DEFINITION

as used throughout this catalog, serves to alert users to potentially hazardous situations which often occur in the use of these products. Failure to read, understand and follow the accompanying instructions on how to avoid these situations could result in death or serious injury.

HOW TO USE THIS CATALOG

If this is your first venture into slings, we suggest you read "Help" pages 3 through 12 to learn about the different types of slings and general safety rules. When you move on to the section containing your sling type, specific information regarding that type is located there.

If you know the type of sling you need, locate the section by looking for the colored page tab.

Specific ordering instructions are shown in each section of the catalog.

Note: All Dimensions and Specifications are Subject to Change Without Notice. Hardware dimensions are nominal and may vary depending on source. If dimensions are critical to your application, please specify your requirements.

INTRODUCING LIFT-ALL®

Company Profile

Started in 1964, Lift-All has grown to be the largest sling manufacturer in North America with over 250 employees working in five manufacturing locations around the United States. Corporate headquarters and the largest facility are located in Landisville, Pennsylvania. Manufacturing facilities and warehouses are strategically located throughout the U.S. Sales representatives cover the entire U.S., Canada and Mexico.

Sound engineering principles, and a serious concern for safety have been the standard by which innovative lifting products have been produced by Lift-All for over 50 years.

Lift-All’s Mission Statement

Our mission is to be the trusted name in quality lifting and securement products and services by dedicating ourselves to customer satisfaction while providing exceptional value. Our long term success will be accomplished by a skilled workforce, committed to the principles of teamwork, integrity and performance.

Disclaimer of Warranties and Limitation of Liability

Seller warrants that its goods are free from defects in materials and workmanship. Accordingly, Seller’s liability is limited to replacing without charge or refunding the purchase price, or making fair allowance for any noncompliance with any specifications or any defects in materials or workmanship in its products existing at the time of delivery. Seller requires written notice and the return of the product to establish any claim.

SELLER MAKES NO OTHER WARRANTY OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEED THE ABOVE OBLIGATION ARE HEREBY DISCLAIMED BY SELLER AND EXCLUDED. Seller will not be liable for any consequential damages, loss or expense arising in connection with the use or inability whatever, regardless of whether damage, loss, or expense results from any act or failure to act by Seller, whether negligent or willful, or from any other reason.
Why Lift-All?

**Lift-All Promotes User Safety**
- Safety Seminars and Sling Inspections are available to all sling users.
- Lift-All quality assurance procedures produce consistently superior products.
- Warning, inspection and operating practices information is supplied with every order.
- By manufacturing all types of slings, Lift-All will, without prejudice, recommend the best sling for the application.
- Traceability of all slings through serial numbers.

**Lift-All Saves You Time**
- Lift-All is the only source that can manufacture all of your sling needs.
- Our engineering staff can design the slings or lifting devices needed for special lifting applications.
- Local manufacturing and warehousing from five U.S. locations assures prompt delivery.
- Lift-All trained distributors are well qualified to assist the user in sling selection and application decisions.

**Lift-All Saves You Money**
- Our combination of uncompromising product quality, service and technology makes Lift-All your best choice in long term value.

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**SLING INSPECTION SERVICES**

OSHA regulations require that all chain slings receive a thorough inspection at least once per year by a competent person. You now have the opportunity to have a thorough, documented inspection performed by a factory trained Lift-All representative. Chain slings, wire rope slings, web slings, roundslings and wire mesh slings all can be inspected in one survey by a representative from the only company that makes them all - Lift-All.

The Inspection Procedure

Each sling is individually recorded and reported by location, serial number (if available), size, type, reach and condition.

If desired, we will affix a warning to those slings found to be damaged.

A Sling Survey Report will be printed and submitted to you for your records, showing the above information along with any recommendations we may have for improving your sling life and lifting safety.

If you wish to repair or replace any of the damaged slings, we will provide cost estimates to do so.

Sling Inspections not only help to insure safe lifting equipment but also increase employee awareness of sling safety, creating a safer workplace for all.

To inquire about or arrange for your Sling Inspection, please call our directed toll free phone number (800) 909-1964.
QUALITY AND ENGINEERING SERVICES

Quality Standards

*Lift-All* insures top quality products through a Quality Program, based predominately on Military Specification MIL-I-45208, which includes:

1. Detailed specifications for each product.
2. Testing of raw material prior to product manufacturing.
3. Product testing in conformance with industry standards.
4. Proof testing as required (certificates available).
5. Final inspection of products prior to shipment.

