



# HMPE SLINGS

HMPE fiber slings represent a cutting-edge lifting solution, combining lightweight construction with exceptional strength and durability. Engineered from ultra high molecular weight polyethylene fibers, these slings are ideal for demanding lifting applications where performance, safety, and efficiency are paramount.

Key advantages of HMPE slings include:

- **High Strength-to-Weight Ratio:** HMPE fibers provide unparalleled lifting capacity while remaining significantly lighter than traditional slings, reducing operator fatigue and easing transportation.
- **Low Stretch:** Minimal elongation under load ensures precision and stability during lifts.
- **Exceptional Durability:** Resistant to abrasion, UV exposure, chemicals, and moisture, HMPE slings perform reliably in harsh environments, including marine and offshore applications.
- **Load Protection:** The soft, yet strong, material reduces the risk of surface damage to delicate or high-value loads.
- **Enhanced Safety:** Lightweight construction reduces handling hazards, and the material's strength minimizes the risk of sling failure under rated loads.



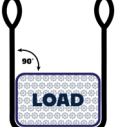



Commonly used in industries such as shipping, construction, aerospace, and heavy manufacturing, HMPE slings excel in critical applications requiring superior performance and reliability. Proper inspection, adherence to load limits, and compliance with safety standards are essential for ensuring safe and effective use.



**HMPE EYE & EYE SLINGS**

**! WARNING !** See page 49 for removal criteria



Diameter (")	Vert 	Choker 	90° 	60° 	45° 	30° 	Circ. (")	MBL (lbs)
1/4 (6 mm)	1,600	1,120	3,200	2,770	2,260	1,600	3/4	8,000
5/16 (8 mm)	2,340	1,630	4,680	4,050	3,300	2,340	15/16	11,700
3/8 (9 mm)	3,500	2,450	7,000	6,060	4,940	3,500	1-1/8	17,500
7/16 (11 mm)	4,200	2,940	8,400	7,270	5,930	4,200	1-1/4	21,000
1/2 (12 mm)	6,260	4,380	12,500	10,800	8,850	6,260	1-1/2	31,300
9/16 (14 mm)	7,580	5,300	15,100	13,100	10,700	7,580	1-3/4	37,900
5/8 (16 mm)	10,200	7,190	20,500	17,800	14,500	10,200	2	51,400
3/4 (18 mm)	13,700	9,590	27,400	23,700	19,300	13,700	2-1/4	68,500
13/16 (20 mm)	14,800	10,300	29,600	25,600	20,900	14,800	2-1/2	74,000
7/8 (22 mm)	18,500	12,900	37,000	32,000	26,100	18,500	2-3/4	92,600
1 (24 mm)	22,000	15,400	44,000	38,100	31,100	22,000	3	110,000
1-1/16 (26 mm)	25,800	18,000	51,600	44,700	36,500	25,800	3-1/4	129,200
1-1/8 (28 mm)	29,400	20,500	58,800	50,900	41,500	29,400	3-1/2	147,000
1-1/4 (30 mm)	33,000	23,100	66,000	57,100	46,600	33,000	3-3/4	165,000
1-5/16 (32 mm)	39,200	27,400	78,400	67,800	55,400	39,200	4	196,000
1-1/2 (36 mm)	44,200	30,900	88,400	76,500	62,500	44,200	4-1/2	221,000
1-5/8 (40 mm)	58,200	40,700	116,400	100,800	82,300	58,200	5	291,000
1-3/4 (44 mm)	62,800	43,900	125,600	108,700	88,800	62,800	5-1/2	314,000
2 (48 mm)	71,000	49,700	142,000	122,900	100,400	71,000	6	355,000
2-1/8 (52 mm)	85,600	59,900	171,200	148,200	121,000	85,600	6-1/2	428,000
2-1/4 (56 mm)	96,200	67,300	192,400	166,600	136,000	96,200	7	481,000
2-1/2 (60 mm)	106,000	74,200	212,000	183,500	149,900	106,000	7-1/2	530,000
2-5/8 (64 mm)	119,200	83,400	238,400	206,400	168,500	119,200	8	596,000
2-3/4 (68 mm)	132,000	92,400	264,000	228,600	186,600	132,000	8-1/2	660,000
3 (72 mm)	156,000	109,200	312,000	270,100	220,600	156,000	9	780,000
3-1/8 (76 mm)	170,000	119,000	340,000	294,400	240,400	170,000	9-1/2	850,000
3-1/4 (80 mm)	188,000	131,600	376,000	325,600	265,800	188,000	10	940,000
3-1/2 (84 mm)	221,600	155,100	443,200	383,800	313,300	221,600	10-1/2	1,108,000
3-5/8 (88 mm)	250,000	175,000	500,000	433,000	353,500	250,000	11	1,250,000
3-3/4 (92 mm)	263,400	184,300	526,000	456,200	372,500	263,400	11-1/2	1,317,000

