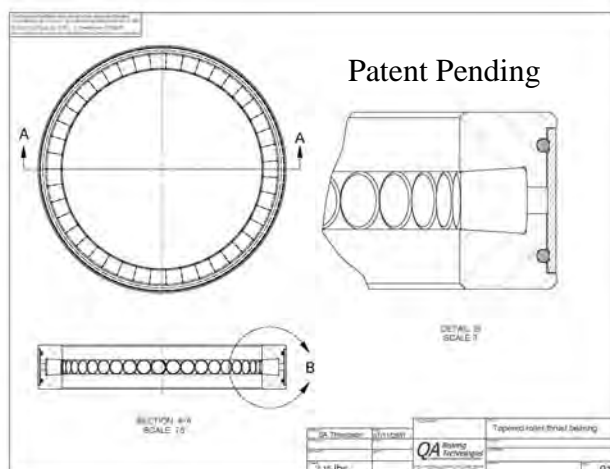


Full complement tapered roller thrust bearings for rotating liner hangers

The thrust bearing used in a typical rotating liner hanger application is subject to extremely high loading at relatively low speeds. The expected operational life is only 6 to 12 hours before being cemented permanently downhole. The demand for a thin cross section and a high static capacity with inherent roller guidance is complicated by the need for an economical price. A tapered roller thrust bearing with its high load rating and reduced true rolling friction is ideally suited for this application.



QA Bearing Technologies has developed a tapered roller liner hanger bearing design that, in addition to higher capacities and lower operating friction, also comes in a sealed and unitized configuration.



The outside diameter of the thrust bearing is often exposed to water and cementing particles, so an external debris barrier is incorporated into the design. This barrier consists of an outer sleeve with two O-ring sealing elements. The O-rings perform two functions: 1) They provide a set of low drag seals 2) They are the flexible elements that enable the bearing to be snapped together into a single unitized assembly (Patent pending) eliminating the handling of loose rollers during tool assembly.

Some customized tapered roller thrust bearings are created by taking the rollers out of three or more standard radial bearings and putting them into a single thrust bearing assembly. Often these rollers also need to be slightly modified and this is done by mixing in the rollers from even more bearings. This is not a good design practice because, with traditional bearing manufacturers, the actual roller size can vary from one manufacturing run to another. Therefore, the chances of having a few oversized rollers carrying the hanger's full load is likely to occur, resulting in these rollers fracturing downhole. At QA Bearing Technologies we assemble each bearing with a set of 8620 carburized tapered rollers from a single diameter size lot.



Maximizing the diameter of the tapered roller in the design reduces friction and facilitates the rotation of the rollers even if foreign particles manage to get into the bearing. True rolling also is achieved by matching the tapered roller angle, the spherical roller ends, and the spherical curve on the inner surface of the raceway flange with a common point on the bearing's centre axis.

For more detailed information on our various designs please contact us.



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