

REMOVING ENGINES



Removing engines exposes you to hazards from gasoline, solvents, other flammables, oils, other lubricants, Freon and sulphuric acid as well as improper use of tools and awkward positioning.

Hazard: Fuel System Under Extreme Pressure

Details

- The fuel system is pressurized, and the pressure can cause fuel to spray at the worker when the fuel line is removed

Threat

- Explosion
- Injury or severe burns to exposed areas

Safe Work Guidelines

- Wear eye goggles that are CSA-approved for the job
- Have a Class B fire extinguisher nearby when working on a fuel system

- Remove the filler cap to relieve the pressure
- Follow the manufacturer's procedure for depressurizing the fuel system for the make and model of the vehicle (sometimes you must do this before you remove the battery)
- Since the fuel pump on most newer cars is located in the fuel tank, be careful to minimize leaks when disconnecting the gasoline line, which may be under pressure

Hazard: Gasoline Liquid, Vapours, or Fumes

Details

- Gasoline vaporizes when it is exposed to the air (e.g., fuel spill, open container)
- Benzene, a contaminant found in gasoline, and its vapours can cause damage to lung tissue over time, even cancer
- Incandescent light bulbs used in trouble lights can shatter when dropped or break if liquid is splashed on them; such breakage can cause the filament to glow, leading to a fire if it is exposed to gasoline vapour
- Static electricity can cause fire or explosion when exposed to gasoline fumes

Threat

- Severe burns from fire or explosion.
- Dermatitis and removal of the fats and oils from the skin resulting in severely cracked skin (known as de-fatting of the skin) with prolonged exposure
- Cancer
- Death

Note: Do not use gasoline – alone or mixed with other liquids to clean anything, including your hands. See Industrial Establishments Regulation 851 (s.63, 78)

Safe Work Guidelines

Before You Start

- Make certain your work area is well ventilated with a mechanical ventilation system delivering a continuous movement of air; if necessary, consult an occupational hygienist or a heating, ventilation and air conditioning (HVAC) technician to make sure you have the proper exhaust system
- Eliminate all sources of ignition: smoking, static electricity, compressors, nearby welding, cutting or grinding operations, electric or gas hot water or hot air heaters, wet/dry shop vacuum cleaners, and any other devices or tools that can create electrical sparks
- Follow proper bonding and grounding procedures when transferring gasoline

While You Are Working

- Store fuel drained from a gasoline tank only in a CSA-approved safety container or in a gasoline caddy – never in an open container
- If you siphon gasoline, use equipment that is recommended by suppliers for the
- Use a double-insulated trouble light with a fluorescent light that has a strong plastic cover or a Teflon-coated bulb instead of a common wire-cage style trouble light
- Store gas tank face up outdoors or in a well-ventilated area
- Wear rubber or nitrile gloves (see the Material Safety Data Sheet) for protection against splashes
- If gasoline spills onto your skin, wash immediately with soap and water
- Wipe up small gasoline spills immediately
- Clean up larger spills with absorbent material

Hazard: Brake, Transmission, and Power Steering Fluids

Details

- These fluids may spill on the shop floor during drainage

Threat

- Slipping, falling, personal injury
- Environmental contamination

Safe Work Guidelines

- Capture brake fluids in a container
- Clean spills immediately using an absorbent material

Hazard: Sulphuric Acid

Details

- Exposure can occur while handling a battery improperly

Threat

- Severe burns
- Damage to and permanent scarring of the skin
- Blindness
- Lung damage through inhalation

Safe Work Guidelines

- Disconnect the battery before removing the engine

Hazard: Freon

Details

- Freon is a gas that produces very low temperatures and is hazardous to the environment

Threat

- Eye injuries and burns
- Global warming

Safe Work Guidelines

- Disconnect the air conditioning system before removing the engine

Hazard: Oil Spills and Splashes

Details

- Used oil can contain heavy metal contaminants that are harmful to your skin as well as to the environment

Threat

- Personal injury from falls (slipping and tripping)
- Eye injury from splashes
- Dermatitis and other skin disorders, from prolonged exposure
- Ground or water contamination

Safe Work Guidelines

Before You Start

- Use catch containers for used oil
- Transfer used oil into proper storage tanks
- Drain and recycle used oil filters
- Contract with a licensed waste hauler to remove, recycle, or dispose of used oil

While You Are Working

- Use safety glasses that are CSA-approved for the job to protect against oil splashes in your eyes
- Wash small spills on the engine with water before starting it
- For large leaks or spills, call the fire department so that they can take measures to contain them
- For small spills, use an absorbent material to clean them up

- Use barrier cream and rubber, nitrile or other impervious gloves to protect your hands from oil

Hazard: Falling or Moving Vehicle

Details

- Vehicles and parts that are not properly supported or attached can slip and fall or move

Threat

- Serious injury or death

Safe Work Guidelines

Before You Start

- Wear CSA-approved safety shoes
- Make sure that the vehicle is resting squarely on the lift
- Know the load limits of the lift and do not overload them
- Use the locking device on hoist when the lift is up
- Do not block or tie open the lift controls when in motion
- Do not leave the lift controls when the lift is in motion

While You Are Working

- Do not lower the vehicle onto the jack stands; this disengages the lift's locking devices
- Ensure that a transmission jack is placed to support the rear of the vehicle while the engine is being removed, to prevent the vehicle from falling off the hoist due to the change in weight distribution
- Do not lower the lift too far or too quickly; this can cause the jack stands to move, causing the vehicle to fall
- Use an impact wrench when working on an elevated vehicle

- Do not use a cheater or break bar when working on an elevated vehicle; the sudden pushing or pulling force could cause the vehicle to shift and fall

Maintenance

- Take the lift out of service and lockout until repaired if it is:
 - leaking (air or hydraulic fluid)
 - dropping abruptly or slowly
 - stepping when being raised or lowered
 - jerky when being raised or lowered

Hazard: Noise

Details

- Noisy tools such as impact tools can be louder than 90 dB

Threat

- Hearing damage, deafness

Safe Work Guidelines

- Wear appropriate hearing protection and make sure that other workers near you are wearing hearing protection

Hazard: Working in a Fixed or Awkward Position

Details

- Muscles tire quickly when you stay in a fixed or awkward position; which places them at higher risk for injury

Threat

- Muscle strain and associated tendon, nerve, disc or joint pain. Common areas include low back, shoulder, elbow and wrist

Safe Work Guidelines

- Make sure you have enough room to move around easily and to store the engine after removal
- Keep parts, tools and supplies as close to you as possible
- Use height-adjustable controls on hoists and platforms to place vehicles and parts in the ideal work zone (e.g., if you're standing, between your shoulder and knuckle height)
- If possible, use two hands to support hand tools
- If you are standing in one place or in a confined space, use a foot rest, ideally at 6 to 10 inches off the ground (e.g., foot stool or tool box)
- Take frequent, short breaks:
 - For short jobs: 15 second break for every 1-2 min. of work
 - For long jobs: 5 minute break every 15-20 min. of work
- Change to a task that involves moving around or uses a different body part to improve your blood flow

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