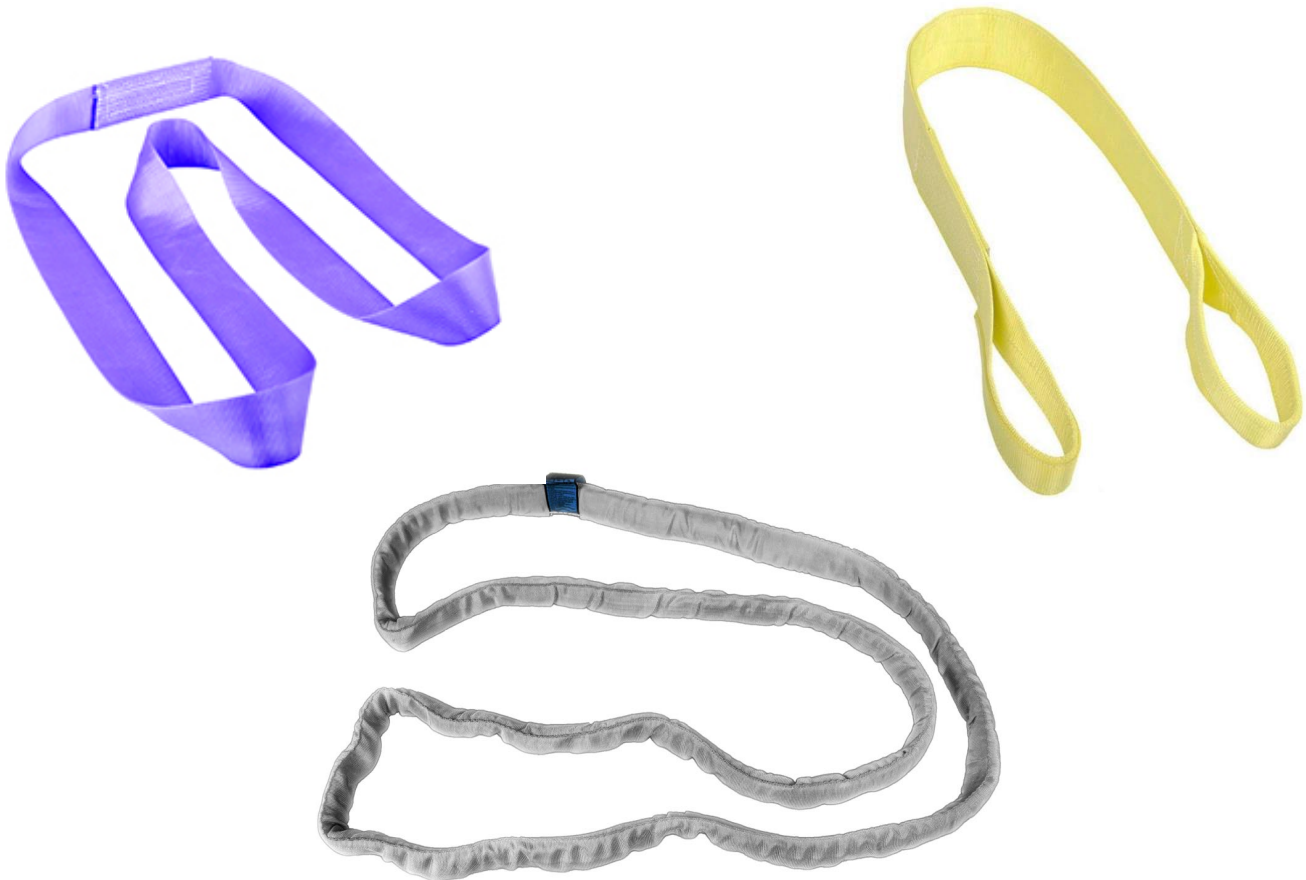


## OPERATION MANUAL

This operation manual is intended as an instruction manual for trained personnel who are in charge of installation, maintenance, repair etc.



Before equipment use, please read this operation manual carefully.

Serial Number: \_\_\_\_\_

Date Purchased: \_\_\_\_\_

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# 1.0 WARRANTY

Every product is thoroughly inspected and tested before it is shipped from the factory. If any problem develops within one year, return the product prepaid to the factory. If an inspection reveals that the problem is caused by defective workmanship or material, repairs will be made without charge and the product will be returned with the shipping prepaid.

## Excluded Items

This warranty does not cover:

- Deterioration caused by normal wear, abuse, chemical or abrasive actions, improper maintenance or excessive heat.
- Problems resulting from repairs, modifications, or alterations made by people other than factory or ACI representatives.
- If the product has been abused or damaged due to an accident.
- If repair parts or accessories other than ACI equipment are used on the product; they are warranted only to the extent that they are warranted by the manufacturer of said parts or accessories.

