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

WLL and **SWL** are abbreviated terms commonly used in the field of engineering.
WLL stands for *Working Load Limit* while
SWL stands for *Safe Working Load*.
The main differences between *Safe Working Load* from *Working Load Limit* is that **SWL** is the older term. Today, **SWL** is not used anymore because it has been completely replaced by the terms **WLL** and **MRC**.
MRC stands for *Maximum Rated Capacity.*

The term *Safe Working Load*, (**SWL**) has been the cornerstone of engineering, particularly with respect to load carrying equipment, for many years. It was generally considered to be the minimum breaking load of a component divided by an appropriate factor of safety giving a 'safe' load that could be hoisted or be carried.

A definition of **SWL** was:

> **Safe Working Load –SWL** sometimes also stated as the Normal Working Load NWL, is the mass or force that a piece of hoisting equipment, hoisting device or accessory can safely use to hoist, suspend, or lower a mass without fear of breaking.

Let us discover the reasons why engineers put an end to using the term *Safe Working Load.*
In the early nineties the USA ceased using this term, because of legal implications.
The European and ISO Standards followed suit a few years later. However, while this was a clean-cut move, for some time there has been indecision as to exactly what replacement terms could be used. Around 2000, both the Americans and Europeans have agreed that *Working Load Limit* (**WLL**) should replace *Safe Working Load* (**SWL**) in describing the capacity of items such as hooks, slings and shackles etc.

Other Standards detail the requirements for cranes, hoists and winches. One of them, Australian Standard 1418.1, was revised in 2002 and part of this revision included replacing the term *Safe Working Load* with *Rated Capacity*.

The term *Safe Working Load* was changed to *Rated Capacity* for cranes, hoists and winches and *Working Load Limit* should replace *Safe Working Load* in describing the capacity of items such as hooks, slings and shackles etc.; that is for hoisting devices below the crane hook.

> **Rated Capacity** is the maximum gross load which may be applied to the crane, hoist or winch hoisting attachment while in a particular working configuration and under a particular condition of use.

When used on a crane, hoist or winch the *Rated Capacity* includes the weight of any attachments, spreader beams or hoisting devices below the crane hook and is the maximum allowable hoisting capacity of the crane, hoist or winch when the hoist is a straight line pull.
MRC is often called the *Manufacturers Rated Capacity* or *Maximum Rated Capacity* to avoid any confusion with maximum gross load.

Now, who sets the load capacity for certain hoisting equipment?

It is the hoisting equipment's manufacturer. The manufacturer recommends the maximum load capacity of his hoisting equipment. The hoisting equipment or device can be a rope, a line, a crane, a hoist, hooks, shackles, slings, or any hoisting device.
To know the safe working load, the hoisting equipment's minimum breaking strength is divided with the safety factor that is constant or assigned to a particular type of equipment.
Usually, the safety factor of a particular equipment ranges from 4 to 7.
If the equipment poses a risk to a person's life, the safety factor is raised to 10.

The *Working Load Limit* of hoisting equipment fully depends on a competent and skilled manufacturer who can wisely designate its **WLL** and **MRC** values.
It's the responsibility of the manufacturer to determine the right or approximate **WLL** and **MRC** value for each hoisting device. To come up with a **WLL** or **MRC** value, there are many factors to consider. This includes the speed of operation, the applied load, the length of each rope or line, size, number, and etc. Any factor that can affect the working load limit of a hoisting device should be carefully observed.

A general definition of **WLL** is:

> **Working Load Limit – WLL** is the maximum mass or force which a product is authorized to support in general service when the pull is applied in-line, unless noted otherwise, with respect to the centreline of the product i.e. the **WLL** of a component is specified by the manufacturer.

However, while the definition for *Working Load Limit* (**WLL**) was originally confined exclusively to the manufacturer's specified maximum load that the item could hoist, it is now generally extended to include both of the following:

- the maximum load that an item can hoist
- the maximum load that an item can hoist in a particular configuration or application.

If the **WLL** is thought of as an assessment of the maximum load an item could hoist under ideal conditions and as specified by the manufacturer, the *Safe Working Load* (**SWL**),if the term is going to be used, can now best be thought of as being a de-rating of **WLL**, following an assessment by a competent person of the maximum load the item can sustain under the conditions in which the item is being used.

In summary:

- *Safe Working Load*, (**SWL**) has been phased out and should no longer be used, and all reasonable practicable efforts should be made to replace **SWL** with *Working Load Limit* (**WLL**) or *Manufacturers Rated Capacity* (**MRC**)
- *Safe Working Load* is the older term of *Working Load Limit*
- *Manufacturers Rated Capacity* (**MRC**) should be used for all cranes, hoists and winches
- *Working Load Limit* (**WLL**) should be used for all for all hoisting devices below the crane hook
- Allowance must be taken into consideration for the arrangement of the hoisting devices by de-rating the **WLL** following an assessment by a competent person of the maximum load the item can sustain under the conditions in which the item is going to be used.