

Rod Ends Support Aircraft Equipment and Reduce Cabin Noise

Enidine Elastomeric Application

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Application Overview

Large aircraft manufacturers such as Boeing and Airbus need to support service equipment and interior structures in a way that provides flexibility for changes in alignment and reduce in-flight structure borne noise. For example, an overhead stowage bin is connected to the airframe structure using tubular strut assemblies including spherical rod ends.

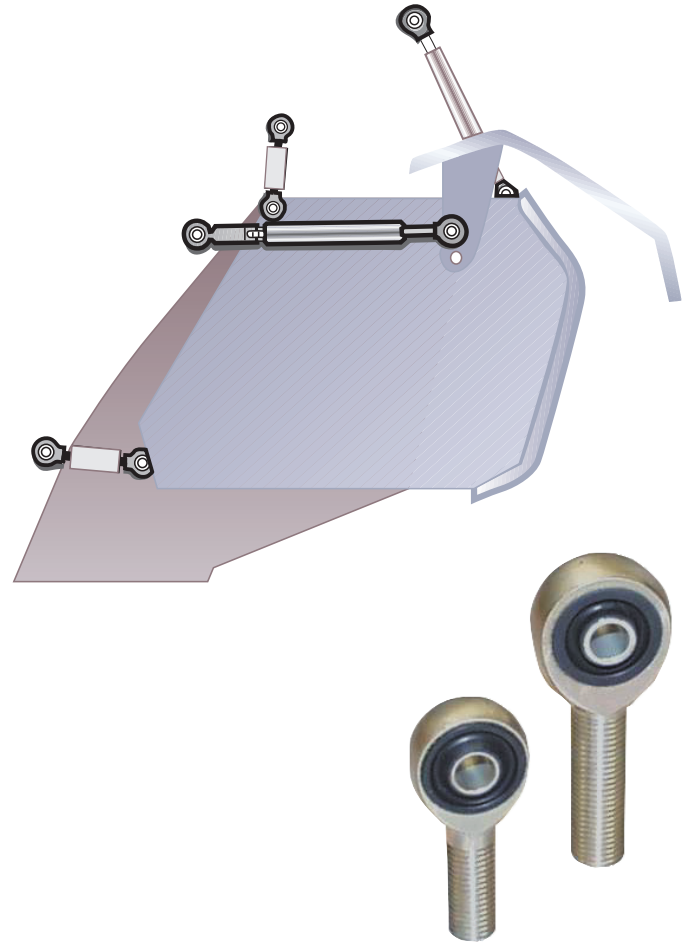
When loaded with carry-on luggage the overhead stowage bins can weigh several hundred pounds. It is supported by a handful of strut assemblies, which are connected to the airframe structure above the insulation barrier. This means that the in-flight operating temperature is close to the freezing point. The assembly must statically support the equipment, accommodate angular misalignment during flight flexure and reduce structure borne noise entering the cabin through the exterior skin of the aircraft.

ITT Enidine Inc. has been successful in developing a family of elastomeric rod ends, which are assembled with the tubes to make up the assembly. The basic design supports the load, offers alignment forgiveness as the elastomer flexes, resists radial push-out forces and reduces the flow of high frequency input (noise).

Product Solution

The ITT Enidine Inc. rod ends were designed by molding a specially developed elastomer between the inner and outer race of a spherical rod end. The special elastomer has unique operating characteristics, which perform extremely well at low operating temperatures.

Reducing cabin noise with elastomeric rod ends required special testing devices. ITT Enidine Inc. designed and manufactured a high frequency test machine known as a four-pole tester. This tester offered absolute alignment with minimal backlash. Noise abatement could be measured in an extremely accurate way. Many of ITT Enidine Inc.'s elastomeric rod ends can reduce noise input by 20 decibels, representing nearly double the requirement of the design specification.



Application Opportunity

The new family of elastomeric rod ends from ITT Enidine Inc. meets the aircraft design specification and provides consistent cold temperature vibration isolation characteristics. During your next flight, enjoy a quiet ride, thanks in part to ITT Enidine Inc.

Airframe manufacturers (SIC 3728) and stowage bin manufacturers (SIC 5088) are good candidates for elastomeric rod ends, which can either be sold to an airline with the bin or integrated by the airframe manufacturer.