Features & Benefits

HIGH PERFORMANCE

SURELIFT® 35, a category 1 low rotation rope, is specially designed for the most demanding single or multi-part high-lift hoisting applications.

- Superior rotation resistance and rope stability
- Excellent flexibility and spooling properties
- Smooth surface reduces drum cross over & riser wear
- Approved for use with a swivel

DY-PAC® 18, a category 2 rotation resistant rope, provides the load stability and performance needs for critical crane hoisting applications.

- Good rotation resistance for most applications
- Increased lifting capacity and drum crush resistance
- Smooth profile for efficiency on high speed hoisting lines

CUSHION-PAC® 8 high cycle ropes incorporate 8 compaction strands and the latest polymer technology needed to address the most critical heavy-duty applications.

- Cushion polymer for strand support & core protection
- Increased rope cycle life & wear resistance
- Minimized operational downtime
- Reduced equipment component wear & good spooling

STEELMASTER® high cycle crane ropes are engineered specially for the extreme conditions found in today's steel industry.

- Superior cycle life based on the optimized rope design
- Torque resistant design for large fleet angle configurations
- Superior high temperature resistant lubricant
- Available in custom operational variations

DY-PAC® 6 high performance ropes are designed with compacted strands, which increases cycle life and reduces drum crushing, sheave and drum wear.

- Dy-Pac design for high breaking loads & smooth profile
- Exceptional durability improves productivity
- High crush resistance and enhanced drum spooling

CUSHION® 7 fully plasticized ropes incorporate a more flexible design and resilient polymer technology to take on the toughest of applications.

- Resists shock loading & eliminates contaminant penetration
- 7 strand construction improves flexibility & cycle life
- Maximizes contact area & minimizes equipment wear

PERFORMANCE SERIES

Performance Series® 620 steel core ropes provide excellent quality and value and are well proven performers in many general purpose applications.

- Good balance between wear resistance & flexibility
- Specially formulated lubrication for extended life
- Manufactured to ASTM A1023 & API –9A standards

Performance Series® 630 steel core ropes provide greater flexibility and are often selected where improved cycle life and better drum spooling are required.

- Proven durable rope design for a variety of applications
- Improved flexibility relative to PS 620 constructions
- Manufactured to ASTM A1023 and API –9A standards

Inspection of Wire Ropes

The most important aspect of operating a rope safely is regular proper inspection. ASME crane safety standards such as B30.2 and B30.5 provide detailed inspection procedures and retirement criteria. Both standards specify that running ropes expected to be used during operations on that day should be visually inspected. The inspection must be more than just a quick look. Rope inspection needs to be done carefully and, in enough light, to find damage or broken wires that may require the rope to be taken out of service. It must also be remembered that a dirty or greasy rope is almost impossible to inspect properly, as dirt and grease may hide problem areas. The individual making the inspection should be familiar with the machine, the wire rope, and that particular application. The B30 standards provide information on both a frequent inspection to be done daily and a much more detailed periodic inspection that is performed at intervals determined by a qualified person using the criteria listed below.

FREQUENT INSPECTION
As stated previously, running ropes expected to be used during operations on that day should be visually inspected. The inspector should know where and how rope on the particular application wears out so that the daily inspection can be focused on the known wear areas. Special care should always be taken when inspecting common repetitive wear sections such as:
Flange step up, cross over and repetitive pick up points on the drum; areas of the rope operating through a reverse bend in the reeving system, equalizer sheaves, and end connections.

The inspector should be concerned with discovering gross damage that may be an immediate hazard. Specific types of damage include the following:
Distortion to the uniform structure of the rope; broken wires; corrosion, gross damage to or deterioration of end connections, evidence of heat/electrical/lightning damage, and localized change in lubrication condition.
When damage is discovered, a qualified person must evaluate affected sections as detailed in the rope replacement section below to determine if the rope needs to be removed from service. The B30 standards do not require frequent inspections to be documented, but it is a good idea to keep a frequent inspection log on the crane, simply noting time, date and identity of the inspector.

