



Dogging and Rigging guide

Use this guide as a practical reference for dogging and rigging work.

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5.4.1 Uses and types of synthetic slings

Working with synthetic slings? Find out about their benefits and limitations, different types of slings and their working load limits.

Synthetic round or flat web slings are used to protect a load from being damaged.

Examples of these loads are:

- boats
- painted surfaces
- machined surfaces
- fragile loads
- timber.

Benefits of synthetic slings

Synthetic round or flat web slings have the following benefits:

- they cradle the load with a greater contact surface
- are lighter in weight than chain slings
- are easier to be moved and stored.

Limitations of synthetic slings

Synthetic slings may be more prone to physical and environmental damage than some other types of slings. For example, sharp edges and hot surfaces can melt the polyester material.

The radius of end fittings shall be no less than the compressed thickness of a Roundsling measured under hand tension. The interface between the sling and the end fitting should not compromise the Working Load Limit by way of overcrowding or interface contact area.

Types of synthetic slings

Note: All slings should be inspected before each load being lifted.

Flat web slings

Flat web slings range in width from 50mm to 300mm standard. They provide stability and balance to loads.



Synthetic flat web slings

Synthetic round slings

Endless round slings are excellent for choke hitching loads and providing connections to other equipment such as:

- serial hoist
- winches
- anchorages.



Synthetic round slings

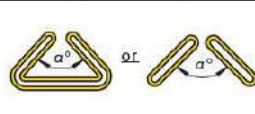
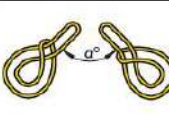
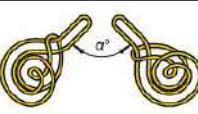
Working load limits for synthetic slings

Australian and international standards

A working load limit (WLL) is the maximum you can lift in a straight/direct configuration. It must never be exceeded.

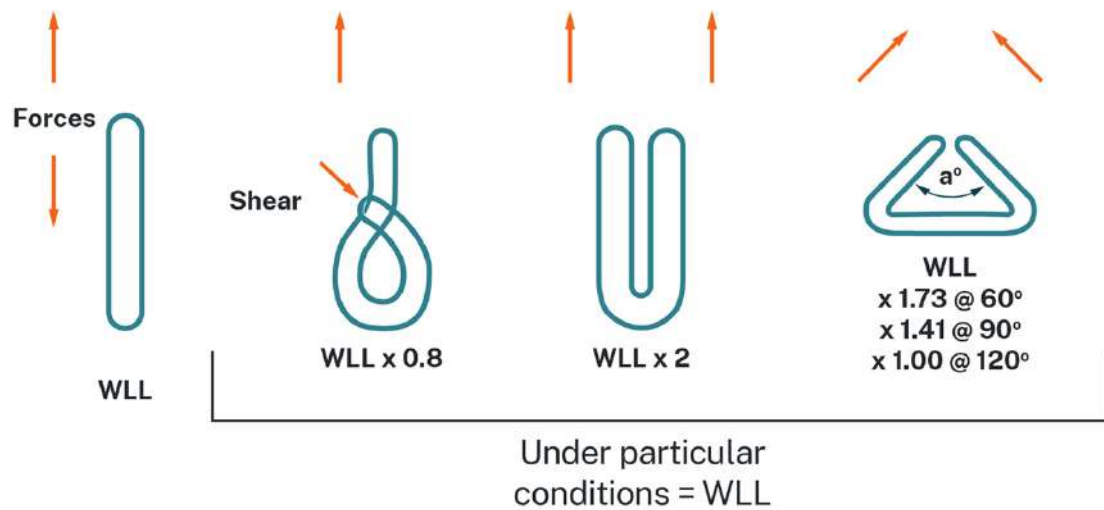
The Working Load Limit and colour code for synthetic round and flat web slings are matched to the Australian and International standards from 1 tonne to 10 tonne or greater.

