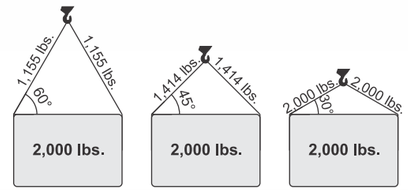
CHAIN SLINGS
WORKING LOAD LIMITS

CHAIN SIZE inches Design Factor 4:1	SINGLE CHAIN	DOUBLE CHAIN SLINGS - TYPE D			TRIPLE CHAIN SLINGS - TYPE T QUADRUPLE CHAIN SLINGS - TYPE Q		
Grade 80	**Vertical**	**@ 60°**	**@ 45°**	**@ 30°**	**@ 60°**	**@ 45°**	**@ 30°**
9/32”	3,500 lbs	6,100 lbs	4,900 lbs	3,500 lbs	9,100 lbs	7,400 lbs	5,200 lbs
3/8”	7,100 lbs	12,300 lbs	10,000 lbs	7,100 lbs	18,400 lbs	15,100 lbs	10,600 lbs
1/2”	12,000 lbs	20,800 lbs	17,000 lbs	12,000 lbs	31,200 lbs	25,500 lbs	18,000 lbs
5/8”	18,100 lbs	31,300 lbs	25,600 lbs	18,100 lbs	47,000 lbs	38,400 lbs	27,100 lbs
3/4”	28,300 lbs	49,000 lbs	40,000 lbs	28,300 lbs	73,500 lbs	60,000 lbs	42,200 lbs
Grade 100	**Vertical**	**@ 60°**	**@ 45°**	**@ 30°**	**@ 60°**	**@ 45°**	**@ 30°**
9/32”	4,300 lbs	7,500 lbs	6,100 lbs	4,300 lbs	11,200 lbs	9,100 lbs	6,450 lbs
3/8”	8,800 lbs	15,200 lbs	12,400 lbs	8,800 lbs	22,800 lbs	18,600 lbs	13,200 lbs
1/2”	15,000 lbs	26,000 lbs	21,200 lbs	15,000 lbs	39,000 lbs	31,800 lbs	22,500 lbs
5/8”	22,600 lbs	39,100 lbs	32,000 lbs	22,600 lbs	58,700 lbs	47,900 lbs	33,900 lbs
3/4”	35,300 lbs	61,100 lbs	49,900 lbs	35,300 lbs	91,700 lbs	74,900 lbs	53,000 lbs

WARNING! NEVER EXCEED THE WORKING LOAD LIMIT. ALWAYS CHECK THE IDENTIFICATION TAG TO DETERMINE IF THE SLINGS RATED CAPACITY IS APPROPRIATE FOR THE LIFT. RATINGS LISTED ARE FOR NEW SLINGS ONLY AND APPLY ONLY TO SUPER SLINGS PRODUCTS. ALWAYS INSPECT THE SLING BEFORE USE.

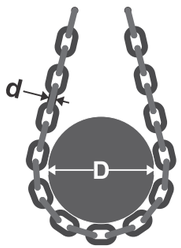
Effect of Angle on Sling Capacity



Capacity Reduction		Sling Tension	
Angle/Deg Horizontal	Loss Factor	Angle/Deg Horizontal	Loss Factor
90	1.000	90	1.000
80	0.985	80	1.015
70	0.940	70	1.064
60	0.866	60	1.155
50	0.766	50	1.305
45	0.707	45	1.414
35	0.574	35	1.742
30	0.500	30	2.000

NACM Recommendation for rated load reduction for basket slings to account for D/d ratio

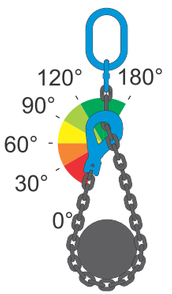
D/d	% Rated Load
Less than 2	Not Recommended
2	60
3	70
4	80
5	90
6 & above	100



*Percentage of basket sling rated load, based on D/d ratio.

Choker Hitch

When using chain slings in a choke, the capacity should be reduced by 20% given that the angle is 120° or greater. For angles below 120° consult with your Super Slings representative.



