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Synthetic Slings

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8 Synthentic Slings

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8-A
Buffalo Web Slings

Important Facts About Buffalo Web Slings *Nylon & Polyester

How to Choose the Right Sling

If you have any questions, please call Hanes Supply. Make sure you know the use, load and conditions for the sling you need. Reading the facts about web slings should help you decide.

Nylon vs. Polyester

Nylon Web - Strong & Economical
Nylon webbing is strong, lightweight and very flexible. It is highly resistant to alkalies, but should never be used in acid conditions. When treated for abrasion it has a stretch factor of 10%. Nylon can be worked in up to 200°F.

Polyester Web - Less Stretch & Acid Resistant
Polyester webbing has become very valuable especially in applications which subject the sling to acid conditions. Also polyester slings are excellent where headroom is limited because of the webbing stretch characteristics. Polyester can work in up to 200°F.

Sling Strength

OSHA standards demand that the rated capacity be noted on each sling. Check the capacity tables in this catalog to make sure of the strength of the sling you may need. Do not ever exceed rated capacities of a web sling.

Each Buffalo Web Sling has a leather tag which states the manufacturer, the type of material rated capacities, type of sling, and length and width of the sling.

Each Buffalo Sling also has a warning tag about inspection and restrictions as to the web sling.

Use of Sling

1. Load surface problem

If sharp or rough edges come in contact with web slings cutting or accelerated wear could occur. Certain accessories in this catalog could help protect the sling.

2. Avoid Crushing and Knotting of Slings

Don’t crush a sling between load and other surface.

3. Do not expose the sling to the sun for an extended period of time.

Prolonged exposure of sling to the sun will degrade lifting capacity.

4. Different Hitches’ Rated Capacities

Slings have the largest load when used in the basket hitch. Capacity in the vertical hitch is 40% of that in the basket hitch. Capacity in the choker hitch is 40% of basket hitch capacity.

Web Material - Soft & Flexible

Web Slings are made from nylon or polyester lifting yarn that is woven into various widths and thicknesses. The lifting yarn is surrounded by a tough abrasive resistance jacket yarn.

Red Warning Core

Red colored yarns under the jacket show when the jacket is worn or cut through and indicate that the sling should be taken out of use.

Shock Absorption

The stretching of web slings allows a cushion against sudden shock. When loaded at rated capacity, a nylon sling will stretch 6-8% and polyester 3-4%. Slings return to normal length when not loaded.

Standard Sling Types

Type 1 – TC Slings: Slings have a triangle fitting on one end & a slotted triangle fitting (the choker) on the other end. Choice of lightweight aluminum or durable steel fittings. This is most commonly used in a choker hitch, but can also be used in basket and vertical hitches.

Type 2 – TT Slings: Slings have a triangle fitting on each end. Used in vertical and basket hitches only (basket hitch being most typical). Choice of lightweight aluminum or durable steel fittings. Type 2 slings are more economical than Type 1.

Type 3 – EE Slings: Slings have eyes at both ends—choice of straight or tapered eyes (tapered eyes are standard ≥ 2” web-width). Flat Eye slings are very popular slings which can be used in all three types of hitches. They are easy to remove from beneath the load after the load is in place. Unless Type 4 is requested, Type 3 will be supplied as the standard EE sling.

Type 4 – EE Slings: Twisted Eye slings are similar to Type 3 except the eyes are twisted to a 90° right angle to the sling body to form a better choker hitch. This type of eye also nests together better when used in a basket hitch. (Tapered eye are standard ≥ 2” web-width)

Type 5 – EN: - Endless slings, sometimes also referred to as grommet slings, are very economical. This is the most versatile sling. They can be used in all three types of hitches and wear points can be moved to increase sling life. The sling legs can be spread for improved load balance.

Type 6 – RE: Return Eye Sling is also referred to as Reversed Eye Sling. Sling body is formed by 2 parts of webbing sewn side by side using either a cordura tube or web in the finished width creating a protective webbing over the entire body and eyes. This extra webbing reinforces the sling and protects it from wear, resulting in an exceptionally strong sling.

Measuring Web Slings

With sling layed flat, measure Pull-to-Pull.

---

Red Core Yarns Warning System

All Hanes Supply Inc., nylon and polyester web slings have red warning yarns. Red core yarns become exposed when the sing surface is cut or worn through the woven face yarns. This is one criteria, but not the only one for removal from service. For more information, see OSHA Requirements.
How to Order Synthetic Web Slings

When ordering sling always consider:

a. Type of hitch
b. Capacity tables
c. The Sling to load angles

When Placing Web Sling Order Please Specify:

1. Sling Material (Nylon or Polyester)
2. Sling type and code number
3. Number of plies
4. Type of webbing
5. Web width
6. Sling length

Number of Piles - This refers to the number of layers of webbing in the body of the slings.

Type of Webbing - Buffalo Sling handles a Light Duty (#6) and Heavy Duty line of webbing (#8).

Sling Length - Web Slings can be made to virtually any length measured as follows:

- Web Slings can be made to virtually any length measured as follows:
- Definition of Web Sling Order Code:

<table>
<thead>
<tr>
<th>Slings Length</th>
<th>Duty line of webbing (#8).</th>
</tr>
</thead>
<tbody>
<tr>
<td>60°</td>
<td>707 lbs.</td>
</tr>
<tr>
<td>45°</td>
<td>866 lbs.</td>
</tr>
<tr>
<td>30°</td>
<td>500 lbs.</td>
</tr>
</tbody>
</table>

Capacity Tag and Warning Sheet

A sewn on durable Capacity Tag and Warning Sheet are included with each Buffalo Sling.

It is important to read and understand all use and warning information before using sling.

Remove sling from service if Capacity Tag or Warning Tag has been removed or is illegible.

Please call if you have any questions or concerns.

Sample Capacity Tag:

<table>
<thead>
<tr>
<th>TC</th>
<th>Width</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>603</td>
<td>10</td>
</tr>
</tbody>
</table>

(a) (b) (c) (d) (e)

- Sling type
- Number of plies
- Type of webbing - heavy duty
- Width of webbing
- Length of sling

Sample Warning Sheet:

- Failure to comply with this warning may result in severe personal injury or death.
- Inspect sling for damage before each use.
- Always protect sling webbing from sharp edges of load.
- Do not attempt to use sling above rated capacity.
- Do not use sling if capacity tag is removed.
- Do not expose sling to temperatures above 194°F.
- Do not tie knots in sling webbing as strength is greatly reduced.
- Do not use sling if there are any signs of cut webbing, heat or chemical damage, excessive wear, or other defects.
- Consult sling load chart for basket hitch capacity reduction due to sling angle.
- Do not use near acids.

Environmental Considerations

- Temperatures above 195°F are seriously degrading to Nylon and polyester.
- Prolonged exposure to ultraviolet light adversely affects nylon and polyester. Slings become bleached and stiff when exposed to sunlight or arc welding.
- Some chemicals have an adverse effect on nylon and polyester. (See Table 1 below)

Chemical Environmental Data

General guide only. For specific concentration, temperature, and time factors, please consult us prior to purchasing or use.

Table 1

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Nylon</th>
<th>Polyester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acids</td>
<td>NO</td>
<td>OK¹</td>
</tr>
<tr>
<td>Alcohol</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>Aldehydes</td>
<td>OK</td>
<td>NO</td>
</tr>
<tr>
<td>Strong Alkalis</td>
<td>OK²</td>
<td>OK</td>
</tr>
<tr>
<td>Bleaching Agents</td>
<td>NO</td>
<td>OK</td>
</tr>
<tr>
<td>Dry Cleaning Solvents</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>Elthers</td>
<td>OK</td>
<td>NO</td>
</tr>
<tr>
<td>Halogenated Hydro-Carbons</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>Hydro-Carbons</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>Ketones</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>Oils Crude</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>Oils Lubricating</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>Soap &amp; Detergents</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>Water &amp; Seawater</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>Weak Alkalis</td>
<td>OK</td>
<td>OK</td>
</tr>
</tbody>
</table>

¹ Concentrated sulfuric acid will cause disintegration.
² Strong alkalis at elevated temperatures will cause degradation.
Web Slings Damage Examples
Web Slings must be removed from service whenever damaged. Prior to each use, all web slings must be examined for any of the following types of damage. In any instance when the red core warning threads are visible, the sling must be immediately removed from service. The following are common examples of web sling damage:

- **Abrasion Damage** - Abrasion damage could happen when the sling tightens around a rough load or pulling a sling from under a load. Over a period of time, a sling that constantly rubs against a rough surface can show abrasion damage.

- **Acid Damage** - Nylon slings should not be exposed to an acid environment at any time. Acids in direct contact with nylon can cause rapid deterioration, any sling with any acid damage should be immediately replaced.

