Wire ropes for rotational stability

Ropes that provide load stability can often provide the best and most economical service in specific applications when you choose, handle and use them properly.

XLT4 ropes are specially designed to provide very low torque, a high minimum breaking force and high resistance to wear in multi-layer spooling. This rope is not "rotation-resistant" and can be used on mobile crane hoist applications at a minimum design factor of 3.5 and can be used with a swivel at the dead end.

Contra-helically laid, rotation-resistant ropes are different from standard ropes because they're designed to reduce rope torque. Modes of failure and wear for rotation-resistant ropes can differ from those for standard rope constructions. The very nature of these ropes requires special handling, selection and usage not encountered with standard constructions.

These ropes are susceptible to kinking, crushing and unbalancing in the form of "core pops" and "birdcages." Use extreme care to avoid operational practices that can possibly lead to these conditions.

There are different types of rotation-resistant ropes, categorized by their resistance to rotation. Category 1 rotation-resistant rope (Flex-X 35) has at least 15 outer strands, has three layers of strands (over a center) and has little or no tendency to rotate, or, if guided, transmits little or no torque. Category 2 rotation-resistant rope (Flex-X 19 PS and 19 x 7) has 10 or more outer strands, has two or more layers of strands (over a center) and has a significant resistance to rotation. Category 3 rotation-resistant rope (8 x 19 RTW) has no more than 9 outer strands, has two layers of strands (over a center) and has limited resistance to rotation. For best performance, Category 2 and 3 rotation-resistant ropes should not be used with a swivel. Category 1 rotation-resistant rope handling, installation and usage.

ROTATION-RESISTANT CRANE ROPES SPECIFICATIONS

MINIMUM BREAKING FORCES IN TONS OF 2,000 POUNDS.

CATEGORY 1 FLEX-X® 35			CATEGORY 2 FLEX-X® 19 PS			19 X 7 XIP®		CATEGORY 3 8 X 19 XIP®		
Diameter Millimeter	Approx. Weight lbs. / ft.	Minimum Breaking Force	Diameter Inches	Approx. Weight lbs. / ft.	Minimum Breaking Force	Approx. Weight lbs. / ft.	Minimum Breaking Force	Diameter Inches	Approx. Weight lbs. / ft.	Minimum Breaking Force
			3/16			0.064	1.57	3/16		
			1/4			0.113	2.77	1/4		
			5/16			0.177	4.30	5/16	0.18	4.63
			3/8			0.25	6.15	3/8	0.26	6.63
			7/16	0.43	11.8	0.35	8.33	7/16	0.36	8.97
13	0.60	20.4	1/2	0.49	15.4	0.45	10.8	1/2	0.47	11.6
16	0.90	30.6	9/16	0.65	19.4	0.58	13.6	9/16	0.60	14.7
18	1.2	38.5	5/8	0.78	23.8	0.71	16.8	5/8	0.73	18.1
19	1.3	42.9	3/4	1.16	34.0	1.02	24.0	3/4	1.06	25.9
22	1.7	57.2	7/8	1.58	46.0	1.39	32.5	7/8	1.44	35.0
25.4	2.2	75.8	1	2.05	59.8	1.82	42.2	1	1.88	45.5
26	2.3	79.3	1 1/8	2.57	75.2	2.30	53.1	1 1/8	2.39	57.3
28	2.7	91.6	1 1/4			2.83	65.1	1 1/4	2.94	70.5
30	3.1	105	1 3/8			3.43	78.4	1 3/8	3.56	84.9
32	3.5	119	1 1/2			4.08	92.8	1 1/2	4.24	100

NOTE: These strengths apply only when a test is conducted with both ends fixed. When in use, the strengths of these ropes may be significantly reduced if one end is free to rotate.