

Dampers for BT10 Bogie (MK3 Fleets)

The Challenge

Unipart Rail, in conjunction with SV dampers from Finland, were set the challenge of developing a new damper to replace the existing Woodhead and Pegasus units, fitted to BT 10 bogies.

The two main requirements of the new product are to have engineering improvements inside the damper that will eliminate oil leaks in service and for the product to be developed at a competitive cost to significantly reduce total life cycle costs compared to overhauled dampers that the new product are designed to replace.

The Solution

Using a unique double sealing system, the BT10 Dampers from Unipart Rail last significantly longer in service and reduce the need for periodic checking by the train operator and therefore eliminating the need for constantly changing dirty, leaking dampers. The new dampers also have high mechanical strength and are manufactured to a very high quality by a specialist European supplier of hydraulic damper products. For example, all welds on the product are in according to EN15085-2 railway welding standard and all dampers are 100% tested to relevant velocities of operation.

The new primary BT10 Dampers use a two stage sealing system which includes double acting polyurethane scraper seal and single acting primary pressure seal which have high static and dynamic sealing ability without "stick/slip" characteristics. These two rod seal elements are designed to work together. This combination gives the best possible sealing capabilities over traditional sealing elements. Due to the non-stick/slip characteristic of primary pressure seal, it has low sealing friction and long service life. The current Pegasus and Woodhead damper sealing system have only one sealing element in the piston rod and they do not have an in-built scraper seal.

Operation temperatures of primary seal is from -30°C to over +100°C and the scraper seal has a temperature range from -35°C to over +100°C.

The Solution Cont...

The new BT10 Damper design also incorporates a Teflon based rod guide and there is no metallic contact between piston rod chrome plating and other damper parts which helps keep the piston rod sealing surfaces in good condition over long periods of operation.

A significant product improvement of the new BT10 Damper design is the use of a high quality synthetic oil which has a viscosity index over 350. This guarantees less fading of damping forces over wide temperature range. Due to combination of internal valve design and oil characteristics, damping force recovery from different kinds of operational situations is excellent. Also smooth damping characteristics have been achieved in shorter strokes without sudden changes. When compared to Pegasus and Woodhead dampers, the BT10 Damper from Unipart Rail generates less heat in the same tests. This helps sealing elements to have longer and better life without the risk of overheating.

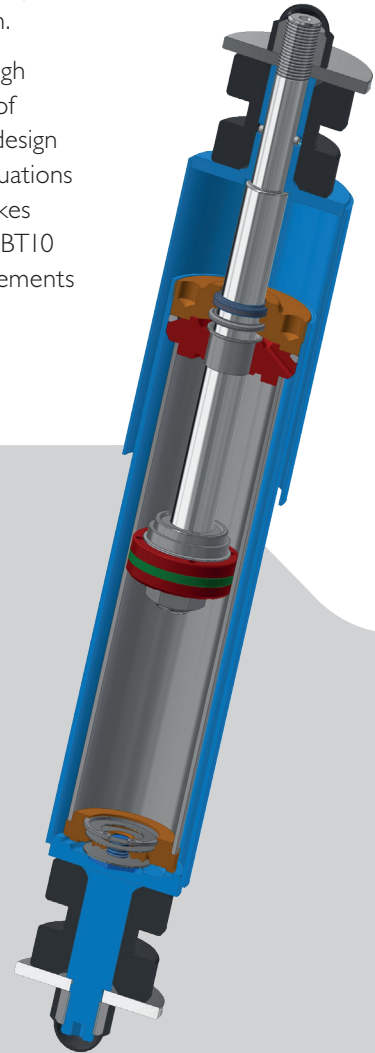
The Result

The new BT10 Dampers from Unipart Rail have been endurance tested on a factory test rig and manufactured in line with the appropriate velocity and damping specification for rail applications. The products have had extensive service trials operating at 125MPH track speed to ensure reliability and quality of manufacture and continual dynamic performance in use. The trials on a variety of UK train routes used by the MK3 fleet have had no adverse reports concerning the fitting and operation of the dampers and with comparable ride quality for the staff and passengers.

The new BT10 Damper products are available with the following benefits:

- 3 year "no-quibble" warranty, fully supported by the specialist supplier
- Best value solution providing up to a 70% cost saving compared to a new damper and a lower cost than the equivalent overhauled unit
- SNC Lavalin approved with full DRCC Certification
- One product code supersedes 3 existing vertical damper types

The primary BT10 Damper from Unipart Rail offers benefits in mechanical strength, sealing solutions, heat generation, stable damping forces and less weight in this damping force category.



BT10 Damper product code: 0072/071520

Supersedes/replaces:

0072/071311 Pegasus Vertical Damper

0015/079740 MK3 Vertical Damper

0098/000012 Woodhead Vertical Damper



Unipart Rail (Traction and Rolling Stock)

Jupiter Building, First Point, Balby Carr Bank,
Doncaster DN4 5JQ

Tel: +44 (0) 1302 731400

Fax: +44 (0) 1302 731401

email: trsenquiries@unipartrail.com

www.unipartrail.com



Visit www.unipartrail.com for details
of our Worldwide Regional Offices