- **Cuts** - A cut is a break of the nylon contact with a sharp edge of the load being lifted. A complete cut can cause a load to be dropped. A cut that shows any sign of the red core warning yarn must be immediately removed from service. Wear pads can help to reduce the risk of nylon sling cuts.

- **Edge Cut** - A nylon sling could experience a cut only on one edge. This will still reduce the strength of the entire sling and must be removed if red core yarn is visible.

- **Face Cut** - These cuts into the face of the sling material can be caused by a load shift of a lesser lift over a sharp edge. These face cuts should be examined and the sling should possibly be removed even if no red core warning thread is visible as a second face cut in a damaged position could cause sling failure.

- **Heat Damage** - Any nylon sling exposed to heat above 195°F or nylon slings in direct contact with flame must be immediately removed from service. Burn spots melting or charring are tell tale signs of heat damage.

- **Illegible or Missing Tag** - Nylon slings with an unreadable or missing tag must be removed from service. The sling user must know the type and capacity of any nylon sling to be used with no exceptions.

- **Punctures and Snaps** - Sharp points may snag or puncture nylon web material. This will compromise the strength of the damaged nylon sling. Such a sling must be removed from service.

- **Tensile Break** - A tension break is caused by an overloading of a nylon or a shock load. These overloaded slings look frayed at the point the sling failure. These slings must be immediately removed from service.

- **Elasticity** - The stretch characteristics of web slings depends on the type of yarn and the web finish.

### Synthetic Web Sling

**Synthetic Slings**

**Web Slings**

**Web Sling Abuses, Safety Info.**

**SYNTHETIC WEB SLINGS:**

**Inspection of Synthetic Web Slings**

**ASME B30.9C 1994**

**Type of Inspection**

a. Frequent inspection - This inspection should be made by the person handling the sling each day the sling is used.

b. Periodic inspection - This inspection should be conducted by designated personnel. Frequency of inspection should be based on:

1. Frequency of sling use;
2. Severity of service conditions; and
3. Experience gained on the service life of slings used in similar applications. Periodic inspection should be conducted at least annually.

**INSPECTION RECORDS.** Written inspection records, utilizing the identification for each sling as established by the user, should be kept for all slings. These records should show a description of the new sling and its condition on each periodic inspection.

**REMOVAL CRITERIA.** A sling shall be removed from service if damage such as the following is visible and shall only be returned to service when approved by a designated person.

- a. Acid or charring burns
- b. Melting or charring of any part of the sling
- c. Holes, tears, cuts or snaps
- d. Broken or worn stitching in load bearing splices
- e. Excessive abrasive wear
- f. Knots in any part of the sling
- g. Excessive pitting or corrosion, or cracked, distorted or broken fittings
- h. Other visible damage that causes doubt as to the strength of the sling.

**Operation of Synthetic Web Sling**

**ASME B30.9C 1994**

**Operating Practices**

- Slings having suitable characteristics for the type of load, hitch and environment shall be selected in accordance with appropriate tables.
- The weight of load shall be within the rated load of the sling.
- Slings shall be shortened, lengthened, or adjusted only by methods approved by the sling manufacturer.
- Slings shall not be shortened or lengthened by knotting.
- Sharp corners in contact with the sling should be padded with material approved by the sling manufacturer.
- Portions of the human body should be kept from between the sling and the load, and from between the sling and the crane hook or hoist hook.
- Personnel shall stand clear of the suspended load.
- Personnel shall not ride the sling.
- Shock loading should be avoided.
- Slings should not be pulled from under a load when the load is resting on the sling.
- Slings should be stored in a cool, dry, and dark place to prevent environmental damage.
- Twisting and kinking the legs shall be avoided.
- Load applied to the hook should be centered in the base (bowl) of hook to prevent point loading on the hook.
- During lifting, with or without load, personnel shall be alert for possible snagging.
- In a basket hitch, the load should be balanced to prevent slippage.
- The sling’s legs should contain or support the load from the sides above the center of gravity when using a basket hitch.
- Slings shall be long enough so that the rated load is adequate when the angle of the legs is taken into consideration.
- Slings shall not be dragged on the floor or over an abrasive surface.
- In a choker hitch, slings shall be long enough so the choker fitting chokes on the webbing and never on the other fittings.
- Nylon and polyester slings shall not be used at temperatures in excess of 194°F (90°C) or a temperature below -40°F (-40°C).

When extensive exposure to sunlight or ultraviolet light is experienced by nylon or polyester web slings, the sling manufacturer should be consulted for recommended inspection procedures.

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Environmental Considerations

1. Slings should be stored in a cool, dry and dark place, and should not be exposed to sunlight, to prevent mechanical or chemical damage when not in use.

2. Chemically active environments can effect the strength of synthetic web slings in varying degrees ranging from none to total degradation. The sling manufacturer should be consulted before slings are used in chemically active environments.

A) ACIDS

1. Nylon is subject to degradation in acids, ranging from none to total degradation.

2. Polyester is resistant to many acids, but is subject to degradation, ranging from none to moderate in some acids.

3. Each application shall be evaluated, taking into consideration the following:
   a. Type of Acid
   b. Exposure conditions
   c. Concentration
   d. Temperature

B) ALKALIS

1. Polyester is subject to degradation in alkalis, ranging from none to total degradation.

2. Nylon is subject to degradation in alkalis, ranging from none to total degradation.

3. Each application shall be evaluated, taking into consideration the following:
   a. Type of Alkali
   b. Exposure conditions
   c. Concentration
   d. Temperature

4. Polyester and nylon slings shall not be used at temperatures in excess of 194°F (90°C), however, they may be used in temperatures as low as -40°F (-40°C).

5. Environments in which synthetic webbing slings are continuously exposed to ultra-violet light can affect the strength of synthetic webbing slings in varying degrees ranging from slight to total degradation.

a. Factors which affect the degree of strength loss are:
   1. Length of time of continuous exposure
   2. Sling construction and design
   3. Other environmental factors such as weather conditions and geographic location.
   4. Suggested procedures to minimize the effects of ultra-violet light.
   a. Store slings in a cool, dry and dark place when not being used for prolonged periods of time.
   b. Inspect slings weekly or more often depending on frequency of sling use.
   c. Visual indications of ultra-violet degradation are:
      1. Bleaching out of sling color
      2. Increased stiffness of sling material
      3. Surface abrasion in areas not normally in contact with the load.
   d. Proof-Testing - Slings used in environments where they are subject to continuous exposure to ultra-violet light should be proof tested to two times rated capacity annually, or more frequently depending on severity of exposure.

Inspection

1. Type of Inspection
   a. Initial Inspection - Before any new or repaired sling is placed into service, it shall be inspected to insure that the correct sling is being used, as well as to determine that the sling meets the requirements of this specification.
   b. On-going Inspection - This inspection should be made by the person handling the sling each time the sling is used.
   c. Periodic Inspection - This inspection shall be conducted by designated personnel. Frequency of inspection should be based on:
      1. Frequency of use
      2. Severity of service conditions

2. Type of Identification
   a. Initial Inspection - Before any polyester round sling is placed into service it shall be inspected by a designated person to ensure that the correct round sling is being used, as well as to determine that the round sling meets the requirements of this specification.
   b. On-going Inspection - This inspection shall be made by a qualified person handling the polyester round sling each time the round sling is used.
   c. Periodic Inspection - This inspection shall be conducted by a designated person. Frequency of inspection should be based on:
      1. Frequency of use
      2. Severity of service conditions
      3. Periodic inspection should be conducted at least monthly.

3. Experience gained on the service life of slings used in similar applications

4. Periodic inspections should be conducted at least monthly.

Possible Defects

1. A sling shall be removed from service if any defects such as the following are visible:
   a. Acid or alkali burns
   b. Melting, charring, or weld spatter on any part of the sling
   c. Holes, tears, cuts, snags or embedded particles
   d. Broken or worn stitching in load bearing splices
   e. Excessive abrasive wear
   f. Knots in any part of the sling
   g. Distortion and excessive pitting or corrosion or broken fittings
   h. Other apparent defects which cause doubt as to the strength of the sling
      i. If sling rated capacity or sling material identification is missing or not readable.

Inspection Records

1. Written inspection records, utilizing the identification for each sling as established by the user, should be kept on file for all slings. These records should show a description of the new sling and its condition on each subsequent inspection.

Repair of Web Slings

1. Slings shall be repaired only by a sling manufacturer. When repaired by other than the original manufacturer, the sling shall be permanently marked to identify the repair agent.

2. All repaired slings shall be proof tested to two (2) times its newly assigned rated capacity, before being put back into service. Certification of proof test should be provided.

