

Best Practice Guidance for AWP - Avoiding Trapping / Crushing Injuries to People in the Platform



Part 2: Guidance for Trained Operators and Rescuers

How to use this guidance

This is the second part of guidance produced by the Strategic Forum for Construction Plant Safety Group and edited by IPAF for use in the US. **Part 1** is aimed at planners, managers, and trainers. It provides information on hazards, risk assessment, controls and responsibilities. The annexes to Part 1 provide detailed information which can assist in the identification of trapping risks and in the planning and managing of work activities to protect against entrapment accidents.

Part 2 is aimed at those using AWP and those responsible for rescuing anyone trapped on an AWP platform. Part 2 has been designed to be used in briefings or toolbox talks.

Note that this document is not intended to be complete guidance on all aspects of AWP operation.

Operators of AWP must at all times be trained and competent.

The Trapping/Crushing Risk

AWPs are acknowledged to be the safest and most efficient means of providing temporary access at height for many work activities.

In some work situations, however, AWP operators, particularly of boom-type AWP, have been trapped/crushed between the AWP platform/basket and an overhead obstruction. This has resulted in a significant number of serious accidents, including several deaths, in the recent years. In some of these accidents, the operator's body was trapped/crushed over the control panel, trapping the controls in the "on position" and making the crushing worse.

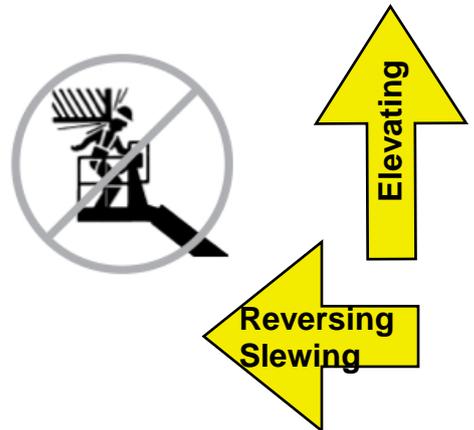
This Best Practice Guidance has been produced by the Strategic Forum for Construction Plant Safety Group, to raise awareness of this risk among AWP **operators, supervisors and rescuers**. For more detailed information please refer to the **Part 1** of this document.



What causes the risk?

Common reasons for accidents include any of the following while operating an AWP close to an overhead obstruction:

- **Reversing, Slewing or Elevating** into an obstruction
- **Unexpected movement of the boom** near to an obstruction



What factors increase the risk?

The factors listed below may **increase** risk when operating an AWP close to an overhead obstruction. Guidance on ways to reduce these risks is given on page 29.

- Poor AWP route planning
- Poor AWP selection
- Insufficient AWP familiarization
- Uneven ground
- Poor visibility at height
- Distractions when operating AWP
- Objects placed on the control panel
- High drive speeds, or lack of care...
- Overriding AWP controls
- Using faulty or poorly maintained AWP

Note: AWP should only be operated by trained and familiarized operators



Common Rescue Problems

Once trapped, rescue can often be hampered because:

- No-one knows the person is trapped
- No emergency rescue plan
- No key in ground level controls:
This limits the ability to use ground level controls in an emergency
- Lack of familiarity with ground / emergency descent controls:
Ground operatives who have never practiced using the ground/rescue controls, and cannot therefore safely bring the basket down in an emergency.
- Overload cell has been activated:
This can affect the operation of the controls.
- Emergency stop has been activated:
This can restrict the ability of the operator to be rescued.
- Complicated boom manoeuvre

If someone is being crushed and can't breathe...

React Immediately!

you only have a few minutes to rescue and resuscitate them
... every second counts!

10 Ways to Reduce the Risk

Working close to overhead structures should be regarded as a “higher risk” AWP operation. If you are expected to carry out this sort of work, you should ensure that the following issues have been properly addressed, and that management has explained the steps taken to minimize trapping/crushing risks in a pre-start briefing.

If in doubt, ask!