*Lift-All* is dedicated to manufacturing and developing products for material handling that meet or exceed current industry and government requirements, including OSHA and ASME B30.9 for lifting slings. *Lift-All* products conform to the following:

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Standard /Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cargo Securement</td>
<td>US DOT, FMCSA 393.102, WSTDA</td>
</tr>
<tr>
<td>Chain Slings</td>
<td>OSHA 1910.184, ASME B30.9, NACM</td>
</tr>
<tr>
<td>Hoists</td>
<td>ASME B30.16, B30.21</td>
</tr>
<tr>
<td>Roundslings</td>
<td>ASME B30.9, WSTDA</td>
</tr>
<tr>
<td>Webbing Slings</td>
<td>OSHA 1910.184, ASME B30.9, WSTDA</td>
</tr>
<tr>
<td>Wire Mesh Slings</td>
<td>OSHA 1910.184, ASME B30.9</td>
</tr>
<tr>
<td>Wire Rope Slings</td>
<td>OSHA 1910.184, ASME B30.9</td>
</tr>
</tbody>
</table>

Engineering Services

Fee based engineering services are available for lifting applications or custom product design and review. Contact *Lift-All* for details on this program.

SAFETY IN LIFTING

Safety Video Available

"Safety In Lifting", a 22 minute presentation is available in DVD format in both English and Spanish. It covers all types of slings: Web, Roundslings, Wire Rope, Chain and Wire Mesh. The Video suggests the best type of sling for common lifting applications, shows safe lifting procedures (in accordance with OSHA and ASME B30.9 guidelines), the proper inspection, care and maintenance of the various sling types, and more. Your in-plant training and safety program may be just a bit easier with some help from *Lift-All*.

Safety Seminar

*Lift-All* representatives are available to present a "Safety in Lifting" seminar at your location, improving your employees knowledge of slings in general and answering specific questions about your applications.

For details about the Video and/or "Safety in Lifting" Seminars call: *Lift-All* at 1-800-909-1964.
SLING SELECTION
Which Type of Sling Should I Choose?

General Use of Different Types of Slings

Synthetic Slings - Both Web Slings and Roundslings are used where loads must be protected from damage. The weight and flexibility of synthetic slings reduce fatigue and strain on riggers. Tuflex Roundslings, with their color coded capacities, and ease of use and inspection, are rapidly gaining in popularity.

Wire Rope Slings - The most common and lowest cost per ton of lift of all slings. Used in the construction industry and other industries where heavy loads and rugged conditions exist.

Chain Slings - Alloy chain slings combine superior strength, ease of handling and durability. The combination of heavy loads, elevated working temperatures and severe lift conditions usually dictate that an alloy chain sling be used. Typical chain sling applications are found in steel mills, foundries, and heavy machining operations requiring repetitive lifts.

Mesh Slings: Wire and Chain - These slings excel in lifting objects that are hot or have sharp edges, such as bar stock or plate steel. Mesh slings greatly enhance load balancing due to their wide load bearing surface. Machine shops and steel warehouses typically have good applications for mesh slings.
General OSHA and Manufacturer Requirements for All Slings

Safe Operating Practices

1. **Sling users must be trained** in operating practices, including sling selection, use, inspection, rigging practices, cautions to personnel, and effects of environment.

2. **Inspect sling at least daily** and remove from service if damaged.

3. **Protect sling from being cut or damaged** by corners, protrusions, or from contact with edges that are not well rounded.

4. **Use sling properly**. Do not exceed a sling's rated capacities and always consider how the sling angle affects the amount of tension on the sling.

5. **Stand clear of load**. Do not stand on, under or near a load, and be alert to dangers from falling and moving loads, and the potential for snagging.

6. **Maintain and store sling properly**. Sling should be protected from mechanical, chemical and environmental damage.

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**Inspection Frequency**

**Initial Inspection** - Each new sling must be inspected by a designated person to help ensure that the correct sling has been received, is undamaged, and meets applicable requirements for its intended use.

**Frequent Inspection** - The sling must be inspected by a designated person before each day or shift in Normal service conditions, or before each use in applications where a rapid rate of sling wear or other degradation may exist. (Severe service conditions).

