

**Freely rotating ball joint –  
Easy assembly and free movement, custom-made**

*Broadview (Chicago), Illinois, October 2006.* Universal joint manufacturer Belden Inc. focuses on special purpose universal joints and drive shaft assemblies made to customers' exact specifications. Manufacturing processes and multiple axis CNC machinery allow Belden to produce small batches and made-to-order custom parts as cost-effectively as high volume standard universal joints.

A recent customer request tested Belden's capability to manufacture custom designs. The hand rail system in a national park required joints to connect independent sections of the hand rail. The connecting elements needed to be assembled easily in the field and required free range of motion so that the hand rail system could accommodate variable degree angles along the terrain. The universal joints had to be a light weight material that could withstand the load of a person when using the rail for support, and handle the harsh outdoor elements.

Belden's design engineers took the joint from concept to finished product. They designed a joint that was not the typical pin and block Cardan style, but rather a ball style joint that could rotate freely without the interference of a yoke ear. The joint was manufactured in aluminum for a high strength to weight ratio and corrosion resistance. The connection method of the joint to the tubing was kept simple for safe and easy assembly in the field. The joints were also anodized to match the color of the rail system tubing for a cosmetic appeal. The end result was a customized product that met the customer's exact application criteria.

Belden's specialty are custom assemblies such as made-to-order hub configurations and lengths, or the complete redesign of joints for specific applications. Materials include alloy, all grades of stainless steels, naval brass and extruded aluminum. Belden provides an extensive line of precision engineered universal joints with complete shaft assemblies as well as couplings for a wide variety of applications. These specialized applications include packaging and conveying equipment, food processing equipment, steel roll forming and levelling equipment, machine tools, woodworking equipment, steering and shift linkage assemblies for race cars as well as industrial and off-highway vehicles.

**About Belden:**

Belden Inc., located in Broadview, Illinois, near Chicago, focuses on special-purpose universal joints and drive shaft assemblies made to customers' exact specifications. Unique manufacturing processes give Belden the flexibility to produce small batches economically and made-to-order custom parts just as cost-effectively as high volume standard universal joints. Belden supplies an extensive line of high quality, precision-engineered universal joints with complete shaft assemblies as well as couplings for a wide range of applications. Applications include steering and shift linkage assemblies for race cars as well as industrial and off-road vehicles, aerospace, packaging and conveying equipment, food processing equipment, steel roll forming and leveling equipment, machine tools, woodworking equipment for the furniture industry and OEM machine tools.