The WLL may be derated (reduced) under certain conditions. This applies to all lifting slings. This chart explains what happens when you change how a synthetic sling is used:

WORKING LOAD LIMITS (WLLs)									
Working load limits under general conditions of use t									
Colour	Marked WLL	Straight lift	Choked straight lift	Parallel basket	Basket hitch or 2, 3 and 4 legs slings			Choke hitch or 2, 3 and 4 legs slings	
					$\alpha = 60^\circ$	$\alpha = 90^\circ$	$\alpha = 120^\circ$	Single wrap $\alpha = \max 45^\circ$	Double wrap $\alpha = \max 60^\circ$
									
Loading factors		1	0.8	2	1.73	1.41	1	1.38	1.38
Violet	1	1	0.8	2	1.7	1.4	1	1.38	
Green	2	2	1.6	4	3.4	2.8	2	2.76	
Yellow	3	3	2.4	6	5.1	4.2	3	4.14	
Grey	4	4	3.2	8	6.9	5.6	4	5.52	
Red	5	5	4	10	8.6	7	5	6.9	
Brown	6	6	4.8	12	10.3	8.4	6	8.28	
Blue	8	8	6.4	16	13.8	11.2	8	11.04	
Orange	10	10	8	20	17.3	14.1	10	13.8	
Orange	Greater than 10	Marked WLL $\times$ LF	Marked WLL $\times$ LF	Marked WLL $\times$ LF	Marked WLL $\times$ LF	Marked WLL $\times$ LF	Marked WLL $\times$ LF	Marked WLL $\times$ LF	

NOTE: The WLL applicable to each configuration is the marked WLL multiplied by the loading factor, L.

Working load limits of synthetic slings



The methods of lifting for synthetic slings

Working load limit tag warnings

The following list of warnings should be provided as a minimum on WLL tags in English:

- consult sling manufacturer or supplier for configurations not shown on the sling tag or a relevant load chart
- do not use any sling that does not have a tag
- inspect sling for damage before each use
- do not use sling if there is any sign of a cut cover, snagging, heat or chemical damage, excessive wear, damaged seams, any other defects, presence of grit or abrasive materials
- do not tie knots in sling
- protect sling from sharp edges of load (such as steel sections)
- do not expose sling to temperatures above 100 degrees Celsius (safe maximum temperature provided by manufacturer)
- do not allow abrasive or other damaging grit to penetrate the fibres
- keep away from acids, alkalis or compounds as directed by the manufacturer
- consult with manufacturer's recommendations before exposing a sling to a chemical environment.

5.4.2 How to inspect synthetic slings

A guide on how to inspect synthetic rope slings, including: what to look for and discard criteria.

How to inspect synthetic slings

Round sling pre-use inspection

Here's how to inspect synthetic round slings before use.

Always start with the tag. Use your fingers to move along the body of the sling to feel for:

- unusual lumps
- cuts in covers
- torn stitching.

The tag should be attached to the sling and legible in English. On the tag should be:

- the manufacturer
- **working load limit** (WLL)
- the serial number
- factor of safety.

Note: blue tag = polyester sling.

A missing tag means immediate discard.



Round synthetic sling tag

Check the sling stitching is intact.



Round synthetic sling stitching

Broken stitching indicates overloading and means immediate discard.



Round synthetic sling with broken stitching

Knots mean immediate discard.



Knot in a synthetic sling

Check both sides of the sling cover. Use your thumb and finger to feel for lumping and 'burns'.



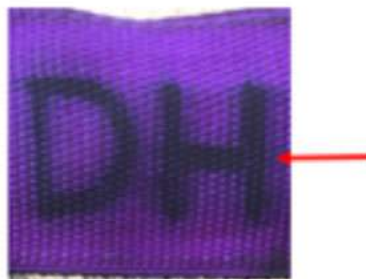
Both sides of synthetic sling cover

Burns are from overloading. Marks like these are indicative of 'burns':



Burns

Marker or paint pen on synthetics are an immediate discard.



Marker on a synthetic sling

Flat web sling pre-use inspection

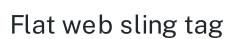
Here's how to inspect synthetic flat web slings before use.

Always start with the tag. It should be attached to the sling and legible in English.

On the tag should be:

- the manufacturer
- working load limit (WLL)
- serial number
- factor of safety.

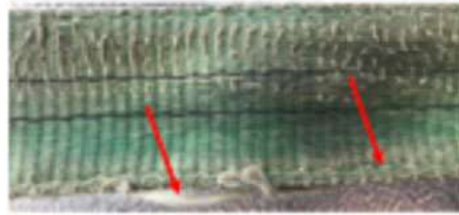
Note: blue tag = polyester sling.