3. Temporary repairs of either webbing, fittings, or stitching shall not be permitted.

WARNING! Web Slings can be cut by contact with sharp or unprotected load edges. Padding must be used to protect the sling.

POLYESTER ROUND SLINGS:

Inspection of Polyester Round Slings: Web Sling and Tie Down Association

Type of Inspection

a. Initial Inspection - Before any polyester round sling is placed into service it shall be inspected by a designated person to ensure that the correct round sling is being used, as well as to determine that the round sling meets the requirements of this specification.

b. On-going Inspection - This inspection shall be made by a qualified person handling the polyester round sling each time the round sling is used.

c. Periodic Inspection - This inspection shall be conducted by a designated person. Frequency of inspection should be based on:
   1. Frequency of use
   2. Severity of service conditions
   3. Periodic inspection should be conducted at least monthly.

Removal from Service

A polyester round sling shall be removed from service if any of the following are visible:

a. If polyester round sling identification is missing or unreadable.

b. Melting, charring or weld spatter on any part of the polyester round sling.

c. Holes, tears, cuts, embedded particles, abrasive wear, or snags that expose the core fibers of the polyester round sling.

d. Broken or worn stitching in the cover which exposes the core fibers.

e. Fittings when damaged, stretched or distorted in any way.

f. Polyester round sling that are knotted.

g. Acid or alkali burns of the polyester round sling.

h. Any conditions which cause doubt as to the strength of the polyester round sling.
Synthetic Web Slings
Safety Info. Continued

Operation of Polyester Round Slings: Web Sling and Tie Down Association

- Determine weight of the load. The weight of the load shall be within the rated capacity of the polyester round slings.
- Select a polyester round sling having suitable characteristics for the type of load, hitch and environment.
- Polyester round slings shall not be loaded in excess of the rated capacity. Consideration shall be given to the round sling to load angle which affects rated capacity.
- Polyester round slings with fittings which are used in a choking hitch shall be of sufficient length to assure that the choking action is on the round sling, and never on the fittings.
- Polyester round slings used in a basket hitch shall have the load balanced to prevent slippage.
- The openings in fittings shall be the proper shape and size to ensure that the fittings will seat properly on the polyester round sling, crane hook, or other attachments.
- Polyester round slings shall always be protected from being cut by sharp corners, sharp edges, protrusions, or abrasive surfaces.
- Polyester round slings shall not be dragged on the floor or over an abrasive surface.
- Polyester round slings shall not be twisted, shortened, lengthened, tied into knots, or joined by knotting.
- Polyester round slings shall not be pulled from under loads when the load is resting on the polyester round sling.
- Do not drop polyester round slings equipped with metal fittings, or pull polyester round slings from under loads when the load is resting on the polyester round sling.
- Polyester round slings shall always be protected from being cut by sharp corners, sharp edges, protrusions, or abrasive surfaces.
- Polyester round slings shall not be dragged on the floor or over an abrasive surface.
- Polyester round slings shall not be twisted, shortened, lengthened, tied into knots, or joined by knotting.
- Polyester round slings shall not pull from under loads when the load is resting on the polyester round sling.
- Do not drop polyester round slings equipped with metal fittings.
- Polyester round slings that appear to be damaged shall not be used unless inspected and accepted as usable.
- The polyester round sling shall be hitched in a manner providing control of the load.
- Personnel, and all portions of the human body shall be kept from between the polyester round sling and the hook, or other attachments.
- The round sling shall be hitched in a manner providing control of the load.
- Personnel, and all portions of the human body shall be kept from between the polyester round sling and the crane hook or hoist hook. Personnel shall stand clear of the suspended load.
- Personnel shall not ride the polyester round sling.
- Shock loading shall be avoided.
- Twisting the legs (branches) shall be avoided.
- Load applied to a hook shall be centered in the bowl of the hook to prevent point loading.
- During lifting, with or without the load, personnel shall be alert for possible snagging of the polyester round sling.
- The polyester round slings shall be long enough so the rated capacity is adequate when the sling to load angle is taken into consideration.
- Only Polyester round slings with legible identification tags shall be used.
- Tags and labels should be kept away from the load, hook and point of choke.
- The polyester round sling shall not be constricted or bunched between the ears of a clevis or shackle, or in a hook. When a polyester round sling is used with a shackle, it is recommended that it be used (rigged) in the bow of the shackle.
- Place blocks under load prior to setting down the load, to allow removal of the polyester round slings, if applicable.

Light Duty Nylon Slings
Specifications
1. The thickness of light duty webbing is 1/8”.
2. The sling width and number of webbing piles will effect the eye length of Types 3 & 4.

NOTE: Tapering - Unless otherwise requested, Types 3, 4 & 5 are tapered at a width of 3” and above. These wider slings are tapered at the bearing points for crane hook accommodation.

Web Rated Capacities (lbs)

<table>
<thead>
<tr>
<th>Width Type</th>
<th>1 PLY</th>
<th>2 PLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 PLY</td>
<td>2 EE1-601 2 EE1-601</td>
<td>2 EE1-602 2 EE1-602</td>
</tr>
<tr>
<td>2 PLY</td>
<td>2 EE2-601 2 EE2-601</td>
<td>2 EE2-602 2 EE2-602</td>
</tr>
</tbody>
</table>

Eye Length Chart

<table>
<thead>
<tr>
<th>Width Type</th>
<th>1 PLY</th>
<th>2 PLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 PLY</td>
<td>2 EE1-601 2 EE1-601</td>
<td>2 EE1-602 2 EE1-602</td>
</tr>
<tr>
<td>2 PLY</td>
<td>2 EE2-601 2 EE2-601</td>
<td>2 EE2-602 2 EE2-602</td>
</tr>
</tbody>
</table>

Polyester Round Slings
Specifications
1. Only Polyester round slings with legible identification tags shall be used.
2. Determine weight of the load. The weight of the load shall be within the rated capacity of the polyester round slings.
3. Select a polyester round sling having suitable characteristics for the type of load, hitch and environment.
4. Polyester round slings shall not be loaded in excess of the rated capacity. Consideration shall be given to the round sling to load angle which affects rated capacity.
5. Polyester round slings with fittings which are used in a choking hitch shall be of sufficient length to assure that the choking action is on the round sling, and never on the fittings.
6. Polyester round slings used in a basket hitch shall have the load balanced to prevent slippage.
7. The openings in fittings shall be the proper shape and size to ensure that the fittings will seat properly on the polyester round sling, crane hook, or other attachments.
8. Polyester round slings shall always be protected from being cut by sharp corners, sharp edges, protrusions, or abrasive surfaces.
9. Polyester round slings shall not be dragged on the floor or over an abrasive surface.
10. Polyester round slings shall not be twisted, shortened, lengthened, tied into knots, or joined by knotting.
11. Polyester round slings shall not be pulled from under loads when the load is resting on the polyester round sling.
12. Do not drop polyester round slings equipped with metal fittings.
13. Polyester round slings that appear to be damaged shall not be used unless inspected and accepted as usable.
14. The polyester round sling shall be hitched in a manner providing control of the load.
15. Personnel, and all portions of the human body shall be kept from between the polyester round sling and the load, and from between the polyester round sling and the crane hook or hoist hook. Personnel shall stand clear of the suspended load.
16. Personnel shall not ride the polyester round sling.
17. Shock loading shall be avoided.
18. Twisting the legs (branches) shall be avoided.
19. Load applied to a hook shall be centered in the bowl of the hook to prevent point loading.
20. During lifting, with or without the load, personnel shall be alert for possible snagging of the polyester round sling.
21. The polyester round slings shall be long enough so the rated capacity is adequate when the sling to load angle is taken into consideration.
22. Only Polyester round slings with legible identification tags shall be used.
23. Tags and labels should be kept away from the load, hook and point of choke.
24. The polyester round sling shall not be constricted or bunched between the ears of a clevis or shackle, or in a hook. When a polyester round sling is used with a shackle, it is recommended that it be used (rigged) in the bow of the shackle.
25. Place blocks under load prior to setting down the load, to allow removal of the polyester round slings, if applicable.
Heavy Duty Nylon & Polyester Slings†

1. The thickness of Heavy Duty Webbing is approx. 3/16”.
2. The sling width and number of webbing plies will effect the eye length of Types 3 & 4.

NOTE: See Eye Length Chart & Information on Monster-Edge Slings.

Type 2 cannot be used with a choker hitch.

Three & Four Ply Hardware Slings are Available upon Request.
* Type Two cannot be used with a choker hitch.

