



Wire Rope

There are many different sizes, configurations, and materials that form wire rope, and these are different types including stainless steel wire rope, galvanized wire rope, and bright wire rope.

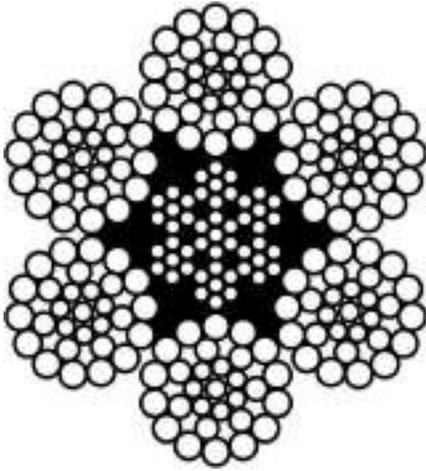
- General Purpose Wire Rope
- Rotation Resistant Wire Rope
- Specialty Wire Rope
- Drilling Lines
- Pendant Lines
- Aircraft Cable

Looking for accessories to use with wire ropes? Our rigging supplies include hardware and accessories for use with cranes, hoists & winches, and oilfield applications.

Variations when choosing your rope:

- **Diameter:** To properly measure the diameter of steel wire ropes, measure the rope at its widest point. This is an industry standard with wire cable manufacturers and steel cable suppliers.
- **Grade of Steel - EIPS, EEIPS:** EIPS is Extra Improved Plowed Steel and has roughly 10% more strength than IPS. EEIPS is Extra Extra Improved Plowed Steel and is approximately 10% stronger than the EIPS. We offer every variety of EIPS Wire Rope and have a one day lead time on any EEIPS ropes.
- **Direction of Lay:** Right hand and left hand designates which way the strands wrap around the core of the steel rope. Regular lay and Lang lay specify which way the wires are formed in the helix pattern. Regular lay means the wires are rotated opposite the direction of the strands around the core. Lang lay means the wires are twisted in the same direction as the strands are wrapped around the wire rope core.
- **Finish - Bright Wire, Galvanized Wire, and Stainless Steel:** Most wire ropes have a bright, self-colored finish hence the name. Wire ropes generally have a coating of lubricant to reduce friction and protect from corrosion. However, there are wire ropes that are galvanized, stainless steel, or coated in vinyl and other plastics.
- **Material of the Core:** Fiber Core (**FC**) or Independent Wire Rope Core (**IWRC**) - Fiber cores are made of natural (sisal, etc.) or synthetic (polypropylene, etc.) fibers and allow for increased flexibility. IWRC offers more support to the outer strands, and have a higher resistance to crushing. IWRC also offers more resistance to heat, reduces the amount of stretch, and increases the strength of the rope.
- **Strands:** Another variable in wire rope is how many strands make up the rope and how many wires make up one strand. For instance, a 6x26 wire rope has 6 strands around a core with 26 wires making up each strand. The 6x19 class is the most common and offers higher resistance to abrasion whereas the 6x37 class offers higher flexibility.

General Purpose



6x36 IWRC
 • Fatigue resistant
 • Abrasion resistant

The 6x36 classification of wire ropes includes standard 6 strand, round strand ropes with 27 through 49 wires per strand.

The 6x36 ropes are important for their fatigue resistance. This fatigue resistance is made possible by the greater number of small wires per strand.

Although there are exceptions for special applications, the constructions in 6x36 classification are primarily designed to be the most efficient for each rope diameter. As the rope size increases, for instance, a large number of wires can be used to achieve required fatigue resistance, and still those wires will be large enough to offer adequate resistance to abrasion.

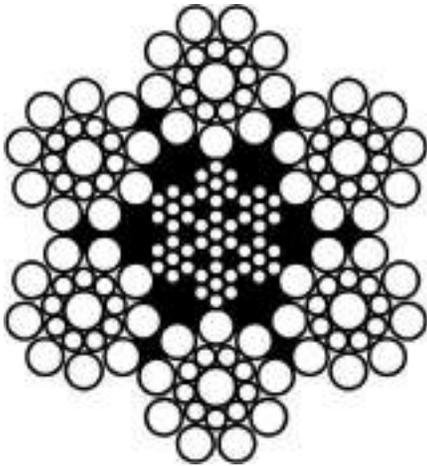
Characteristics of Standard 6x36 Class Ropes

In most rope sizes, only one 6x36 classification rope is made. These constructions were selected to provide fatigue resistance without having wires that are too small.

