

INFORMATION SHEET

Car stackers

Overview

This information sheet provides guidance on work health and safety (WHS) duties and the management of risks associated with car stackers, in accordance with the *Work Health and Safety Act 2020* and Work Health and Safety (General) Regulations 2022. It contains information relevant to persons with management or control of a car stacker in a workplace; importers, suppliers and installers of car stackers; and WHS service providers involved in the inspection and maintenance of car stackers.

Background

Car stackers, also known as automated vehicle parking systems, are a type of plant that allows vehicles to be stored in compact, vertical arrangements to maximise available parking space. Car stackers vary in complexity. In simple systems, users drive their vehicle onto a platform that is mechanically lifted above another parked vehicle. More complex systems can lift, lower, rotate and transfer parked vehicles from a platform into an available space within a grid-like configuration.

Movements are powered by a range of components, which may include electric motors, hydraulic pumps, shuttles, pulleys, turntables, and sliding rails or tracks. Users are typically required to park and exit their vehicle before operating a car stacker via a remote control, switched controls, touchpad or a swipe card system. These controls are also used to retrieve the vehicle.

Recently, there has been an increase in the installation of car stackers in commercial and residential developments. While these systems maximise space efficiency, they introduce unique health and safety risks.

Car stackers are subject to requirements under WHS legislation in Western Australia but are not classified as a registrable item of plant.



Car stackers are not designed to be used as a vehicle hoist and must not be used for the purpose of performing underbody chassis examinations or services.

Who has WHS duties in relation to car stackers?

Multiple duty holders have roles in managing risks associated with car stackers. A person can have more than one duty, and more than one person can have the same duty at the same time. Each duty holder must comply with their duties so far as is [reasonably practicable](#).

- A person with management and control of a workplace must ensure that a car stacker at the workplace is without risks to the health and safety of any person.
- Designers must ensure a car stacker is designed to be safe throughout its lifecycle. They can do this by designing control measures and incorporating health and safety risk management principles into the design process. They must ensure that calculations, analysis, testing or examination occur as necessary, and provide adequate, relevant information to each person who receives the design.
- Manufacturers must ensure that a car stacker is manufactured to be safe throughout its lifecycle. They must ensure that calculations, analysis, testing or examination occur as necessary, and provide adequate, relevant information to each person who receive the car stacker (e.g. residual risks).
- Importers and suppliers of car stackers must carry out or arrange the carrying out of calculations, analysis, testing or examination; or ensure that the calculations, analysis, testing or examination have been carried out; to ensure the car stacker is safe. They must provide adequate, relevant information to persons to whom they provide or supply the car stacker, including information obtained from the manufacturer (e.g. the manufacturer's data plate or name plate, operating instructions).
- Installers and commissioners must ensure that installation, construction or commissioning is carried out in a manner that ensures the car stacker is safe.
- WHS service providers such as training, inspection and maintenance providers must ensure recommendations, testing and training they provide in relation to car stackers are adequate to eliminate or minimise risks effectively, and that any relevant use of these services does not put any person's health and safety at risk.
- Workers engaged to operate, inspect, maintain and repair car stackers must take reasonable care for their own health and safety and that their acts or omissions do not adversely affect others' health and safety. They must also comply with reasonable instructions, policies or procedures from the person conducting a business or undertaking.

Hazards and risks associated with car stackers

In managing health and safety risks associated with car stackers, persons with management or control must ensure reasonably foreseeable hazards are identified. For workplaces with car stackers, this includes but is not limited to:

- fire, which may spread rapidly due to the storage of combustible materials (e.g. fuel, lithium batteries in electric vehicles) in compact spaces and vertical arrangements
- electrical faults (e.g. due to faulty or damaged wiring)
- human or operational errors (e.g. incorrect parking or operation of the car stacker)
- structural or mechanical failure, and
- incorrect use of a car stacker (e.g. using it as a vehicle hoist).

It is also important to consider common contributory factors that may increase the risks associated with car stackers, including:

- limited awareness of hazards
- inadequate training and information for users, including availability of instruction manuals, appropriate labelling and signage
- lack of pre-operational checks, inspections and maintenance activities
- supply and importation of equipment that does not meet relevant technical design standards, and
- importers and suppliers failing to carry out (or arrange the carrying out of) calculations, analysis, testing or examination needed to ensure the car stacker is safe.

The person with management or control should undertake a risk assessment to ensure all hazards are identified, assess how severe the risks are and determine what actions should be taken to manage the risks.

The person with management or control must implement control measures to eliminate risks associated with car stackers, or if this is not possible, minimise risks so far as is reasonably practicable.

Managing the risks

To minimise health and safety risks associated with car stackers in the workplace, the person with management or control must ensure that:

- adequate safety signs are installed and clearly displayed, including one or more permanent name plates stating:
 - the business name, country of manufacture, full address of the manufacturer and manufacturer's authorised representative where applicable (e.g. importer, supplier)
 - design standard, model number, serial number, year of installation, testing details, maximum rated capacity and maximum permissible number of vehicles
 - parked vehicles are secured against accidental movements in accordance with the car stacker manufacturer's operating instructions
- operating instructions are displayed and operational controls are labelled to indicate the nature, function and direction of operation
- inspection and maintenance of car stackers adheres to the manufacturer's recommendations, or if this is not available, a competent person's recommendations
 - if it is not reasonably practicable to follow these recommendations, the person with management or control of the workplace must ensure inspections and maintenance are carried out annually
- all persons who operate the car stacker receive training on how to do so safely, including steps to follow if a safety concern arises or incident occurs
- before workers are directed to clean, repair or test car stackers, they have been provided with information about hazards, risks and the precautions they need to take, and
- car stackers are used for their designed purpose only and not as a vehicle hoist to perform underbody chassis examination or service

The importer and supplier must ensure testing has been conducted to confirm the car stacker is without risks to the health and safety of any person who is in the vicinity of, uses, or carries out work in relation to the car stacker, and must provide information on risks and safe use to the person with management or control of the plant.

Further information

WorkSafe

- [*Managing risks of plant in the workplace: Code of practice*](#)
- [*Duty of persons conducting business or undertakings that provide services relating to work health and safety: Interpretive guideline*](#)

Department of Fire and Emergency Services

- [*GL-14: Fire Safety in Car Stacker Systems*](#)

Australasian Fire and Emergency Services Authorities Council

- [*Fire Safety Requirements for Automated Vehicle Parking Systems*](#)

Australian standards

- AS 5124:2017 [*Safety of machinery – Equipment for power driven parking of motor vehicles – Safety and EMC requirements for design, manufacturing, erection and commissioning stages*](#)
- AS 2118:2017 [*Automatic fire sprinkler systems, Part 1: General systems*](#)
- AS 1657:2018 [*Fixed platforms, walkways, stairways and ladders – Design, construction and installation*](#)