\*Rated capacities (in pounds) are based on a design factor of 5:1 and determined with the sling angle calculated from the vertical.

Chart continued on next page

Dia. (")	Vert	Choker	90°	60°	45°	30°	Circ. (")	MBL (lbs)
4 (96 mm)	304,000	212,800	608,000	526,000	429,900	304,000	12	1,520,000
4-1/8 (100 mm)	324,400	227,000	648,000	561,000	458,700	324,400	12-1/2	1,622,000
4-1/4 (104 mm)	339,400	237,500	678,000	587,000	479,900	339,400	13	1,697,000
4-1/2 (108 mm)	365,400	255,700	730,000	632,000	516,000	365,400	13-1/2	1,827,000
4-5/8 (112 mm)	376,000	263,200	752,000	651,000	531,000	376,000	14	1,880,000
4-3/4 (116 mm)	385,400	269,700	770,000	667,000	545,000	385,400	14-1/2	1,927,000
5 (120 mm)	413,900	289,700	827,000	716,000	585,000	413,900	15	2,069,500
5-1/8 (124 mm)	442,400	309,600	884,000	766,000	625,000	442,400	15-1/2	2,212,000
5-1/4 (128 mm)	471,000	329,700	942,000	815,000	666,000	471,000	16	2,355,000
5-1/2 (132 mm)	499,500	349,600	999,000	865,000	706,000	499,500	16-1/2	2,497,500
5-5/8 (136 mm)	528,000	369,600	1,056,000	914,000	746,000	528,000	17	2,640,000
5-3/4 (140 mm)	556,000	389,500	1,113,000	963,000	787,000	556,000	17-1/2	2,782,500

Minimum Break Load (MBL) in pounds is determined using spliced test samples in accordance with Cordage Institute 1500-02 - Test Method for Fiber Ropes.

Minimum sling length on fabricated eye & eye slings assumes 1) a compressed minimum eye length of 6.75 times the rope diameter in inches, and 2) a clear span area between splices of 10 times Kennedy rope circumference in feet.

The recommended design factor (DF) of 5:1 on this chart is based on several existing sling standards including ASME B30.9. This design factor takes into account various factors including the use of Ultra High Molecular Weight Polyethylene (HMPE) fiber which is extremely durable and resistant to repeated high loads. HMPE rope slings have and can be used with different DF ratios; however, this is a decision which must be made by a qualified person in conjunction with the rope manufacturer.

We recommend the use of wear protection around choking points. Please consult KWRS if you require the use of our fiber rope slings in a choker hitch at a lifting angle of less than 120°, following ASME B30.9 guidelines.

### Bending Guidance for Eye & Eye Slings

In theory, a sling used in a basket configuration could have twice the working load as a sling in a vertical configuration because two ropes are now holding the load instead of one. However, the decrease in tensile stress is partially offset by an increase in bending stress. The magnitude of this bending stress is dependent on the size and shape of the contact surface. Users must account for the bending strength loss with an efficiency factor as shown below in the reduced basket capacity calculation.

The bending efficiency reduces as the D:d ratio is reduced. Example: a 5:1 D:d ratio provides 80% efficiency.

**Reduced Basket Capacity Calculation**

$C = B \times e$

**C = Reduced Basket Capacity due to bending efficiency reduction**

**B = Rated Basket Capacity with consideration of horizontal sling fleet angle**

**e = Bending efficiency percentage**

Represents a contact surface that is equal to or greater than the rope diameter

Represents a contact surface with a D:d ratio of one or greater. Refer to the Efficiency Table for deductions as needed.

