

Threaded Connector

Abstract

162162

Method and apparatus are disclosed to complete a threaded connection between two connector members by relative rotation between the connectors, utilizing fluid pressure between them to overcome radial load resistance during make up by rotation, and thereafter to produce axial and radial loading in the completed connection, but without otherwise applying longitudinal forces to drive the two connectors together to make up the threaded connection. In a disclosed embodiment, a pin connector has a tapered neck with external threads, and a box connector has a collar with a tapered interior, featuring tapered threads. The pin neck is received within the box collar, and the two sets of threads are made up by relative rotation between the pin and box. When a stall position is reached due to radial resistance forces, two combinations of bump and ramp seals provide a sealed zone between the sets of threads. Fluid pressure is applied in the sealed zone to radially contract the neck and expand the collar without breaking the sealing engagement between the bump seals and the ramp seals. The resulting reduction of radial resistance between the neck and collar allows the further threading of the pin and box together by rotation between them until load surfaces of the pin and box mutually engage. Subsequent release of the fluid pressure from the sealed zone allows the pin neck to expand and the box collar to contract, moving the two sets of threads together, and radially loading the engagement at the seals. The load surfaces of the pin and box threads are slanted so that a wedging action is produced that further axially loads the connected pin and box.

Fig. 1

G00002