Load Sensing Systems

1: Compliance to ASNZS1418-10 2011

2: Recovery system(s) for the trapped operator(s).

What is LSS ?

LSS = Load Sensing System.

This is a system (control device) that indicates that the load in the basket / platform exceeds rated capacity, but triggers before 120% of capacity.

It shall trigger after the rated capacity is reached and before 120% of the rated capacity is exceeded

LSS is now part of the Australian Standard.

Be careful of the Terminology used, the words “Weighing System” could indicate a compliance to the “Weights and Measures Act”

Why do we have LSS ?

LSS is taken from the EU Machinery Directives (OH&S Regulations for 19 European Countries) for machines that lift people, and has been made a requirement for MEWP's sold into the European market.

Under the new Australian Standard ASNZS1418-10 2011:

A: it is a requirement that all applicable MEWP's be fitted with LSS systems

OR

B: meet the Enhanced Overload and Stability criteria.

This will take effect for all new machines being built or imported into Australia and New Zealand from the 25th May 2011 publication date of AS/NZS 1418-10, 2011.

Note: The ASNZS1418-10 2011 version has unique differences to the European EN280 version and the CE Certificate Interpretation.

How does LSS work ?

2.3.1.2 Load-sensing system

Where provided, the load-sensing system shall operate in the following way:

(a) It shall trigger after the rated capacity is reached and before 120% of the rated capacity is exceeded.

(b) When the load-sensing system is triggered, a warning, **consisting of a flashing red light at each pre-selected control position** together with an acoustic signal **audible at each control position**, shall be activated. The light shall continue to flash all the time the overload prevails and the acoustic alarm shall sound for a period of at least 5 seconds and shall be repeated every minute.

(c) If the load-sensing system is triggered while the work platform is stationary, it shall prevent all movement of the work platform. Movement shall only restart if the overload is removed.

NOTE: **If the load-sensing system is triggered during normal movement of the work platform, the possibility of normal movement may remain.**

For Type 1 MEWPs in Group A, it is permitted for the load-sensing system to be effective only when raising the extending structure from the lowest position. In this case, for the overload test specified in Clause 3.6.4, the test load shall be 150% of the rated load. (non drive vertical lift)

For Group A MEWPs in general, the load-sensing system need not be activated until the work platform is elevated more than 1 m or 10% of lift height, whichever is the greater, above the lowest position. If an overload condition is sensed at or above this height, further elevation shall be prevented. (all verticals, including self propelled scissors)

The load-sensing system shall be in accordance with Clause 2.10.

The emergency override system shall remain active at all times, including those times when the load-sensing system is activated.

2.3.1.2	Load-sensing system provides visual and audible warning, and stops the work platform when certain rated load situations have been exceeded	3	2 (1–2)	d

What are the alternatives to Load Sensing Systems?

2.3.1.5 Criteria for enhanced stability for limited work platform dimensions

As an alternative to a load- and moment-sensing system, MEWPs for up to two persons may follow 'enhanced stability requirements'.

To meet the requirement of enhanced stability, the MEWP shall be designed according to the following criteria:

(a) Inside dimensions of the work platform at any horizontal section shall be as follows:

(i) For one person, sectional area not more than 0.6 m2 with no side more than 0.85 m.

(ii) For two persons, sectional area not more than 1.1 m2 with no side more than 1.5 m.

(b) For the static stability test described in Clause 3.6.3.1, the test loads shall be calculated using 150% of the rated capacity as identified in Clause 2.1.2. The other load and force combinations specified in Clauses 2.1.4.1, 2.1.4.2, 2.1.4.3, and 2.1.4.4 shall remain as specified.

2.3.1.6 Criteria for enhanced overload for limited work platform dimensions

As an alternative to a load-sensing system, MEWPs for up to two persons may follow 'enhanced overload requirements'.

To meet the requirements of enhanced overload, the MEWP shall be designed according to the following criteria:

(a) Inside dimensions of the work platform at any horizontal section shall be as follows:

(i) For one person, sectional area not more than 0.6 m2 with no side more than 0.85 m.

(ii) For two persons, sectional area not more than 1.1 m2 with no side more than 1.5 m.

(b) For the overload test described in Clause 3.6.4, the test load shall be 150% of the rated capacity.

What about machines delivered before ASNZS1418-10 2011 Publication ?

Under the Australian Standard there is NO requirement for machines delivered before publication of the new Standard, to have LSS installed.

What if I cannot remove the excess load from the platform / basket in my current position ?