Plan the AWP route carefully

a) Keep a sensible distance from obstructions

The route taken by the AWP should ideally be planned so as to keep a **sensible distance** between the AWP and any overhead obstruction. This distance will need to be greater for a boom-type AWP being driven at height to allow for the possible “bounce” and “see-saw” effects.

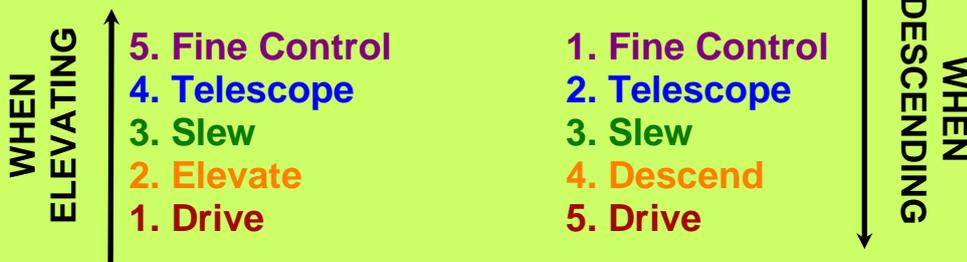


b) Avoid the drive / elevate / slew controls when close to an obstruction

If working close to an overhead obstruction is unavoidable, it is strongly recommended that, where possible, only the fine-positioning controls of a boom-type AWP should be used. Once the AWP is close to the obstruction **the “coarser” drive, elevate and slew controls should be avoided.**

Movements should always be slow, deliberate and planned. This is achieved by careful use of the AWP’s proportional controls.

The sequence of control use given below is recommended:



c) Driving at height should be the last resort

Driving a boom-type AWP at height should be the maneuver of last resort when positioning the platform close to an overhead obstruction since it can create unexpected movements that make fine adjustment of the platform position difficult to achieve..

If driving at height is considered the least risk option, booms should be driven at their **slowest speeds** (this is of particular relevance at lower heights, when drive speeds are faster).

✔ Select AWP carefully

It is important to ensure the AWP selected is **suitable for the specific maneuver to be carried out if working close to an overhead obstruction**.

Particular attention should be given to the choice of:

- **Reach** of machine - ideally, it is better not to operate close to the limit of the machine's "operating envelope"
- **Clearance** - ensure AWP and platform are not too large for the spaces in which the machine must be operated

✔ Ensure familiarization is specific

It is essential that appropriately trained operators receive a **familiarization that is specific to the AWP they plan to use**, conducted in a low-risk area away from overhead structures.

In addition to familiarity with the normal operating controls of the AWP, the minimum standard for each operator is to fully understand:

- **Emergency Descent Controls** – how to use the emergency lowering controls, both under power and auxiliary modes including how the controls work *once the load cell has been activated*
- **"Dead Man" Controls (e.g. foot pedals)** – what happens if you remove your foot from the foot pedal and re-insert in a simulated "slumped over the controls" situation?
- **Operating Past the 90 Degree Position:** how do the controls work when a boom-type AWP is slewed past the 90 degree position?

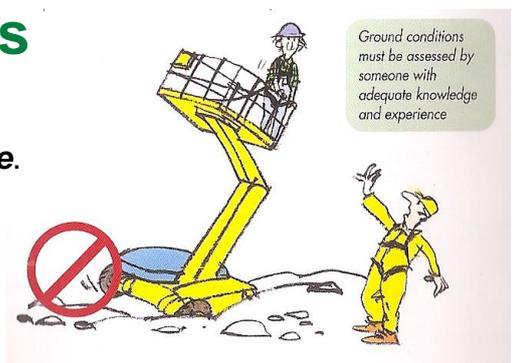
Personnel on the ground, who are competent to lower the AWP in an emergency, should undergo familiarization with the emergency and ground controls and **practice emergency lowering procedures** at regular intervals in accordance with the emergency rescue plan.

✔ Ensure good ground conditions

Ground conditions should be suitable for the safe operation of the machine. The ground should where possible be relatively level and compacted with **no obstructions in the operating zone**.

All trenches, column bases and pits should be identified and protected.