## Remarks

EXCEPT AS STATED HERE, ACI MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES FOR A PARTICULAR PURPOSE.



Alterations or modifications of equipment and use of non-factory repair parts can lead to dangerous operation and injury.

To avoid injury:

**DO NOT** alter or modify equipment.

**DO NOT** use equipment to lift, support or otherwise transport people.





**DO NOT** suspend unattended loads over people.

## 2.0 SAFETY PRECAUTIONS

### 2.1 Safety Alert Symbols

Throughout this manual are steps and procedures that can prevent hazardous situations, the following symbols are used to identify the degree or level of hazard seriousness.

#### DANGER, WARNING AND CAUTION NOTICE

Symbol	Description
	<b>Danger</b> Indicates an imminently hazardous situation which, if not avoided, <b>will result in death or serious injury</b> and property damage.
	<b>Warning</b> Indicates an imminently hazardous situation which, if not avoided, <b>could result in death or serious injury</b> and property damage.
	<b>Caution</b> Indicates a potentially hazardous situation which, if not avoided, <b>may result in minor or moderate injury</b> or property damage.
	<b>Notice</b> Notifies people of installation, operation or maintenance information which is important but not directly hazard related.



Failure to read and comply with any of the limitations noted in this manual can result in serious bodily injury or death, and/or property damage.

### 2.2 Technical Data

- Maximum working temperatures 90°C (194°F).
- Oil and grease do not normally affect strength.
- Resistant to most acids, however is not resistant to concentrations of alkalis.
- Does not lose strength in water-will not rot or mildew.
- Excellent resistance to ultra-violet rays because outer cover protects inner fibers.
- Only 3% elongation (relative to 7% in nylon slings).

## 3.0 GENERAL DESCRIPTION & FEATURES

## 3.1 General Description

Slings are designed for lifting loads. Before using, make sure that the load does not exceed the rated capacity of the sling. Slings should always be stored indoors.

Polyester slings are a smart choice due to their light weight, durable and flexible construction. Round slings are wrapped in a flexible and dense woven polyester fabric to protect the load bearing yarns from abrasion and damaging UV rays. Web slings provide a degree of protection for loads that require safe and easy handling. The light weight, flexibility and stretch of synthetic slings reduce fatigue and strain on riggers. Synthetic slings also provide for ease of inspection.

There are four types of slings to choose from:

- Eye & Eye Double-Ply
- Endless Polyester Single-Ply
- Endless Polyester Double-Ply
- Round Sling

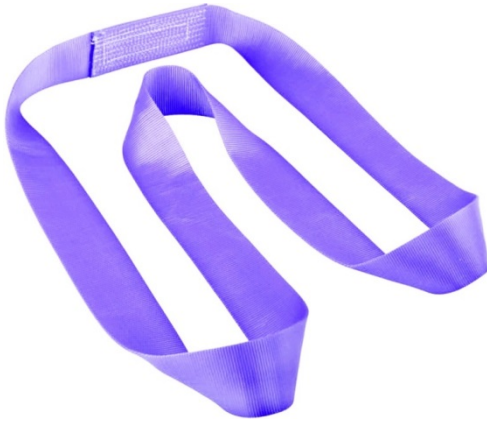
## 3.2 Features

### 3.2.1 Eye & Eye, Double-Ply Polyester Webbing Sling



- Capacity Range: 2,200 to 11,000 lbs.
- Double-Ply polyester webbing sling with reinforced lifting eyes.
- Suitable in applications where minimal damage to the load's surface finish is important.
- Compact size and light weight.
- Color coded according to DIN-EN-1492-1.
- Each inch webbing width is equal to 1 Ton capacity.
- The flat cross section makes it easy to be removed from beneath the load once it has been placed.
- Safety factor 7:1.

### **3.2.2 Endless, Single & Double-Ply Polyester Sling**



- Capacity Range: 2,200 to 8,800 lbs.
- Available in Single or Double-Ply.
- Lightweight and durable. Able to withstand acid, bleaching agents, and high temperatures.
- Color coded according to DIN-EN-1492-1.
- Safety factor 7:1.
- The lift weight, flexibility and stretch of synthetic slings reduces fatigue and strain on riggers.
- It is economical and adaptable with uses in all hitch arrangements.

### **3.2.3 Round Sling**



- Polyester Round Sling, Continuous/Endless loop.
- Capacity Range: 2,200 lbs to 66,000 lbs.
- High strength to weight ratio.
- Low elongation/extreme flexibility.
- Double cover for extra life.
- Polyester interior fibers do not contact the load, meaning little wear as long as the cover is intact.
- Identification tags indicate size, type, and capacity.
- Color coded according to capacity.

