

Guidance for Lifting with Earthmoving machinery (Wheeled Loaders)

It is imperative that a thorough understanding of the initial rating is attained. The rating for wheel loaders, articulated wheel loaders, tracked loaders, skid steer loaders and the front portion of a backhoe loader as per AS1418.8 section 5, should be the lesser of three values,

Namely:

- 50% of the full turn static tipping load,
- the maximum load that the machine can lift to full height, and
- the structural strength of the machine and its attachment point

All earthmoving machinery used for lifting freely suspended loads, irrespective of load rating should be fitted with:

- 1) Warning device (machine horn)
- 2) Machine level indicator
- 3) Machine slope indicator (inclinometer) if OEM ratings allow for sloping ground
- 4) Load Indicator (Optional, not Mandatory)

Irrespective of the machine load ratings ensure that warning information is provided ensuring that loads are never lifted over, or in the vicinity of people. (Use tag lines)

Ensure the rating of the lift point is clearly marked near the lift point.

Irrespective of the load rating, ensure that a rated capacity chart is mounted inside the operator's cabin that also lists any conditions that may affect the rating.

If hose burst protection valves are fitted,(best option) ensure that a notice to that effect is displayed.

If hose burst protection valves are not fitted, ensure that a notice to that effect is displayed.

Ensure that the above information is also shown in the Operator's manual.

The primary reasons that make buckets not suitable for the mounting a lifting lug include:

-

Buckets are recognised as a consumable item and as a result, the structural integrity of the bucket is reduced as it wears. Bucket wear is a known design consideration that occurs in all circumstances. Thus when a designer certifies a bucket and lifting lug, they calculate the lugs rated load with an appropriate safety factor.

As the bucket wears, this safety factor will reduce to an unknown amount over an unknown time period leaving the operator or owner with a degree of risk that the lug may fail during lifting without warning.

Australian Standard 'AS 1418.8:2008 Section 5' Construction & Mining Equipment Industry Group Inc
<http://www.cmeig.com.au/engineering/papers/>

The rated capacity shall be the maximum mass (expressed in kilograms) that may be handled at the maximum lift point radius, or reach, expressed in metres in the most adverse configuration for each lift point without the strength, hydraulic, and stability requirements being exceeded.

The rated capacity shall comprise the mass of the lifted load and the lifting attachments. Where a bucket is fitted, the rated capacity shall be established at the rated lift bucket position that results in the maximum radius.”

When calculating the rated capacity there are two key machine features that must be considered, stability and hydraulic capacity.

The rated capacity must not be greater than –

1. 87% of the hydraulic capacity at maximum reach/radius
2. The appropriate percentage of the tipping load that has to be applied to tip the machine as per table 5.5 in AS1418.8 section 5
3. Stationary lifting = 75% of tipping load
4. Pick and carry = 66% of tipping load unless the machine is articulated then it is 50%

.Source Plant Assessor see www.assessor.com.au