Efficiency Table	
D:d Ratio	eff % (e)
25:1	100.0%
8:1	82.5%
5:1	80.0%
3:1	75.0%
2:1	72.5%
1:1	65.0%



## HMPE ENDLESS GROMMET SLINGS

HMPE endless grommet slings offer greater strength than eye and eye slings without increasing rope diameter and can be made shorter since no extra material is needed for eyes. Their minimum breaking load depends on the pin diameter they are mounted on.



WARNING

**See page 49 for  
removal criteria**

Dia. (in.)	Vert	Choker	90°	60°	45°	30°	Circ. (in.)	MBL (lbs.)
1/4 (6 mm)	2,640	1,120	4,750	4,110	3,360	2,370	3/4	13,200
5/16 (8 mm)	3,860	1,630	6,940	6,010	4,910	3,470	15/16	19,305
3/8 (9 mm)	5,770	2,450	10,300	9,000	7,350	5,190	1-1/8	28,875
7/16 (11 mm)	6,930	2,940	12,400	10,800	8,820	6,230	1-1/4	34,650
1/2 (12 mm)	10,300	4,380	18,500	16,100	13,100	9,290	1-1/2	51,645
9/16 (14 mm)	12,500	5,300	22,500	19,400	15,900	11,200	1-3/4	62,535
5/8 (16 mm)	16,900	7,190	30,500	26,400	21,500	15,200	2	84,810
3/4 (18 mm)	22,600	9,590	40,600	35,200	28,700	20,300	2-1/4	113,025
13/16 (20 mm)	24,400	10,300	43,900	38,000	31,000	21,900	2-1/2	122,100
7/8 (22 mm)	30,500	12,900	55,000	47,600	38,800	27,500	2-3/4	152,790
1 (24 mm)	36,300	15,400	65,300	56,500	46,200	32,600	3	181,500
1-1/16 (26 mm)	42,600	18,000	76,700	66,400	54,200	38,300	3-1/4	213,180
1-1/8 (28 mm)	48,500	20,500	87,300	75,600	61,700	43,600	3-1/2	242,550
1-1/4 (30 mm)	54,400	23,100	98,000	84,800	69,300	49,000	3-3/4	272,250
1-5/16 (32 mm)	64,600	27,400	116,400	100,800	82,300	58,200	4	323,400
1-1/2 (36 mm)	72,900	30,900	131,200	113,600	92,800	65,600	4-1/2	364,650
1-5/8 (40 mm)	96,000	40,700	172,800	149,600	122,200	86,400	5	480,150
1-3/4 (44 mm)	103,600	43,900	186,500	161,500	131,800	93,200	5-1/2	518,100
2 (48 mm)	117,100	49,700	210,800	182,600	149,100	105,400	6	585,750
2-1/8 (52 mm)	141,200	59,900	254,200	220,100	179,700	127,100	6-1/2	706,200
2-1/4 (56 mm)	158,700	67,300	285,700	247,400	202,000	142,800	7	793,650
2-1/2 (60 mm)	174,900	74,200	314,800	272,600	222,600	157,400	7-1/2	874,500
2-5/8 (64 mm)	196,600	83,400	354,000	306,500	250,300	177,000	8	983,400
2-3/4 (68 mm)	217,800	92,400	392,000	339,500	277,200	196,000	8-1/2	1,089,000
3 (72 mm)	257,400	109,200	463,300	401,200	327,600	231,600	9	1,287,000
3-1/8 (76 mm)	280,500	119,000	504,000	437,200	357,000	252,400	9-1/2	1,402,500
3-1/4 (80 mm)	310,200	131,600	558,000	483,500	394,800	279,100	10	1,551,000
3-1/2 (84 mm)	365,600	155,100	658,000	569,000	465,300	329,000	10-1/2	1,828,200
3-5/8 (88 mm)	412,500	175,000	742,000	643,000	525,000	371,200	11	2,062,500
3-3/4 (92 mm)	434,600	184,300	782,000	677,000	553,000	391,100	11-1/2	2,173,050

**One splice in one leg vertical, choker and basket hitches. Basket hitch at varying angles.**

*\*Rated capacities (in pounds) are based on a Design Factor of 5:1 and a D:d of 8:1. Ratings are determined with the sling angle calculated from the vertical.*

