

# A Glossary of Common Mobile Elevating Work Platform (MEWP) Terms

Safety is always job one on aerial worksites. Many accidents or equipment damage happens when operators don't fully understand the equipment. Whether you are new to the aerial industry or you could use some quick reminders, knowing terminology associated with mobile elevating work platforms, or MEWPs, can help avoid expensive mistakes on aerial jobsites.

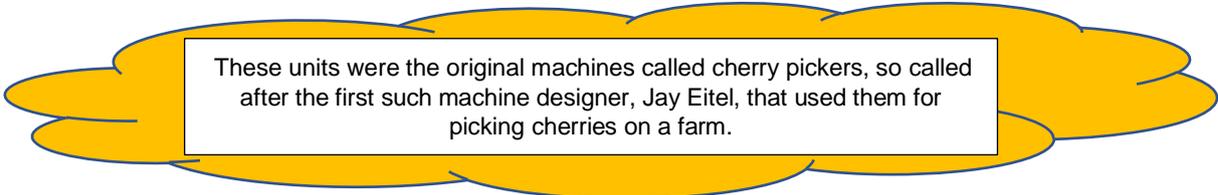
**MEWPs** – A machine or device that is intended to place people, their tools and some material to working positions at height and consists of at least a work platform with controls, an extending structure and a chassis. Mobile Elevated Work Platforms are typically designed to the international ISO16368 design standard. The most widely used term for the method of personnel lifting or work at height that is also called Powered Access or Aerial Work Platforms (AWP). The term EWP or just Elevated Work Platforms, is also used (mainly Australia).

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**Auto Levelling** – A hydraulic outrigger system that levels the lift on uneven ground before elevating the platform. This system is commonly used on most trailer-mounted boom lifts, spider-lifts, truck or vehicle-mounted boom lifts and some scissor products, although it is used on a few self-propelled boom lifts as well.

**Auxiliary Functions** – Lift functions that are operated by a power source other than the main source (used primarily in situations to return the operator to the ground when the main power source is depleted or does not function). Is also used to assist in emergency scenarios.

**Boom Lifts** – Comprises of units that have a boom or booms as the primary method of lifting. Boom lifts can provide ranges of both vertical height and horizontal outreach that cannot be achieved with scissor lifts. Such units can have various methods of propulsion ranging from units that are fully self-propelled, to truck-mounted boom lifts, trailer-mounted boom lifts or crawler-type boom lifts.



These units were the original machines called cherry pickers, so called after the first such machine designer, Jay Eitel, that used them for picking cherries on a farm.

Two main categories of boom lifts are generally used:

**Articulated boom lifts:** These units are also often called knuckle-booms or Z-booms. The boom sections provide a range of articulation that provides the machine enhanced accessibility.

**Telescopic boom lifts:** The boom is typically operating in a straight line with the boom sections extending to provide increased reach horizontally or vertically. Also referred to as stick booms or straight booms.

## Brakes

**Dynamic Brake:** The system that slows and stops the machine when moving. Spring-applied, hydraulically released (multi-disc) systems are common.

**Parking Brake:** The system that keeps the machine immobile while parked. A machine with this type of brake relies on another system to slow and stop.

**Construction Model** – A unit designed primarily for outdoor construction work. Standard features may include pneumatic, foam-filled, rubber-filled or solid tyres and powerful diesel engines (although petrol or LPG may also be used but they are not that common in South Africa). Most construction models have rough-terrain features such as rough-terrain tyres, oscillating axles and four-wheel drive to negotiate difficult, unimproved jobsites.

**Contact Pressure** – The weight or pressure that the machine's wheels apply to the floor material. Contact pressure is used in combination with floor load to determine if the floor is capable of sustaining the overall weight of the machine. The weight of some aerial work platforms exceeds the capacities of many tiled, slated or asphalt floor surfaces. Specifications provided in the manufacturer's operators manual should be referenced to determine the contact pressure of hard rubber tyre machines.

**Drive Enable** – A system that warns the operator when the turntable has been rotated beyond the non-steer wheel. Note: When the drive enable system is in use, the machine may drive in the opposite direction that the drive and steer control handle is moved. Use the color-coded direction arrows typically on the platform controls and the drive chassis to identify the direction of travel.