### Eye Length Chart

<table>
<thead>
<tr>
<th>Sling Width (in)</th>
<th>Piles of Webbing</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8-1/2</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
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<tr>
<td>5</td>
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<td>6</td>
<td>18</td>
<td>18</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
</tbody>
</table>

† Monster-Edge available for all Heavy Duty Type Slings. Most web sling damage starts on the edge and progresses across the face of the webbing. Polymer coated yarns are woven into the edges of Monster-Edge sling webbing to reduce damage and increase its useful life.

### Webbing Rate Capacities (lbs)

<table>
<thead>
<tr>
<th>Type 1</th>
<th>Type 2</th>
<th>Type 3</th>
<th>Type 4</th>
<th>Type 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical</td>
<td>Choker</td>
<td>Basket</td>
<td>Vertical</td>
<td>Choker</td>
</tr>
<tr>
<td>1 Ply</td>
<td>2 Ply</td>
<td>3 Ply</td>
<td>4 Ply</td>
<td>1 Ply</td>
</tr>
<tr>
<td>1 EE1-801</td>
<td>1 EE2-802</td>
<td>1 EE3-803</td>
<td>1 EE4-804</td>
<td>1 EE5-805</td>
</tr>
<tr>
<td>12 EE1-808</td>
<td>12 EE2-807</td>
<td>12 EE3-806</td>
<td>12 EE4-805</td>
<td>12 EE5-804</td>
</tr>
<tr>
<td>24 EE1-806</td>
<td>24 EE2-805</td>
<td>24 EE3-804</td>
<td>24 EE4-803</td>
<td>24 EE5-802</td>
</tr>
</tbody>
</table>

### Monster-Edge Slings

Add an “M” onto the end of your ordering code for Monster-Edge.

### Tapering

Types 3, 4, and 5 are tapered at 3” and wider unless otherwise ordered. These wider slings are tapered at the bearing points to accommodate a crane hook.

### Treatment

Unless specifically requested, all nylon web slings will have an abrasion resistant treatment applied. The standard for polyester web slings, however, is without treatment.

### Note

Polyester webbing is not available over 10” in width.
Nylon Slings

Reversed Eye (RE) Slings

Reversed Eye Sling is a modified endless sling. Cordura wear pads offer added protection on the body and eyes of the sling. This extra Cordura webbing offers superior abrasion resistance and slings life.

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Vertical Choker (lbs)</th>
<th>Basket Width (in)</th>
<th>Slings Thkns. (in)</th>
<th>Eye Length (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy Duty Web</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 PLY RE1-802</td>
<td>5,000</td>
<td>10,000</td>
<td>3-1/2</td>
<td>1</td>
</tr>
<tr>
<td>RE1-804</td>
<td>5,000</td>
<td>10,000</td>
<td>3-1/2</td>
<td>1</td>
</tr>
<tr>
<td>RE1-806</td>
<td>5,000</td>
<td>10,000</td>
<td>3-1/2</td>
<td>1</td>
</tr>
<tr>
<td>2 PLY RE2-802</td>
<td>7,200</td>
<td>14,400</td>
<td>3-1/2</td>
<td>1</td>
</tr>
<tr>
<td>RE2-804</td>
<td>7,200</td>
<td>14,400</td>
<td>3-1/2</td>
<td>1</td>
</tr>
<tr>
<td>RE2-806</td>
<td>7,200</td>
<td>14,400</td>
<td>3-1/2</td>
<td>1</td>
</tr>
<tr>
<td>3 PLY RE3-804</td>
<td>9,000</td>
<td>18,000</td>
<td>3-1/2</td>
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</tr>
<tr>
<td>RE3-806</td>
<td>9,000</td>
<td>18,000</td>
<td>3-1/2</td>
<td>1</td>
</tr>
<tr>
<td>4 PLY RE4-806</td>
<td>11,000</td>
<td>22,000</td>
<td>3-1/2</td>
<td>1</td>
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</tbody>
</table>

Light Duty Web

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Vertical Choker (lbs)</th>
<th>Basket Width (in)</th>
<th>Slings Thkns. (in)</th>
<th>Eye Length (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 PLY RE1-802</td>
<td>3,000</td>
<td>6,000</td>
<td>3-1/2</td>
<td>1</td>
</tr>
<tr>
<td>RE1-804</td>
<td>3,000</td>
<td>6,000</td>
<td>3-1/2</td>
<td>1</td>
</tr>
<tr>
<td>RE1-806</td>
<td>3,000</td>
<td>6,000</td>
<td>3-1/2</td>
<td>1</td>
</tr>
<tr>
<td>2 PLY RE2-802</td>
<td>4,500</td>
<td>9,000</td>
<td>3-1/2</td>
<td>1</td>
</tr>
<tr>
<td>RE2-804</td>
<td>4,500</td>
<td>9,000</td>
<td>3-1/2</td>
<td>1</td>
</tr>
<tr>
<td>RE2-806</td>
<td>4,500</td>
<td>9,000</td>
<td>3-1/2</td>
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<tr>
<td>3 PLY RE3-804</td>
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<td>3-1/2</td>
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<tr>
<td>RE3-806</td>
<td>5,500</td>
<td>11,000</td>
<td>3-1/2</td>
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</tr>
<tr>
<td>4 PLY RE4-806</td>
<td>7,000</td>
<td>14,000</td>
<td>3-1/2</td>
<td>1</td>
</tr>
</tbody>
</table>

Wide Lift (WL) Slings

Continuous Eye Wide-Lift

For Heavy Loads - Constructed from one endless sling with the two body lengths butted and joined side by side. Stiffener webbing is used at the base of the eyes to deter the body webbing from folding down the middle.

Attached Eye Wide-Lift

For Light, bulky loads that require wider bearing areas and some balance attributes. Eyes are made from separate material – WLA1 is one ply – WL2 is two ply – both sewn to slinging body. Single ply for both one and two ply eyes.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Eye Wide-Lift</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 PLY</td>
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<td></td>
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</tr>
<tr>
<td>6</td>
<td>WL1-806</td>
<td>15,000</td>
<td>9</td>
<td>1-1/2</td>
</tr>
<tr>
<td>8</td>
<td>WL1-808</td>
<td>20,000</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>WL1-810</td>
<td>25,000</td>
<td>15</td>
<td>2-1/2</td>
</tr>
<tr>
<td>12</td>
<td>WL1-812</td>
<td>30,000</td>
<td>18</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>WL1-816</td>
<td>38,000</td>
<td>24</td>
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</tr>
<tr>
<td>20</td>
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<tr>
<td>2 PLY</td>
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<td></td>
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<td>15</td>
<td>2-1/2</td>
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<td>38,000</td>
<td>18</td>
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<td>WL2-816</td>
<td>45,000</td>
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<td>2-3/4</td>
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<td>WL2-820</td>
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<td>3-1/2</td>
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<td>WL2-824</td>
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<td>36</td>
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</table>

Attached Eye Wide-Lift

<table>
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<tr>
<th></th>
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<tbody>
<tr>
<td>1 PLY</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>6</td>
<td>WLA1-806</td>
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</tr>
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<tr>
<td>24</td>
<td>WLA1-824</td>
<td>5,000</td>
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</tr>
<tr>
<td>2 PLY</td>
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<td></td>
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</tr>
<tr>
<td>6</td>
<td>WLA2-806</td>
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<td>24</td>
<td>WLA2-824</td>
<td>8,000</td>
<td>18</td>
<td>2</td>
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</table>

Cordura-Web 1000 Capacity

<table>
<thead>
<tr>
<th>Type U</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 PLY</td>
</tr>
<tr>
<td>EE1-101</td>
</tr>
<tr>
<td>EE1-102</td>
</tr>
<tr>
<td>EE1-103</td>
</tr>
<tr>
<td>EE1-104</td>
</tr>
<tr>
<td>2 PLY</td>
</tr>
<tr>
<td>EE2-101</td>
</tr>
<tr>
<td>EE2-102</td>
</tr>
<tr>
<td>EE2-103</td>
</tr>
<tr>
<td>EE2-104</td>
</tr>
</tbody>
</table>

Cost Effective

- The abrasive resistant Cordura™ yarns that cover the web sling surfaces extend the life of the sling.

Time Efficient

- Quick identification with stripped capacity.
- Stripped capacity for quick identification.

1000 Capacity

One Stripe = 2,000 lbs. per inch of width (one ply only). Superior abrasion resistance. Stronger than other webbing by 25%. For Types 3, 4, and 5, the eyes of Cordura-Web 2000 slings for are not tapered in any width. Cordura-Web slings meet or exceed OSHA and ASME B30.9 requirements.

Glass Lifting Slings

Buffalo Sling can custom make your company lifting slings to fit any glass size load. They can be designed to permit close stacking of glass and these two ply slings feature wear pad material for protection against those sharp edges, and side bridles for added load stabilization. Call Hanes Supply Inc. with your particular requirements.