# 4.0 INSPECTION

## 4.1 Initial Inspection

You should have any new or repaired slings inspected by a designated person before putting it into use, to ensure that the correct sling is being used, as well as to determine that the sling meets applicable specifications and has not been damaged in shipment.

## 4.2 Frequent Inspection

This inspection shall be made by the user handling the sling each time it is in use.

- Periodic Inspection: this inspection should only be conducted by designated personnel.
- Frequency of inspection should be based on:
  - ✓ Frequency of which round sling is used.
  - ✓ Severity of service conditions.
  - ✓ Experience gained on the service life of slings used in similar applications.
  - ✓ Periodic inspections should be conducted at least annually.

## 4.3 Remove from Service when:

- Cuts to sling cover expose red-striped white core yarns.
- Snags, holes, tears, or abrasions expose red-striped white core yarns.
- End fittings are pitted or corroded, cracked, distorted, or broken.
- The sling shows signs of melting, chemical damage, or charring.
- Capacity tag is illegible or missing.
- Knots in any part of the sling.
- Broken or worn stitching in the cover which exposes the core fibers.
- Other visible damage which causes doubt as to the strength of the sling.

The use of any sling with a nylon cover and polyester load-bearing core yarn makes the detection of chemical damage to the core yarn extremely difficult. Use of such slings in chemically active environments, especially those which include strong alkalis, is not recommended. In such chemically active environments, slings using covers made from the same fiber as the core yarn is recommended. This is due to the fact that the environment will damage the cover either before or at the same time as the core yarn, making inspection and detection much more reliable. Here at ACI, we only sell polyester slings that we inspect and proof test before shipping.

## NOTICE

Note: Do not expose round slings to temperatures exceeding 194°F. Do not exceed rated capacities. Ratings must be reduced when slings are used at angles of less than 90° from horizontal.

## 5.0 POLYESTER VS. NYLON SLINGS

Polyester slings are a great alternative to nylon slings as they have substantially less stretch value. At rated capacity, a treated nylon sling stretches approximately 10%, whereas a treated polyester sling will stretch approximately 7%. The lesser stretch of polyester makes load control easier by reducing bounce. The pliable body of polyester slings will hug the load much better than a nylon lifting sling which will prevent your synthetic slings from locking up on the load in choker hitches. Polyester slings are ideal for applications requiring more strength, less stretch and chemical conditions where a nylon lifting sling would not be appropriate. Polyester can be used in temperatures up to 194°F. Also, polyester slings are excellent where headroom is limited because of the webbing's low stretch characteristics. Polyester slings are ideal for applications requiring more strength, less stretch and chemical conditions where a nylon lifting sling would not be appropriate. We currently have the polyester sling available in endless single and double-ply, eye & eye, and round slings.

One thing to remember when replacing a round lifting sling is how to measure. Stretch the polyester sling end to end and measure the sling tip to tip. Do not measure the circumference, or amount of fabric for the entire polyester crane sling as this will give you a sling 2x the size you have intended. Make sure you measure accurately to ensure the proper length is ordered.

Chemical Resistance Chart		
Chemical	Polyester	Nylon
Acid	*	NO
Alcohols	OK	OK
Aldehydes	NO	OK
Strong Alkalis	**	OK
Bleaching Agents	OK	NO
Dry Cleaning Agents	OK	NO
Ethers	NO	OK
Halogenated Hydrocarbons	OK	OK
Hydrocarbons	OK	OK
Ketones	OK	OK
Oils, Crude	OK	OK
Oils, Lubricating	OK	OK
Soap and Detergents	OK	OK
Water and Seawater	OK	OK
Weak Alkalis	OK	OK

**THIS IS A GENERAL GUIDE LINE ONLY**  
 \*Disintegrated by concentrated sulfuric acid  
 \*\*Degraded by strong alkalis at elevated temperatures



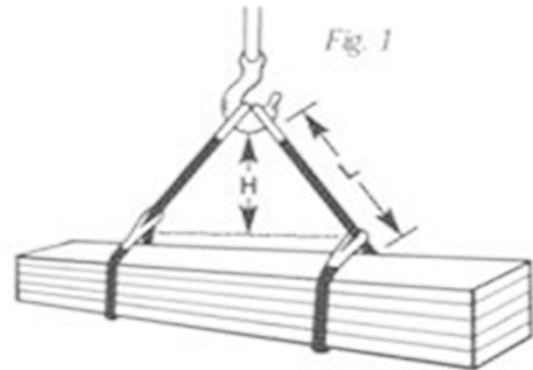
## 6.0 RECOMMENDED OPERATING PRACTICES FOR SLINGS