If it is impossible to remove the excess load whilst in the current position:

An operator at the ground can switch to the lower controls, and the emergency override system (eg auxiliary 12VDC pump system) can be used to manoeuvre the platform into a safe position to remove the excess load.

or

If equipped, the emergency override system at the platform controls may also be used.

Where are the override controls ?

2.6.5 Duplicate controls: Location, accessibility, protection and selection

Duplicate controls for all powered functions that are necessary to retrieve the platform in an emergency shall be provided at the base or ground level, and shall override control devices situated on the work platform.

If provided, travel controls fixed to the chassis and operated from ground level shall be positioned so as to cause the operator to stand at least 1 m from the vertical tangent to the wheels or crawlers.

A locking mechanism, in accordance with Clause 2.10, shall be provided such that movement is possible from only one preselected control station. The base or ground-level controls shall override all additional controls, including the platform emergency-stop (E stop) control. If the emergency-stop output of a control station is bypassed when another control station is in use, this shall occur in such a way that operation of that station is positively prevented should the bypass fail to release.

Verification shall be carried out by functional test and visual examination.

2.6.5	Interlocks controls so that control of MEWP can only be done at one preselected station	1	1	c (b–c)

When can the operator use the override controls ?

2.6.10 Overriding emergency system

Overriding of the platform emergency stop control and load-sensing system is allowed for rescuing a trapped or incapacitated operator on the platform. Overriding is permitted only by the use of a safety device that is independent from the selection control device. The safety device shall be operated by hold to run controls.

The overriding of the load-sensing system shall allow motion of the platform sufficient to rescue the operator. Features shall be provided to protect against misuse of the overriding system.

MEWPs shall be fitted with an overriding emergency system (e.g. a hand pump, a secondary power unit, gravity-lowering valves) in an easily accessible position to ensure that, if the main power supply fails or the operator is incapacitated, the work platform can be returned to a position from which it is possible to leave it without danger, taking into account the need to maneuver the work platform clear of obstructions (see Clause 4.2.4).

The controls of the emergency system shall be easily accessible from the base or support surface.
NOTE: This is not necessary if the MEWP is equipped for safe access to (or exit from) the work platform by other means (e.g. fixed ladders).

Verification shall be carried out by design check and functional test.

Can I turn off the LSS ?

The short answer is “NO”.

LSS is a requirement under Australian Standards, and being enforced by State Regulators and therefore is integral in the safe use of MEWP’s.

Excerpt from ASNZS1418-10 2011

2.3.1 Methods to avoid overturning and exceeding permissible stresses

2.3.1.1 *General*

In addition to the provisions of Clause 2.1.5.5, the MEWP shall be provided with control devices or follow methods outlined in this Clause that reduce the risk of overturning and the risk of exceeding permissible stresses by one of the equivalent solutions indicated in Table 2.3.1.1 by a cross.

NOTE: Load or moment controls are not able to protect against an overload that grossly exceeds the rated capacity.

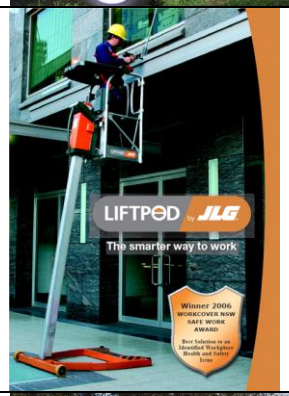
TABLE 2.3.1.1

CONTROL DEVICES

Group (see Clause 1.3.19)	Load-sensing system and position control (see Clauses 2.3.1.2 and 2.3.1.3)	Load- and moment-sensing systems (see Clauses 2.3.1.2 and 2.3.1.4)	Moment-sensing system with enhanced overload criteria (see Clauses 2.3.1.4 and 2.3.1.6)	Position control with enhanced overload and stability criteria (see Clauses 2.3.1.3, 2.3.1.5 and 2.3.1.6)
A	X			X
B	X	X	X	X

Groups and types as per ASNZS1418-10 2011

EN280 **ISO16368 & AS/NZ1418-10 2011**	**Type 1** Travelling is only allowed with the MEWP in its stowed position	**Type 2** Travelling with work platform in elevated travel position is controlled from a point on the chassis	**Type 3** Travelling with work platform in elevated travel position is controlled from a point on the work platform.
Group A Where the vertical projection of the centre of area of the platform in all platform configurations at the maximum chassis inclination specified by the manufacturer is always inside the tipping lines.			
Group B All MEWPs that are <u>not</u> in Group A.	  		  

New Inclusions in the Australian AS1418-10 2011 Standard	
Section 5 MEWPs intended for exclusive use in Orchards	
Section 6 Portable MEWPs	
Section 7 Insulated MEWPs