Kevlar® and PVC rubber coated wear pads are available. Please call Hanes Supply with your exact requirements.

---

**WARNING**

Failure to follow the care, use and inspection instructions could result in severe personal injury. DO NOT exceed rated capacities.

WWW.HANESSUPPLY.COM 8-7
Synthetic Slings

Stone Lifting Slings
Buffalo Stone Lifting Nylon Slings are reinforced with special abrasion resistant yarns. The standard stone lifting sling has a width of 4”.

Boat Lifting Slings
These quality, high capacity slings are engineered to provide labor-saving convenience with all types of lifting devices. They are available in one or two-ply construction, in webbing widths from 2” to 12”, to provide rated capacities for virtually any size boat normally lifted by an overhead device.

Rigged in basket hitches, pairs of standard slings offer total lifting capability to 53 tons per pair, and greater lifts can be achieved by rigging additional slings, or pairs, in the lift.

Rigged in basket hitches, pairs of standard slings offer total lifting capability to 53 tons per pair, and greater lifts can be achieved by rigging additional slings, or pairs, in the lift.

Polyester or Nylon
Standard Capacities 4,800 to 53,760 lbs.

- Per Sling
  - Non-abrasive—protects hull and finish of boat.
  - Low Weight—easy to handle and rig up.
  - Durable—resistant to mildew, oil, seawater.
  - Flexible—adapts to hull configuration to cradle load.
  - Custom Designs—can be made for specific applications and usual rigging configurations.
  - Wide choice of accessories and fittings.
  - Low Stretch—Only 3% for Polyester, 6% for Nylon at Rated Capacity, with ability to return to original length when relaxed.
  - Color Coded—Polyester slings are yellow, Nylon slings are orange.

Web & Bridle Slings

PIECE AND MANHOLE HANDLING:

Model SCB-Lined Steel Choker Belt

<table>
<thead>
<tr>
<th>Product Features:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel lined fabric belt allows exact alignment of pipe.</td>
</tr>
<tr>
<td>Flexibility gives a firm grip without slippage.</td>
</tr>
<tr>
<td>Field repairable.</td>
</tr>
<tr>
<td>Designed and manufactured to ASME B30.9</td>
</tr>
</tbody>
</table>

Model LIB - Lowering In Belt

Product Features:
- Efficient handling of large pipes
- Provides stable lift of long pipes
- Designed and manufactured to ASME B30.20 & B30.9

Fittings and Accessories

- Loose Pin Hardware: Allows in-field removal for use on other slings or on additional eyes for use with different size boats.
- Edge Guard Wear Pads: Can be sewn on any portion of sling. Protects edges and prolongs useful life.
- Sliding Chine & Knee Pads: Permits positioning of add-on eye at any point to prevent rubbing on hull and to protect sling from sharp corners.
- Steel Triangle: Permanent in-field fitting of alloy steel is reusable. Slides easily onto lifting hook.
- Lead Weights: May be sewn into keel pad. Can be fixed or sliding, and promotes rapid sinking of sling.
- Disconnect: Permits removal of sling from beneath boat with removing sling eye from hook. Protective flap is standard.

Fittings and Accessories

- Extra Sewn Eyes: Permits lifting of different size slings with one set of slings.
- Lead Weights: May be sewn into keel pad. Can be fixed or sliding, and promotes rapid sinking of sling.
- Disconnect: Permits removal of sling from beneath boat with removing sling eye from hook. Protective flap is standard.

Note: For loose-pin hardware (shackles) on two-ply slings made with 8”, 10” or 12” webbing, consult Hanes Supply.
Bridle Slings & Hardware

Advantages and Benefits of Application Economical, Safety and Time Saving Features

- Oblong links and hooks are alloy steel for strength and durability
- Better load control and balance. Bridle slings give fixed lifting points and multiple legs.
- Hardware also avoids cutting and wearing of synthetic slings at bearing points.
- Red core thread safety warning system helps in ease of inspection process.
- Soft web sling legs prevent damage to load.
- Endless Type of web sling legs can be shifted to rotate wear points. Longer lasting slings.
- More ergonomic - lighter weight than chain or wire rope bridle slings.

How to Order

- (Quad - 4)
- (Triple - 3)
- (Double - 2)
- (Oblong)

WARNING

- Do not exceed rated capacities. Ratings must be reduced when slings are used at angles of less than 90° from horizontal.

Steel Triangles and Chokers

Forced aluminum triangles and chokers are forced from aircraft quality aluminum alloy that combines the highest strength and durability with the lightness of aluminum. Parts are hand ground and polished to a smooth finish.

Web Sling Shackles

- Finish: Hot Dip Galvanized.
- Klik Pin (zinc plated) as shown furnished as standard-cotter or hair pin can be used also.
- Shackles Body: Carbon Steel, Heat Treated and Tempered.
Twin-Path® & Twin-Path® Covermax Slings

Tremendous Labor Savings - Time is money. The ease of handling ultra-light Twin-Path® Extra Slings adds up to substantial labor savings, each and every time the sling is used. There is no need to have an extra crane, forklift or personnel to handle heavy slings.

Safety in Lifting and Pulling - Twin-Path® Slings are without a doubt the most impeccable lifting slings available.

Tests have shown that Twin-Path® Slings do not recoil at break, thereby eliminating the devastating whiplash effects characteristic of chain, wire rope, synthetic web and rope.

Patented Back Up Protection - Twin-Path® Slings are actually two complete and separate slings in one. Each path makes its own separate connection between the hook and the load. We do not recommend the use of damaged slings, but chances are good that if damage to one of the paths went undetected that, unlike web slings or round slings, you would have sufficient reaction time to maintain control of the load. Only Twin-Path® provides this security.

Early Warning System - Twin-Path® Slings have two independent covers that are color coded for easy inspection. When the outer cover is cut, the red inner cover instantly becomes visible providing the sling user with a visual alert to remove the sling from service. Only Twin-Path® provides such a warning and inspection mechanism.

Tell Tails - Tell Tails provide a simple means of inspection. Before using the sling check that both Tell Tails are showing. If one or both of the tails are not visible, or are chemically degraded, remove the sling from service.

Labeling - Twin-Path® Slings are uniquely tagged with a hot branded leather tag. The specifications including model, length, and rated load are clearly legible. This is the best sling tag in the industry. The leather tag is permanently affixed. It is inflammable and tamper proof. This leather tag outlasts and outperforms fabric and silk screened vinyl tags.

Space Saver - Sometimes space is a scarce commodity. Storage problems are easily resolved as Twin-Path® Extra Slings require substantially less space to store than the cumbersome wire rope slings and chain slings that they replace.

Versatility - Twin-Path® Extra Slings are easily used with all three sling hitchers, vertical and baulk. Choking loads are no longer a problem. Hitching is made easy because of the free form, and supple body of Twin-Path® Extra Slings. You will never experience “choke-lock” when disengaging the sling from the load.

Maintenance Free - Twin-Path® Slings, unlike wire rope and chain, do not require lubrication or reannealing.

Twin-Path® Slings & Twin-Path® Covermax

Overload Indicators - Twin-Path® and Twin-Path® Covermax Slings are the first and only slings of any kind to be manufactured with built in overload indicators. If the tell-tails shrink to where 1/2” or less is exposed, this is an indication that the sling has been overloaded, and the sling should be removed from service immediately.

In other words, when 1/2” or less of the tails are visible, this is an indication that the sling has been overloaded. Round slings and web slings provide no such warning or inspection mechanism before failing or breaking. This lack of warning and inspection device greatly contributes to the potential for catastrophic failure.

Patented Back Up Protection - Twin-Path® and Twin-Path® Covermax slings are actually two complete and separate slings in one. Each path makes its own separate connection between the hook and the load. We do not recommend the use of damaged slings, but chances are good that if damage to one of the paths went undetected that, unlike web slings or round slings, you would have sufficient reaction time to maintain control of the load. Only Twin-Path® and Twin-Path® Covermax provide this security.

Ease of Inspection - The Twin-Path® and Twin-Path® Covermax provide an early warning mechanism. The load carrying yarns are never to come into contact with the load. There is no wear with the protective outer covers remaining intact. Twin-Paths® and Twin-Path® Covermax slings have two independent covers that are color coded for easy inspection. When the outer cover is cut, the red inner cover instantly becomes visible providing the sling user with a visual alert to remove the sling from service, and send
Twin-Path® & Twin-Path® Covermax Slings

it to the manufacturer for inspection and repair. Damage which exposes the Inner load bearing yarns is one criteria for immediate removal from service for inspection and repair. Only Twin-Path® and Twin-Path® Covermax assure such a warning system.

