



This safety resource was written for the recycled materials industry by the recycled materials industry and was developed to assist you in making your recycling operation a safe place for employees, customers, and visitors. This resource covers OSHA requirements that may or may not be applicable to your operation.

HYDRAULIC EXCAVATORS

DEFINITION: A hydraulic excavator consists of an upper carriage with hydraulically rotating upper deck (revolving 360°) and attachment, directly mounted to either a wheeled or crawler undercarriage. The front end of the excavator attachment consists either of a bucket, grapple, scrap shear, or another implement.

Excavators that are operated in scrap yards may be exposed to a wide range of external hazards during normal operation, not only to the operators but also to maintenance personnel and others nearby.

Primary Hazards:

- Falling and ejected objects
- Slipping and falling
- Cutting
- Pinching and crushing
- Burning and explosions

Safety Solutions:

- Wearing personal protective equipment
- Pre-startup inspections
- Scheduled inspections and maintenance
- Safe operating and working procedures
- Employee safety training
- Operator and maintenance training

Pre-Start Up Procedures and Inspections:

- Ensure that the operator is properly trained and qualified to operate the equipment
 - Only authorized personnel may operate the excavator
 - The operator must be mentally and physically fit, have good vision, spatial perception, adequate hearing and a quick reaction time (response)
 - The operator must be completely familiar with the layout and operation of the excavator
 - Identify a clear and safe approach to the machine
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- The operator must know at all times the capabilities and limitations of the hydraulic excavator
- Prior to every shift, the operator must perform a daily walk-around inspection of the excavator and jobsite surroundings
 - Check for loose pin and bolt connections, wear and tear items, leaks and structural damage of any kind
 - Pay close attention to any deficiencies such as clogged radiator/cooler cores, air cleaner indicator, frayed and or otherwise damaged hoses and/or hose assemblies.
 - Ensure that all safety signs are installed and legible
 - Document all discrepancies on a "Daily Checklist" and immediately report any deficiencies to your maintenance department
- Never operate a defective or damaged machine
- Verify that all maintenance has been completed
- Egress and regress the excavator facing the machine using three-point stance on ladders and steps
- Ensure that all side doors and covers are unlocked but closed and secured
- Ensure that windows and mirrors are clean, and the mirrors are positioned for best possible visibility
- Adjust seat and armrests to the most comfortable position
- Make sure that the area of operation is clear of obstacles and employees

Starting and Operating the Excavator:

- By sounding the horn twice, ensure that other personnel in the vicinity is aware that this machine has been started and that operation is about to commence
- Maintain clear communication with co-workers and good visibility at all times
- Operate machine only outdoors or in a well ventilated interior space
- Use both of the warning signals to warn all personnel in the vicinity by sounding the horn and/or by energizing the beacon light/flasher (if applicable)
- Start the engine and allow the systems such as the engine coolant/oil and hydraulic fluid to warm up to operating temperatures

- Test all equipment functions such as attachment/implement movements and brake systems
- Place the excavator into the proper working position and begin operation
- During operation make sure that the attachment or basic machine sufficiently clears buildings, power lines and other obstructions
- Be sure to operate within the machine's lifting capabilities at all times (see lift chart or refer to the manufacturer's manual)
- Use only slow, progressive joystick or foot pedal movements when operating the attachment functions such as boom, stick, bucket, clamshell or other implements
- Maintain a safe distance to basements, ditches, slopes and embankments

Shut-Down Procedure:

- Park the excavator on level and firm ground
- Line up upper deck with undercarriage and lower the attachment completely to the ground
- Engage the parking and swing brake functions
- In case of an emergency, if the machine stops on an incline, lower the attachment completely to the ground and use blocks/rocks to keep the machine from rolling downhill
- Disengage the safety lever
- Gradually reduce the engine speed and remain in idle for three minutes before shut-off
- Work the joysticks in a circular motion to relieve system pressure
- Shut, secure and lock windows, all covers and cab door
- Climb off the excavator facing the machine and using a three-point stance
- Never jump of a machine
- Switch off the battery disconnect (if applicable) and remove the disconnect key

Maintenance Procedures:

- Always follow the manufacturer's daily, scheduled and preventive maintenance and inspection procedures and instructions

- Follow the proper lock-out/tag-out procedures as established by your company
- Use only approved man-lifts, ladders, scaffolds, platforms or the catwalks (if applicable) of the excavator to perform any maintenance, inspection or repair procedures
- Never walk on an elevated boom or stick structure without an appropriate fall protection
- Always use fall protection when working at heights in excess of eight feet above ground
- Always use the appropriate tools to service the excavator and always wear the personnel protective equipment (PPE) as required by OSHA and jobsite regulations
- Only properly trained and authorized mechanics/technicians are allowed to maintain and repair this excavator
- When servicing this excavator never use your hands or fingers to align bolts or pins

Visitor/Vendor/Supplier Alert:

- Post safety signs that inform of all jobsite hazards
- Inform to maintain the proper and safe distance from all equipment at the jobsite
- Must be advised to observe all safety signs posted

General Safety Instructions:

- The operator must be made aware of the dangers and risks involved with the operation of this hydraulic excavator
- Train every employee what each warning signal or audible alarm represents
- Identify areas where falling or ejected debris may occur
- Frequently check the placement of safety signs, make certain they are legible and complete. Replace missing or illegible safety signs at once
- Instruct all employees to adhere fully to the instructions given on the safety signs
- Identify and cordon off or mark specific areas that are prohibited to enter during machine operation.
- Ensure that trip and fall hazards are kept out of drive and walkways
- Always follow good housekeeping procedures

- No one is permitted to stay underneath the excavator or its attachment, unless it is properly supported, while the machine is being serviced