Automotive Lifting Equipment

Vehicle Hoists

A vehicle hoist / lift is a necessary tool in any automotive repair shop. There are several common types of auto hoists used in repair shops:
- above ground two post lifts
- above ground four post lifts

Other variations are not as common but include side lifts and scissor lifts. In ground lifts can be further divided into low pressure lifts and high pressure lifts. These terms describe the fluid pressure levels used to extend the lift.

Identified Risks and Hazards

- Falling objects – tools, vehicle components etc.
- Trapping hazards – finger crushing in machinery
- Crushing hazards – hand injuries
- Entanglement hazards – clothing and body parts caught in machinery
- Slip, Trip hazards – liquids and equipment on floors

Improperly maintained or adjusted hydraulic parts can cause serious injury.

Always use caution when working on a hydraulic system. Even when the system is shut down, hydraulic oil can still be under pressure.
If the controls for more than one lift are in one location, they should be numbered or colour-coded to ensure operators know which control operates each individual lift.

**Pre-operational Safety**

Ensure you understand the information provided in the automotive lift’s manual and that the operating and maintenance instructions are permanently located and clearly visible.

The equipment must be used in accordance with manufacturer’s instructions.

Inspect the automotive lift for any disrepair. In addition, assure that the hydraulic oil levels are at the correct amount and chains, cables, drums are not damaged, corrosive or worn.

Familiarise yourself with and check all machine operations and controls.

Check the capacity of the hoist compared to the weight of the vehicle. If vehicle is too heavy, do not proceed.

Check all safety devices are in good condition.

Ensure support arms are capable of being locked in position.

Ensure rubber pads are in good condition on all load points.

Ensure that you are wearing the appropriate personal protective equipment including your hard hat, safety glasses, gloves, boots and ear plugs if the lift is excessively noisy.

Ensure the area is clean and clear of grease, oil, and objects that may be a slip/trip hazard.

Faulty equipment must not be used. Immediately report any suspect equipment.

If the lifting device does not conform then notify your supervisor immediately.

**Operating Safety Precautions**

Never attempt to lift a load that exceeds the rated capacity of the automotive lift.

Centre vehicle on hoist, ensuring that the weight is evenly distributed to the front and rear.

Never raise a vehicle with a person inside.

Identify the correct jacking points and place the lifting pads under the vehicle at the front & rear on the jacking points, ensuring contact. Raise the vehicle about one foot off the floor.

Check the stability by pushing or shaking gently. Do not try to stabilize a vehicle when it is in the air. Lower it immediately.

Ensure that the automotive lift locking devices are in place. Never work under a vehicle that does not have the load locking devices in place. Engage manual lock.
Only one person shall operate the hoist at a time.

Do not leave the controls whilst the lift is in motion.

Do not raise only one end of the vehicle with the lift.

Ensure the area around the automotive lift is cleared of any rubbish or spilt fluids.

Ensure hoist area is clear of people and equipment before operating.

Never leave the hoist running unattended.

Do not work on vehicle while it is being raised

Do not stand directly in front of the vehicle

Do not rock a vehicle on a lift.

Do not lower the lift to rest on supporting jacks. Extend the height of the jacks to support the weight of the vehicle.

Do not use wooden blocks or homemade devices in place of proper lifting adaptors.

Do not rely on hoisting equipment. Support equipment on blocks or stands.

Do not lower the vehicle until all people, tools, and materials are clear from under lift.

At the completion of work lower the vehicle hoist and ensure to remove all tools and obstructions from beneath the vehicle.

**Daily Maintenance**

**Lift arms**
- check for cracks and breaks in welds or castings
- lubricate swivel points

**Chains and cables**
- Check chain and cables for unusual stretch or wear
- Lubricate chains and cables
- Inspect connections for corrosion or fatigue
- Check sockets and pulleys for wear
- Examine coating and sheath on cables
- If there is slack sensors ensure they are working

**Operating Procedures**

Know the load limits of the lift and adaptors. Do not overload. The rated capacity is displayed on the manufacturer's name plate.
Position the vehicle so that the centre of gravity is in accordance with manufacturers' recommendations.

Put the transmission in neutral position, turn off ignition, close all car doors, and check for overhead obstructions such as radio aerials.

Place adaptors or pads in the proper position under the recommended contact points.

Check that the automatic chock devices on drive-on or runway lifts are in position before raising a vehicle. Ensure that permanent blocks are sufficient to stop a vehicle. As the lift is raised, observe the automatic chocks at the drive-on end of the lift runners.

Raise the lift until the vehicle's wheels are just off the floor (about 30 cm or 1 ft). Then check again to ensure that contact pads and any adaptors are set accurately and that loads are not being placed on parts of the vehicle which might be damaged.

Lower the vehicle and readjust the lift before continuing further if the contact with the vehicle is not even or if it looks as if the vehicle may slip.

Do not bang or move the lift quickly at the top. Raise it slowly for the last 45 cm. Banging the lift will stretch the seal bolts and allow oil to leak.

Lock the lift with the mechanical locking device or use appropriate jack stands.

Be aware of conditions that could cause the vehicle's centre of gravity to shift and cause the vehicle to fail. For example, before lifting a vehicle, remove a load or cargo if it can shift unexpectedly, or follow the manufacturer's recommendations for removing heavy components like engines or axles and universals. In addition, the removal or installation of parts may cause the centre of gravity to shift and the vehicle to become unstable.

Watch for low obstructions when walking under a supported vehicle.

Wear suitable personal protective equipment (PPE) when working under raised vehicles; e.g., goggles or face protection for protection from leaking fluids, rust, dust, etc. or a hard hat to prevent injuries from bumps or falling objects.

Check overhead clearances before lifting. Watch for antennas, vehicle signs and attachments.

Close the vehicle doors, hood, and trunk, and make sure no one is inside before raising the vehicle.

Keep people at least 2 m away from the vehicle about to be raised.

Carry out a daily safety check of all components before using the lift.

Check that no tools, equipment, jacks or other obstructions are under the lift.

Ensure that everyone is standing clear of the lift before it is lowered.
Lower the vehicle slowly and smoothly and allow the lift to go as low as possible.

Adjust lift arms or other supports, or remove chocks, as needed, so that the vehicle can be moved without bumping into any parts of the lift when the vehicle is driven out of the garage.

### Other lifting devices

**Engine Lift / Crane**

The main use of these lifting devices is removing/replacing engines and transmissions in cars and light commercials.

Steel wheels to easily move around your workshop.

Dismantles to transport in most car boots. Has steel casters for easy moving.

**Engine Stand**

A portable hand operated device for supporting car engines during repairs or rebuilding with the added advantage of easily rotating the engine for easy access to any particular area. It allows motor to be turned 360 degrees.
Hydraulic Jack

These jacks are used for lifting, raising and jacking machinery, cars, trucks and buildings. They are light to carry and easy to use. There are a wide range of capacities and sizes.

Trolley / Floor Jack

These jacks are used for lifting, raising and jacking cars and trucks. They are easily moved as they are mounted on wheels. The rear set of wheels are on swivel mounts, allowing easy manoeuvrability.

Chain Block

A hand operated block & tackle lifting apparatus with workshop, rural & engineering applications. Popular tasks include engine and machinery hoisting.
Car Stands

A portable hand positioned device for supporting car chassis during repairs or rebuilding.