**Drive Hubs** – The wheel hub and gearbox assembly used to transfer power from the wheel motor to the wheel, used on self-propelled machines. Drive hubs utilise a planetary gear system that reduces wheel motor speed, thereby creating greater rotary force.

**Extendable Axles** – With this feature, the axles on an MEWP retract to the width of the truck bed for transport and extend to necessary stability specifications on the jobsite. The width of aerial work platforms is a critical factor in maintaining stability.

**Occupied Floor Pressure** – The weight the floor is capable of sustaining, measured in kg per cm<sup>2</sup> ( or pounds per square foot PSF). This is used in combination with Contact Pressure to determine if the weight of the machine exceeds the capacity of the floors support system and/or surface material. To calculate floor load, multiply the machine's width by its length to determine the total area occupied, then divide the weight of the machine by the total area occupied to determine floor load. Also refer to Contact Pressure.

**Front-Arm Swing** – Occurs when the front boom arms (elevate assembly) of an articulating boom extend beyond any edge of the chassis during rotation. Some models have no front-arm swing and are valuable in tight areas and narrow aisle applications.

**Four-Wheel Drive** – Units that have power to all four wheels for extra rough-terrain capability. Most machines that have rough-terrain features include four-wheel drive.

**Function Enable Switch** – A hand or foot switch that, when used in combination with any function switch, enables the function to take place. This switch guards against unintentional initiation of a function. Also often referred to as a “dead-man switch”.

**Function Test** – Pre-operation test of all MEWP functions (ground and platform controls) performed by a competent operator prior to each use.

Note that this does not equate to degrees!

**Grade** – Refers to the severity of the slope, usually measured in percent. Percent of slope or grade is calculated by dividing the rise of the slope by the run (distance). For example, to determine the slope grade, if the ground height (rise) changes 2m over a 10m run, 2m divided by 10m equates to a 20% grade.

As a side-note, on some machines such as spider-lifts and scissor-lifts, these ground control panels can be disengaged from the chassis to allow the operator to travel the machine while walking behind or next to the machine.

**Gradeability** – Refers to the ability of the machine to drive up a grade or slope with the counterweight uphill assuming adequate traction. Usually specified as a percent, for example machines with 30% gradeability are theoretically able to climb a slope of 30%.

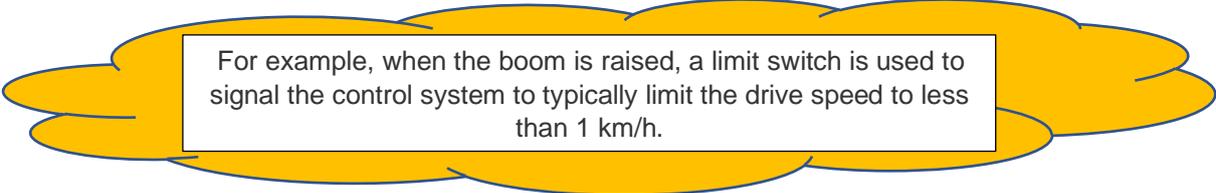
**Ground Control Panel** – The panel, on the turntable of a boom lift or the drive chassis of a scissor lift, that allows the lift functions to be operated from the ground. There are no drive or steer controls on the ground control panel. Service technicians or ground personnel most commonly use ground controls in emergency situations, to override platform controls and retrieve the operator or for function tests.

**Industrial Model** – A unit designed primarily for indoor maintenance and/or installation work. Standard features typically include non-marking tyres and DC electric power.

**Jib** – An articulating section, generally relatively short (mostly 2m to 3m but it can be more in some cases) that is often located at the outer edge of a boom on a boom lift that provides enhanced accessibility for the user.

**Level/Tilt Alarm** – An audible warning, automatically activated by a sensor when the machine is tilted beyond allowable operating tolerances (does not automatically disable use of the machine but may disallow further lifting). When the alarm sounds, the operator must lower the boom and reposition to a firm, level surface. (On some models however, the level sensor may disable the upward movement of a machine.)

**Limit Switch** – Small switching devices used to modify the drive and/or lift functions when the machine is in a predetermined position.



For example, when the boom is raised, a limit switch is used to signal the control system to typically limit the drive speed to less than 1 km/h.