The greater number of wires in the 6x36 classification makes the ropes more susceptible to crushing. This can be minimized, however, by specifying an Independent Wire Rope Core (IWRC) and by using well-designed sheaves, grooved drums and proper operating techniques.

6x36 IWRC Strength and Weights Chart

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)
1/4	0.116	3.4
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
1-1/4	2.89	79.9
1-3/8	3.5	96
1-1/2	4.16	114
1-5/8	4.88	132
1-3/4	5.67	153
1-7/8	6.5	174
2	7.39	198
2-1/8	8.35	221
2-1/4	9.36	247
2-3/8	10.4	274
2-1/2	11.6	302
2-5/8	12.8	331
2-3/4	14	361
2-7/8	15.3	392
3	16.6	425
3-1/8	18	458
3-1/4	19.5	492
3-3/8	21	529
3-1/2	22.7	564
3-5/8	24.3	602
3-3/4	26	641
3-7/8	27.7	680
4	29.6	720
4-1/8	31.7	757
4-1/4	33.3	799
4-3/8	35.4	844



6x19 IWRC
 • Abrasion resistant
 • Crush resistant

The 6x19 classification of wire ropes includes standard 6 strand, round strand ropes with 16 through 26 wires per strand. This is a good rope to withstand abrasion or crushing on the drum. Ropes with independent wire rope strands and a core (IWRC) in general, are more crush resistant than fiber core ropes.

When you purchase our 6x19 Class of wire ropes, you get more than just another rope. Manufactured in an ISO 9001 certified factory and backed by the industry’s largest staff of professional engineers, we do more than meet published specifications.

Our quality begins with our raw material qualification process. All of our suppliers must meet rod standards that are more stringent than industry standards. We then track the rod coils through the manufacturing process for full traceability. And we don’t stop there; the tracking continues into the field as each schedule is tracked to the customer. In addition to tracking, throughout the manufacturing process, we break test wires and tie that information to the coil and/or reel of rope. Through these actions, we know the characteristics of the rope from its infancy and know who purchased it when it was completed. This peace of mind is what you should expect from the leader.

Characteristics of Standard 6 x 19 Class ropes:

6x19S (Seale) - This is a good rope to withstand abrasion or crushing on the drum but its fatigue resistance is decreased.

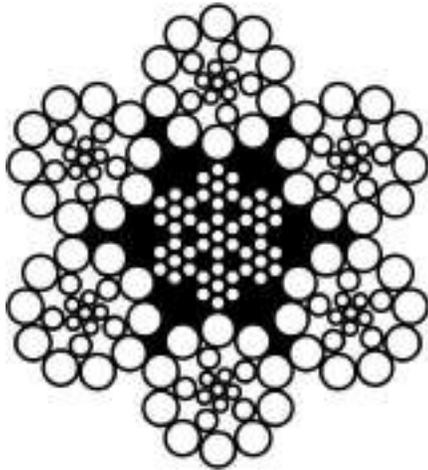
6x25FW (Filler Wire) - To most wire rope users, 6x19 means 6x25 filler wire. It is a common rope in the 6x19 classification.

6x26WS (Warrington Seale) - A standard 6x26WS design provides the best rope for a wide range of applications. In general, we recommend the use of a 6x26WS in any application where a 6x25FW is used.

**6x19 IWRC
 Strength and Weights Chart**

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.) XIP
1/4	0.116	3.4
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
1-1/4	2.89	79.9
1-3/8	3.5	96
1-1/2	4.16	114
1-5/8	4.88	132
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3-3/8	21	529
3-1/2	22.7	564
3-5/8	24.3	602
3-3/4	26	641
3-7/8	27.7	680
4	29.6	720
4-1/8	31.7	757
4-1/4	33.3	799
4-3/8	35.4	844

6x26 IWRC Strength and Weights Chart



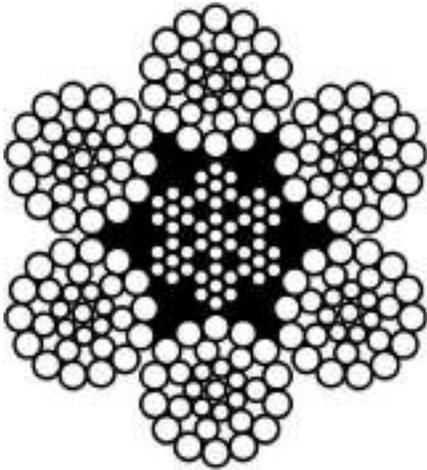
6x26 WS IWRC
 • Fatigue resistance comparable to a 6x25FW
 • Recommended in any application where a 6x25FW is used.