PERIODIC INSPECTION
The inspection frequency needs to be based on factors such as expected rope life as determined by experience on the particular installation or similar installations, severity of environment, percentage of capacity lifts, frequency rates of operation, and exposure to shock loads. Inspections need not be at equal calendar intervals and should be more frequent as the rope approaches the end of its useful life. There are many duty cycle rope applications where the service life is less than a month, or sometimes even a week in severe service conditions, so a periodic level of inspection may have to be performed daily.
The periodic inspection must cover the surface of the entire rope length and no attempt should be made to open the rope. In addition to common repetitive wear sections specified in the frequent inspection, additional sections prone to rapid deterioration such as the following need special attention.

(1) Locations where rope vibrations are damped, such as: sections in contact with equalizer sheaves, or other sheaves where rope travel is limited; sections of the rope at or near end connections where corroded or broken wires may protrude; bridle reeving in the boom hoist ropes; repetitive pickup points and crossover and change of layer points at flanges on drums; fleeting or deflector sheaves.
In addition to the specific types of damage listed in the frequent inspection section, these additional items need to be addressed: Measuring the rope diameter in numerous locations to assess uniform loss of diameter along the entire length of rope; close visual observation of the entire length to identify; lengthening of lay in localized areas; diameter reduction in localized areas; distortion of rope structure (kinking, birdcaging, crushing); steel core protrusion between the outer strands; internal corrosion; wear of outside wires; more detailed inspection of end connections for broken wires and corrosion; severely corroded, cracked, bent, worn or improperly applied end connections; waviness (corkscrew effect) of rope; high or low strand.
To establish data as a basis for judging the proper time for replacement, a dated report of rope condition at each periodic inspection must be kept on file. This report shall cover points of deterioration listed above. If the rope is replaced, only the fact that the rope was replaced need be recorded.
Certain types of ropes and applications require special attention and require reduced time intervals between periodic inspections:
• Rotation Resistant ropes have a unique construction and are susceptible to damage and increased deterioration when working under difficult conditions such as duty cycle operation.
• Boom hoist ropes because of the importance of their function and because their location may make inspection difficult.

ROPE REPLACEMENT
There are no precise rules to determine the exact time for the replacement of the rope since many variable factors are involved. Once a rope reaches any one of the removal criteria, it must be replaced immediately unless allowed to operate to the end of the work shift by the judgment of a qualified person. If the rope was not removed immediately, it shall be replaced before the end of the next work shift. Specific inspection attributes and removal criteria are:
(1) Broken wires: (a) For ropes operating on equipment covered by B30.5: In running ropes, 6 randomly distributed wire breaks per rope lay or 3 wire breaks per strand per rope lay. A rope lay is the distance that it takes one outer strand to make one complete revolution around the rope. A 6-strand rope will typically have a rope lay of 6.4 times the rope diameter (i.e. a 1/2" 6x25FW EIP IWRC RRL rope will have rope lay of 3.2") (b) For ropes operating on equipment covered by B30.2, in running ropes is 12 randomly distributed wire breaks per rope lay or four wire breaks per strand (c) For all categories of Rotation Resistant ropes, the retirement criteria is 2 wire breaks in 6 rope diameters or 4 wire breaks on 30 rope diameters (i.e. 6 rope diameters in a 1" rope is 6") (d) One broken outer wire at the contact point with the core which has worked its way out of the rope structure and protrudes, loops out or is slightly raised from the body of the rope
Note: Broken wire removal criteria cited in this volume apply to wire rope operating on steel sheaves and drums and wire rope operating on multilayer drums regardless of sheave material. Due to the difficulty in detecting wire breaks when polymer sheaves are utilized with single layer drums, the user should contact the sheave manufacturer for broken wire removal criteria.

