformly than on a typical round strand rope. The triangular strand structure also results in more steel in the cross-section than a standard round strand rope of equal size.

Flattened (Triangular) Strand 6x30 Style G Strength and Weights Chart

	FIBER CORE		IWRC	
Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)
1/2	0.45	13.0	0.47	14.0
9/16	0.57	16.3	0.60	17.6
5/8	0.70	20.1	0.74	21.7
3/4	1.0	28.8	1.1	31.0
7/8	1.4	39.0	1.4	41.9
1	1.8	50.6	1.9	54.4
1 1/8	2.3	63.6	2.4	68.5
1 1/4	2.8	78.2	3.0	84.0
1 3/8	3.4	93.9	3.6	101
1 1/2	4.1	111	4.3	119

6-Strand PFV

- Abrasion resistant
- Fatigue resistant
- Plastic polymer cushions strands, distributes internal stresses and keeps dirt out

Backed by a service-proven reputation, these ropes are built tough to withstand abrasion and fatigue.

6-Strand PFV ropes are plastic impregnated with plastic polymer applied at high pressure which cushions the strands, distributed internal stresses, keeps in wire rope lubricant and keeps out dirt and debris. This polymer doesn't melt or soften from the heat of normal operating temperatures. It's also virtually unaffected by sunlight and cold weather.

Union, a WireCo WorldGroup brand, produces wire rope for a variety of applications – each with their own exacting specifications. We employ the most experienced, talented, licensed engineers in the industry to design solutions for your application. Eight WireCo WorldGroup manufacturing operations and seven distribution centers in North America, plus manufacturing facilities in Mexico, Germany and China, give our customers unparalleled support and global reach. Find out for yourself why Union wire ropes have proven themselves time and time again in the field. **Union: Tested, Tough & True**.

PFV 6x19 and 6x36 Class XIP IWRC Strength and Weights Chart

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)
3/8	0.28	7.55
7/16	0.37	10.2
1/2	0.49	13.3
9/16	0.63	16.8
5/8	0.76	20.6
3/4	1.10	29.4
7/8	1.51	39.8
1	1.96	51.7
1 1/8	2.48	65.0
1 1/4	3.06	79.9
1 3/8	3.71	96.0
1 1/2	4.41	114
1 5/8	5.17	132
1 3/4	6.01	153
1 7/8	6.89	174
2	7.83	198
2 1/8	8.85	221
2 1/4	9.92	247

NILSPIN

- Highly resistant to kinking
- Excellent strength/weight ratio in water
- Superior resistance to corrosion
- Will not peel

NILSPIN was engineered specifically for underwater applications. With its phenomenal resistance to kinking, corrosion, abrasion and fatigue, NILSPIN is a significant improvement over regular 3x19 oceanographic ropes.

Following the success of our plastic impregnated and coated SPACE-LAY wire rope on long and short term buoy implants, our engineers have designed the ideal underwater rope combining the unique anti-kink and corrosion resisting properties of regular SPACE-LAY with outstanding anti-rotational characteristics, high yield strength, low stretch and low weight in water.

NILSPIN Special 3x19 Strength and Weights Chart

Rope Diameter (in)	O.D. of Covering (in)	Min. Breaking Force (lbs)	Approx. Weight per 100' in lbs	
			Air	Sea Water
1/8	3/16	1,870	3.50	2.27
5/32	7/32	2,840	5.23	3.56
3/16	1/4	4,000	7.37	5.19
1/4	5/16	6,650	12.9	9.46
5/16	7/16	9,900	21.0	14.3
3/8	1/2	13,900	60.0	21.3
7/16	9/16	18,800	39.2	28.1
1/2	21/32	24,400	51.7	36.7
9/16	23/32	30,700	62.8	44.8
5/8	25/32	37,700	77.5	56.2
3/4	15/16	53,900	113.0	82.7

SPACE-LAY

- Tough, durable covering
- High fatigue resistance
- Resistance to liquid penetration
- Immune to peeling

For many applications, the SPACE-LAY design has proven far superior to all other known types of plastic coated wire rope. It has also outlasted bright, galvanized and stainless steel ropes – especially where submersion or abrasion prevents formation of a protective oxide film, which these metals require to resist corrosive elements. Under such conditions, SPACE-LAY plastic-impregnated and coated galvanized wire rope offers important advantages to users.

With ordinary plastic-coated wire rope, the individual metal strands are in direct contact with each other at many points. As a result, the metal-to-metal contact causes internal friction and wear. Even more important, with conventional constructions, there is no interlocking bond. If the outer cover becomes cut or abraded, it is easily peeled off, exposing the bare metal strands to corrosion.

In SPACE-LAY construction, each individual strand is separated from all the others by one or more extra-large “spacer-wires.” This design serves two important functions: (1) It enables the extruded plastic to form a wall of protection around EACH strand. (2) It also assures a tight, interlocking bond between the inner plastic filler and the outer plastic jacket. No peeling or leaking. In SPACE-LAY construction, each individual wire is galvanized for additional corrosion protection.

SPACE-LAY Strength and Weights Chart

Rope Diameter (in)	O.D. of Covering (in)	Construction	Min. Breaking Force (lbs)	Approx. Weight per 100' in lbs	
				Air	Sea Water
3/32	1/8	7x7	920	1.7	1.2
1/8	5/32	7x7	1,700	2.9	2.1
5/32	7/32	7x7	2,600	4.7	3.0
3/16	1/4	7x7	3,700	6.5	4.3
1/4	5/16	7x7	6,100	10.9	7.5
5/16	13/32	7x19	9,800	20.0	14.0
3/8	15/32	7x19	14,400	27.0	20.0
1/2	5/8	6x19 IWRC	22,800	50.0	37.0
3/4	7/8	6x19 IWRC	49,600	108	*
7/8	1 1/16	6x19 IWRC	66,500	147	*
1 1/8	1 3/8	6x19 IWRC	106,400	245	*