- Determine weight of the load. The weight of the load shall be within the rated capacity of the polyester round sling(s).
- Select a polyester sling that has suitable characteristics for the type of load, hitch, and environment.
- Polyester 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 capacities.
- Polyester slings with fittings, which are used in a chocked hitch shall be of sufficient length to assure that the choking action is on the round sling and never on the fitting.
- Polyester 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 sling, crane hook, or other attachments.
- Polyester slings shall always be protected from being cut by sharp corners, sharp edges, protrusions, or abrasive surfaces.
- Polyester slings shall not be dragged on the floor or over an abrasive surface.
- Polyester slings shall not be twisted, shortened, lengthened, tied into knots, or joined by knotting.
- Polyester slings shall not be pulled from under loads when the load is resting on the polyester sling.
- Do not drop polyester slings equipped with metal fittings.
- Polyester sling that appear to be damaged shall not be used unless inspected and accepted as usable.
- The polyester sling shall be hitched in a manner providing control of the load.
- Personnel, including all portions of the human body, shall be kept from between the polyester sling and the load, and from between the polyester sling and the crane hook or hoist hook.
- Personnel shall stand clear of the suspended load.
- Personnel shall not ride the polyester 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, personnel shall be alert for possible snagging of the polyester sling.
- The polyester sling's legs (branches) shall contain or support the load from the sides above the center of gravity when using a basket hitch.
- Polyester slings shall be long enough so the rated capacity is adequate when the sling to load angle is taken into consideration.
- Only polyester slings with legible identification tags shall be used.
- Tags and labels should be kept away from the load, hook, and point of chocked.
- Polyester slings should 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).

# WARNING

The capacity of a sling to lift weight decreases as the angle of the sling moves away from being vertical. If the angle of the sling is not taken into consideration before selecting a sling to lift a load, serious injury or death could result from the load being dropped.

Sling Angle Chart		
Horizontal	Capacity Reduction Factor	Load Multiplier
90°	1.000	1.000
85°	0.996	1.005
80°	0.985	1.016
75°	0.966	1.036
70°	0.940	1.064
65°	0.906	1.104
60°	0.866	1.155
55°	0.819	1.222
50°	0.766	1.306
45°	0.707	1.415
40°	0.643	1.556
35°	0.574	1.743
30°	0.500	2.000









## Sling Angle Capacities




If you know the lifting angle of the sling being used, you can apply the Capacity Reduction Factor or the Load Multiplier in the Sling Angle Chart. If you don't know the angle:

- Attach the sling(s).
- Apply lift until the slings are taut and the load is almost ready to leave the ground (but do not lift the load off the ground).
- Measure the length of the sling between the lift point and the load.
- Measure the height between the lift point and the load (see Fig. 1).
- \*Do not exceed rated capacities. Ratings must be reduced when slings are used at angles of less than 90° from horizontal.

## 7.0 DIMENSIONS & SPECIFICATIONS

		Capacities (lb)				
Color	Model Number				Width (in)	Length (ft)
		Vertical (lb)	Choked (lb)	Basket (lb)		
<b>Round Slings</b>						
Purple	RS-020	2,200	2,080	5,200	2	4'-20'
Green	RS-050	5,300	4,200	10,600		4'-20'
Gray	RS-080	8,800	6,720	16,800		4'-20'
Red	RS-100	11,000	8,480	21,200		4'-20'
Orange	RS-130	13,200	10,600	26,400		4'-20'
	RS-210	22,000	16,960	42,400		6'-20'
	RS-250	27,500	20,000	50,000		6'-20'
	RS-900	66,000	52,800	132,000		10'-20'

		Capacities (lb)				
Color	Model Number				Width (in)	Length (ft)
		Vertical (lb)	Choked (lb)	Basket (lb)		
<b>Endless Single-Ply Polyester Slings</b>						
Purple	WSESP-020	2,200	1,800	4,400	2	4'-18'
Green	WSESP-040	4,400	3,500	8,800	2.25	4'-18'
Yellow	WSESP-060	6,600	5,300	13,200	3	4'-18'
Gray	WSESP-080	8,800	7,000	17,600	4	4'-18'
<b>Endless Double-Ply Polyester Slings</b>						
Purple	WSEDP-040	4,400	3,500	8,800	2	4'-18'
Green	WSEDP-060	6,600	5,300	13,200	2.25	4'-18'
Green	WSEDP-080	8,800	7,000	17,600	2.25	4'-18'

		Capacities (lb)				
Color	Model Number				Width (in)	Length (ft)
		Vertical (lb)	Choked (lb)	Basket (lb)		
<b>Eye &amp; Eye Polyester Slings</b>						
Purple	WSDP-020	2,200	1,800	4,400	2.00	4'-18'
Green	WSDP-040	4,400	3,500	8,800	2.25	4'-18'
Yellow	WSDP-060	6,600	5,300	13,200	3.00	4'-18'
Gray	WSDP-080	8,800	7,000	17,600	4.00	4'-18'
Red	WSDP-100	11,000	8,800	22,000	5.00	4'-18'