Reductions from nominal diameter greater than 5% (Minimum Value = Nominal Diameter x .95)
Distortion of rope structure: (a) Damage resulting in distortion of the rope structure (e.g., kinking, birdcaging, crushing) (b) Steel core protrusion between the outer strands (c) Localized change in lay length (d) Changes in original geometry due to crushing forces where the diameter across the distorted section is 5/6 of the nominal diameter.
(4) Waviness (corkscrew effect) in the rope that causes overall diameter to increase to a value greater than 110% of nominal rope diameter. (5) A high or low strand that is higher or lower than ½ of the strand diameter above or below the surface of the rope.
(6) Any apparent damage from a heat source including, but not limited to welding, power line strikes, or lightning.
(7) Widespread or localized external corrosion as evidenced by pitting, and obvious signs of internal corrosion such as magnetic debris coming from valleys.
(8) Severely corroded, cracked, bent, worn, grossly damaged, or improperly installed end connections

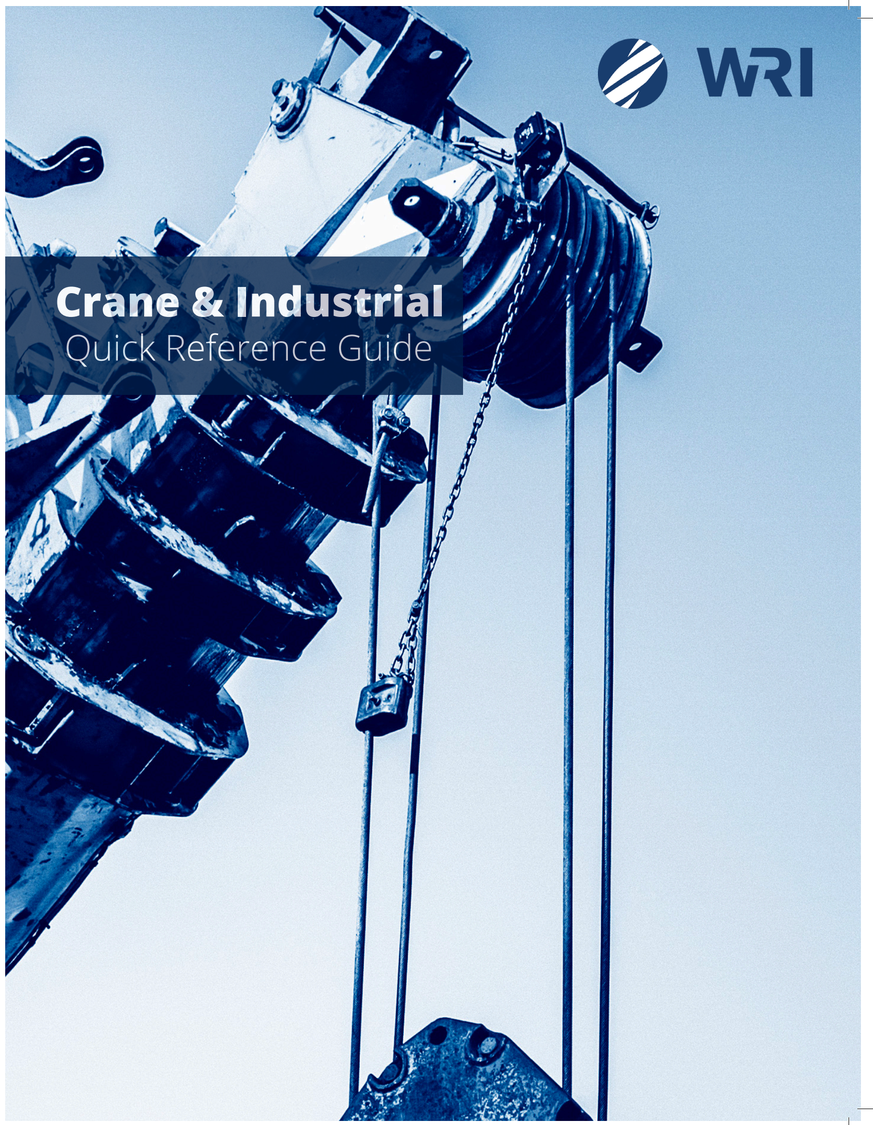
Note: Consult the latest edition of the ASME B30 Volume that applies to your crane as removal criteria may be updated over time based on the latest knowledge and information. All rope that has been idle for a month or more due to shut down or storage of a crane should be given a detailed inspection according to the requirements of the periodic inspection provided by the B30 standards.