**Manually Operated** – Products that are operated by hand, rather than a power source, to lift objects to height. The load platform is typically operated by a winch, which is controlled by a hand-crank that moves it up and down to position the load in place.

**Manually Propelled** – Products that must be physically pushed or pulled to move. They are typically on wheels or casters.

**Mast Booms** – Self-propelled units that have a single, often telescopic mast that allows it to be lifted or lowered vertically only. Can be rotating or non-rotating on its turret and in some cases can come with a jib-section allowing it some horizontal outreach. Some more light-weight units (also called AWP's, personnel lifts or vertical lifts) can be pushed around (manually propelled) and come with stabilisers.

**MEWP Training** – Practical and theoretical training and guidance given to an operator to ensure competency in operating the machine safely in all conditions. Two basic types of training can be given:

**Generic competency training: Also called formal/primary MEWP training.** In South Africa this is currently overseen by the likes of the Department of Labour and governed by the National Code of Practice for the Training Providers of Lifting Machine Operators (NCOP). The Institute for Work at Height (IWH) administers a major part of this process of licencing MEWP operators. Internationally this is mirrored by typically the International Powered Access Federation (IPAF) with their PAL card licence procedure.

**Basic Safety and Handover Familiarisation :** This entails machine-specific training in accordance with each machine manufacturer's requirements. This include manufacturers' warnings and instructions, control functions as well as the function of each safety device specific to that particular MEWP's make and model.

**Narrow (N)** – Units that are built to extra-narrow specifications to improve building access and manoeuvrability in tight or congested areas. There is no common dimension for narrow models, although the smaller N units are able to pass through a single or double doorway. Narrow models are generally heavier, due to increased counterweight.

**Ninety-Degree Steering** – The ability of certain machines to turn at a right angle, which results in a zero inside turning radius. A very important feature in tight and congested areas.

**Oscillating Axle** – Axles that are designed to pivot in the middle to compensate for uneven terrain and keep all the tyres on the ground.

**Outreach** – The maximum horizontal outreach that can be achieved by a boom lift, typically measured from the centre of the turret to the outer edge of the work platform.

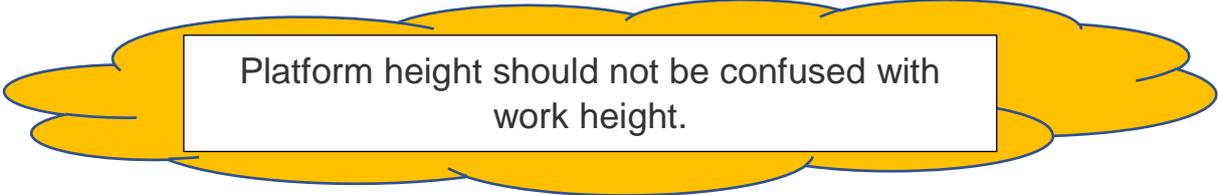
**Outriggers** – Devices that increase the stability of the machine by creating a wider footprint, lifting and levelling the machine.

**Platform Control Panel** – The panel in the platform that houses the lift/lower, drive and steer controls. The drive and steer controls are mostly located only on the platform control panel. The most common functions found on the platform control panel are:

- Proportional-drive joystick
- Steer control thumb rocker
- Boom functions such as up/down or extend/retract
- Turntable rotation
- Platform level and platform rotation
- Jib boom functions
- Engine start and engine speed for models with diesel engines
- Horn
- Auxiliary power
- Emergency stop

**Platform Height** – The maximum vertical height the floor of the work platform is capable of reaching. Often used as part of the model name.

**Pothole Guards** – Fixed or self-deploying devices used on industrial scissor lift models to



Platform height should not be confused with work height.

reduce the possibility of a tip-over when a wheel is driven into a hole or drop-off. These devices work by lowering the chassis ground clearance near the wheels. Also referred to as Pothole Protectors.

**Pre-delivery Inspection (PDI)** – Thorough inspection of the MEWP prior to each rental or sale to ensure that its condition is as per manufacturer's specifications.

**Pre-Operation Inspection** – Visual inspection of the MEWP completed by a competent machine operator prior to each use.