Superior Abrasion Resistance - Twin-Path® slings have an orange outer cover made from 100% polyester. These seamless covers are specially woven to provide superior abrasion resistance. Twin-Path® Covermax slings have all the features of Twin-Path® slings and more. They have gray outer covers made from DuPont Cordura which are a minimum four times more abrasion resistant than polyester or nylon. Twin-Path® Covermax slings put a cordura wear pad in contact with the load at all times. Twin-Path® Covermax slings outlast all other synthetic slings. Choose Twin-Path® Covermax slings when abrasion and longevity are a consideration.

Versatile - Twin-Path® and Twin-Path® Covermax slings are easily used in all three sling hitches, vertical, choker, and basket. Choking loads is no longer a chore. Hitching is made easy because of the free form, and supply body of Twin Path® and Twin Path® Covermax slings. You will never experience “choke-lock” when disengaging the sling from the load.

Durability - The hook and load contact points of Twin-Path® and Twin-Path® Covermax slings can be continually rotated and reversed to further extend not only the life of the protective outer covers, but the overall life of the sling. Wire rope slings remember their last load and usually become distorted after the first lift.

Soft and Flexible - Twin-Path® and Twin-Path® Covermax slings adapt to all sizes and types of load configurations. They also easily adapt to fit hooks and shackles that might be otherwise too small for alternative sling types. Unlike other slings, you never have to be concerned with minimum D to D ratios when using Twin-Path® and Twin-Path® Covermax slings. As long as the lifting points are smooth and have the same lifting capacity as the Twin-Path® and Twin-Path® Covermax sling… NO PROBLEM!

Load Protection - Twin-Path® and Twin-Path® Covermax slings afford the slinger or user with the ultimate degree of load protection. The strength of steel in a velvet glove! Twin-Path® and Twin-Path® Covermax slings will NOT mar, scratch, or deface any delicate metallic surfaces, and are equally gentle on non-metallic loads.

Repairable - All Twin-Path® slings are internally inspectable by factory personnel. Unlike other round slings and web slings, all the slings in the Twin-Path® line are repairable and recyclable.

Twin-Path® Extra Slings & Twin-Path® Extra Covermax

Overload Indicators - Twin-Path® Extra and Twin-Path® Extra Covermax slings are the first and only slings of any kind to be manufactured with built in overload indicators. If the tell-tails shrink to where 1/2” or less is immediately, this is an indication that the sling has been overloaded, and should be removed from service immediately. In other words when 1/2” or less of the tellies are visible, this is an indication that the sling has been overloaded.

Patented Back Up Protection - Twin-Path® Extra and Twin-Path® Extra Covermax Slings are actually two complete and separate slings in one. Each sling maintains its separate connection between the hook and the load. WE DO NOT RECOMMEND the use of damaged slings, but chances are good if damage to one of the paths went undetected that, unlike web slings of round slings, you would have sufficient reaction time to maintain control of the load. Only Twin-Path® Extra and Twin-Path® Extra Covermax provide this security.

Ease of inspection - The Twin-Path® Extra and Twin-Path® Extra Covermax provide an early warning and inspection mechanism. The load carrying yarns never come into contact with the load. There is no tear to them as long as the protective outer covers remain intact. Twin-Path® Extra and Twin Path® Extra Covermax slings have two Independent covers that are color coded for easy inspection. When the outer cover is cut, the red inner cover instantly becomes visible providing the user with a visual alert to remove the sling from service and send it to the manufacturer for inspection and repair. Damage which exposes the Inner load bearing yarns is one criteria for immediate removal from service for Inspection and repair. Only Twin Path® Extra and Twin Path® Extra Covermax assure such a warning system.

Super Strong - Ultra Light - Twin-Path® Extra and Twin-Path® Extra Covermax slings are manufactured with DuPont’s Kevlar® 29 Yarn, an incredible material that is many times stronger than steel, at a fraction of the weight. Twin-Path® Extra and Twin-Path® Extra Covermax are ideal for helicopter and aerospace applications.

Repairable - All Twin-Path® Extra and Twin-Path® Extra Covermax slings are internally inspectable by factory personnel. Unlike other round slings and web slings, Twin-Path® Extra and Twin-Path® Extra Covermax Slings are truly repairable.

Extreme Temperatures & Electrical Currents - DuPont’s Kevlar® Yarn actually becomes stronger when exposed to cold temperatures. Moisture combined with sub zero temperatures renders most synthetic products rigid and non-pliable. Kevlar® does not absorb moisture to the same degree as does nylon and polyester fiber. Kevlar® products actually “shed” moisture to remain soft and flexible. At the other end of the scale Kevlar® yarn withstands temperatures of up to 800 degrees F. and self extinguishes when exposed to flames. Kevlar® is inherently non-conductive. As such, it prevents stray currents from welding operations from damaging the crane motor. Twin-Path® Extra and Twin-Path® Extra Covermax slings are ideal for lifting and positioning electrical equipment.

Nuclear Environments - The performance of Kevlar® fibers in nuclear environments is detailed in a report titled, “Radiation Effect on Organic Materials in Nuclear Power Plants” (Report #EPRNIP 2128, dated Nov. 1981). When Kevlar® as exposed to radiation at the level of 1,000,000,000 rads, there was no effect on the fiber. Twin-Path® Extra and Twin-Path® Extra Covermax slings are well suited to use in nuclear generating stations.

WARNING! Twin-Path® round slings can be cut by contact with sharp or unprotected load edges. Padding must be used to protect the sling.

TWIN-PATH® SLINGS SAFETY INFO.

Mechanical Considerations
1. Determine the weight of the load. The weight of the load shall be within the rated capacity of the sling.
2. Select a sling having suitable characteristics for the type of load, hitch, and environment.
3. Slings shall not be loaded in excess of the rated capacity.
4. Consideration shall be given to angle of lift which may affect the lifting capacity. Diameters of pins and sharp edges also may affect the capacity of the lifting sling.
5. Slings used in a basket hitch must have the load balanced to prevent slippage and accidents.
6. Slings used with fittings shall be compatible with the fittings used. The lifting capacity shall be rated at the lower of the fitting or sling. Fitting openings shall be of the proper shape and size to assure that the fitting will seat properly.
7. Slings shall be protected from cutting and sharp edges. All sharp protrusions and abrasive surfaces will be kept from contact with the sling where poor situations develop padding shall be interjected between the sling and the load.
8. Slings shall not be dragged on the floor or drawn across other surfaces which may damage the sling.
9. Slings shall not be twisted or tied in knots to shorten.
10. Slings shall not be pulled from under loads resting on the sling.
11. Do not drop objects on slings or run over them with vehicles.
12. Slings which are damaged shall not be used.
13. Sling hitches shall be in accordance with the load and from between the sling and any attachment to lifting devices such as hooks.
14. Portions of the human body shall be kept from between the sling and the load and from between the sling and any attachment to lifting devices such as hooks.
15. Personnel shall not ride on the sling or suspended loads.
16. Personnel shall not stand on the load or suspended loads.
17. Avoid snatch or shock loading.
18. Twisting and kinking the legs of the sling shall be avoided.
19. Load applied to the hook should be centered in the bow of the hooks. Do not point load the hook.
20. During lifting with or without the load all personnel shall be alert for possible snagging.
21. The slings should contain or support the load from the sides above the center of gravity so that load will not tilt when the load is lifted.
22. Slings shall be of the proper length so that the angle of the sling to the load does not reduce the rated capacity of the sling for a given angle.
23. Only legibly marked or labeled slings should be used. If the tag is not visible, or missing, the sling should not be used.
24. Keep labels or tags away from the load, the hook and the angle of choke.
25. Twin-Path® Slings should be inspected each time before each lift.

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Twin-Path® & Twin-Path® Covermax Slings

Synthetic Slings

Environmental Considerations

1. When not in use, slings (Twin-Path®) should be stored in a clean dry place. Heat sources and non-ventilated places should be avoided.

2. Chemically active environments can affect the strength of Twin-Path® Lifting Slings. Different chemicals will react with different exposure to Covermax Bulked Nylon, polyester, aramids, aramids. Polypropylene, Olefin, and Olefin fibers. Please see the enclosed tables for reactions of specific chemicals.

ARAMIDS are resistant to most ketones, alcohols, dry cleaning solvents and many other organic solvents. Aramids show good resistance to alkalis at room temperature, but is degraded by strong alkalis at higher temperatures. Aramids are resistant to most weak acids and alkalis, ketones, alcohols, hydrocarbons, oils and dry cleaning solvents. Strong acids and bases and sodium hypochlorite bleach attack aramids, particularly at high temperatures of high concentrations.