ROPE SERVICE LIFE
A long-range inspection program should be established and should include records on the examination of ropes removed from service so that a relationship can be established between visual observation and actual condition of the internal structure. There are a wide variety of wire rope constructions available to be used on cranes. It is important that the correct rope be used for each specific application. Because wire rope wears in service, the method by which the rope wears is an important factor in determining the most suitable rope. Replacement rope must have a rated strength at least equal to the original rope supplied or recommended for the machine. Any change from the original specification for the rope must be specified by the wire rope manufacturer, crane manufacturer, or qualified person. When there is a question, consult with Bridon-Bekaert about the rope construction most appropriate for the application.

Edition 05/2020

BRIDON · BEKAERT
THE ROPES GROUP

280 New Commerce Blvd. Wilkes-Barre, PA. 18706 1-800-521-5555 contact@bridon-bekaert.com www.bridon-bekaert.com
5501 Trans-Canada Hwy, Pointe-Claire, Quebec H9R 1B7, Canada 1 514-697-9711



Crane & Industrial
Quick Reference Guide

Application Guide

	Performance Series				High Performance			
	PS 620	PS 630	Dy-Pac 6	Cushion-Pac 8	Dy-Pac 18	Surelift 35	Steelmaster CP8	Cushion 7
Mobile Hydraulic Crane								
Main Hoist Rope					•	•		
Auxiliary Hoist Rope					•	•		
Mobile Crawler Boom								
Main Hoist Rope	•	•			•	•		
Auxiliary Hoist Rope					•	•		
Boom Hoist Rope	•		•	•				
Tower Crane								
Main Hoist Rope						•		
Luffing Hoist Rope	•	•	•	•				
Trolley Rope	•	•	•	•				
Pile Driving Crane								
Main Hoist Rope			•			•		
Boom Hoist Rope			•	•				
Hammer Line Rope			•					
Foundation Drilling Rig								
Main Hoist rope						•		
Auxiliary Rope						•		
Crowd Rope			•	•				
Overhead Crane								
Main Hoist Rope	•	•	•	•				
Scrap Main Hoist Rope	•		•	•				•
Steel Mill Melt Shop Crane								
Main Hoist Rope	•	•	•				•	
Skip Hoist Rope							•	
Port Container Crane								
Main Hoist Rope	•	•	•	•				
Boom Hoist Rope	•		•	•				
Trolley Rope		•	•	•				
Port Gantry Cranes								
Hoist Ropes		•	•	•				
Trolley Ropes		•	•	•				
Port Unloader Crane								
Closing Rope		•	•	•				
Holding Rope		•	•	•				
Boom Hoist Rope	•	•	•	•				
Dockside Crane								
Main Hoist Rope					•	•		
Boom Hoist Rope	•		•	•				
Offshore Pedestal Crane								
Main Hoist Rope					•	•		
Auxiliary Hoist Rope					•	•		
Boom Hoist Rope			•	•				
Winch Applications								
Truck Mounted Winch	•	•	•	•				
Car Puller			•	•				•
Saw Mill Carriage			•	•				•

** Must not be reverse lay*

High Performance

SURELIFT® 35

Diameter		Approx Mass WSC		Minimum Breaking Force Rope Grade EEIP / 2160
mm	lb/ft	kg/m	tons	kN
14	0.67	1	20.9	186
15	0.74	1.1	24	214
16	0.87	1.3	28.5	253
18	1.08	1.6	35.6	317
19	1.21	1.8	39.8	355
20	1.34	2	43.7	389
21	1.48	2.2	48.4	431
22	1.61	2.4	53.9	480
23	1.81	2.7	57.9	515
24	1.95	2.9	63.9	568
25	2.08	3.1	68.7	611
26	2.28	3.4	74.8	666
28	2.62	3.9	87	774
29	2.82	4.2	89.9	800
30	3.02	4.5	96.2	**856**
31	3.23	4.8	102.7	914
32	3.49	5.2	109.5	974

*Category 1, may be use with a swivel.