Chain Cautions

DO NOT: Load an assembly in excess of working load limits shown.
DO NOT: Put an unequal load on one leg of the sling. Distribute load evenly.
DO NOT: Expose assembly to impact, rapid lifts or sudden stops.
DO NOT: Tie knots or allow chains to become twisted.
DO NOT: Use a chain that appears defective, worn or damaged.
DO NOT: Fasten chain over sharp corners or edges when it can be avoided.
DO NOT: Point or tip load hooks

super slings inc.
Secure Solutions

Super Slings Inc. - www.superslings.ca

Nisku
505 - 11 Avenue Nisku, AB
P: (780) 955-7111 F: (780) 955-7199
Red Deer
7620 Edgar Industrial Dr Red Deer, AB
P: (403) 406-4996 F: (403) 406-4997

AWRF Est. 1976 · REGISTERED COMPANY ISO 9001 · WEB SLING & TIE DOWN ASSOCIATION MEMBER

All chain assemblies manufactured by Super Slings Inc. are done so in accordance with ASME B30.9-1 in conjunction with Alberta Occupational Health & Safety standards. For a copy of these standards and requirements please visit www.asme.org or work.alberta.ca/occupational-health-safety.html

CHAIN SLING WARNINGS & USAGE

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WARNING!

WARNING! Chain Slings WILL FAIL if worn-out, overloaded, misused, damaged, improperly maintained or abused. Chain Sling failure may cause serious injury or death.
Protect yourself and others:

- ALWAYS INSPECT Chain for WEAR, DAMAGE or ABUSE
- NEVER USE Chain that is WORN-OUT, DAMAGED or ABUSED
- NEVER OVERLOAD a Chain Slings
- INFORM YOURSELF: Read and understand manufacturer's literature
- REFER TO APPLICABLE CODES, STANDARDS and REGULATIONS for INSPECTION REQUIREMENTS and REMOVAL CRITERIA

The **WARNING** Icon, used in our product information is done to alert sling users to potentially hazardous conditions and situations.
WARNING It is your explicit responsibility to consider all risk factors prior to using any rigging device or product. Read and understand the information contained in this bulletin, in our catalog, on our web site www.superslings.ca and follow OH&S and ASME guidelines. Use by untrained persons is hazardous. The American Society of Mechanical Engineers, in the Sling Safety Standard, ASME B30.9-2006, clearly establishes the requirement for training. Section 9-1.1-Training states, "Chain sling users shall be trained in the selection, inspection, cautions to personnel, effects of the environment and rigging practices, covered by this chapter." **WARNING** All Products supplied and manufactured by Super Slings Inc are sold with express understanding that the purchaser and user are thoroughly familiar with the safe and proper use and application of the product. The qualified person and sling user has the responsibility for use and application, and should have sufficient training and knowledge of all applicable standards to responsibly use our products. **WARNING** Failure to follow proper use, care and inspection criteria could result in severe personal injury or death. Chain products will fail if damaged, abused, misused, overused, or improperly maintained.
Super Slings Inc., as a manufacturer of chain slings, can only control the specifications of our chain products in accordance with industry and governmental standards for chain sling manufacturing. It would be impossible for any warning to contain all of the possible misapplication associated with the use of Super Slings Inc. products. Our warnings are intended to identify only those risks which are most common. The responsibility and understanding of the proper safe use and application of the products in our catalog, ultimately rest with the end user. We are not responsible for the end user's assembly in which our products may be used. Failure of the product can occur due to misapplication, abuse, intentional alteration or improper maintenance. Product failure can result in property damage, personal injury or death.
Working Load Limit (WLL) The "Working Load Limit" (rated capacity) is the maximum load that shall be applied in direct tension to an undamaged straight length of chain, strap or fittings.
Proof Test The "Proof Test" (manufacturing test force) is a term designating the minimum tensile force which has been applied to a product under constantly increasing force in direct tension during the manufacturing process. These loads are manufacturing integrity tests and shall not be used as criteria for service or design purposes.

