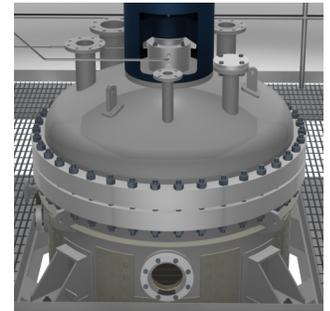


The Filter nest of the FUNDA filter is supported by the top head. The filter nest is removable and withdrawn by lifting the top head. When the nest has been installed the filter is sealed by clamping or bolting the head to the body of the filter vessel. The clamping design is an integral part of the pressure vessel and therefore included in the ASME pressure vessel calculations. A variety of materials are available for the clamps and bolts.

## Standard Flange Clamping

Bolts provide an economical option for maintain closure force on the gasket installed between the head and the filter vessel. Studs, each with a nut at the top and the bottom, are installed through an array of holes machined in the mating body flanges of the top head and the vessel. Steri provides the optimum bolt tightening torque values for the chosen gasket material. A variety of materials are available for the bolts and nuts as are a variety of coatings such as zinc, PTFE and others.



*Body Flange Bolts*

## Swing Bolting

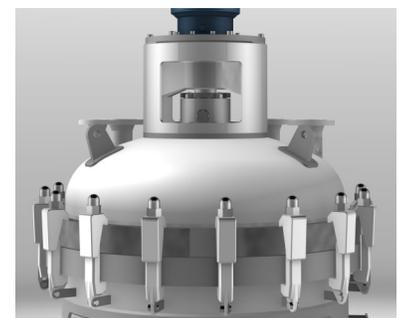


*Swing Bolts*

Swing bolts reduce installation and removal time as there is only one nut per bolt that needs to be handled. The swing bolt design is essentially an eyebolt where the eye end is captured below the vessel body flange and the tightening nut is at the top end. The body flanges of the top head and filter vessel have slots rather than holes allowing the bolts to swing into place. The advantage of this design is that the swings bolts stay with the vessel and the nuts stay with the swing bolts.

## C-Clamps

The C-clamp consists of two forged and machined blocks with a stud permanently installed in the lower block and closure nut. The upper block slides over the stud then the closure nut is threaded onto the stud. When the nut is tightened against the top of the upper clamp block it draws the two blocks together and applies clamping force to the body flanges to seal the vessel. The advantages of this design are that the clamps do not need to be disassembled, only loosened to be removed. In addition, the bottom end of the c-clamp lower block can be fastened to the vessel allowing the clamps to swing out of the way. And, no slots or holes are required in the body flanges. Stainless steel is the most common material for the c-clamps but other materials are available.



*C-Clamps*