Aramids are compatible with fluorine-containing elastomers, resins, and refrigerants at high temperatures, and are resistant to fluorine compounds in high concentrations.

The resistance of aramids to oxides of sulfur at temperatures above the acid dew point is superior to that of polyester. Below the dew point, concentrated sulfuric acid may condense on the fiber and cause a progressive loss in strength.

In moderate to strong acid alkalis environments, evaluation of aramids should be made to ensure that the yarn will perform acceptably before use.

POLYESTER and NYLON are not significantly affected by most compounds of the following classes: Alcohols, Dry Cleaning Solvents, Halogenated Hydrocarbons, Ketones, Soaps and Synthetic Detergents, and Water (including Sea Water).

Polyester also shows good to excellent resistance to aqueous solutions of most weak acids at the boil, and to most strong acids at room temperature, but is disintegrated by concentrated (95%) sulfuric acid at room temperature. Aqueous solutions of strong alkalis at room temperature, but is degraded at the boil. Oxidizing agents, and is not degraded by bleaching treatments ordinarily used for textiles. Nylon is not significantly affected by most aldehydes, alkalis, ethers, or hydrocarbons, but is deteriorated by dilute acids (e.g., hydrochloric acid and sulfuric acid in 10% concentrations at room temperature cause a noticeable loss in breaking strength in 10 hours).

Solvents for nylon include: concentrated formic acid, Phenolic compounds at room temperature, calcium chloride in methanol at room temperature, hot solutions of calcium chloride in Glacial Acetic Acid, Ethylene Chlorohydryin, and Ethylene Glycol, hot solutions of zinc chloride in methanol, and Benzyl alcohol at the boil.

HDPE has excellent chemical resistance (100% strength retention) after 6 months immersion in the following liquids:

- Sea Water 10% Detergent Solution
- Hydraulic Fluid Kerosene
- Perchloroethylene Glacial Acetic Acid
- Toluene Gasoline
- 5M Sodium Hydroxide Ammonium Hydroxide (29%)
- Hypophosphite Solution (10%) 1M Hydrochloric Acid

HDPE has a 91% strength retention after 6 months immersion in Chlorox®. K-Spec core yarn strength retention is based on test results for components at 65°C/150°F (or less) for 6 months. K-Spec has a 100% strength retention when exposed to: age, 10% detergent solution, rot and mildew, sunlight and Toluene; 99% strength retention when exposed to: acetic acid, gasoline, hydrochloric acid 1m, hydraulic fluid, kerosene, and sea water; 98% retention when exposed to: 25% ammonium hydroxide, 10% hypophosphite solution, and 40% phosphoric acid; 97% retention when exposed to 5m sodium hydroxide; 95% retention when exposed to Portland cement and sulfuric acid; and 88% retention when exposed to Chlorox® and nitric acid.

Fiber Characteristics

(Using Nylon as basis of 1.0)

- Bulk Strength is defined as strength per circumference squared. Working Strength is defined as rope actually in use under a cycling load. Heat sources and non-ventilated places should be avoided.

- Co-efficient of Friction is based on reluctance to slip or slide. Critical temperature is defined as the point at which degradation is caused by temperature alone.

- Cold-Flow (Creep) is defined as fiber deformation (elongation) due to molecular slippage under a constant steady static loading situation. Fibers that have this inherent characteristic will display extremely low or negligible creep. Minor fluctuations occur in the rate and/or frequency of load loss. In rope form, this would apply to polypropylene, polyethylene and HDPE Olefin fibers.

Inspections of Twin-Path® Products

1. Tell-Tails should extend past the tag area of each sling. If both Tell-Tails are not visible remove the sling from service. If the Tell-Tails show evidence of chemical degradation, remove the sling from service. Send to manufacturer for repair evaluation.

2. Slings should be inspected for evidence of cutting or tearing of the outer cover. Sling tags should be removed from service and sent back to the manufacturer for repair evaluation. Damage to the cover may indicate core damage.

3. Inspect slings for evidence of heat damage. Sling tags or Covermax covers should not be exposed to temperatures above 82°C/180°F. Aramid covered Sparkeater Slings should not be exposed to temperatures over 149°C/300°F. Slings with HDPE Olefin cores should not be exposed to temperature above 65°C/150°F. K-Spec Core Slings should not be exposed to temperatures above 82°C/180°F. Cold temperature exposure down to minus -40°C/minus -40°F do not effect the strength of the products. Other temperatures should be referred to the manufacturer.

4. Slings using aluminum fittings shall not be used where fumes, vapors, sprays, or mists of alkalis or acids are present.

5. Twin-Path® Lifting Slings and any fittings attached should be subject to frequent and regular inspections. In addition to the initial inspection by a competent person and frequent written inspections the slings should be visually inspected before each use.

6. Written inspections should be performed each 30 days and documents of such inspection by a competent person shall be kept on file in the safety department of the plant or site where used. Inspections may be done more often based on frequency of use, severity of conditions, experience of past service life.

7. Slings should be examined throughout their length for abrasion, cuts, heat damage, fitting distortion or damage, tag legibility, and if any doubts are held by the inspector the sling should be removed from service. Core integrity is determined by hand inspection of the entire sling or by fiber optic light transfer if this type of tell-tail is installed in the sling. If a deterioration is found, the sling must be removed from service and returned to the manufacturer for evaluation.

8. Slings removed from service that are not considered repairable should be destroyed and rendered completely unfit for future use.

9. Abrasion, heat damage or cuts to the cover may indicate a loss of strength to the load core and these slings should not be used until evaluated by the manufacturer. At area of damage cover should be opened and the core yarns counted and visually inspected.

Testing Procedures

1. For proof testing the pins shall be 2" diameter or larger.

2. Proof tests shall consist of pulling the slings to twice their rated capacity as shown in the appropriate tables. Slings shall be held at the proof test limit for a period of 15 seconds and then the tension may be released.

3. Testing of Twin-Path® Sling products and load yarn shall be on a certified and currently calibrated testing machine, which meets or exceeds the standards as described in ASME E4.

4. Break testing of slings shall be as above with results documented. A minimum design factor of five is mandatory. Pin size for testing should be a maximum diameter equal to half the sling width.

5. Proof testing is recommended for every sling.

6. After the sling is proof tested the Tell-Tails should then be trimmed to length prior to shipment.

7. Repaired fittings or slings shall be proof-tested before they are returned to service.

These recommended standard specifications have been formulated as a guide to users, industry and government to insure the proper use, maintenance and inspection of Twin-Path® lifting sling products.
**Twin-Path® & Twin-Path® Covermax Slings**

**Twin-Path® Slings**
- Twin-Path® Slings are constructed of polyester load carrying yarns.
- The load carrying yarns are protected by two independent, seamless, color-coded polyester covers.
- The internal red cover is protected by the outer orange cover.
- The sling cover is fabricated in such a way that it is actually two complete and separate slings in one. Each path makes its own separate connection between the lifting hook and the load. This unique back up system is designed to provide the slinger with sufficient reaction time to maintain control of the load if damage to one of the paths went undetected.

**Twin-Path® Covermax Slings**
- Twin-Paths Covermax Slings are constructed of polyester load carrying yarns.
- Gray Tag Patch - Polyester Load Yarns.
- The load carrying yarns are protected by two independent, seamless, color-coded covers.
- The internal polyester red cover is protected by an outer gray cover of Covermax nylon.
- Sleeves can be sewn around the body of the sling so that they can be positioned to the areas where they are needed.

**Polyester Cover – Covermax Cover**
A leather tag contains required information - and the Flag Tag contains the vertical capacity in large readable characters.

**TWIN-PATH® & TWIN-PATH® COVERMAX SPECIFICATIONS**
Canadian Patent #1,280,458 United States Patent #4,850,629

<table>
<thead>
<tr>
<th>Twin-Path® Stock No.</th>
<th>Twin-Path® Covermax Stock No.</th>
<th>Rated Capacities (lbs) 5-1 D/F</th>
<th>Approx. Wt. (lbs per ft) (Bearing-Bearing)</th>
<th>Approx. Body Width (in)</th>
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<td>50.000</td>
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</table>

PLEASE NOTE: Capacities shown include both paths and are for one complete sling. Ratings based on straight pin diameter one-half the sling width.

**WARNING!** Can fail if damaged, misused or overloaded. Inspect before use. Use only if trained. Observe rated capacity. Avoid sharp edges and exposure to acid, alkalis, sunlight and temperature over 180°F. DEATH or INJURY can occur from Improper use or maintenance.

**Polymer Slings**
- Twin-Path® Extra Covermax Slings are constructed of high performance load carrying yarns.
- Orange Tag Patch - High Performance Load Yarns.
- The load carrying yarns are protected by two independent, seamless, color-coded covers.
- The internal polyester red cover is protected by an outer gray cover of Covermax nylon.
- Sleeves can be sewn around the body of the sling so that they can be positioned to the areas where they are needed.