Minimum Breaking Force The "Minimum Breaking Force" is the minimum force at which the product during manufacture has been found by testing to break when a constantly increasing force is applied in direct tension. Breaking force values are not guarantees that all chain or strap segments will endure these loads. This test is a manufacturer's attribute acceptance test and shall not be used as a criteria for service or design purposes.
The Working Load Limits and the associated design factor of each Super Slings Inc product may be affected by wear, misuse, overloading, corrosion, deformation, intentional alteration and other use conditions. Regular inspection must be conducted to determine whether use can be continued at the assigned Working Load Limit, a reduced Working Load Limit or whether the product must be withdrawn from service. The terms "Working Load Limit", "Proof Test" and "Minimum Breaking Force" contain no implication of what load the product will withstand if the product is used in such conditions of abuse and misuse.
Super Slings Inc. accepts no liability for any such abuse or misuse. The Working Load Limit of a sling or assembly must not exceed the lowest Working Load Limit of the components in the sling or assembly. Use only Super Slings Inc. approved parts as replacements when servicing or repairing original Super Slings Inc. slings or assemblies.
All Working Load Limits (WLL) shown in this catalog apply only to new or "in as new" condition products. Use only grade 80, 100 or 120 alloy or grade 50 stainless steel chain and attachments for overhead lifting.
When using chains in a choker application, the working load limit (WLL) of the sling must be reduced by 20%. When using non-cradled grab hooks in a shortening or choker application, the (WLL) should be reduced by 20%
Super slings inc. Products are intended to be used at or below the working load limits (WLL) specified in constantly increasing force applications under direct tension or in a straight line pull.
Shock loading is prohibited and side loading must be avoided, as it exerts additional dynamic forces or loading which the product is not designed to accommodate. The conditions involving use in certain environmental situations such as unusual (high or low) temperature, chemical, etc..., can cause changes in chain performance.
All chains and attachments are capable of creating sparks unless otherwise noted. Welding chain or component parts or products can be hazardous. Consult with your Super Slings Inc. representative for additional information or questions regarding the use and application of these products.

Temperature and Chain Guidelines

Use of Grade 80 Chain Under Heat Conditions

Effect of Elevated Temperature on the Working Load Limit of **Grade 80** Alloy Chain. Chains should not be used outside of the -40° F to 400° F (-40° C to 204° C) temperature range without consulting the chain manufacturer. The specific working load limit reductions for Grade 80 chains used at and after exposure to elevated temperatures have been established and are shown below.

Grade 80 Heat Conditions

Maximum Temperature of Chain	Reduction of Working Load Limit While At Temperature	Reduction of Working Load Limit After Exposure to Temperature
Below 400°	None	None
400°	10%	None
500°	15%	None
600°	20%	5%
700°	30%	10%
800°	40%	15%
900°	50%	20%
1000°	60%	25%
Over 1000°	(see below)	(see below)

All slings exposed to temperatures over 1000°F must be removed from service

Use of Grade 100 Chain Under Heat Conditions

Effect of Elevated Temperature on the Working Load Limit of **Grade 100** Alloy Chain. Chains should not be used outside of the -40° F to 400° F (-40° C to 204° C) temperature range without consulting the chain manufacturer. The specific working load limit reductions for Grade 100 chains used at and after exposure to elevated temperatures have been established and are shown below.

Grade 100 Heat Conditions

Maximum Temperature of Chain	Reduction of Working Load Limit While At Temperature	Reduction of Working Load Limit After Exposure to Temperature
Below 400°	None	None
400°	15%	None
500°	25%	5%
600°	30%	15%
700°	40%	20%
800°	50%	25%
900°	60%	30%
1000°	70%	35%
Over 1000°	(see below)	(see below)

All slings exposed to temperatures over 1000°F must be removed from service

General Hook & Latch Guidelines

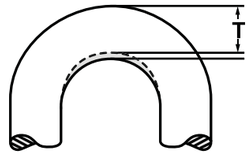
Fig.1

Fig.2

Important Safety Information Read & Follow

- Always inspect hook & latch before using.
- Never use a latch that is distorted or bent.
- Always make sure spring will force the latch against the tip of the hook.
- Always make sure hook supports the load.
- Do not point load hooks–load should bear on the bowl of hook. The latch must never support the load. (See Figure 1 & 2).
- Latches are intended to retain loose sling or devices under slack conditions.
- Latches are not intended to be an antifouling device.

Table of Wear Specifications



If chain is worn to less than the minimum allowable thickness (T), remove the chain from service.

Wear Specifications

Chain Size		Material Diameter		Min Allowable Thickness (T)	
Inches	mm	Grade 80	Grade 100	Grade 80	Grade 100
9/32	7	0.274	0.279	0.239	0.239
3/8	10	0.392	0.404	0.342	0.342
1/2	13	0.510	0.529	0.443	0.443
5/8	16	0.630	0.625	0.546	0.546
3/4	20	0.781	0.821	0.687	0.687
7/8	22	0.906	–	0.750	–
1	26	1.032	–	0.887	–
1-1/4	32	1.250	–	1.091	–

Chain specifications may vary by manufacturer, contact Super Slings for sling specific information.

