

# CORE RIGGING CONCEPTS

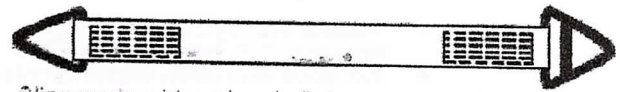
## SYNTHETIC SLINGS (WEB & ROUND SLINGS)

### 1. Minimum design factor.

The minimum design factor for synthetic slings is five (5).

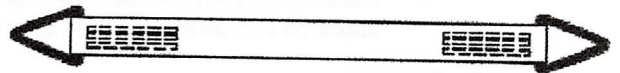
### 2. Sling types.

SLING TYPE	DESCRIPTION	TYPE CODE
Type I	Triangle – Choker	TC
Type II	Triangle – Triangle	TT
Type III	Eye – Eye (flat)	EE (or EEF)
Type IV	Twisted Eye	EE (or EET)
Type V	Endless	EN
Type VI	Reverse Eye	RE
Type VII	Flat Eyes	FE
Type VIII	Wide Body Basket	WBB
Type IX	Load Balancer Basket	LBB



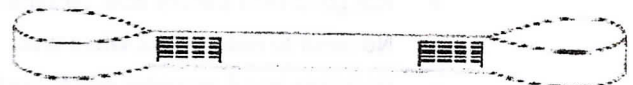
Sling made with a triangle fitting on one end and a slotted triangle choker fitting on the other end. It can be used in a vertical, basket, or choker hitch.

Type I



Sling made with a triangle fitting on both ends. It can be used in a vertical or basket hitch only.

Type II



Sling made with a flat loop eye on each end with loop eye opening on same plane as sling body. This type of sling is sometimes called a flat eye-and-eye, eye-and-eye, or double-eye sling.

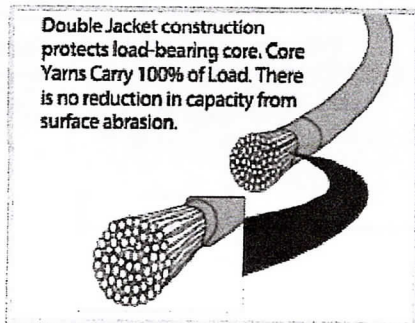
Type III

### 3. Endless slings vs. round slings.

Endless slings are a type of sling with no end – like a rubber band. Endless slings can be made from chain, wire rope, or synthetic materials.

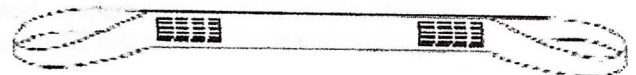
When the endless sling is made of webbing material, it is simply referred to as an endless sling. The fibers in the webbing itself bear the weight of the lifted load.

Round slings, however, are designed with load-bearing core yarns which are encased in a protective outer covering (sheath). The outer cover does not bear any of the load – the load is completely supported by the internal core yarns.



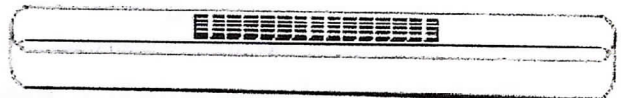
Double Jacket construction protects load-bearing core. Core Yarns Carry 100% of Load. There is no reduction in capacity from surface abrasion.

An advantage of endless & round slings over traditional EE slings is that the sling attachment point can be varied, extending the life of the sling.



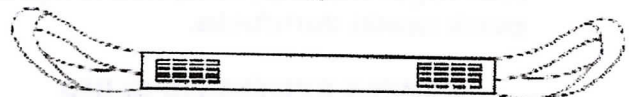
Sling made with both loop eyes formed as in Type III, except that the loop eyes are turned to form a loop eye which is at a right angle to the plane of the sling body. This type of sling is commonly referred to as a twisted-eye sling.

Type IV



Endless sling, sometimes referred to as a grommet. It is a continuous loop formed by joining the ends of the webbing together.

Type V



Return-eye (reversed-eye) sling is formed by using multiple widths of webbing held edge-to-edge. A wear pad is attached on one or both sides of the sling body and on one or both sides of the loop eyes to form a loop eye at each end which is at a right angle to the plane of the sling body.

Type VI

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## 4. Sling material.

### 4.1. Nylon.

- Common general sling material able to be used where exposed to water, grease, or oil.
- **Reduce WLL by 15% when wet.**
- Not good with acids, bleach agents, or extreme temps (below -40°F or over 200°F).
- Stretches & shrinks more than polyester, but stretching helps absorb some minor shock loading.  
**Nylon slings stretch 6 – 10% when loaded to capacity.**
- Exposure to sun's UV rays will degrade nylon slings over time. Sling mfr. may establish limits to service life based on cumulative outdoor exposure and # sling plies.

#### NOTE:

*Most synthetic sling manufacturers use sling color or colored threading to identify different or special products.*

### 4.2. Polyester.

- Similar use to nylon, but is a little more abrasion-resistant. Also, absorbs less water & is more resistant to mild acids than nylon.
- Not good with sulfuric acid, alkaline chemicals, aldehydes, or extreme temps (below -40°F or over 200°F).
- **No need to reduce WLL when wet.**
- Stretches less & provides better load control than nylon. **Polyester slings stretch 3 – 7% when loaded to capacity.**
- More resistant to UV degradation than nylon. Sling mfr. may establish limits to service life based on cumulative outdoor exposure and # sling plies.

4.3. **Polypropylene** – Less preferable than nylon and polyester slings due to its lower abrasion resistance, breaking strength, and resistance to stretching. However, its main advantage over nylon & polyester is that polypropylene slings **float in water**, whereas the others do not.

## 5. Identification tag.

Synthetic slings must be marked with:

- Sling manufacturer
- Type (mfr. code/stock #)
- Capacity (WLL)
- Synthetic material used
- Number of legs (if more than one)

User is responsible for assuring the ID tag remains attached and legible.

Always refer to the WLL on the sling's ID tag – never rely on color code, width, other ID tags, or generic capacity charts/tables.

3100 LBS	Vertical	TYPE EE1-902
2480 LBS	Choker	LENGTH 6 FT
6200 LBS	Basket	05/20/16

Polyester Sling 5:1 Design Factor

### SAMPLE SYNTHETIC SLING TYPE CODE:

**EE2-904 x 8**

