

Whitepaper:

New North American Access Equipment ANSI Standards

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Current International Standards

In the present day US market, self-propelled Aerial Work Platforms (AWP) are placed into market under adherence to standards laid out by the American National Standards Institute (ANSI), depending on their configuration (A92.5 for boom supported platforms, A92.6 for scissor type platforms). These standards dictate stability, testing and safety requirements to AWP manufacturers, resulting in the marketplace receiving and utilizing certified machines.

The Canadian Standards Authority (CSA) publishes similar standards for the Canadian market, while ANSI-certified AWP's are the typical configuration for North, Central and South American countries. This allows for a consistency of approach, equipment and training throughout the Americas.

In Europe however, AWP's must adhere to the Machinery Directive, with guidance from European Standard EN280:2013, which is similar to the relevant International Organization for Standardization design standard (ISO 16368). The EN280/ISO 16368 standards are substantively different from the current ANSI standards, which can result in inconsistency of equipment and operator training globally.

At a Glance: The Core Changes

- Naming - ANSI A92.5/A92.6 becomes (ANSI A92.20) for equipment design. An Aerial Work Platform (AWP) becomes a Mobile Elevating Work Platform (MEWP).
- Load Sensing – most machines will actively monitor load and NOT operate with normal functionality if overloaded beyond rated capacity.
- New Wind force requirements – Increased weight and reduced capacities in outdoor/wind conditions.
- New stability testing requirements - expect to see foam filled only (no air filled tires) on the vast majority of RT scissors and RT booms under the new standard (Booms and Rough Terrain Scissors). Flotation tires not feasible.
- Entrance gate with toe boards replaces chain entrance on electric scissors and vertical masts. Toe boards at entrances on booms.
- Railing Heights: Compact DC scissors now mostly equipped with folding instead of fixed rails.

Future International Standards

ANSI is moving towards a new access equipment design standard, A92.20, which will broadly bring North American equipment into line with equipment currently in the EU marketplace, closing off most global variances. Standards for safe use (A92.22) and training (A92.24) go further in completing this objective. This work is being carried out by ASC A92 –Aerial Platforms Committee, the consensus body approved by ANSI for standard development. This committee is made up of individuals representing consumers/users, directly affected public, distributors/dealers (inc. rental companies), experts/consultants, government, industrial/commercial, insurance bodies, labor bodies, equipment manufacturers, professional societies, regulatory agencies, testing laboratories, not-for-profit groups, and component manufacturers.

Under these new standards, the Aerial Work Platforms (AWPs) terminology becomes Mobile Elevating Work Platforms (MEWPs).

CSA is following a similar path, updating their B354 standards with B354.6 (Design), B354.7 (Safe use) and B354.8 (Training).

At a Glance: End Users

- New training and familiarization requirements – A92.22 and A92.24.
- Load Sensing – jobs which previously been inappropriately completed by overloading a machine will require different planning and execution with new units that will be designed to inhibit this misuse.
- Wind Ratings –Outdoor tasks requiring multiple personnel will require consideration of new machine capacities during planning phase.
- Stability Testing – Tires – Limited availability of units that can be equipped with floatation tires will require additional planning for soft ground / sand areas.
- Railing height increases: Will require folding down rail sections to traverse most indoor doorways with compact electric scissors.

Familiarization and Training

The familiarization definition has been expanded upon to improve clarity, including adding the features, devices and limitations as defined by the manufacturer in the operator’s manual. The ability of a qualified operator to self-familiarize has also been recognized.

The structure of the Manual of Responsibilities has changed from having multiple versions to manage (i.e. A92.6 for scissors or A92.5 for booms) to having a single document that covers the responsibilities for all MEWPs within this new suite of standards. Training requirements have been expanded to include not only operators, but supervisors (entities assigned by users to monitor operator performance and supervise their work) and occupants (entities on the work platform) as well.

The occupant training includes the use of fall protection, factors affecting stability, safe use of MEWP accessories, site specific work procedures, hazards and their avoidance related to the task at hand, manufacturer’s warnings and instructions, site risk assessment, and general knowledge of the MEWP operation to lower the MEWP in the event that the operator is unable to do so.

The supervisor training includes proper MEWP selection, applicable rules/regulations/standards, potential hazards associated with the use of MEWPs, and knowledge regarding the manufacturer’s operation manuals.

Additionally, online theory training is now a recognized option for operator training, with detailed requirements specified.



Effects on North American Access Equipment – A92.5/A92.6 to A92.20

Load Sensing

Perhaps the most obvious change to operators and fleet managers alike is the addition of active load sensing systems on aerial equipment.

As with current standards, it is the responsibility of the machine operator to ensure that the unit is not loaded beyond the restrictions displayed on the unit by the manufacturer. Moving forwards into A92.20, however, MEWPs must be equipped with a load sensing device that will disable the normal elevating functions of the machine and sound/flash an alarm when overloaded.

Rental companies and contractors alike should be aware that jobs which had previously been inappropriately completed by overloading a machine will require different planning and execution with new units that will be designed to inhibit this misuse.

While load sensing does add some complexity to units, equipment operators should be aware that identical technology has been in use in other markets (such as Europe and Australia) for over 10 years; the required modules are extensively field tested and validated in those market places.

Scissor lifts will generally use a combination of scissor stack angle sensors, pressure transducers on the lift cylinders and/or load sensing pins, while booms will typically use load cells to measure platform load.

While there are some differences in implementation for manufacturers, load sensing affects booms and scissors similarly from a fleet/operation perspective.