WARNING!
NEVER EXCEED THE WORKING LOAD LIMIT.
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Chain Sling Safety Checklist

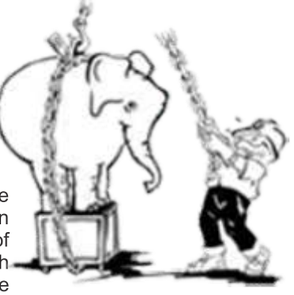
Check #1 **Inspections**

Visually examine the sling before each use. Look for stretched, gouged, bent or worn links and components, including hooks, with open throats, cracks or distortion, if damaged, remove from service.

Check #2 **Balance**

Know the load — determine the weight, center of gravity, angle of lift and select the proper size of sling.

Check #3 **Overload**

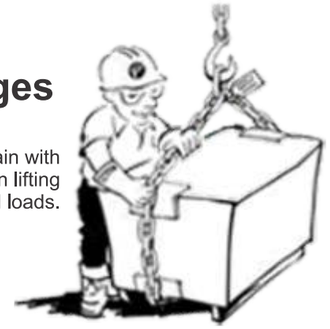


Never overload the sling — check the working load limit on the identification tag. Always consider the effect of Angle of Lift — the tension on each leg of the sling is increased as the angle of lift, from horizontal, decreases.

Check #4 **Knots, Twists & Kinks**

Make sure chain is not twisted, knotted or kinked before lifting load. Slings should not be shortened with knots, bolts or other make-shift devices.

Check #5 **Sharp Edges**



Protect chain with padding when lifting sharp edged loads.

Check #6 **Abrupt Movements** *Shock Loading*

Lift and lower loads smoothly. Do not jerk.

Check #7 **Temperature**

Do not expose alloy chain or slings to temperatures above 400°F (200°C) or below -40°F (-40°C)

Check #8 **Chain Care**

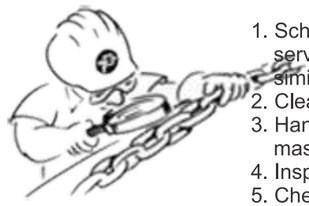
Store slings properly on an A-Frame or sling rack and protect chain slings from corrosion during storage.

Specific Removal Criteria for Chain Slings

The chain sling shall be removed from service if any of the following are visible:

- Missing or illegible tag
- Cracked or broken links or hardware
- Excessive wear, nicks or gouges
- Stretched links or fittings
- Bent, twisted or deformed links or fittings
- Excessive pitting or corrosion
- Lack of ability of chain or components to hinge freely
- Weld splatter
- Knots in any part of the sling
- Discoloration on any part of the sling, which may indicate chemical damage
- Fittings that display excessive pitting, corrosion, or are cracked, bent, twisted, gouged or broken
- For hooks – see ASME B30.10 for removal criteria
- For fittings – see ASME B30.26 for removal criteria
- Other conditions and/or visible damage that cause doubt as to the continued use of the sling

*Any repairs to damaged slings should only be performed by original manufacturer or qualified persons. all repaired chain slings must be pull tested as stated in ASME B30.9



Chain Sling Inspection Procedure

1. Schedule periodic link-by-link inspection of chain slings, based on frequency of sling use, severity of service conditions, nature of lifts being made and experience gained on service life of slings used in similar circumstances.
2. Clean chain prior to inspection, to make damage or defects more easily seen.
3. Hang chain vertically, if practical, for preliminary inspection. Measure reach accurately (bearing point of master link to bearing point of hook). Check this length against reach shown on tag.
4. Inspect link by link for damage listed above and below.
5. Check master links and hooks for all of the above faults – hooks especially for excessive throat opening

Examples of Chain Sling Damage

 **Missing Tag Improper Fabrication**	 **Bent Link**	 **Stretched Link Elongation**	 **Bent Hook**
 **Severe Corrosion Rusting**	 **Heat Gouge**	 **Heat Damage**	 **Excessive Wear**
 . **Heat / Welding Damage**	 **Metal Loss**		

Not all possibilities of damage are shown. Inspections should be performed by a trained, qualified and experienced person.