

Fuselage Assembly Tandem Lift System



The Challenge

A major aircraft manufacturer was developing a means to reduce the overall time it takes to build a business jet. One area specifically reviewed was the time it took to place the fuselage on fixed height jack stands at each assembly stage/station along the assembly line. The customer searched for a design solution that could overcome the challenges of the application:

1. fuselage must be supported by no more than two lifts.
2. lifts must be able to transport the fuselage from one station to another.
3. lifts must work in unison at extremely slow speeds.

The Autoquip Solution

An Autoquip design team met with the industrial safety and tooling engineers from the customer's factory to review potential lifting solutions, because the synchronization requirement could be loosened to 0.5 – 1.0% of the lifts potential travel – individually powered hydraulic lifts customized with slow-speed circuits would be adequate for the application. The hydraulic lifts were made extra-wide for added load stability, and equipped with a specialized base frame that could be fitted with the customer's specified brand of air bearings for ease of transporting the loaded lifts. The lifts can be controlled as a tandem or individually when necessary for maintenance, etc.

Both lifts were also equipped with free-fall arrest devices that would completely arrest the descent of the lifts in



the event of a catastrophic hydraulic hose failure. The tooling engineer is completely satisfied with a material lift that was customized to adapt to the constraints of the job site and the limited accessibility to the aircraft. The assembly personnel are able to complete a fuselage in less overall time with fewer specialized jack stands saving valuable floor space.

The Solution Benefits

Through the use of this customized scissor lift system, the customer has experienced an improvement in efficiency and throughput on this assembly line, and has specified this system multiple times since for other production models/lines.