The 6x26 WS has better resistance to abrasion than a 6x25FW. It features a compact construction with solid support for the wires; therefore it has a high resistance to crushing. Its number and relative size of the inner wires add to the stability of the strand and gives it a fatigue resistance comparable to a 6x25 FW. A standard 6x26 WS construction provides the best rope for a wide range of applications. In general, we recommend the use of the 6x26WS in any application where a 6x25FW is used.

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.) XIP
1/4	0.116	3.4
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
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4	29.6	720
4-1/8	31.7	757
4-1/4	33.3	799
4-3/8	35.4	844

Available galvanized at 10% lower strengths, or in equivalent strengths of special request.

Specialty Wire



- Mast Raising Lines
- Fatigue resistant
 - Meets API Specifications
 - Proof Tested

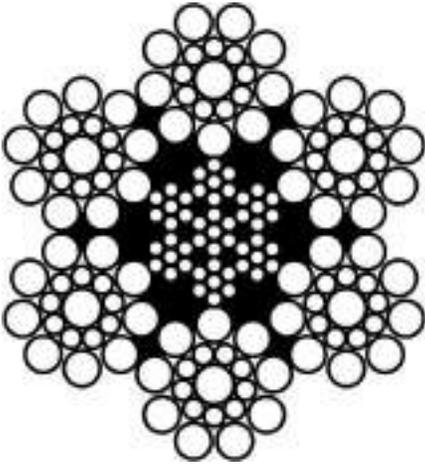
Mast Raising Lines, also called Bull Lines or Bridle Lines, are usually two pieces: each having sockets on both ends. These lines can be fabricated from either right regular lay rope or right lang lay rope. They must be fabricated from IWRC ropes.

Mast Raising Lines
Strength and Weights Chart

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.) XIP
1	1.85	51.7
1-1/8	2.34	65
1-1/4	2.89	79.9
1-3/8	3.5	96
1-1/2	4.16	114
1-5/8	4.88	132
1-3/4	5.67	153
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3-1/2	22.7	564
3-5/8	24.3	602
3-3/4	26	641
3-7/8	27.7	680
4	29.6	720

Sizes up to 1-3/8" are 6x19 class IWRC.
All sizes greater than 1 1/2" are 6x36 class IWRC.

Rotary Drill Lines



6x19 IWRC Conventional Drill Line

- Standard Drill Line
- Meets or exceeds API 9A

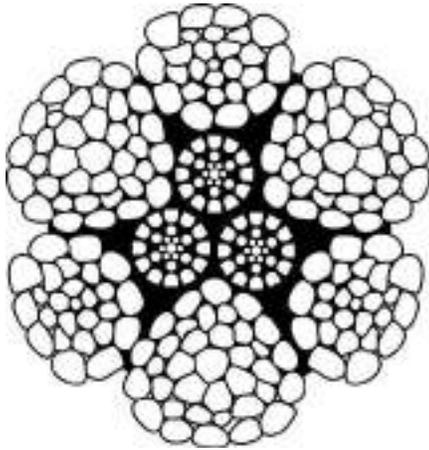
This demanding application requires a rope that is abrasion resistant, crush resistant, fatigue resistant and relatively stable.

Premium ropes may be used for specific applications. PFV cushions the strands, distributes internal stresses, keeps in wire rope lubricant and keeps out dirt and debris, extending the service life.

Conventional Drill Line Strength and Weights Chart

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.) XIP
7/8	1.42	39.8
1	1.85	51.7
1-1/8	2.34	65
1-1/4	2.89	79.9
1-3/8	3.5	96
1-1/2	4.16	114
1-5/8	4.88	132
1-3/4	5.67	153
1-7/8	6.5	174
2	7.39	198

Rope sizes of 7/8 - 1" are 6x26WS RRL IWRC construction.
 Rope sizes of 1 1/8 - 1 1/2" are 6x19S RRL IWRC construction.
 Rope sizes of 1 5/8 - 2" are 6x26WS RRL IWRC construction.
 All sizes available in PFV coating.



