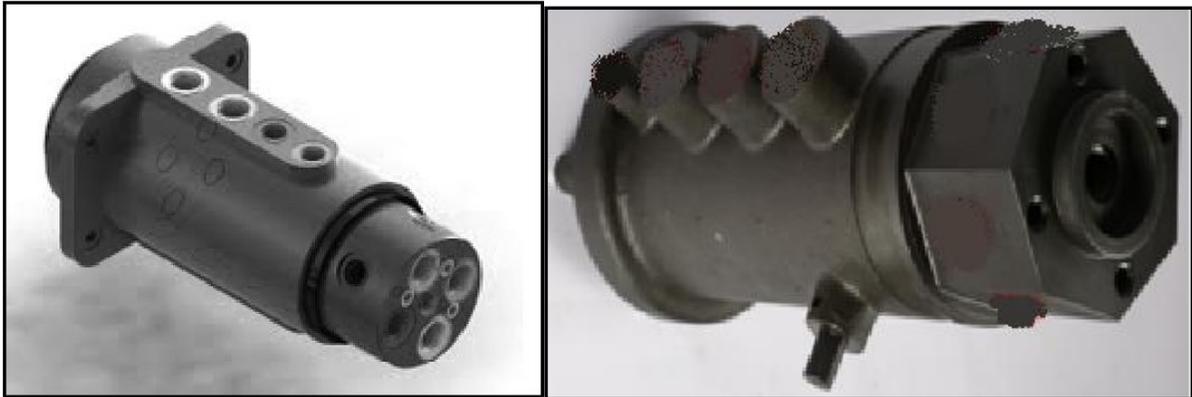


Function of rotary coupling and engineering expectation

Rotary coupling also called as Rotary joint or Center joint is designed for supplying high pressure oil from stationary member to rotating member. Rotary coupling being a hydraulic element and used in earth moving and material handling equipments, its weight has to be as light as possible while being able to withstand the pressure load and frictional torque load which are cyclic in nature. The design needs to be sound and reliable and pressure drop has to be minimum while optimizing the section thickness and flow paths.



Rotary coupling is mounted on under carriage of an excavator and when the upper carriage rotates, through a driving mechanism the axle drive pin will get the rotational force / torque. Axle along with input hoses also rotates with reference to coupling axis. This avoids twisting of hoses. Rotary coupling is used to provide oil supply to all hydraulic elements like cylinder, hydraulic motors etc which are mounted below the under carriage.

In case of rotary coupling the outer body can be rotating element or it can also be stationary. Rotary coupling can have any number of ports depending upon the requirement of the application and it can handle different types of fluids such as air, brake fluid, hydraulic oil etc.

Rotary coupling is an important member of earth moving equipment and accessing of this hydraulic element is very difficult since it is mounted below the super structure. Because of this the design has to be perfect and testing also to be done close to actual condition of working. Heart of the rotary coupling is the sealing system and it has to be leak proof. There should not be any inter-port leakage which results in mal-functioning of the entire equipment. Higher the number of seals higher is the torque and all depends on the selection of the seals. Another important aspect is that the manufacturing accuracies of all components influences in higher torque.

Care has to be taken while designing, one has to consider pressure drop and manufacturing accuracies of the rotary couplings since this is critical for the functioning of the entire equipment.