

Pneumatic (air) control



Description

Pneumatic (air) controlled knees have inner chambers which house a sliding piston. The piston seals against the side of the chamber much like a bicycle pump. As the piston moves, air is compressed by it, regulating the pressure against the bending and straightening moments of the knee. The pressure differential allows the user to walk more comfortably at different speeds.

Advantages

- May be used over one axis of rotation (monocentric knees) or multiple axes (polycentric knees).
- Efficient use of air compression lowers energy use.
- Provides better swing control than constant friction systems.
- Lighter than comparable hydraulic units.
- Generally lighter and less expensive than hydraulic knees.
- Allows variable walking speeds.

Disadvantages

- Piston seals are prone to wear.
- Less effective than hydraulic systems.
- Can produce heat when actively worked for long periods.
- Slightly heavier and more expensive than mechanical friction knees.
- Complex.