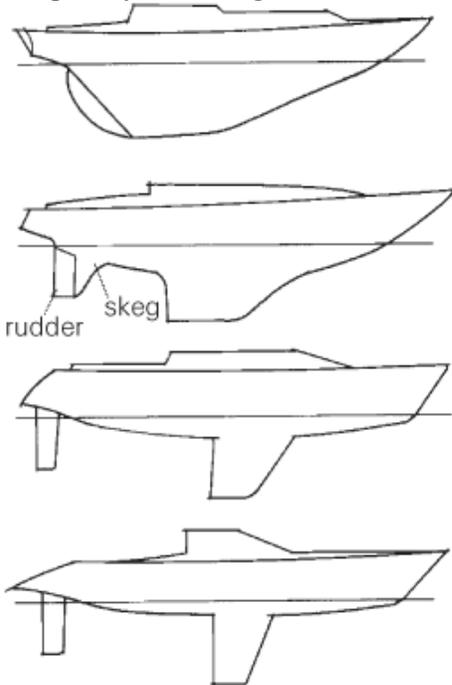


the ANSWER's KEEL from: <http://www.answers.com/topic/keels-2>

*(keel with cutaway forefoot and skeg-hung rudder)*

The keel is the main structural member of a wooden vessel, running fore and aft along the center-line of the bottom. It is the backbone upon which all the other structural members rest. In modern fiberglass construction, the hull is a monocoque in which the skin, or outer shell, bears most of the stresses. The keel is greatly modified, particularly in sailboats, where it is extended downward from the hull to perform two important functions: to stop the boat being blown sideways by the force of the wind in the sails, and to counterbalance the overturning force of the sails. To accomplish the latter, the keel is either made of, or encapsulates, a mass of iron or lead, and is known as a ballast keel. A narrow, deep fin keel is more efficient for driving a boat to windward than a wide, shallow keel of the same area. It also makes a boat more maneuverable, but it fails to provide directional stability, so that constant attention is needed at the helm. A full-length "cruising" keel depends on sheer lateral area rather than hydrodynamic lift to prevent leeway. It acts more like a barn door than an airplane wing. It provides the best directional stability possible, keeping the boat on course for extended periods without attention to the helm. A fin keel needs to be moving through the water to be effective at stopping leeway, just as an airplane needs to be moving through the air to gain lift from its wings. A traditional cruising keel is almost as effective when it is stopped as when it is moving. With its small wetted surface and, consequently, less drag from friction, a fin keel is favored by racing boats.



*Top to bottom: Traditional full keel, keel with cutaway forefoot and skeg-hung rudder, moderate-aspect fin keel with spade rudder, and high-aspect fin keel and spade rudder.*