Chart continued on next page



Dia. (in.)	Vert	Choker	90°	60°	45°	30°	Circ. (in.)	MBL (lbs.)
4 (96 mm)	501,000	212,800	902,000	781,000	638,000	451,400	12	2,508,000
4-1/8 (100 mm)	535,000	227,000	963,000	834,000	681,000	481,700	12-1/2	2,676,300
4-1/4 (104 mm)	560,000	237,500	1,008,000	872,000	712,000	504,000	13	2,800,050
4-1/2 (108 mm)	602,000	255,700	1,085,000	939,000	767,000	542,000	13-1/2	3,014,550
4-5/8 (112 mm)	620,000	263,200	1,116,000	967,000	789,000	558,000	14	3,102,000
4-3/4 (116 mm)	635,000	269,700	1,144,000	991,000	809,000	572,000	14-1/2	3,179,550
5 (120 mm)	682,000	289,700	1,229,000	1,064,000	869,000	614,000	15	3,414,675
5-1/8 (124 mm)	729,000	309,600	1,313,000	1,137,000	929,000	656,000	15-1/2	3,649,800
5-1/4 (128 mm)	777,000	329,700	1,398,000	1,211,000	989,000	699,000	16	3,885,750
5-1/2 (132 mm)	824,000	349,600	1,483,000	1,284,000	1,049,000	741,000	16-1/2	4,120,875
5-5/8 (136 mm)	871,000	369,600	1,568,000	1,358,000	1,108,000	784,000	17	4,356,000
5-3/4 (140 mm)	918,000	389,500	1,652,000	1,431,000	1,168,000	826,000	17-1/2	4,591,125

This MBL includes a 10% reduction due to 55:45% load sharing. Minimum Break Load (MBL) in pounds is determined using spliced test samples in accordance with Cordage Institute 1500-02 - Test Method for Fiber Ropes.

Specifications for endless loop (grommet) HMPE rope slings assume one end-to-end splice. The length of splice determines the minimum length of a grommet sling.

The recommended design factor (DF) of 5:1 on this chart is based on several existing sling standards including ASME B30.9. This design factor takes into account various factors including the use of Ultra High Molecular Weight Polyethylene (HMPE) fiber which is extremely durable and resistant to repeated high loads. HMPE rope slings have and can be used with different DF ratios: however, this is a decision which must be made by a qualified person in conjunction with the rope manufacturer.

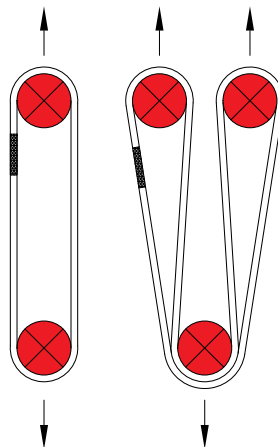
Please consult KWRS if you require the use of our fiber rope slings in a choker hitch at a lifting angle of less than 120°, following ASME B30.9 guidelines.

### Bending Guidance for Endless Grommet Slings

In theory, a sling used in a basket configuration could have twice the working load as a sling in a vertical configuration because there are double the number of supporting strands. However, the decrease in tensile stress is partially offset by an increase in bending stress. The magnitude of this bending stress is dependent on the size and shape of the contact surface. Users must account for the bending strength loss with an efficiency factor as shown below in the reduced basket capacity calculation.

The bending efficiency reduces as the D:d ratio is reduced. Example: a 5:1 D:d ratio provides 97% efficiency.

**Reduced Basket Capacity Calculation**  
 $C = B \times e$   
**C = Reduced Basket Capacity due to bending efficiency reduction**  
**B = Rated Basket Capacity with consideration of horizontal sling fleet angle**  
**e = Bending efficiency percentage**



Represents a contact surface with a D:d ratio of one or greater. Refer to the Efficiency Table for deductions as needed.

