



## **2011 TECHNOLOGY INITIATIVES – HIGHLIGHTS**

Bendix Spicer Foundation Brake LLC (BSFB) continues to exhibit technical leadership and offer original equipment manufacturers (OEMs) the latest advances in truck, tractor, and trailer foundation brake technology, engineering a comprehensive selection of high performance foundation brake solutions for today and tomorrow. The company also fully supports the aftermarket with its Bendix<sup>®</sup>, Formula Blue<sup>®</sup> and Spicer<sup>®</sup> branded foundation brake service parts. Following are highlights of several key technology initiatives.

### **AIR DISC BRAKES**

North American production of Bendix<sup>®</sup> ADB22X<sup>™</sup> air disc brakes began in 2005. Since that time, we have put more than 200,000 air disc brakes into service across a wide range of commercial vehicle applications, seeing acceptance at a steadily increasing growth rate. Today, all heavy vehicle OEMs offer the Bendix ADB22X air disc brake as optional equipment, and many fleets spec them as standard equipment. These fleets report better braking feel, improved performance, lower fade, increased stopping power, and – in many cases – lower operating expenses. This dramatic increase in acceptance has allowed us to now focus on product improvements, which will reduce the cost of the disc brake without compromising its performance or reliability. Two of the advancements include: engineering breakthrough metallurgical formulations for rotors; as well as the development of a new Bendix<sup>®</sup> double-diaphragm spring brake. The spring brake affords a lower cost alternative to piston-style designs used previously. The new rotor formulations are currently available as Bendix Splined Disc<sup>®</sup> rotors, and will soon be available in conventional “U Shaped” configurations. All are compatible with lightweight aluminum hubs for trucks, tractors, and trailers.

### **FOUNDATION DRUM BRAKES**

The Bendix Spicer Foundation Brake engineering team continues to advance drum brake technology in preparation for the implementation of the 2011 Reduced Stopping Distance regulation. Through advancements in lining materials, as well as subtle, cost-effective enhancements to our proven ES<sup>™</sup> Brake design, we have developed a new “High Performance” drum brake solution that exceeds the new requirement without significant changes in technology or introduction of new equipment. In addition, 2010 saw the initial production availability and field testing of these higher performing models, which will allow the drum brake to maintain its place as a cost-effective stopping solution for years to come. The new regulation becomes effective August 1 of 2011 and covers all 6x4 heavy tractors with Gross Vehicle Weight Ratings (GVWRs) of 59,600 lbs and less. An additional product improvement is an improved electro-deposition paint process for brake shoes called “E-Coat2”. E-Coat2 offers even greater protection against rust jacking and other forms of corrosion and provides the very best corrosion available. As the global foundation drum brake center of excellence, our Elyria, Ohio-based BSFB engineers serve as the technical lead for drum brake design for Knorr-Bremse CVS, overseeing significant development activity worldwide.

### **AUTOMATIC SLACK ADJUSTERS**

In 2011, the BSFB slack adjuster team once again will demonstrate its expertise in brake adjustment with the introduction of the Bendix<sup>®</sup> Versajust<sup>™</sup> automatic slack adjuster to North America. The product was developed using time-tested brake adjustment technologies specifically adapted for the highly corrosive environments seen on North American roadways. Preserving the proven clearance sensing philosophy of earlier Bendix designs, the Versajust slack introduces key enhancements, including: improved exterior body corrosion resistance; increased sealing to protect the internal mechanism from harsh environments; improved grease retention; and an O-ring-sealed worm shaft. Engineering development work also continues

on a variety of advanced automatic slack adjuster designs – to complement the Versajust model – for all applications. As the global slack adjuster center of excellence, our Elyria, Ohio-based BSFB engineers serve as the technical lead for automatic slack adjuster design for Knorr-Bremse CVS, overseeing significant development activity worldwide.

### **ACTUATION AND AIR CHAMBERS**

2011 marks the continuing evolution of Bendix Spicer Foundation Brake as a service chamber and spring brake supplier. The Bendix® EverSure™ spring brake with No Touch™ technology is a new, next-generation double-diaphragm spring brake for drum brakes that offers the lightest weight in the industry, while delivering best-in-class durability and performance. Among the key innovations in the EverSure spring brake technology is the elimination of contact between compressed power spring coils, allowing the protective coating to remain intact and resulting in significantly better corrosion resistance – and longer spring life – than competitive products. In addition, optimized diaphragm geometry results in best-in-class force output. The Bendix® EverSure™ product portfolio also includes a new double-diaphragm spring brake for air disc brakes which was launched in 2010. Design improvements and expansion for the entire brake actuation product line continues, providing significant original equipment growth opportunities for BSFB. Bendix is the global design lead center of excellence for Service Chambers and Double Diaphragm Spring Brakes for the Knorr-Bremse Group worldwide.

### **AFTERMARKET**

We're committed to delivering the most complete offering of wheel-end components and aftermarket solutions for light-, medium-, and heavy-duty applications. Bendix Spicer Foundation Brake is a one-stop source for nearly 50,000 OEM-quality, all-makes foundation brake replacement parts. Our aftermarket product line growth in 2011 will be further accentuated by the continued expansion of our high-quality, comprehensive remanufactured shoe program, and the continued expansion of our hydraulics product list, which includes both the Bendix® and Formula Blue® brands. The Formula Blue hydraulic brake parts product line, consisting of more than 7,000 light- and medium-duty parts, is being expanded to include full lines of premium, high-quality hydraulic parts for model year coverage up to 2012 for the broadest range of domestic and import makes and vehicle applications. Our comprehensive medium-duty hydraulic product line illustrates the one-stop shopping that exists with Bendix Spicer Foundation Brake.

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