DY-PAC® 18

Diameter		Approx Mass WSC		Min Breaking Force Rope Grade EEIP / 2160	
in	mm	lb/ft	kg/m	tons	kN
3/8		0.281	0.42	8.31	73.9
	10	0.336	0.50	9.49	84.4
	11	0.407	0.61	11.7	104
7/16		0.415	0.62	11.2	100
	12	0.484	0.72	13.7	122
1/2		0.542	0.81	14.6	130
	13	0.568	0.85	16.1	143
	14	0.659	0.98	18.5	165
9/16		0.686	1.02	19.3	172
5/8	16	0.847	1.26	22.7	202
	18	1.09	1.62	30.8	274
3/4	19	1.22	1.82	32.4	288
	20	1.34	1.99	37.9	337
	22	1.63	2.43	46.8	416
7/8		1.66	2.47	46.8	416
	24	1.94	2.89	54.6	486
1		2.17	3.23	57.5	512
	26	2.27	3.38	64.1	570
	28	2.63	3.91	74.3	661
1 1/8		2.74	4.08	71.5	636
1 1/4	32	3.39	5.04	87.9	782

Performance Series

Performance Series® 620

Diameter		Approx Mass IWRC		Min Breaking Force EIP IWRC		EEIP IWRC	
in		lb/ft	kg/m	tons	kN	tons	kN
1/4		0.108	0.16	3.40	30.2		
5/16		0.169	1.74	5.27	46.9		
3/8		0.244	0.36	7.55	67.2		
7/16		0.332	0.49	10.2	90.7	11.2	100
1/2		0.434	0.65	13.3	118	14.6	130
9/16		0.549	0.82	16.8	149	18.5	165
5/8		0.688	1.02	20.6	183	22.7	202
3/4		0.975	1.45	29.4	262	32.4	288
7/8		1.33	1.98	39.8	354	43.8	390
1		1.73	2.57	51.7	460	56.9	506
1 1/8		2.19	3.26	65.0	578	71.5	636
1 1/4		2.75	4.09	79.9	711	87.9	782
1 3/8		3.28	4.88	96.0	854	106	943
1 1/2		3.90	5.80	114	1,010	125	1,110

*6x19 classification

Performance Series® 630

Diameter		Approx Mass IWRC		Min Breaking Force EIP IWRC		EEIP IWRC	
in		lb/ft	kg/m	tons	kN	tons	kN
1/4		0.108	0.16	3.40	30.3		
5/16		0.169	1.74	5.27	46.9		
3/8		0.244	0.36	7.55	67.2		
7/16		0.332	0.49	10.2	90.7	11.2	100
1/2		0.434	0.65	13.3	118	14.6	130
9/16		0.549	0.82	16.8	149	18.5	165
5/8		0.688	1.02	20.6	183	22.7	202
3/4		0.975	1.45	29.4	262	32.4	288
7/8		1.33	1.98	39.8	354	43.8	390
1		1.73	2.57	51.7	460	56.9	506
1 1/8		2.19	3.26	65.0	578	71.5	636
1 1/4		2.75	4.09	79.9	711	87.9	782
1 3/8		3.28	4.88	96.0	854	106	943
1 1/2		3.90	5.80	114	1,010	125	1,110

*6x36 classification

Whilst every effort has been made to ensure the accuracy of the product tables, the information contained within is intended as a guide. For specific or specialized requirements, please contact BBRG.