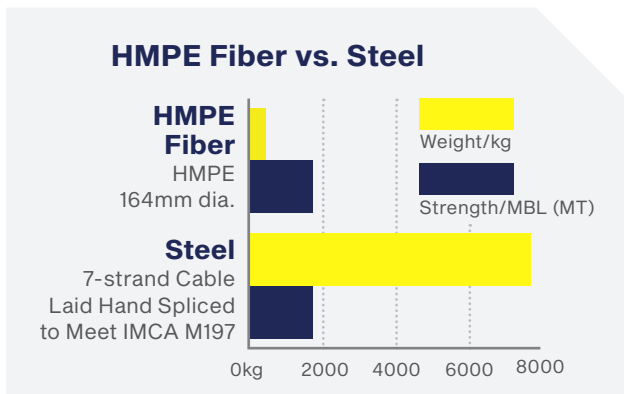
Efficiency Table	
D:d Ratio	eff % (e)
8:1	100.0%
5:1	97.0%
3:1	91.0%
2:1	88.0%
1:1	79.0%



## HMPE FIBER VS STEEL

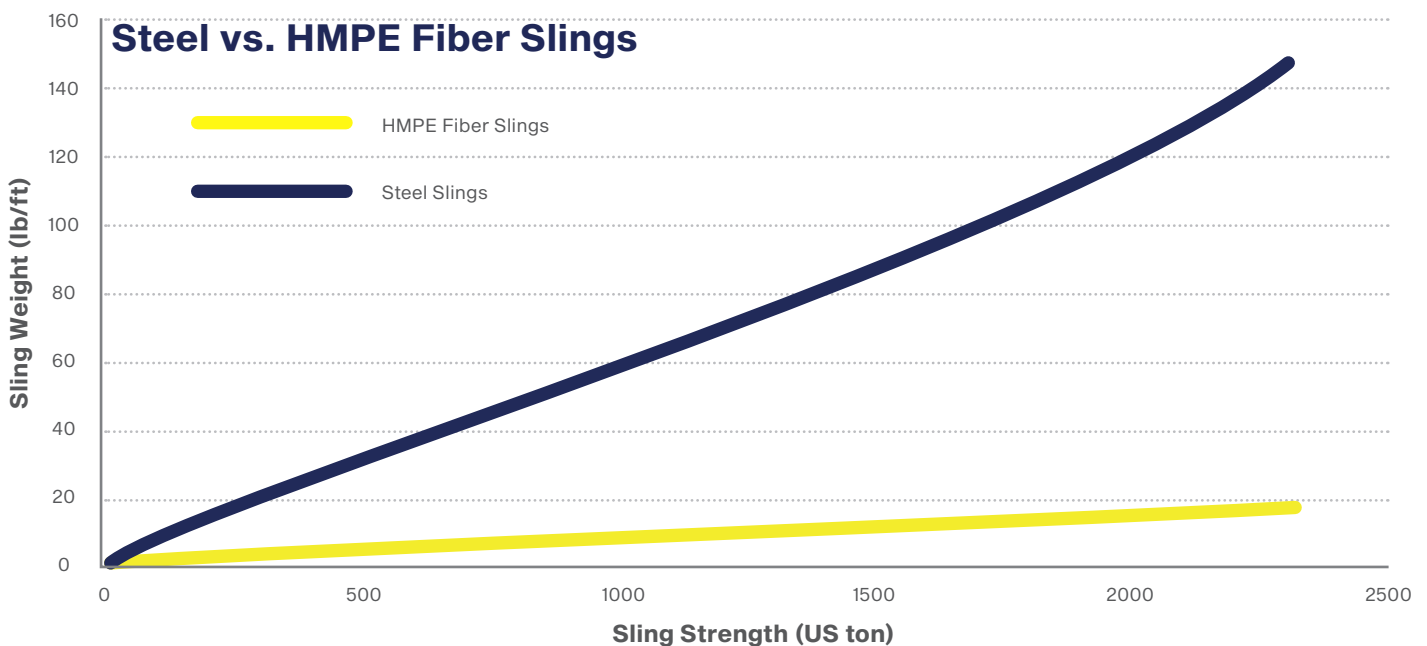
HMPE fiber ropes and slings have become increasingly popular as replacements for steel wire ropes in load handling. These modern, high-strength synthetic fibers offer remarkable durability without the risks of rust or corrosion. They remain unaffected by both salt and fresh water, and can be safeguarded against abrasion, cutting, and heat damage. Additionally, they are easy to inspect and repair.

