

# Hydraulic jack

Profession



----- Hydraulic jack Hydraulic jacks are typically used for shop work, rather than as an emergency jack to be carried with the vehicle. Use of jacks not designed for a specific vehicle requires more than the usual care in selecting ground conditions, the jacking point on the vehicle, and to ensure stability when the jack is extended. Hydraulic jacks are often used to liftelevators in low and medium rise buildings. A hydraulic jack uses a fluid, which is incompressible, that is forced into a cylinder by a pump plunger.

Oil is used since it is self lubricating and stable. When the plunger pulls back, it draws oil out of the reservoir through a suction check valve into the pump chamber. When the plunger moves forward, it pushes the oil through a discharge check valve into the cylinder. The suction valve ball is within the chamber and opens with each draw of the plunger. The discharge valve ball is outside the chamber and opens when the oil is pushed into the cylinder. At this point the suction ball within the chamber is forced shut and oil pressure builds in the cylinder.

In a bottle jack the piston is vertical and directly supports a bearing pad that contacts the object being lifted. With a single action piston the lift is somewhat less than twice the collapsed height of the jack, making it suitable only for vehicles with a relatively high clearance. For lifting structures such as houses the hydraulic interconnection of multiple vertical jacks through valves enables the even distribution of forces while enabling close control of the lift.

In a floor jack (aka 'trolley jack') a horizontal piston pushes on the short end of a bellcrank, with the long arm providing the vertical motion to a lifting

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pad, kept horizontal with a horizontal linkage. Floor jacks usually include castors and wheels, allowing compensation for the arc taken by the lifting pad. This mechanism provide a low profile when collapsed, for easy maneuvering underneath the vehicle, while allowing considerable extension.