News Release

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FOR IMMEDIATE RELEASE
From the Bendix Tech Tips Series

BENDIX TECH TIPS: SELECTING THE RIGHT VALVE FOR YOUR TRAILER APPLICATION

Practical Guidance to Help Spec for Compliance, Performance, and Smart-Trailer Readiness

AVON, Ohio – Sept. 17, 2025 – Choosing the right ABS (antilock braking system) electronic control unit (ECU) and associated valving for your trailer can make the difference between compliance on paper and reliable performance on the road. Be it a short dry van, a long tanker, or a trailer built to tow, each is required to meet baseline performance requirements for air-braked trailers in the United States and Canada (FMVSS/CMVSS 121). That said, each type of trailer requires a different valve setup to do it right. Matching the package to the trailer's length, vocation, and specific features is what separates merely compliant from truly road ready.

This Bendix Tech Tips installment highlights the factors fleets should weigh when spec'ing trailer ABS valves, controls, and auxiliary features and how manufacturers and suppliers apply those choices to deliver compliant, road-ready systems.

"Regulations set the starting point, but trailers need different valve setups depending on their design," said Robin Humphreys, manager of trailer products for Bendix. "A short dry van might use a basic system, while longer or towing trailers usually need a booster valve to keep brakes in sync and meet the regulatory timing requirements. And as trailers get more axles or carry tougher loads, additional valves help keep braking balanced and predictable."

Right Architecture for the Job

When a trailer's braking system is engineered with the right architecture per FMVSS/CMVSS guidelines, it delivers consistent stopping distance, predictable handling, and readiness for stability features and connectivity. No matter the vehicle, the layout you choose defines how the trailer will perform on the road.

- **Length, axle spread, and vocation:** For over-the-road dry vans, a basic two-wheel-speed sensor, one-modulator (2S/1M) ABS configuration satisfies minimum FMVSS/CMVSS requirements. Longer trailers may require a control-line booster valve (for example, a relay/booster such as the Bendix® R-12P) to help meet timing expectations. Wide-axle-spread trailers may require extra valving to serve the braking layout. Vocational trailers that carry higher-risk loads – such as fuel and gas haulers – commonly step up to 4S/2M control to monitor and modulate more wheel-ends.
- **Towing vs. non-towing:** Trailers designed to tow should be engineered with a booster valve to meet FMVSS/CMVSS timing regulations and to support consistent vehicle-train braking response.
- **Stability systems:** Trailer roll-stability programs (such as Bendix® TABS-6™ single-channel and multichannel configurations) require accurate trailer inputs – length, weight, and wheelbase – to tailor software and interventions. Planning stability at the design stage makes sure that sensor and modulator placements, plumbing, and valve selection all work together.

"Trailers with more axles or specialty designs benefit from extra valves and more points of control," said John Ripley, vehicle systems engineer at Bendix. "Added control helps trailers respond more smoothly in real-world maneuvers and also sets the stage for easier diagnostics, stability features, and the connectivity fleets are looking for."

Features and Connectivity Drive Choices

Modern trailers often require braking systems that do more than cover the basics. When fleets request features such as lift axles, rear unloading systems, friction and rotor-wear alerts, or low-system-pressure warnings, those needs drive which valves and electronic control units are built into the trailer by manufacturers and their suppliers.

Many fleets are also asking for trailers that share useful data with their service teams. Those expectations shape ECU choice, since the right unit enables contemporary diagnostic

functions while also positioning the trailer for future capabilities – like predictive maintenance alerts, tractor-trailer communication, and advanced stability functions.

"Thinking about connectivity up front helps fleets avoid costly retrofits later," said Humphreys. "Advanced controllers open the door to diagnostics, service tools, and the electronic features that may keep trailers competitive in the years ahead."

Make It a System

Selecting the right valves, sensors, and controllers is only part of the job. The trailer OE will make sure all the components work together as a complete braking system and put the finished unit through end-of-line tests before it ever leaves the plant.

Over the life of the trailer, keeping diagnostic tools up to date and ensuring technicians are trained on the latest systems helps maintain performance.

"The right valve choices begin with fleets clearly defining their operating needs," said Ripley. "When fleets, builders, and brake-system suppliers align early at the system level, it's more likely to result in a trailer that delivers on both compliance and performance."

Quick Spec Checklist

Before finalizing your selection, it helps to run through the essentials. These checks guide spec decisions and make sure the design supports both compliance and performance.

- **Trailer basics**: length, wheelbase, axle count/spread, and towing capability
- **Braking setup**: ABS/stability system type (single channel vs. multichannel)
- **Valve needs**: booster or relay valve for longer/towing trailers
- **Feature set**: lift-axle control, rear unloading, friction and rotor-wear alerts, low-system-pressure warnings all affect the correct ECU selection
- **Connectivity**: diagnostics/data-sharing for current and future smart-trailer needs (J1939, PLC and ISO 11992, for example)
- **Testing**: end-of-line checks and documentation (timing, sensor placement, plumbing)

Information in the Bendix Tech Tips series – including an archive of past topics – is available at the Bendix Knowledge Dock™ multimedia center. Additional training is offered through the Bendix On-Line Brake School at brake-school.com. For technical support, contact the Bendix Tech Team at 1-800-AIR-BRAKE.

About the Bendix Tech Tips Series

Bendix, the North American leader in the development and manufacture of leading-edge active safety, air management, and braking system technologies, is committed to helping keep commercial vehicles on the road and in good working condition. The Bendix Tech Tips series addresses common commercial vehicle maintenance questions and issues concerning the total range of components found within foundation and air brake systems, as well as advanced safety systems.

About Bendix Commercial Vehicle Systems LLC

Bendix Commercial Vehicle Systems, a member of Knorr-Bremse, develops and supplies leading-edge active safety technologies, energy management solutions, and air brake charging and control systems and components under the Bendix® brand name for medium- and heavy-duty trucks, tractors, trailers, buses, and other commercial vehicles throughout North America. An industry pioneer, employing more than 3,600 people, Bendix is driven to deliver the best solutions for improved vehicle safety, performance, and overall operating cost. Contact us at 1-800-AIR-BRAKE (1-800-247-2725) or visit bendix.com. Stay connected and informed through Bendix expert podcasts, blog posts, videos, and other resources at knowledge-dock.com. Follow Bendix on X, formerly known as Twitter, at x.com/Bendix_CVS. Log on and learn from the Bendix experts at brake-school.com. And to learn more about career opportunities at Bendix, visit bendix.com/careers.

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