1. **Weight Reduction:** They are 1/7 the weight of comparable steel wire rope sling.
2. **Rigging Efficiency:** The lightweight nature reduces rigging time.
3. **Ease of Handling:** Their flexibility and softness make them easier and safer to handle.
4. **Cost Savings:** Reduced handling, transportation, and storage costs.
5. **Repurposing:** Splice into different lengths / configurations throughout life of the sling.



### Benefits of HMPE Fiber vs. Steel

- Lighter and easier to handle
- Reduced risk of injury
- Remarkably durable, will not rust or corrode
- No broken/protruding wires
- Saves on transportation, storage, set-up
- Low maintenance
- Not affected by salt or freshwater
- Easy to inspect and splice



## PHYSICAL PROPERTIES OF HMPE

### Creep

Creep refers to the irreversible elongation of a rope under constant loading. Ropes experiencing creep often maintain relatively high breaking strengths until they are on the verge of failure, highlighting the importance of monitoring operating conditions that could cause excessive creep. When used within the recommended working load limit (WLL) and temperature range, HMPE exhibits minimal creep elongation during normal operations.

The risk of a rope creeping can be simplified into “The Three Ts”: tension, temperature, and time. Any operating conditions involving high loads, elevated temperatures, or extended durations will increase the likelihood of elongation due to creep.

### Abrasion Resistance

HMPE is renowned for its superior abrasion resistance compared to other fibers. This attribute is due to the molecular alignment of the polymer and the fiber’s low coefficient of friction. When braided into a rope, this property allows the fibers to move easily relative to one another, minimizing damage from abrasion.



**WARNING**



### Temperature Resistance

#### High-Temperature Considerations:

1. Strength Loss Threshold: HMPE ropes begin to irreversibly lose strength at temperatures above approximately 65°C (150°F).
  - Usage Restriction: Do not use HMPE ropes if ambient or contact temperatures exceed this limit.
2. Storage and Exposure Limits:
  - Short-Term Exposure: Avoid storage or exposure to temperatures over 70°C (160°F) for more than two hours.
  - Critical Temperature Limit: Never expose HMPE ropes to temperatures above 130°C (265°F), even briefly.

#### Low-Temperature Performance:

1. Strength in Cold Environments: HMPE fiber ropes exhibit no loss of strength in cold temperatures and may even gain strength at extremely low temperatures.
2. Ice Removal: Always remove any ice from slings before use to ensure safety and effectiveness.



## CHEMICAL EXPOSURE

HMPE fiber is impervious to most common chemicals, but degradation is subject to time of exposure, concentration of chemical, temperature, and overall conditions. Chemically active environments can affect the strength of synthetic fiber rope slings in varying degrees from moderate to total degradation. See general guidance below, but contact KWRS for guidance if the load handling sling will be used in a potentially damaging chemical environment.

### Resistance to Chemical Immersion

	6 Mos.	2 Yrs.
Seawater	<b>Safe</b>	<b>Safe</b>
Hydraulic Fluid	<b>Safe</b>	<b>Safe</b>
Kerosene	<b>Safe</b>	<b>Safe</b>
10% Detergent Solution	<b>Safe</b>	<b>Safe</b>
Gasoline	<b>Safe</b>	<b>Safe</b>
Toluene	<b>Safe</b>	<b>Moderate</b>
Glacial Acetic Acid	<b>Safe</b>	<b>Safe</b>
1M Hydrochloric Acid	<b>Safe</b>	<b>Safe</b>
5M Sodium Hydroxide	<b>Safe</b>	<b>Safe</b>
Ammonium Hydroxide (29%)	<b>Safe</b>	<b>Safe</b>
Perchloroethylene	<b>Safe</b>	<b>Safe</b>
Clorox Bleach	<b>Fair</b>	<b>Do Not Use</b>
Hypophosphite Solution (10%)	<b>Safe</b>	<b>No Data</b>
Nitric Acid	<b>Moderate</b>	<b>No Data</b>
Sulfuric Acid	<b>Resistant</b>	<b>No Data</b>
Phosphoric Acid	<b>Moderate</b>	<b>No Data</b>

## ROPE SLING CONFIGURATION

Just as important as selecting the right fiber and construction, selecting the correct configuration will further enhance the performance of any sling. There are two primary configurations for fiber rope slings:

### Eye and Eye Slings

When spliced into an eye and eye sling, HMPE will essentially act as a size-for-size replacement for a traditional steel wire rope sling in terms of strength. Each end is terminated using a KWRS approved splice which becomes locked in place after proof load testing.