- Flex-X® 9
- Crush resistant
 - Abrasion resistant
 - Greater surface area

Flex-X® 9 Strength and Weights Chart

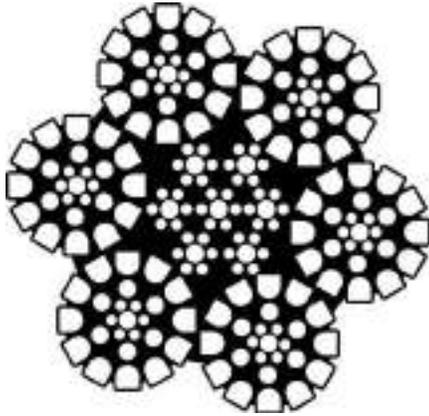
Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)
5/8	0.90	26.2
3/4	1.3	37.4
7/8	1.79	50.6
1	2.33	65.7
1 1/8	2.93	82.7

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, 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

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

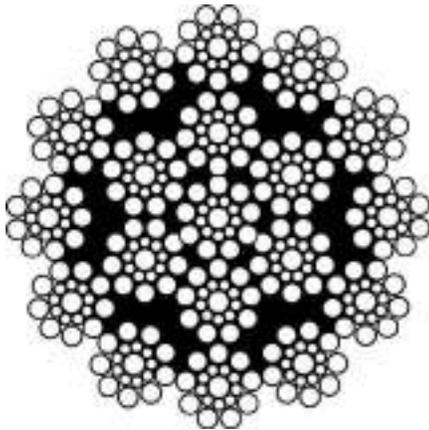
Flex-X® 6 users receive superior performance and increased service life in many applications compared to the ropes they had previously employed. When compared to conventional six-strand ropes, Flex-X® 6 ropes provide greater surface area and more steel per given diameter. This increases rope stability 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, 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 Strength and Weights Chart

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)
3/8	0.32	8.8
7/16	0.41	11.9
1/2	0.55	15.3
9/16	0.7	19.3
5/8	0.86	22.7
3/4	1.25	32.4
7/8	1.67	43.8
1	2.18	56.9
1-1/8	2.71	71.5
1-1/4	3.43	87.9
1-3/8	4.25	106
1-1/2	5.01	125



- 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 19x7 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 Strength and Weights Chart

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)
7/16	0.43	11.2
1/2	0.49	14.6
9/16	0.65	18.5
5/8	0.78	22.7
3/4	1.16	32.4
7/8	1.58	43.8
1	2.05	56.9
1-1/8	2.57	71.5

*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.

Sling Inspection & Removal Criteria Quick-Guide PER ASME B30.9

Wire Rope Slings (PER B30.9)

Wire Rope Slings shall be removed from service if any of the following conditions are present:

1. Missing or illegible sling identification.
2. Broken Wires:
 - For strand-laid and single-part slings, 10 randomly distributed broken wires in one rope lay, or 5 broken wires in one strand in one rope lay.
 - For cable-laid slings, 20 broken wires per lay.
 - For less than eight-part braided slings, 20 broken wires per braid.
 - For eight-part or more than eight braided slings, 40 broken wires per braid.
3. Severe localized abrasion or scraping.
4. Kinking, crushing, bird caging, or any other damage resulting in damage to the rope structure.
5. Evidence of heat damage.
6. End attachments that are cracked, deformed, or worn to the extent that the strength of the sling is substantially affected.
7. Severe corrosion of the rope, end attachments, or fittings.
8. For hooks, removal criteria as stated in ASME B30.10.
9. For rigging hardware, removal criteria as stated in ASME B30.26
10. Other conditions, including visible damage, that cause doubt as to the continued use of the sling.

Synthetic Flat Web Slings (PER B30.9)

Synthetic Web Slings shall be removed from service if any of the following conditions exist:

1. Missing or illegible sling identification.
2. Acid or caustic burns.
3. Melting or charring of any part of the sling.
4. Holes, tears, cuts, or snags.
5. Broken or worn stitching in load bearing splices.
6. Excessive abrasive wear.
7. Knots in any part of the sling.
8. Discoloration & brittle or stiff areas on any part of the sling, may mean chemical or ultraviolet/sunlight damage.
9. Fittings that are pitted, corroded, cracked, bent, twisted, gouged, or broken.
10. For hooks, removal criteria as stated in ASME B30.10.
11. For rigging hardware, removal criteria as stated in ASME B30.26
12. Other conditions, including visible damage, that cause doubt as to the continued use of the sling.

Alloy Steel Chain Slings (PER B30.9)

Alloy Steel Chain Slings shall be removed from service if any of the following conditions are present:

1. Missing or illegible sling identification.
2. Cracks or breaks
3. Excessive wear, nicks, or gouges.
4. Stretched chain links or components
5. Bent, twisted, or deformed chain links or components.
6. Evidence of heat damage.
7. Excessive pitting or corrosion.
8. Lack of ability of chain or components to hinge (articulate) freely.
9. Weld splatter.
10. For hooks, removal criteria as stated in ASME B30.10
11. For rigging hardware, removal criteria as stated in ASME B30.26
12. Other conditions, including visible damage, that cause doubt as to the continued use of the sling.

