Differences between **WLL** and **SWL**

Introduction

In lifting, hoisting and rigging, the correct interpretation of load ratings is essential for safety, compliance and equipment longevity. Two terms frequently encountered are **WLL (Working Load Limit)** and **SWL (Safe Working Load)**. Although historically related, these terms do *not* mean the same thing, and one of them is no longer permitted in modern engineering standards.
This document explains the difference, outlines why SWL was phased out, and clarifies how WLL and MRC (Maximum Rated Capacity) should be used today.

1 What Is Safe Working Load (SWL)?

SWL (Safe Working Load) is an *older engineering term* historically used to express the maximum load that a lifting device or accessory could safely handle during normal use. The value was typically calculated as:
Minimum Breaking Load ÷ Safety Factor
A common definition was:
"The mass or force that a hoisting device or accessory can safely lift, suspend or lower without risk of failure."

Why SWL is no longer used

Beginning in the early 1990s, the United States eliminated the term due to legal ambiguity. Engineers, courts and regulators considered the word "safe" problematic because it implied a guarantee that no failure could occur.
European and ISO standards followed shortly afterwards. By the early 2000s, international agreement was reached that SWL should be replaced.
Differences Between WLL and SWL
Today, **SWL is considered obsolete** and should not be used on lifting equipment labels, documentation or rigging accessories.

2 The Modern Term: Working Load Limit (WLL)

WLL (Working Load Limit) is now the globally accepted term for describing the maximum load a lifting accessory (below-the-hook equipment) is permitted to handle under ideal, in-line loading conditions.
A standard definition is:
"The maximum mass or force which a product is authorised to support in general service when the pull is applied in-line with the centreline of the product."
Differences Between WLL and SWL

WLL is set by the manufacturer

Manufacturers determine the WLL based on:
- ✓ design factors
- ✓ material strength
- ✓ intended use
- ✓ manufacturing tolerances
- ✓ testing procedures
- ✓ configuration effects

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WLL applies to equipment such as:
- ✓ hooks
- ✓ shackles
- ✓ slings
- ✓ lifting points
- ✓ eyebolts
- ✓ below-the-hook devices

WLL may change with configuration

While originally limited to a fixed "in-line maximum", the modern interpretation extends to *any specific configuration or application*.
Angle loading, multi-leg slings, and non-standard rigging arrangements **de-rate** the WLL.

3 MRC – Maximum Rated Capacity (for cranes, hoists and winches)

For all **hoisting appliances** (cranes, hoists, winches), the correct term is **MRC**, also known as:
- ✓ Maximum Rated Capacity
- ✓ Manufacturer's Rated Capacity
- ✓ Rated Capacity (ISO/EN/AS standards)

Australian Standard 1418.1 (2002 revision) formally replaced SWL with Rated Capacity for lifting machines.

MRC includes:

- ✓ the crane or hoist
- ✓ the hook block
- ✓ any lifting attachment
- ✓ spreader bars
- ✓ below-the-hook lifting devices

Key point:

SWL → NOT allowed for cranes.
MRC → ONLY correct term.
(SWL was removed because the word "safe" was legally problematic.)

4 Who Determines WLL and MRC?

The manufacturer is solely responsible for determining:
- ✓ WLL for lifting accessories
- ✓ MRC for lifting machines

Factors considered include:
speed of operation, loading cycles, materials, construction, dynamic effects, rope length, number of parts of line, environmental conditions.
Safety factors typically range from 4:1 to 7:1 for general lifting equipment, and up to 10:1 where human life is directly at risk.

5 Residual Use of SWL

Although SWL is obsolete, some legacy documentation still uses the term.
If encountered:
- SWL = **de-rated** value of WLL
- It should be replaced by the correct term

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- If seen on equipment labels, the item is outdated and should be re-evaluated or replaced

Modern practice requires using **WLL** or **MRC**, not SWL, to maintain compliance with ISO, EN, OSHA, ASME and national regulations.

6 Summary

Term	Applies to	Status	Meaning
SWL	Historical term for all lifting equipment	**Obsolete**	Older calculation of safe load (breaking load ÷ safety factor)
WLL	Lifting accessories below the hook	**Current global standard**	Maximum allowable load set by manufacturer under ideal conditions
MRC / Rated Capacity	Cranes, hoists, winches	**Current global standard**	Maximum permissible gross load including attachments

Overall conclusions

✓ *Safe Working Load*, (**SWL**) has been phased out and should no longer be used.
✓ *Working Load Limit* (**WLL**) is the correct term for hooks, slings, shackles and below-the-hook devices.
✓ *Manufacturers Rated Capacity* (**MRC**) is the correct term for cranes, hoists and winches.
✓ De-rating must be applied for angles, configurations and rigging arrangements.
✓ Only competent persons may determine de-rated working limits.

Further Reading & Official Guidance

➢ Cranes for You Knowledge Centre: https://www.cranesforyou.com/knowledge/
➢ What Is a Heavy Lift Consultant: https://www.cranesforyou.com/heavy-lift-consultant/
➢ Appointed Person lifting operations – everything you need to know: https://www.cranesforyou.com/appointed-person-lifting-operations/
➢ Lifting Safety & Compliance Services: https://www.cranesforyou.com/lifting-safety-compliance/

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