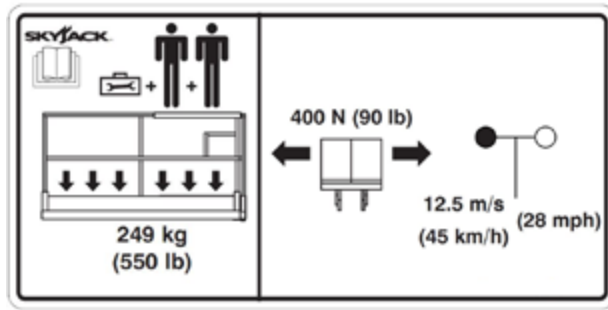
Load sense components on scissor lift

At a Glance: Rental Companies

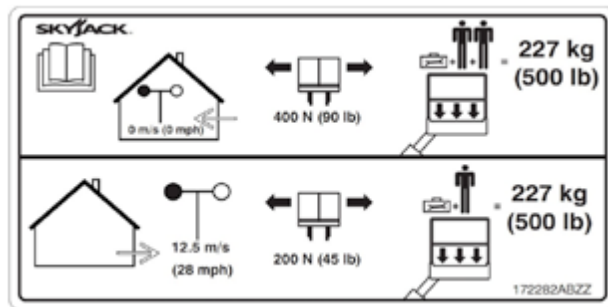
- New training and familiarization requirements – A92.22 and A92.24. Will demand customer education.
- Load Sensing – End user education on machine differences. Resource allocation to deal with calls, such as “machine does not work”.
- Wind - End user education on new indoor/outdoor personnel ratings.
- Stability testing – Tire – Requirement to manage a foam filled only RT aerial fleet.
- Accessories – Check existing accessories for capacities and fit (interference).

Wind Forces

One of the large differences between A92.5/A92.6 and EN280/ISO (and therefore A92.20) standards is the manner in which the effects of wind load are applied to stability tests and calculations. At a high level, wind load is assessed more aggressively under A92.20.



Capacity Decal A92.5/A92.6



Capacity Decal A92.20

Scissors and Vertical Masts

These units will feel the sharpest impact of more conservative wind load assessments, with a larger delta in percentage of added weight. Narrower electric slab units are more affected than the wider, heavier rough terrain units.

It should also be anticipated that personnel capacities for outdoors (wind rated) use will differ under A92.20 from current A92.6 machines.

For example, a typical A92.6 scissor may have a 2 person capacity with a 28mph (12.5m/s) wind rating. The same scissor lift under A92.20 may have a 2 person capacity under a 0mph wind load (often referred to as “indoors use”) and 1 person capacity at up to 28mph (12.5m/s) winds (often referred to as “outdoors use”)

While options will exist for manufacturers to supply lighter, indoor only machines into category classes previously occupied by machines rated for outdoor use, it should be anticipated that this would pose large challenges in fleet management that need not exist. Fleet managers will need to consider the wind rating of their future purchases to ensure compatibility with the applications of their customer base.

Booms

While some added weight can be required, standard 40’-80’ self-propelled booms are generally much less affected by the wind rating requirements of A92.20.

Expect slight increases in weight and more stringent restrictions on material size supported by glazier kits, pipe racks etc. Personnel capacities are unlikely to be affected on larger models, but compact electrical units may vary in a similar way to scissor lifts.

Machine Availability – Old vs. New Standards

Our expectation is that new standard will be published in Q2 2017, however that is still to be confirmed. Manufacturers have to be able to supply compliant machines within one year of the ANSI A92.20 publication dates. In other words, units built between Q2 2017 and Q2 2018 may be manufactured to either the old, or new standard. Existing machines built to ANSI A92.5/A92.6 prior to 1 year after publication of ANSI A92.20 remain approved for use. There is no backdating of the new standard to existing machines.

There does, therefore, remain a window in which fleet managers can choose to purchase the less complex ANSI A92.5/A92.6 machines. The extent to which they do so is largely down to their fleet planning needs and how it reflects their customer needs. Some contractors may demand the latest machines only on site. Ultimately it is in the Rental Company’s interests to address this issue as early as possible to allow their aerial equipment vendors to plan accordingly.

Stability Calculations & Tests

Tires

Variations exist in the calculation of overturning and stability moments between A92.20 and A92.5/A92.6. These mostly have only subtle effects on machines, but the largest change comes about from how A92.20 treats the difference between air filled and foam filled tires.



With A92.20, the demand is made that machines are tested with a fully deflated air filled tire in the worst possible position, making air tires unattractive from a feasibility standpoint; you can expect to see foam filled only (no air filled tires) on the vast majority of RT scissors and RT booms under A92.20.

Railings and Platform Entries

Platform Railings

Under the current standards, smaller scissor lifts in the North American market have solid, non-folding rails approx. 1m (39.5") in height. A92.20 mandates a railing height of 1.1m (43.5") from the platform floor. This additional height results in these smaller units no longer being able to fit through standard door heights with the rails deployed, necessitating a change to folding rails as standard on a number of units.

Additional familiarization will be required with end users to establish the need to fold railings for traversing doors with newer machines.



Entrance Gates

Due to its simplicity and cost effectiveness, the most prevalent scissor lift entrance in the North American market today is the chain gate entrance. With the move to A92.20, flexible devices are no longer permitted to be used as platform gates and toe boards have to be present on all areas of the platform, including the entrance. This mandates a shift away from chain gates to half height, full height or saloon style gates for all scissors.

Boom lifts will keep broadly the same entrances as today's machines, with the exception that the toe boards must again cover the entrance area.



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