

The History of Victor Designs (Jun '09)

Tie rod



It is fair to say that the company has come a long way from the day where hand calculations and rudimentary “rule of thumb” methods were used to design cylinders. In the 1950’s right through to the early 80’s Victor Hydraulics made a range of tie-rod cylinders that were very effective, but with low strength tube, low strength tie rods, relatively expensive construction methods, and increasing system pressures the days of this design were numbered.

Clip



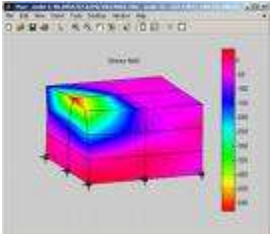
The impending demise of the tie-rod cylinder design created the need for a new range of cylinders that were relatively economic to manufacture. The company’s manufacturing equipment didn’t possess the technological grunt available today, so given constraints at the time, the best design was the DACC (double acting compression clip) range . This design used a wire retaining ring to join the head (gland) to the tube, and compression clips to retain the piston to the rod. The connection method essentially used a round wire circlip at both the head and the piston. Whilst it was simple and relatively inexpensive to manufacture, it had its shortcomings.

- The clip produced very high stresses that permanently deformed the interfaces and made maintenance very difficult.
- The design around the gland area was very prone to ingress of water. Typically after a few seasons the protective greases had dissipated and corrosion had commenced, shortening the overall life of the cylinder and in some cases making disassembly for maintenance all but impossible.

Threaded



The company was purchased by new owners in the 1989, and from that point forwards there was a significant investment in the factory and design facilities enabling the company to take advantage of new technology. This culture remains deeply embedded in the company today. In the early nineties the company purchased its first CNC lathe, and this together with some sophisticated enhancements to hydro-copying enabled the company to manufacture threaded cylinders efficiently.



Advanced in house analytical tools enabled the company to design a new range of threaded cylinders. It is wrong to say that there is nothing new to “screwed and glued” cylinders. Finite element analysis enabled the company to highly refine the designs so that they are now “tuned” to ensure that the cylinders have the maximum possible fatigue resistance.

This intense approach made ISO 9001 a natural consequence of the company’s culture.