News Release

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FOR IMMEDIATE RELEASE

WHEN A FLOOD STRIKES: BENDIX DETAILS BEST PRACTICES FOR AIR BRAKE SYSTEMS AND COMPONENTS IN DAMAGED TRACTORS AND TRAILERS

To Ensure Safe and Reliable Operation, Pay Close Attention to the Technology of Submerged Vehicles, from Wheel-End to Compressor

ELYRIA, Ohio – Sept. 17, 2018 – As certain as autumn follows summer, hurricane season spins to life every year, and with it the threat of flooding that can be devastating for people and property. When threat turns to reality, as with Hurricane Florence, truck drivers and the trucking industry – so vital to recovery and rebuilding efforts in stricken areas – must take special care to keep tractors and trailers in safe operating condition. Doing so helps avoid future issues for those vehicles exposed to floodwaters.

Bendix offers the following insights on inspecting and – where possible – reconditioning air brake and wheel-end components that have been submerged in floodwaters.

Ask This Question First

"Was the floodwater salt water? That's number one," said Jim Szudy, Bendix engineering manager for advanced systems engineering. "The answer dictates what you should do next. If it was salt water, you'll need to immediately begin replacing parts. For example, pneumatic air brake valves that have been submerged have likely lost their lubrication. Because salt water is extremely corrosive, these valves would be at much higher risk for sudden and premature malfunction. Replace any brake system valve that has been submerged in sea water

– along with air compressors, air reservoirs, antilock brake system (ABS) relay modulators, and brake actuators."

Salt water is a threat to wheel-ends as well, heightening the possibility of corrosion and increasing the chances of rust jacking and damage to other components. Here, too, Bendix recommends complete replacement to prevent failure in the future.

Sometimes it's not clear whether the submergence was by fresh water or salt water, such as if the vehicle was in a coastal area. In that case, play it safe and follow the above guidelines.

Also keep this in mind: When replacing any pneumatic system components that have been subjected to flood conditions, disconnect all contaminated air hoses, flush them with clean water, and blow them out with air pressure to remove contaminants.

When the Damage Is from Fresh Water

Are you certain the vehicle or trailer was submerged in fresh water? If so, power wash the vehicle and trailer, including the foundation brakes, to assist in determining the condition of components. Then, to properly check the air brake control systems, take the following steps:

- **Vehicle valving**
  - To check for evidence of water or contamination, mark and remove the connectors at the first valve in the system from the front.
  - Inspect the valve for water and contaminants, and carefully use air pressure to blow air through the hoses and watch for evidence of water or contamination.
  - Continue to inspect all the valves in the air brake system. Replace any valve showing evidence of water or if it is not functioning.
- **The charging system**
  - When fresh water has entered the air compressor or dryer through the air system intakes, do not attempt to start the vehicle.
  - Use dry compressed air from a stationary (or suitable portable unit) air compressor to drain the service tanks of any residual water. Air dryers remove moisture in compressed air, but they won't remove moisture that's present after the service tanks.
  - After pneumatic lines are reconnected, install a new or properly serviced air dryer to aid in removing any residual moisture from the air inlet.

- **Wheel-ends**
  - > Examine wheel-ends for water, which increases the possibility of rust jacking (corrosion between lining material and the shoe table) on drum brakes, and can also pool in drums when left standing, leading to corrosion.
  - > Ensure the integrity of the friction couple between the friction and disc or drum.
  - > Verify no water has entered the chamber through the airlines by removing fittings and mounting stud nuts and orient ports downward. If present, drain and reinstall. Follow the appropriate wheel-end relubrication procedures, including regreasing slack adjusters.
- **Electronics system**
  - > Conduct a diagnostic download on the system using a tool such as Bendix® ACom® Diagnostics software for the ABS, as well as (if equipped) ESC (electronic stability control) and collision mitigation controllers, including the front radar.
  - > In most cases, electronics will validate through self-check: If the electronic control unit (ECU) is operable, it will check the necessary solenoids, sensor, harnesses, etc.
  - > Inspect the seven-pin electrical connector interface between the tractor and trailer.
  - > Inspect tractor and trailer glad hands and the supply and control hoses, since water and contaminants can pass into the air brake system through unprotected glad hands.

"Just as in the case of salt water submersion, you'll need to replace all pneumatic air brake components if you find signs of moisture or other contamination – unfortunately, there's no other option, given the importance of a fully functioning system and clean air," Szudy said. "Once water or contamination has entered into any of the air brake components – through the exhaust valves, for instance – it's not possible to completely clear the system without total disassembly."

Szudy cited two Bendix Technical Bulletins – *Flood Damage: Bendix Recommended Procedure for Trailer and Dolly Control Systems That May Have Been Submerged* (TCH-003-

048), and *Flood Damage: Bendix Recommended Procedure for Power Vehicles That May Have Been Submerged* (TCH-003-049) – as valuable resources to help fleets get their trailers and power vehicles back into service should they become submerged. Both are available in the Bendix Document Library online at bendix.com.

Return to Service

If no evidence of water or contamination is found, thoroughly test the air brake system and ABS before returning the vehicle or trailer to service.

Where the ABS is concerned, note that the action of floodwaters and power washing may move the ABS wheel speed sensors from their normal position. By hand, push the wheel speed sensors back into contact with the exciter ring, and normal wheel bearing play will adjust the sensor position when the wheel turns.

Bendix recommends retesting – including diagnostic checks of electronic systems such as ABS, full stability (ESP/ESC), collision mitigation systems, and Automatic Traction Control (ATC) – 30 days after the vehicle or trailer has been returned to service.

“To help fleets and owner-operators with questions, Bendix has resources available 24/7, including 1-800-AIR-BRAKE, our Service Engineering team, and our library of Service Data Sheets and Technical Bulletins,” Szudy said. “And remember that flooding may impact other vehicle systems as well. So be sure you’re following all the appropriate vehicle and system manufacturer inspection guidelines.”

Bendix also helps trucking professionals stay connected through updates on the latest information in truck operation and maintenance at the Knowledge Dock® (knowledge-dock.com), which features an archive of the Bendix Tech Tips series, as well as videos, blog posts, podcasts, and white papers. A podcast on how to inspect and help return power vehicles and trailers back into service following exposure to floodwater is available as a part of that series.

For more information about Bendix air brake systems and technologies, call 1-800-AIR-BRAKE (1-800-247-2725) or visit safertrucks.com/solutions.

About Bendix Commercial Vehicle Systems LLC

Bendix Commercial Vehicle Systems, a member of the Knorr-Bremse Group, 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 3,200 people, Bendix is driven to deliver 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 Twitter at twitter.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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