



LADDER CLIMBING SYSTEM COMPONENTS

An Overview



© Gravitec Systems, Inc. 2009

A LADDER CLIMBING SYSTEM is a permanent, engineered fall protection system designed as an alternative to ladder cages. A properly engineered and installed system will continuously protect a worker from falling while ascending or descending a permanent ladder. This secondary fall protection system travels up and down the ladder and locks when needed to arrest a fall. Ladder climbing systems are designed to bolt onto a permanent ladder but are relatively easy to remove if necessary.

Most ladder climbing systems consist of a top anchor, a line constituent, intermediate brackets, a bottom anchor and a traveling sleeve. The top anchor is the load-bearing anchor. This anchor is critical in cable systems and further engineering analysis may be needed to ensure the permanent ladder will support fall arrest loads imposed on it. Pipe and rail systems bolt to the ladder at multiple locations so the top anchor is less critical for pipe and rail systems than cable systems.

Usually, the line constituent runs down the middle of the ladder. The frontal D-ring of the climber's full-body harness connects to the line. In some systems, however, the line constituent runs down or is integral to one side of the ladder. Because the line is located to the ladder's side, these systems raise concerns about how a falling body will behave or be suspended following a fall. Consequently, they are rare.

Intermediate brackets hold the line constituent in place. On cable systems, the intermediate brackets prevent the cable from moving out of position when the wind blows. On pipe and rail systems, the intermediate anchors serve as load-bearing anchors.

The bottom anchor terminates the system. In cable systems, the bottom anchor holds the cable in position and maintains line tension. Pipe and rail systems have no bottom anchor because they are bolted securely to the ladder along its entire length and therefore will not move out of position.