Polyester Roundslings (PER B30.9)

Roundslings shall be removed from service if any of the following conditions exist:

1. Missing or illegible sling identification.
2. Acid or caustic burns.
3. Evidence of heat damage.
4. Holes, tears, cuts, abrasive wear, or snags that expose the core yarns.
5. Broken or damaged core yarns.
6. Weld splatter that exposes core yarns.
7. Knots in the roundslings, except for termination points of core yarns inside the cover.
8. Fittings that are pitted, corroded, cracked, bent, twisted, gouged, or broken.
9. For hooks, removal criteria as stated in ASME B30.10.
10. For rigging hardware, removal criteria as stated in ASME B30.26.
11. Any other condition that may cause doubt as to the continued use of the sling.

Rigging Hardware Inspection & Removal Criteria Quick-Guide

Hooks (PER B30.10)

Hooks having damage or wear described as follows shall be repaired or replaced:

1. Cracks, nicks, and gouges that compromise the integrity of the hook. Repair of cracks, nicks, and gouges shall be carried out by a designated person by grinding longitudinally, following the contour of the hook, provided no dimension is reduced more than 10% (or as recommended by the manufacturer) of its original value.
2. Wear exceeding 10% (or as recommended by the manufacturer) of the original sectional dimension.
3. Any visibly apparent bend or twist from the plane of the unbent hook.
4. Any distortion causing an increase in throat opening of 5%, not to exceed 1/4 in. (or as recommended by the manufacturer)
5. Inability of self-locking hooks to lock.
6. A hook latch that is inoperative shall be repaired, replaced, or removed if not required.
7. If a required latch is inoperable and cannot be immediately repaired or replaced, the hook shall be sufficiently moused to retain loose items as defined in para. 10-1.3(c) until the latch is repaired or replaced.
8. When reassembling shank hooks, original securing methods or manufacturer's recommendations shall be followed.
9. All replacement parts shall be at least equal to the original manufacturer's specifications.
10. Hooks without provision for latches may be moused to retain loose items as defined in para. 10-1.3(c).
11. For special lifting applications where the throat opening is required to be closed, mousing may be used in place of the latch to retain loose items as defined in para. 10-1.3(c), when approved by a qualified person.

Shackles (PER B30.26)

Shackles shall be removed from service if damage such as the following is visible and shall only be returned to service when approved by a qualified person:

1. Missing or illegible manufacturer's name or trademark and/or rated load identification.
2. Indications of heat damage including weld spatter or arc strikes.
3. Excessive pitting or corrosion.
4. Bent, twisted, distorted, stretched, elongated, cracked, or broken load-bearing components.
5. Excessive nicks or gouges.
6. A 10% reduction of the original or catalog dimension at any point around the body or pin.
7. Incomplete pin engagement.
8. Excessive thread damage.
9. Evidence of unauthorized welding.
10. Other conditions, including visible damage, that cause doubt as to the continued use of the shackle.

Eyebolts, Eye Nuts, Swivel Hoist Rings, Turnbuckles (PER B30.26)

Adjustable hardware shall be removed from service if damage such as the following is present and shall only be returned to service when approved by a qualified person:

1. Missing or illegible identification.
2. Indications of heat damage including weld spatter or arc strikes.
3. Excessive pitting or corrosion.
4. Bent, twisted, distorted, stretched, elongated, cracked, or broken load-bearing components.
5. Excessive nicks or gouges.
6. A 10% reduction of the original or catalog dimension at any point.
7. Excessive thread damage or wear.
8. Evidence of unauthorized welding or modification.
9. For swivel hoist rings, lack of the ability to freely rotate or pivot.
10. Other conditions, including visible damage, that cause doubt as to continued use.

Links & Rings (PER B30.26)

Links, rings, and swivels shall be removed from service if conditions such as the following are present and shall only be returned to service when approved by a qualified person:

1. Missing or illegible identification.
2. Indications of heat damage, including weld spatter or arc strikes.
3. Excessive pitting or corrosion.
4. Bent, twisted, distorted, stretched, elongated, cracked, or broken load bearing components.
5. Excessive nicks or gouges.
6. A 10% reduction of the original or catalog dimension at any point.
7. Evidence of unauthorized welding or modification.
8. For swivels, lack of the ability to freely rotate when not loaded.
9. For swivels, loose or missing nuts, bolts, cotter pins, snap rings, or other fasteners and retaining devices.
10. Other conditions, including visible damage that cause doubt as to continued use.