**Periodic Inspection** - Every sling must be inspected “periodically”. The designated person should be someone other than the person performing the frequent inspection.

The frequency of periodic inspections should be based on the sling's actual or expected use, severity of service, and experience gained during the inspection of other slings used in similar circumstances, but must not exceed a one year interval. General guidelines for the frequency of periodic inspections are:

- Normal service—yearly
- Severe service—monthly to quarterly
- Special service—as recommended

A written record of the most recent periodic inspection must be maintained. (See WSTDA WS-1 for definitions of service conditions.)

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**1. Training**

**Sling Users must be Trained and Knowledgeable**

Sling users must be knowledgeable about the safe and proper use of slings and be aware of their responsibilities as outlined in all applicable standards and regulations.

ASME B30.9 states: "Sling users shall be trained in the selection, inspection, cautions to personnel, effects of the environment and rigging practices.

OSHA Sling Regulation 29 CFR 1910.184 states that a **qualified person** is one: "who, by possession of a recognized degree or certificate of professional standing in an applicable field, or who, by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work."

If you are unsure whether you are properly trained and knowledgeable, or if you are unsure of what the standards and regulations require of you, ask your employer for information and/or training – DO NOT use web slings if you are unsure of what you are doing. Lack of skill, knowledge or care can result in severe INJURY or DEATH to you and others.

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**2. Inspections**

**Inspections. Each day before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a competent person designated by the employer. Additional inspections shall be performed during sling use, where service conditions warrant. Damaged or defective slings shall be immediately removed from service.** (OSHA Wording)
3. Protect Slings

**WARNING** Read Definition on page 3

*Slings shall be padded or protected from the sharp edges of their loads.*

(OSHA Wording)

The cutting of synthetic slings is the main cause of sling failure; usually caused by a sharp or small diameter load edge against the sling. Proper protection must be used to avoid cutting. (See Sling Protection Section page 14).

Punctures & Abrasions seriously degrade sling strength. Rough load surfaces and dragging slings on the ground will damage all slings, steel or synthetic. Use proper padding between slings and rough loads. Never drag slings on ground or concrete floors.

**Sling Protection**

A qualified person must select materials and methods that adequately protect slings from edges or surfaces. Sleeves, wear pads, corner protectors, or other softeners are examples of materials commonly used as protection devices. However, **No protective device is "cut proof"**.

Some protection devices provide abrasion resistance, but offer virtually no protection against cuts. Several "test" lifts, done in a non-consequence setting, may be necessary to determine the suitability of each protection device. After each "test" lift, inspect all slings and protection devices for damage.

Foreign Matter - Material such as metal chips and heavy grit can damage slings, both internally and externally. Avoid contact with foreign matter whenever possible.

4. Use Slings Properly

- Slings shall not be dragged on floor.

**Improper Loading - Shock Loading, unbalanced loading, overloading and inadequate consideration for the effect of angle factors can adversely affect safety. Make sure the load weight is within the rated capacity of the sling(s) being used for both type of hitch and angle of lift.**

(OSHA Wording)

- Do not shock load. Jerking the load could overload the sling and cause it to fail.

- Lift must be stable with respect to the center of gravity - balanced.
GENERAL OSHA AND MANUFACTURER REQUIREMENTS FOR ALL SLINGS

**WARNING**

*Slings used in a basket hitch shall have the loads balanced to prevent slippage.*
 *(OSHA Wording)*

*Slings shall not be loaded in excess of their rated capacities.*
 *(OSHA Wording)*

*Rated capacities (Working Load Limits) must be shown by markings or tags attached to all slings.*

*Do not point load hooks - center load in base of hook.*

- *Angle of lift must be considered in all lifts. See page 12.*
- *Temperature and chemical environment must be considered (see specific sling types for data).*

**Temperature** - Avoid loads and environments where temperatures exceed the limits of the slings being used. All slings can be damaged by excessive heat, including heat from welding torches and weld spatter.

**Chemical Environment** - Slings exposed to certain chemicals or the vapors of these chemicals can lose some or all of their strength. When using slings in a chemical environment, contact *Lift-All* to assure sling compatibility.