**Polyester Cover – Covermax Cover**
A leather tag contains required information - and the Flag Tag contains the vertical capacity in large readable characters.

**TWIN-PATH® EXTRA & TWIN-PATH® EXTRA COVERMAX SPECIFICATIONS**
United States Patent #4,850,629 Canadian Patent #1,280,458

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<td>TPXC 800</td>
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<td>TPX 900</td>
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<td>15.000</td>
</tr>
</tbody>
</table>

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Synthetic Slings

Synthetic Slings/Wear Pads

BUFFALO SLING
Single Path - Endless Polyester Round Slings
- A flexible solution to your lifting needs.
- Rotation of lift points extends service life of sling.
- Length measure from Bearing Point to Bearing Point
- Two same color polyester tubular jackets.
- The economical choice!

Twin-Path® Eye & Eye Synthetic Sling
US Patent #5,727,833 & #4,850,629
EE – This product is made to be an eye and eye sling only. Usually an eye and eye sling is made from a round sling with a sleeve over it to form the eyes at each end. This sling is light, strong and less expensive than a round sling with a sleeve. It can be manufactured using either K-Spec® K-End® yarn or polyester. Riggers have told us that they have some applications where they want an eye & eye sling only & this is the one with all of the Twin-Path® features in a strictly eye & eye product.

Twin-Path® Adjustable Bridle Sling
US Patent #4,850,629 & #5,651,573
TPA (with K-Spec®) or TPA (with polyester) This tool is an aid to finding the center of gravity. When the load is lifted the ring moves over the COG to balance and level the object. We developed this tool in conjunction with riggers in the field for lifting objects with uneven geometric proportions or off center balance points. The Twin-Path® Sling may be permanently attached to the ring or in the field using a G-Link™ for the connection. The G-Link™ or the permanent attachment keeps the slings in the same plane as the ring which is the ideal form of connection.

CornerMax™ Wear Pads
(Patent Pending)
Abrasion protection requires a wear pad to protect a length of sling from exposure to a wide abrasive surface, such as concrete. Exposure of the sling to a sharp corner requires a wear pad that is not susceptible to cutting. After isolating the difference in the requirements, it was apparent that our Synthetic Armor Wear Pad was adequate for abrasion protection. A new type of wear pad was developed to improve the protection of the sling when exposed to steel corners, the CornerMax™ wear pad. The principle behind this invention is the formation of a tunnel between the pad and the edge, greatly reducing the possibility of cutting. Photo shows formation of a tunnel between the steel edge and the CornerMax™ wear pad.

Magnetic Aluminum Corner Protector
Made to order based on diameter and width requirements. These aluminum protectors attach with magnets to steel corners and keep the surrounding sling from contacting the load, just snap it in place and put the sling into the protected area.

### Synthetic Slings

#### Rated Capacity (lbs) Approx. Measurements

<table>
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<td>Green</td>
<td>5,300</td>
<td>4,200</td>
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<td>42,400</td>
<td>106,000</td>
<td>3</td>
<td>2.5</td>
<td>2-3/4</td>
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<td>SP8600</td>
<td>Olive</td>
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<td>52,800</td>
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<td>3-1/8</td>
<td>5-1/4</td>
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<tr>
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<td>72,000</td>
<td>180,000</td>
<td>8</td>
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<td>3-5/8</td>
<td>6</td>
<td></td>
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</tbody>
</table>

### Twin-Path® Adjustable Bridle Sling

#### Rated Capacity (lbs) Approx. Measurements

<table>
<thead>
<tr>
<th></th>
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<td>17,320</td>
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<tr>
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<td>15,000</td>
<td>25,980</td>
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<td>2-1/4</td>
<td>55</td>
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<td>43,300</td>
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<td>2-1/4</td>
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<tr>
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<td>30,000</td>
<td>51,960</td>
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<td>2-1/4</td>
<td>55</td>
</tr>
</tbody>
</table>

### Twin-Path® Sparkeater Slings

Twin-Path® Sparkeater Slings provide exceptional thermal stability and can withstand temperatures up to 300°F/149°C. Aramids are inherently non-conductive. They prevent stray currents from welding operations from damaging the crane motor, wire rope or hoist chain.

U.S. Patent #4,850,629 Canadian Patent #1,280,458

### Warning!
Do not exceed rated capacities. When slings are used at angles of less than 90° from horizontal ratings must be reduced.

### Note:
The outer yellow cover is made from a high temperature resistant aramid fiber.
- All load bearing fibers are made from an aramid fiber known for its extra high tenacity, modulus, low stretch and non-conductive properties.
- An inner red cover contrasts with the outer yellow cover for easy early warning safety alert.
- Two separate paths make their own separate connection between the hook and the load. This is back up protection found only in Twin-Path® products.
G-Links™

NEW! A multi-use coupler specifically designed for connecting hardware to web, round or Twin-Path® slings. This versatile patent-pending coupler can be used to connect two slings together, as a sliding choker hook or as a two leg bridie! Always use G-Links™ of correct width and rated capacity.

Two G-Links™ used together will double the rated capacity of one G-Link™

Caution Message:
Wear Pad Materials

Wear Pad Materials

The Importance of Wear Pads

Cut Test

*The cutting edge was established by utilizing a 1" thick plate. A 45° angle was machined on each side of the plate with a radius of less than .016". No sliding was allowed of the slings. The results indicate the pad protection when the slings are loaded against this edge.

<table>
<thead>
<tr>
<th>Approx. Pad Thickness (in)</th>
<th>Rating* (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unprotected Sling</td>
<td>5/32</td>
</tr>
<tr>
<td>Rough Rider</td>
<td>5/32</td>
</tr>
<tr>
<td>Shark Skin</td>
<td>3/16</td>
</tr>
<tr>
<td>Thick White Pad</td>
<td>3/8</td>
</tr>
</tbody>
</table>

*After cutting test

Slings should be removed from service that are not capable of repair should be destroyed and rendered completely unfit for future use.
Wear Pads

Poly Pads
Sliding Poly Pads protect slings and tie down straps for loads that have sharp and/or abrasive conditions.

Tough, woven polyester fibers with impregnated and coated PVC are the materials which the poly pads are manufactured from.

Flat Fast Sleeves
Flat Fast Sleeves Widths and Appropriate Slings*

<table>
<thead>
<tr>
<th>Sleeve Width (in)</th>
<th>Web Sling Width** (in.)</th>
<th>Wire Rope Sling Dia. (in.)</th>
<th>Chain Sling Size (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
<td>1/4 – 3/4</td>
<td>7/32</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>7/8 – 1-1/2</td>
<td>9/32 – 3/8</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>1-5/8 – 2</td>
<td>1/2</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>2-1/4 – 2-1/2</td>
<td>5/8 – 3/4</td>
</tr>
<tr>
<td>8</td>
<td>6</td>
<td>7/8</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>8</td>
<td>1-1/4</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Slings shown are the maximum recommended size for each sleeve width.
**One or two ply only. For three or four ply, go to the next larger sleeve.

Standard Stitched Sleeves
Stitched-Sleeves Widths and Appropriate Slings*

<table>
<thead>
<tr>
<th>Sleeve Width (in)</th>
<th>Web Sling Width* (in.)</th>
<th>Wire Rope Sling Dia. (in.)</th>
<th>Chain Sling Size (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
<td>1/4 – 3/4</td>
<td>7/32</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>7/8 – 1-1/2</td>
<td>9/32 – 3/8</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>1-5/8 – 2</td>
<td>1/2</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>2-1/4 – 2-1/2</td>
<td>5/8 – 3/4</td>
</tr>
<tr>
<td>8</td>
<td>6</td>
<td>7/8</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>8</td>
<td>1-1/4</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* One or two ply only. For three or four ply, go to the next larger sleeve.

How to Order
1. Choose a Style
   Edge Protector Poly Pad
   Flat Fast Sleeve Stitched-On
   Flat Stitched Sleeve Wear Pad

2. Length of Sleeve
   (If Stitched-On pad, describe position on sling)
   ________ Feet

3. Choose a Material
   TWP (Thick White Pad) Rough Rider
   Shark-Skin Other

4. For Use On
   Web Sling - Code or Width
   Round Sling-Twin Path
   Single-Leg - Code
   Double-Leg - Code

   Chain Sling Size ________ inches
   Wire Rope Sling - Dia. ________ inches

WARNING! Wear pads are not a guarantee against cutting or other sling damage. To avoid personal injury or death, keep all personnel clear of loads about to be lifted and suspended loads.