201: Health and safety in building services engineering  
**Handout 12: Access equipment**

**Learning outcome**

The learner will:

1. Be able to demonstrate and understand the procedures for establishing a safe working environment

**Assessment Criteria**

3.7 describe and demonstrate safe practices and **procedures** for the use of **equipment and materials** in the working environment.

**Range**

**Equipment and materials**: Access equipment (PASMA requirements), Portable power tools (e.g. cartridge gun, drills, grinders), Tools and materials storage facilities, Dangerous substances (e.g. cutting compounds and adhesives), Ladders, Use of mobile scaffold towers, Use of signs and guarding.

**Access equipment**

Most construction work is carried out above ground level. Work that is carried out at heights of up to 1.5m can be done without using ladders; for work above this height the use of ladders and scaffolds will be required.

### Ladders

Ladders are used to gain access to scaffolds or light work at high levels. They can be made from either timber or aluminium and are available in various lengths depending on the requirements of the job you are doing.

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| Access 01.png | Pole ladders  * Used to access scaffolds. * Can be up to 12m in length. |
| Access 02.png | Extension ladders Extension – or multi-section – ladders are split into sections which can be extended to reach the required height. |
| Access 03.png | Step ladders These are used mainly for indoor work but can also be used outside, as long as they are standing on a firm base. |

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| Access 04.png | Roof ladders  * For use on sloped roofs. * Must be accessed from a scaffold, not a ladder. * Hooked end prevents the ladder slipping down the roof. |

**Using ladders safely**

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| * Should be inspected before every use (see below). * Ladders must only be used on firm, hard ground. * Never try to raise an extended ladder – extension ladders must be raised one section at a time. * Don’t raise a heavy ladder on your own – two people should raise and lower ladders. * Ladders should stand at an angle of 75° for safe use – ratio of **1:4** (1 out for every 4 up). * Ladders longer than 3m must be secured, preferably at the top, or – if this is not possible – at the bottom. If neither way is possible, someone must ‘foot’ the ladder by standing with one foot on the bottom rung and the other placed firmly on the ground to prevent the ladder slipping outwards or falling sideways. * Ladders should extend at least 5 rungs (or 1.07m) above the landing platform. * When moving ladders more than a few metres, they should be lowered and carried on the shoulders by **two** people – one on either end. * **Never** overreach when working on a ladder. | Access 06.png |

Pre-use checks: does the ladder/step ladder have any of the following?

* missing, damaged or worn anti-slip feet on metal and fibreglass ladders/step ladders (essential for a good grip)
* items stuck in or adhered to the feet, such as stones, grease, dirt or other debris, preventing the feet from making direct contact with the ground
* mud, grease, oil or wet paint either on the rungs, stiles, steps or platform
* cracks, splits, bends or warps in the rungs, stiles, steps or platform
* missing, broken or weakened rungs or steps
* missing or damaged tie rods
* cracked or damaged welds, missing or loose screws or rivets, corrosion, sharp edges, dents
* painted surfaces**\*.**

**\*** Ladders/stepladders should never be painted, as this could hide dangerous defects from view. Wooden ladders/stepladders can be protected with a clear, non-slip varnish or transparent rot-proofing product.

If the answer to any of these is ‘Yes’ then the ladder/stepladder should be taken out of use.

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| **Tower scaffolds**  A tower scaffold is one way to prevent a fall when working at height. The type of tower selected must be suitable for the work and erected and dismantled by people who have been trained and are competent to do so in compliance with **PASMA** (Prefabricated Access Suppliers’ and Manufacturers’ Association).  Those using tower scaffolds should also be trained in the potential dangers and precautions required during use.  The manufacturer, supplier or hirer has a duty to provide an instruction manual explaining the erection sequence, including any bracing requirements.  **Tower requirements**   * Tubes must be straight. | Access 05.png |

* Tubes and fittings must be undamaged and free from corrosion.
* The ground on which the scaffold is placed must be firm and even.
* Base plates must be used. Adjustable base plates can be used on ground which has different levels.
* Sole plates must be used to provide even weight distribution if the tower is to be used on soft ground.
* Foot ties or plan bracing must be fitted as low as possible.
* Working platforms must be close boarded.
* Overhang boards must not exceed four times the thickness of the boards and must not be less than 50mm past the support.
* Working platforms higher than 2m must have toe boards fitted at least 150mm high and guard rails between 920mm and 1,150mm high.

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| Access 07.png | **Podiums**  Podium steps are much better than step ladders; they offer trouble-free and secure access to ceilings and walls, and reduce the odds of falling from just a metre. |
| Access 09.png | **Telescopic ladders**  One version is just 780mm when closed but stretching to 3.3m when extended. This ladder will fit easily in the boot of the car. It is also very portable, thus making it a good choice for tight spaces. |

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| Access 10.png | **Mobile scissor lifts**  A scissor lift is a type of platform that can usually only move vertically. The mechanism to achieve this is the use of linked, folding supports in a criss-cross ‘X’ pattern, known as a pantograph (or scissor mechanism). The upward motion is achieved by the application of pressure to the outside of the lowest set of supports, elongating the crossing pattern and propelling the work platform vertically. |
| Access 11.png | **Cherry picker**  A cherry picker (also known as a boom lift, man lift, basket crane or hydraladder) is a type of aerial work platform that consists of a platform or bucket at the end of a hydraulic lifting system. |
| Access 12.png | **Crawling boards**  Crawl boards are designed to be lightweight but very robust. They will enable operatives to work safely within loft spaces. |