

# 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

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