**Range of Motion** – Also known as working envelope, this is the work area that articulating and telescopic booms are able to access. Range of Motion charts are available for each machine model.

**Restricted Platform Capacity** – Used by some manufacturers to specify platform weight restrictions for certain segments within the machine’s range of motion — indicated on the Range of Motion chart.

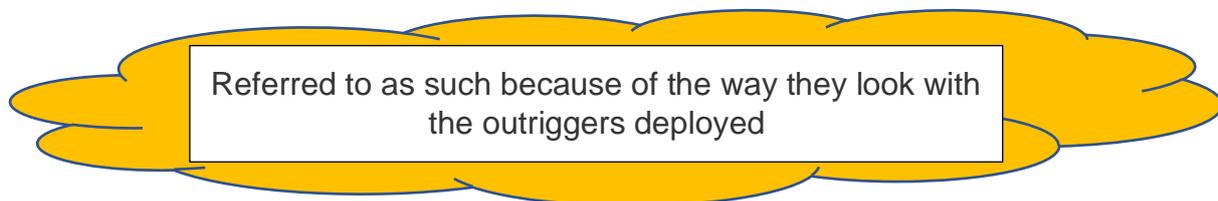
**Rough Terrain (RT)** – Describes a unit designed to travel over unimproved construction site terrain. Some units receive the RT designation with only the addition of lug tread tyres. Others feature packages that include oscillating axles, more powerful diesel engines and four-wheel drive.

**Scissor Lifts** – Units that utilise a scissor stack to achieve the required working height. These units typically only have horizontal lift with little outreach except for maybe a small bit reached with extending deck platforms. Scissor lifts typically have a ‘X’ type scissor stack but there is also a ‘Z’ type scissor, commonly known as a Sigma lift.

**Self-Propelled** – Units equipped with a hydraulic drive system that allows the machine to be driven to the work area.

**Slew or slewing** – The movement of the turret on the chassis of a boom lift (typically on a slew ring) to provide up to 360 degrees of rotation, continuous or non-continuous.

**Spider Lifts** – Boom lifts that are typically operated on a crawler/track-base, fitted with outriggers to provide stability. Their compact size and reduced weight are their biggest advantages as they can operate on uneven ground or even floors and in buildings where other heavier machines cannot go.



**Stabilisers** – Devices that increase the stability of the machine and are capable but not designed for lifting or levelling the machine.

**Stowing** – The procedure for preparing the MEWP for parking at the end of a work period. Could include the lowering of the platform, retracting stabilisers or extendable axles, shutting the machine down and securing the machine from unauthorised use.

**Tail-swing** – Occurs when the rear end of the turntable extends beyond any edge of the drive chassis when the lift is rotated. Tail-swing generally exists on all telescopic booms and some articulating booms. A number of articulating boom lifts have zero tail-swing, which is very valuable for tight areas and narrow aisle applications.

**Terrainability** – Refers to a machine’s ability to negotiate terrain. Influenced by factors such as horsepower (power and drive speed), tyre size (flotation), tyre tread design, traction control and the axle suspension system. Some relation to grade-ability.

**Turning Radius** – Equals one-half the dimension of the circle that the tyre follows when the machine is turned as tight as possible. A tight turning radius is important for congested applications.

**Two-Wheel Drive** – Units that have drive power to only two wheels. The two powered wheels on most booms are at the rear, non-steer end. Two-wheel-drive scissor lifts usually drive with the front steer wheels. Most industrial units normally only require two-wheel drive.

**Up and over reach**– A term typically used for the maximum height achieved on the lower boom section of an articulated boom lift prior to the deploying of the vertical and horizontal outreach achieved with the secondary boom sections.

**Working Height** – The industry standard in Europe is 2m higher than platform height (in US, it is 6 ft higher). This is based on the premise that an individual standing in the platform can reach areas 2m higher than the floor of the platform. Working height is actually a more important factor than platform height when you are qualifying a machine for a jobsite.

**Workplace Inspection** – An inspection of the worksite performed by a competent operator prior to each use to identify workplace hazards to avoid while moving, setting up and operating the machine.

**Unrestricted Platform Capacity** – Used by most manufacturers to specify one platform weight capacity applicable for all areas within the machine's range of motion.