High Performance

DY-PAC® 6

Diameter		Approx Mass WSC		Min Breaking Force Rope Grade EIP / 1960	
in	mm	lb/ft	kg/m	tons	kN
3/8		0.285	0.42	8.79	78.2
	10	0.308	0.46	9.69	86.2
	11	0.373	0.56	11.9	106
7/16		0.376	0.56	11.9	106
	12	0.444	0.66	13.9	124
1/2		0.497	0.74	15.3	136
	13	0.521	0.78	16.0	142
	14	0.605	0.90	18.5	165
9/16		0.633	0.94	19.3	172
5/8	16	0.775	1.15	23.6	210
	18	1.00	1.49	30.1	268
3/4	19	1.10	1.49	32.4	288
	20	1.23	1.83	37.2	331
	22	1.47	2.19	45.01	401
7/8		1.52	2.26	45.01	401
	24	1.78	2.65	53.6	477
1		1.92	2.86	57.5	512
	26	2.07	3.08	62.9	560
	28	2.36	3.51	73.0	649
1 1/8		2.54	3.78	76.0	676
1 1/4	32	3.13	4.66	87.9	782
1 3/8		3.79	5.64	106	943
1 1/2	38	4.00	5.95	125	1113

CUSHION-PAC® 8

Diameter		Approx Mass WSC		Min Breaking Force EIP / 1960	
in	mm	lb/ft	kg/m	tons	kN
3/8		0.306	0.46	9.69	86.2
	10	0.316	0.47	10.0	89.2
	11	0.383	0.57	12.4	110
7/16		0.391	0.58	12.4	110
	12	0.456	0.68	14.4	128
1/2		0.505	0.75	16.2	144
	13	0.535	0.80	16.9	150
	14	0.620	0.92	19.6	174
9/16		0.646	0.96	20.3	181
5/8	16	0.825	1.23	25.0	222
	18	1.03	1.53	32.1	286
3/4	19	1.19	1.77	35.7	318
	20	1.25	1.86	36.7	353
	22	1.48	2.20	48.0	427
7/8		1.53	2.28	48.0	427
	24	1.76	2.62	58.2	517
1		2.04	3.04	62.8	559
	26	2.14	3.18	67.0	596
	28	2.37	3.53	77.7	691
1 1/8		2.68	3.99	81.8	727
1 1/4	32	3.16	4.70	102	907
1 3/8		4.11	6.12	129	1148
1 1/2	38	4.64	6.91	138	1,228

STEELMASTER®

Diameter	Approx Mass WSC		Min Breaking Force Rope Grade EIP / 1960		EEIP / 2160	
in	lb/ft	kg/m	tons	kN	tons	kN
1/2	0.50	0.74	14.6	130	16.1	143
4/7	0.63	0.94	18.5	165	20.4	182
5/8	0.78	1.2	22.7	202	25.0	223
3/4	1.1	1.6	32.4	288	35.6	317
7/8	1.5	2.2	43.8	390	48.2	429
1	1.9	2.9	56.9	506	62.6	557
1 1/8	2.4	3.6	71.5	636	78.7	700
1 1/4	3.1	4.5	87.9	782	96.7	861
1 3/8	3.7	5.5	106	943	117	1,041
1 1/2	4.4	6.5	125	1,112	138	1,228

CUSHION® 7

Diameter	Approx Mass WSC		Min Breaking Force Rope Grade EIP / 1960		EEIP / 2160	
in	lb/ft	kg/m	tons	kN	tons	kN
1/2	0.456	0.683	13.3	118	14.6	130
9/16	0.576	0.861	16.8	149	18.5	165
5/8	0.722	1.07	20.6	183	22.7	202
3/4	1.02	1.52	29.4	262	32.4	288
7/8	1.40	2.08	39.8	354	43.8	390
1	1.82	2.70	51.7	460	56.9	506
1 1/8	2.30	3.42	65.0	578	71.5	636
1 1/4	2.89	4.29	79.9	711	87.9	782
1 3/8	3.44	5.12	96.0	854	106.0	943

Whilst every effort has been made to ensure the accuracy of the product tables, the information contained within is intended as a guide. For specific or specialized requirements, please contact BBRG.