Check eye covers for holes. If the parent material is in good condition the sling can be used.



Furry edges are not usually an issues until they interfere with the stitching.



Furry edges

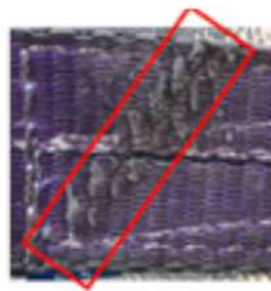
Loose thread can be trimmed off. It is usually the thread end knot that has come undone.



Loose thread in a flat web sling

Abrasion is ok as long as there is not material separation.

Cuts in slings are an immediate discard.



Cut in a sling

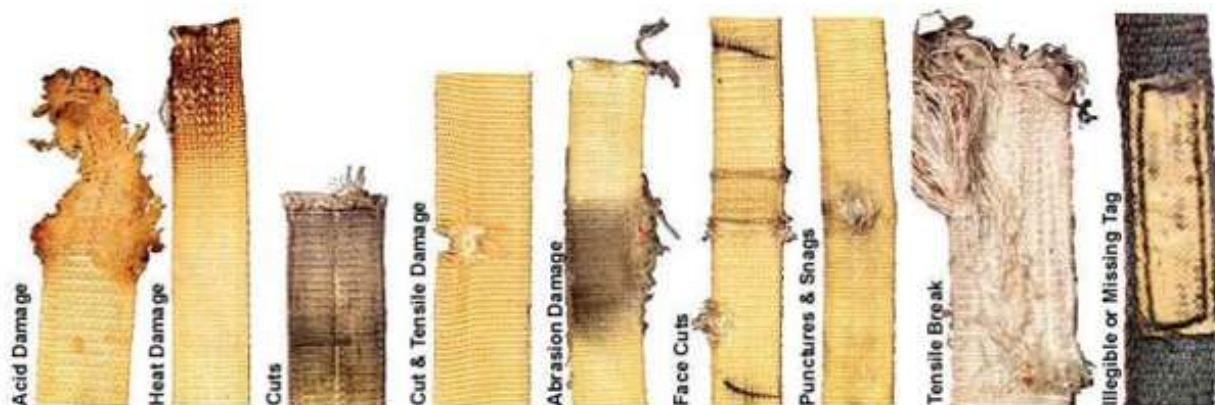
Discard criteria for synthetic slings

When inspecting synthetic slings, check for this discard criteria:

- the last inspection was over 3 months ago

- WLL tags are illegible or missing
- there are areas that show material deformity, like cuts to load bearing fibres
- there are holes in round sling covers that show the internal yarn
- heat damage or weld spatter etc.
- chemical damage
- torn stitching
- internal thickening of a round sling
- UV damage (shown by the sling colour changing or fading to white)
- permanent marker or paint on the sling
- knots.

Here are some examples of sling damage:



Examples of damage

Interfacing components

End fittings

Any end fittings of round slings should be compatible with the hooks or other lifting devices they are connected to.

The interface between the roundsling and the end fitting should be in accordance with Clause 2.2.8.2 of Australian Lifting Standards. This is to make sure the WLL of the roundsling leg will not be compromised by overcrossing or the interface contact area.

Note: metallic end fittings intended for use in acidic or alkaline environments should be resistant to acid or alkali.

End fittings supplied with a roundsling

End fittings should have a WLL of not less than the WLL of the sling.

The interface between the cover and the end fitting should be so that the strength of the sling leg will not be compromised by overcrowding or the interference of the contact region.

Two end fittings on a sling don't have to be identical. If a sling is designed for choked slinging, one fitting should be able to pass through the other fitting.

Measuring roundslings

The radius of end fitting interfaces should be no less than the compressed thickness of the roundsling.

When measuring roundslings, take care to make sure:

- the sling is undamaged
- the measurement is of the point of the sling which may come into contact with the load
- pressure is applied by hand without risk of damaging the sling.

Related information

5.3.6 Fibre rope assemblies



5.4.1 Uses and types of synthetic slings



5.5.1 Alloy chain slings

