

Compact excavator



A Bobcat compact excavator

A **compact** or **mini excavator** is a tracked or wheeled vehicle with an approximate operating weight from 0.7 to 8.5 tonnes. It generally includes a standard backfill blade and features independent boom swing.

Hydraulic Excavators are somewhat different from other construction equipment in that all movement and functions of the machine are accomplished through the transfer of hydraulic fluid. The compact excavator's work group and blade are activated by hydraulic fluid acting upon hydraulic cylinders. The excavator's slew (rotation) and travel functions are also activated by hydraulic fluid powering hydraulic motors.

Structure



A Bobcat mini excavator. Note the backfill blade

Most compact hydraulic excavators have three distinct assemblies: house, undercarriage and workgroup.

House

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The house structure contains the operator's compartment, engine compartment, hydraulic pump and distribution components. The house structure is attached to the top of the undercarriage via a swing bearing. The

house, along with the workgroup, is able to rotate or slew upon the undercarriage without limit due to a hydraulic distribution valve which supplies oil to the undercarriage components.

Slew Slewing refers to rotating the excavator's house assembly. Unlike a conventional backhoe, the operator can slew the entire house and workgroup upon the undercarriage for spoil placement.



A Kubota compact excavator

Undercarriage

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The undercarriage consists of rubber or steel tracks, drive sprockets, rollers, idlers and associated components/structures. The undercarriage supports the house structure and the workgroup.

Workgroup

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The workgroup of a compact hydraulic excavator consists of the boom, dipper or arm, and attachment (e.g. auger, bucket or breaker). It is connected to the front of the excavator's house structure

via a swing frame that allows the workgroup to be hydraulically pivoted left or right to achieve offset digging for trenching parallel with the tracks. Certain manufacturers including Terex and Caterpillar (CAT) offer an extendable boom option, much like the extendable boom of a backhoe loader.

Independent Boom Swing

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The primary purpose of boom swing is for offset digging around obstacles or along foundations, walls or forms. A secondary use is cycling in areas too narrow for cab rotation. Independent boom swing is one of the major

advantages of a compact excavator over other excavation equipment.

Backfill blade

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The backfill blade is used for grading, leveling, backfilling, trenching, and general dozer work. The blade can be used to increase dump height and digging depth depending on its position in relation to the excavator's workgroup, this makes it very versatile.

Attachments



A NPK breaker fitted to a Wacker Neuson compact excavator

In recent years, hydraulic excavator capabilities have expanded far beyond excavation tasks. With the advent of hydraulic powered attachments such as a tiltrotator, breaker, a grapple or an auger, the excavator is frequently used in many applications other than excavation and with the tiltrotator attachment, actually serves as an effective tool carrier. Many excavators feature quick coupler (quick-attach) mounting systems

for simplified attachment mounting, dramatically increasing the machine's utilization on the jobsite.

Zero-tail Swing



A Wacker Neuson excavator with zero-tail. The tail does not extend to the street.

There are two distinct classes of compact excavators, conventional tail swing - units that have a rear counterweight that will extend beyond the tracks when the house rotates, and

zero-tail swing - units with a house whose diameter stays within the width of the tracks through full rotation. Zero-tail swing units allow operators to focus on digging and not looking at where they are swinging and are intended for operation in limited spaces, like next to a wall.

Notable manufacturers

- Bobcat Company.
- Caterpillar Inc.
- CASE CE
- CNH Global
- Dingo Australia

- Doosan Infracore (formerly Daewoo Heavy Industries & Machinery) - including Solar brand
- Gehl
- Hitachi Construction Machinery.
- JCB
- John Deere
- Kobelco (Kobe Steel Group)
- Komatsu Limited
- Kubota
- IHI Construction Machinery.
- Takeuchi Manufacturing
- Volvo Construction Equipment
- Wacker Neuson
- Yanmar

References

External links

- [Compact Excavator Specifications and Comparisons](#)

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