Due to the splice length and free span requirements as shown in the drawing below, eye and eye slings have a minimum length that must be considered. The sling can be made only so short due to the splices. Refer to minimum sling length column in the sling rating charts.

#### Eye and Eye fabrication with splice-terminated eyes at each end:



- Minimum D:d ratio in the eyes is 1:1
- Minimum eye length must be 6x the bearing surface diameter or pin diameter to maintain the vertex angle below 300
- Rated capacity of eye and eye slings in a vertical pull include splice efficiencies
- When basketing eye and eye slings, the rated capacity will be affected when the basket point D:d ratio is less than 25:1

### Endless Grommet Slings

Grommets are manufactured by splicing the ends of a rope together to form a continuous loop. Compared to eye and eye slings, they have increased strength with little to no increase in the chosen rope diameter due to two legs holding the load. Alternatively, the same load can be held with a smaller rope diameter due to the two legs holding the load.

The breaking strength of endless grommet slings is directly affected by the pin diameter on which they are mounted.

#### Grommet (endless loop):



#### Grommet (endless loop) with formed eyes at each end:





continued

- Grommet sling rated capacity is directly related to the contact curvature on which it will be used
- Grommet sling ultimate strength is based on applying a configuration factor (CF) to the single leg strength to which the rope is made

## PROOF LOADING

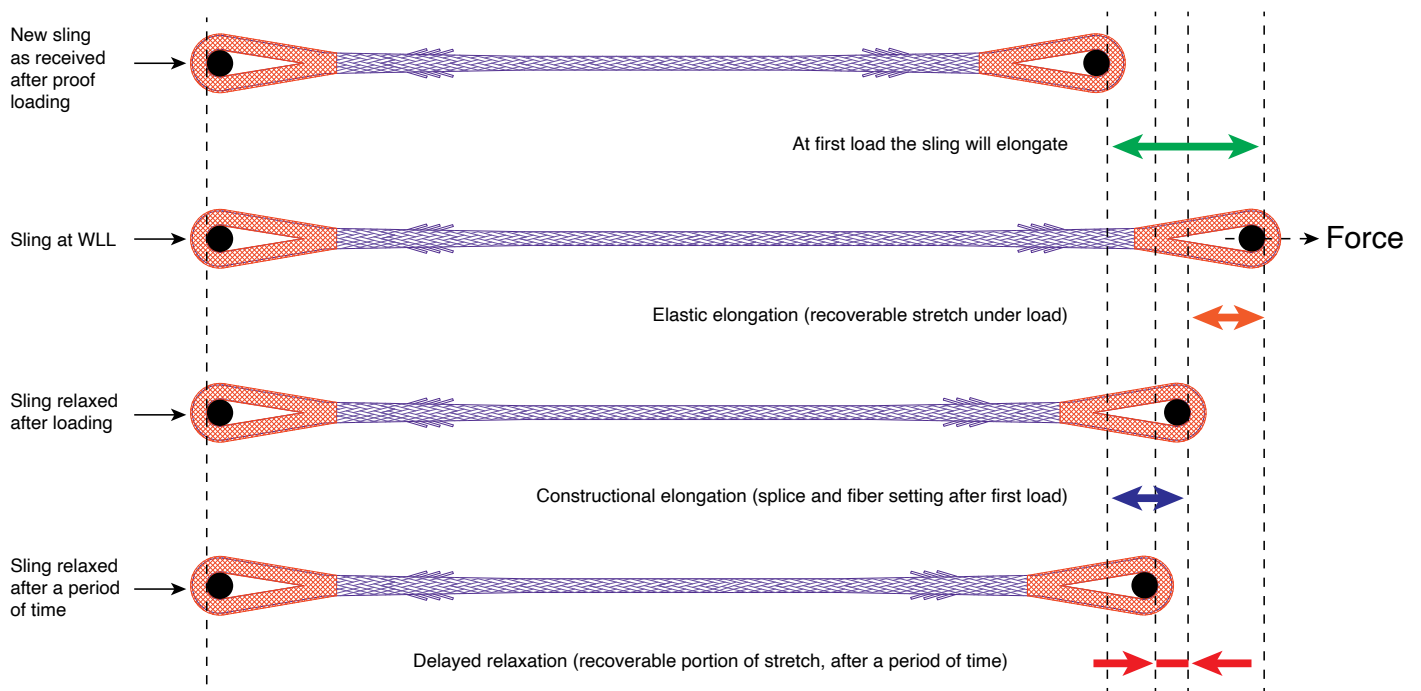
Proof-loading is a non-destructive process which subjects the completed sling assembly to a predetermined load, typically 40% of the MBL of the rope.