**Slings shall be securely attached to their loads.**
 *(OSHA Wording)*

Read Definition on page 3
GENERAL OSHA AND MANUFACTURER REQUIREMENTS FOR ALL

**WARNING**

Read Definition on page 3

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- **Slings shall not be shortened with knots or bolts or other makeshift devices.** (OSHA Wording)

- **Sling legs shall not be kinked.** (OSHA Wording)

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**5. Stand Clear of the Load**

- Hands or fingers shall not be placed between the sling and its load while the sling is being tightened around the load. (OSHA Wording)

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- After lifting, the load should not be pushed or guided by employees hands directly on the load. Ropes or "tag lines" should be attached for this purpose.

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- Suspended loads shall be kept clear of all obstructions. All employees shall be kept clear of loads about to be lifted and of suspended loads. (OSHA Wording)

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- Before a load is lifted, a place should be prepared where it is to be put down. Lumber can be used to allow space to remove the sling and prevent shifting of the load.
6. Maintain and Store Sling Properly

Attempt to keep slings clean and free of dirt, grime and foreign materials.

When not in use, slings should be stored in an area free from environmental or mechanical sources of damage, such as: weld spatter, splinters from grinding or machining, or sources of UV, heat, or chemical exposure, etc.

Additional Factors to consider when handling loads

- Integrity of the attachment points
- Structural stability of the load
- Loose parts that could fall from load
- Power lines in the area
- Secure a clear load path and avoid any contact with objects that would impede load movement
- Tag lines can often be attached to the load and be used to aid in controlling load position

Choker Hitch Angles

When a choke hitch is used, and the angle of choke is less than 120 degrees, the sling choker hitch capacity decreases. To determine the actual sling capacity at a given angle of choke, multiply the sling capacity rating (for a choker hitch) by the appropriate reduction factor determined from the tables below.

Reduction in rated capacity as a function of angle of choke

<table>
<thead>
<tr>
<th>Angle of Choke</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; or = 120</td>
<td>1.00</td>
</tr>
<tr>
<td>105</td>
<td>.82</td>
</tr>
<tr>
<td>90</td>
<td>.71</td>
</tr>
<tr>
<td>60</td>
<td>.58</td>
</tr>
<tr>
<td>0</td>
<td>.50</td>
</tr>
</tbody>
</table>

Sling capacity decreases as choke angle decreases.
**Effect of Angle of Lift on a Sling’s Rated Capacity**

**WARNING**
Read Definition on page 3

Using slings at an angle can become deadly if that angle is not taken into consideration when selecting the sling to be used. The tension on each leg of the sling is increased as the angle of lift, from horizontal, decreases. It is most desirable for a sling to have a larger angle of lift, approaching 90°. Lifts with angles of less than 30° from horizontal are not recommended. If you can measure the angle of lift or the length and height of the sling as rigged, you can determine the properly rated sling for your lift.

**INCREASED TENSION**

What capacity sling do I need?

1. Determine the weight that the sling will be lifting [LW].

2. Calculate the Tension Factor [TF].
   
   a. Using the angle from horizontal, read across the angle chart to the corresponding number of Tension Factor column.
   
   - OR -
   
   b. Divide sling length* [L] by sling height* [H].

3. Lifting Weight [LW] x the Tension Factor [TF] = Minimum Sling Rating for the type of hitch that will be used.

* Measured from a common horizontal plane to the hoisting hook.

**REDUCED CAPACITY**

What would be the rating of each sling rigged at this angle?

1. Calculate the Reduction Factor [RF].

   a. Using the angle from horizontal, read across the Angle Chart to the corresponding number of the Reduction Factor column.
   
   - OR -
   
   b. Divide sling height* [H] by sling length* [L].

2. Reduction Factor [RF] x the sling’s rated capacity for the type of hitch that will be used = Sling’s Reduced Rating.

* Measured from a common horizontal plane to the hoisting hook.