If ground conditions are poor, do not operate the AWP.



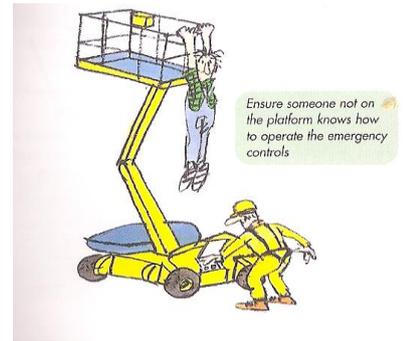
✔ Ensure good visibility at height

When working inside the building, and at times of low light (e.g. in winter months or in poor weather), **adequate lighting should be provided** or work suspended.

✓ Minimize distractions

Distractions in the platform/basket, such as mobile phones and trailing cables should be strongly discouraged. Loose materials on the AWP handrails or in the basket of the AWP should be prohibited and should be carried in approved containers and/or using approved materials handling attachments.

Distractions on the ground (people or objects near the AWP base) should be removed before operating and exclusion zones complied with.



✓ Do not obstruct AWP controls

Basket controls: basket/platform hand and foot controls should not be obstructed. Tools and materials which could obstruct the controls should not be placed on the AWP control panel but stored in approved containers and and/or using approved materials handling attachments.

Once in position, consider isolating the power until you need to re-position to reduce the risks of accidental operation.

Emergency lowering controls: these controls could be required to affect an emergency rescue and should not be obstructed by objects on the ground (e.g. operating AWP close to a wall with emergency controls facing the wall).

✓ Slow down, don't crouch over the controls and look!

- Slow drive speeds should be used, particularly when reversing
- Crouching over the controls significantly reduces the operator's margin of safety
- Scan the area for obstructions both before and during AWP operation
- Do not lean over the guard rails while operating the AWP

✓ Do not override the AWP controls or use faulty AWP's

- Check that the AWP has a current annual inspection
- Always perform daily checks
- Report all faults
- Any faults must be rectified before using AWP
- Do not override the controls

Rehearse rescue procedure

The following points should have been considered before using the AWP. In extreme cases, and/or where an operation involves repeatedly working close to an obstruction, an observed “dry run” could be appropriate, to look for potential entrapment risks that could result in a rescue being required.

- **Ensure ground key available:**
The ground key for the AWP should ideally be left in the base unit where this is practicable, or at least quickly available at ground level if not.
- **Appoint a ground rescue person:**
While the AWP operation is taking place at least one (and as many as is appropriate) designated ground rescue person should be appointed who knows the rescue procedure and has been familiarized with the AWP being used (including emergency rescue controls). They should always be readily available in the event of an emergency.
- **Consider how to raise the alarm:**
A system must be in place to identify that an operator may have become trapped, particularly for lone workers working close to an overhead structure. This needs very careful consideration if the operator cannot be seen from the ground. Operators must take advice if such a system has not been put in place when a risk of entrapment is present.
- **Decide who should effect the rescue and how:**
This depends on the complexity of the operation and therefore the relative risk of effecting a rescue from the ground compared to the risk of an operator, possibly in a state of panic, trying to rescue himself. It also depends on how the controls for the specific AWP being used function.

The order of priority should be:

- 1. Operator:** the operator, or other competent people in the basket, should try to rescue themselves by re-tracing the steps they took in reverse order.
- 2. Ground staff:** if visibility and understanding of situation from the ground are good, ground staff should effect a rescue using the ground controls in the following order:
 - **auxiliary power** at first which gives the slowest and most controlled maneuver of the boom until it is obvious that the basket is clear of any obstructions at height.
 - **powered descent:** once clear of obstructions, it is then recommended to switch to powered descent to maximize the speed of recovery.
- 3. Another AWP:** In some situations the use of another AWP to gain access to the platform may be the safest option. This will only be acceptable if such rescue has been planned and includes means of transferring between platforms which prevents anyone falling.

Further Guidance:

For more details about preventing trapping accidents please refer to **Part 1** of this Best Practice Guidance document.