After fabrication, KWRS fiber rope slings will be subjected to preload or proof-load testing. Physical properties that change while load testing are:

- Diameter will decrease
- Length will increase

During the initial proof load testing, the rope will experience constructional elongation. The purpose of preloading is to remove constructional stretch and stabilize the elongation properties of the sling. During this process the rope will elongate approximately 5–6% and reduce in diameter.

It is at this time that the as-built, fabricated length of the sling is taken (i.e., after proof load testing).



## REMOVAL CRITERIA

There are no precise rules to determine the exact time for the removal of the rope since many variable factors are involved. Inspection methods and retirement criteria specific to a given rope design shall be provided by the rope manufacturer. Once a rope reaches any one of the removal criteria, it shall be replaced. Specific inspection attributes and removal criteria include the following:

- Damage that is estimated to have reduced the effective diameter of the rope by more than 10%, as compared to an unaffected section of the rope
- Cuts, gouges, areas of extensive yarn material breakage along the length, and abraded areas on the rope
- Uniform yarn material breakage along the major part of the length of the rope, such that the entire rope appears covered with fuzz or whiskers
- Inside the rope, yarn material breakage, fused or melted yarn material involving damage estimated at more than 10% of the diameter of the rope or affecting more than 10% of strand diameters in half of the strands in a lay length. This may be observable by prying or twisting to open the strands in some rope constructions, as recommended by the rope manufacturer
- Discoloration, brittle yarns, and hard or stiff areas that may indicate chemical damage, ultraviolet damage, or heat damage
- Dirt and grit in the interior of the rope structure that is causing damage to rope yarns.
- Kinks or distortion in the rope structure, particularly if caused by forcibly pulling on the loops (known as hockles)
- Melted, hard, or charred areas that affect more than 10% of the diameter of the rope or affect more than 10% of strand diameters in half of the strands in a lay length
- Any apparent damage from a heat source, including, but not limited to, welding, power line strikes, or lightning
- Poor condition of thimbles or other components manifested by corrosion, cracks, distortion, sharp edges, or localized wear
- End terminations removal criteria include severely corroded, cracked, bent, worn, grossly damaged, or improperly installed end terminations
- For jacketed rope, completely broken jackets that no longer protect the load-bearing fiber
- Other conditions, including visible damage, that cause doubt as to the continued use of the rope



## SLING PROTECTION

If additional protection from the elements, cutting, abrasion, or mud ingress is needed, KWRS offers several wear protection options. Fiber rope slings can be completely covered in protection, or simply protected in critical contact areas; e.g. the basket lifting point, or the eyes. Options include:

### HMPE Braided Chafe



Combining the lightweight, abrasion resistant and non-water absorbing properties

of HMPE fiber, Braided Chafe protection is a tightly braided tubular structure which can be freefloating or fitted onto the sling to offer the highest protection from cuts and abrasion that KWRS offers.

### HMPE Narrow Woven



Combining the lightweight, abrasion resistant and non-water absorbing properties of

HMPE fiber, Narrow Woven protection is a lightweight woven fabric structure which is easy to install and retrofit on existing slings, providing protection from cuts and abrasion.

### Sidewinder



A cost-effective woven fabric material, Sidewinder is the most commonly used protection for abrasion. This protection is available as a permanent installation,

or in a removable / replaceable form with a hook-and-loop closure.

