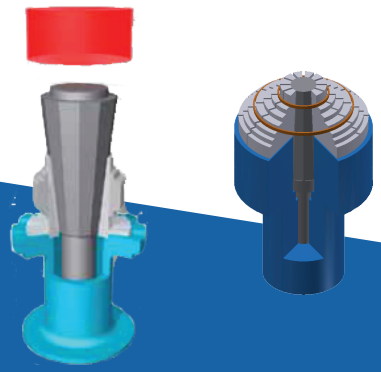
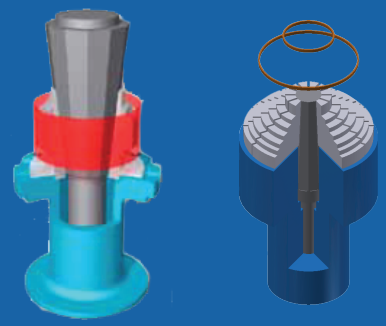
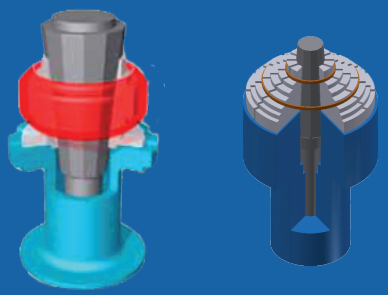


EXPANDERS

PROCESS



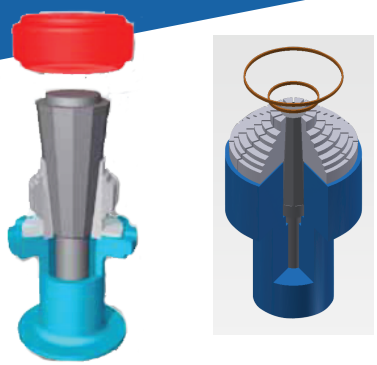


Principle of an Expander

The part to be expanded is positioned around the collapsed dies. Cone and drawbar are in the extended position on pull type, and retracted position on push type.

As the drawbar pulls the cone down, or pushes up, the inclined surfaces of the cone force the jaws and dies outward. Outward expansion stretches the part past its yield point to the desired shape and size.

When the part reaches the desired shape and size, the drawbar/cone assembly returns, and the jaws and dies return to their original position. The part, formed and sized to close tolerances, is ready to be unloaded.



Range of Specifications Expanding

- Tonnage: Less than 2 ton to over 3600 ton
- Diameter: 25 mm to over 8 m
- Height: 6 mm to over 5 m
- Wall Thickness: 1,5 mm to over 305 mm
- Materials: Steel, Aluminum, Nickel-based Aerospace Alloys, Titanium, Stainless Steel, etc
- Custom Ranges Available

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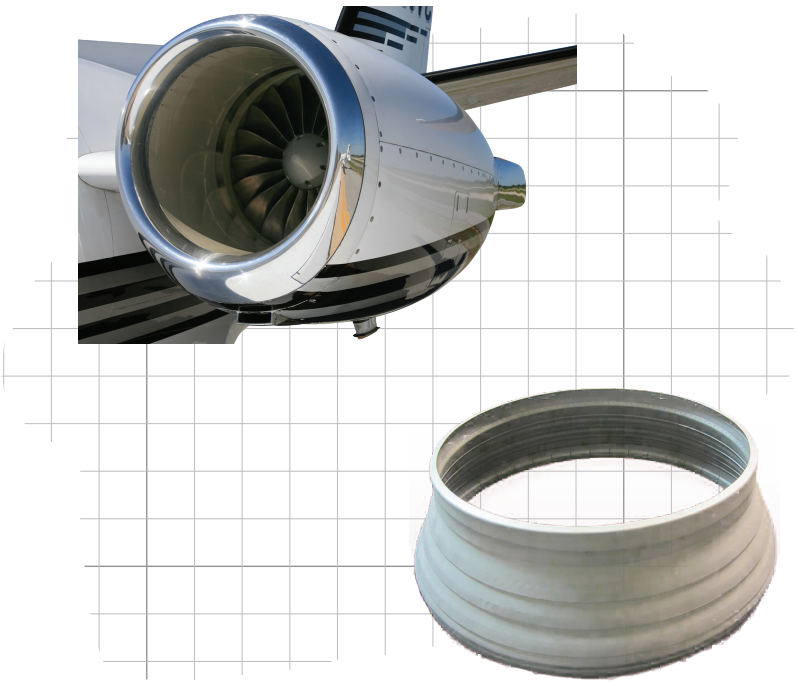
Jet Engine Components

Highly stressed jet engine parts made from super alloys such as titanium, inconel and hastelloy, are often difficult to form. Fontijne Grotnes Expanders are used extensively in the aerospace industry by well established companies to form nozzles, plus, exhaust cones and combustor liners, which are made of sheet metal.



Applications

Fontijne Grotnes Expanders are used for forming combustion chambers for jet engines. The part is formed from a conical shaped blank made of super alloy material. At the same time, the part is calibrated to precise tolerances.

Sheet metal components for aircraft engines are formed and sized on Fontijne Grotnes Expanders. The initial shape is a conical cylinder made of rolled and welded sheet metal. A super alloy material is used which is resistant to very high temperatures.

Benefits

Expansion is a highly accurate and repeatable forming process with a shorter cycle time than comparable forming techniques.
Fontijne Grotnes Expanders make it possible to size and form profiles in a wide range of materials.
Fontijne Grotnes has knowledge of software programs to offer simulations regarding your forming processes.
By using an Expander less material is needed and the machining time is dramatically reduced, also there is virtually no limit to the materials that can be formed or sized.

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