### Effect of Angle Chart

<table>
<thead>
<tr>
<th>Tension Factor (TF)</th>
<th>Angle From Horizontal</th>
<th>Reduction Factor (RF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.000</td>
<td>90°</td>
<td>1.000</td>
</tr>
<tr>
<td>1.004</td>
<td>85°</td>
<td>0.996</td>
</tr>
<tr>
<td>1.015</td>
<td>80°</td>
<td>0.985</td>
</tr>
<tr>
<td>1.035</td>
<td>75°</td>
<td>0.966</td>
</tr>
<tr>
<td>1.064</td>
<td>70°</td>
<td>0.940</td>
</tr>
<tr>
<td>1.104</td>
<td>65°</td>
<td>0.906</td>
</tr>
<tr>
<td>1.155</td>
<td>60°</td>
<td>0.866</td>
</tr>
<tr>
<td>1.221</td>
<td>55°</td>
<td>0.819</td>
</tr>
<tr>
<td>1.305</td>
<td>50°</td>
<td>0.766</td>
</tr>
<tr>
<td>1.414</td>
<td>45°</td>
<td>0.707</td>
</tr>
<tr>
<td>1.555</td>
<td>40°</td>
<td>0.643</td>
</tr>
<tr>
<td>1.742</td>
<td>35°</td>
<td>0.574</td>
</tr>
</tbody>
</table>
| 2.000               | 30°                   | 0.500                 

Sling capacity decreases as the angle from horizontal decreases. Sling angles of less than 30° are not recommended.

### Example:

**Increased Tension**

- LW = 500 lbs.
- LW = 500 lbs.

Load weight = 1,000 lbs.
Rigging - 2 slings in vertical hitch
Lifting Weight (LW) per sling = 500 lbs.
Measured Length (L) = 10 ft.
Measured Height (H) = 5 ft.
Tension Factor (TF) = 10 (L) / 5 (H) = 2.0
Minimum Vertical Rated Capacity required for this lift = 500 (LW) x 2.0 (TF) = 1000 lbs. per sling

**Reduced Capacity**

Example:
Vertical Choker rating of each sling = 6,000 lbs.
Measured Length (L) = 6 ft.
Measured Height (H) = 4 ft.
Reduction Factor (RF) = 4 (H) / 6 (L) = .667
Reduced sling rating in this configuration = .667 (RF) x 6,000 lbs. = 4,000 lbs. of lifting capacity per sling
Lifting Application Worksheet

Please fill in as much information as possible in order to aid in selecting the proper lifting equipment.

Distributor: _________________________________
Date:  _____________________________________
Contact Name: ______________________________
   Telephone:  ______________________________
   Fax:   ___________________________________

Description of the load being lifted
What is the load: ___________________________
Size of the load:
   Weight:  _________________________________
   Width:   _________________________________
   Height:  _________________________________
   Length:  _________________________________
   Diameter:  _______________________________
Other Notes:  ______________________________

Lifting Conditions
Overhead Height Clearance:  ___________________  
(From top of load)
Operating Temperature:
   □ Room  □ Other _______ °F
Other Notes:  _______________________________

If exposed to chemicals:
Chemical: _________________________________
   Conc: __________ %
   Temperature:  □ Room  □ Other _______ °F

Lifting Operation
□ Lift and Transport  □ Pull / Drag Load Only
□ Lift and Turn  □ Lift Load Only
□ Other Notes:  ___________________________________

Lifting equipment being used (excluding slings)
Check the following equipment that performs the lift:
□ A single hook/hoist/crane.  Hook sizes used:  __________
□ Two hooks/hoists/cranes.  Hook sizes used:  __________
□ Fork-lift.  Width/thickness of the forks:  __________
   Distance between the inside edges of the forks:  __________ in.
Is a lifting beam to be used?  □ Yes  □ No
   If Yes:  Beam Span:  _____ ft.  ______  in.
   Is it adjustable?  □ Yes  □ No
   Is a new beam needed?  □ Yes  □ No
Other Notes:  ___________________________________

Rigging Configuration
Number of pick-up points:  __________
Connection point information:
□ Ring/Eye/Shackle
   Size:  _____ ID:  _____ "  OD:  _____ "  THK:  _____ 
□ Wrapped around the load
□ Trunnion/ Pin
   Diameter:  _______ "
Is center of gravity an equal distance from all pick-up points?  □ Yes  □ No
Sling/legs attached to the load in a:
□ Vertical Hitch  □ Choker Hitch
□ Basket Hitch  □ Other  __________________________
□ Double Wrap Basket Hitch
□ Double Wrap Choker Hitch
□ Is edge protection needed?
Other Notes:  ___________________________________

Attach drawing of load and intended rigging configuration with dimensions.