Smart Wave – Tire Pressure Monitoring System (TPMS)

Component Location, Familiarization and Diagnostics
What Is Smart Wave

- Under-inflated tires are costly and dangerous. Tire blow-outs and fires present a serious risk to coaches and passenger safety, and under-inflated tires reduce tire life and fuel economy while increasing the potential for vehicle downtime. After all, most tire failures are the result of prolonged under-inflation which can be avoided by maintaining accurate tire pressure. Smart Wave TPMS is an active tire pressure and temperature monitoring system designed to simplify and automate a tire maintenance process resulting in an overall reduction of operating costs. At the push of a button on the dash mounted display, the system provides accurate, real-time tire pressure and temperature information. Almost half of all emergency roadside assistance calls are a result of tire failure.

Under inflated tire facts:
- 90% of all tire failures are a result of tire under-inflation,
- 20% under-inflation reduces tread life by 25%,

Properly inflated tires will provide you with:
- Longer tread life,
- Improved fuel economy,
- Less vehicle downtime,
- Improved vehicle, passenger and driver safety
Smart Wave

Smart Wave is a TPMS (Tire Pressure Monitor System) safety feature that is offered as a standard item on 2014 Van Hool Motor Coaches. Previous coaches could have TPMS installed as optional equipment.

Therefore the optional installation could differ slightly from the basic system. The following information will clarify the systems.

Smart Wave for Coaches is an active tire pressure and temperature monitoring system. At the push of a button, the system provides the driver with real-time tire pressure and temperature information, even when the vehicle is in motion.

Each tire has an internally mounted pressure transducer that monitors the pressure and temperature in that tire.

The information is transmitted via an antenna to a module that is either connected to the J1939 CAN line or is a stand alone system with its own diagnostic connector. The module is also connected to a drivers display unit mounted on the dash.
The Smart Wave display can alert the driver to an under inflated tire before it becomes dangerous by providing one of three alerts.

- Pressure Deviation Alert
- Critical Low Pressure Alert
- High Temperature Alert

The display unit can be used to:

- Monitor the pressures and temperatures in each tire
- Provide alerts to the driver
- Perform diagnostics

The Benefits of Smart Wave are:

- Reduce accident risk
- Increase fuel economy
- Extend tire life
Smart Wave
Basic System

Component kit using existing J1939 CAN Line on Coach
Smart Wave
Component Location

The tire pressure transducer is mounted on the rim by the valve stem.

A total of 9 transducers are installed on the coach, 1 per each wheel. To include 1 also installed in the spare.

Note: When the spare tire is used it will need its position programmed for the Smart Wave to learn its position in the system.
Smart Wave
Component Location

Antenna mounted on the framing rail ahead of the drive axle under the brake relay assembly
The antenna wire (black cable shown) is routed up through the pressure switch box drain hole.

The pressure switch box is located in the last luggage bay and directly above the antenna mounting site.

The antenna wire is routed forward to the first luggage bay along the top of the luggage area and up to the smart wave module.
The Smart Wave module (gateway receiver) is mounted under the coach by the front axle facing forward.

The antenna wire is routed from the front electrical box over the front axle and into the antenna port on the left side of the module.
The harness from the Smart Wave module is routed under the dash, and connected to a “Y” connector that connects the Smart Wave to the J1939 CAN line.

The “Y” connector can be found by the wiper motor and the REI amplifier located behind the cover in the stairwell.
CHECKING TIRE TEMPERATURE, PRESSURE, AND PRESSURE DEVIATION:

At the push of a button, Smart Wave TPMS will provide the driver with real-time tire pressure and temperature information for each tire on their vehicle. Please check tires only when the vehicle is stopped and in a safe location. Never check tire status when the vehicle is in motion and the driver's attention is on the road.

When the vehicle is driven over 14 mph (24 km/h), the tire sensors will activate and Smart Wave will begin to receive tire data. While the vehicle is in motion, the sensors will measure tire pressure and temperature every 12 seconds and transmit tire data approximately every 3-5 minutes.
Starting from the TPMS Ready screen, press the right button once and the display will show the first axle screen starting at the front of the coach with one tire position highlighted. The pressure, temperature and pressure deviation information displayed is for the selected tire.

To move to the next wheel on the vehicle, press the right button once. The next tire in sequence will be highlighted and its pressure, temperature and pressure deviation reading will be displayed. Each time the right button is pushed, the next tire in sequence will be selected and its information displayed. Pressing the right button when the last tire on the axle is selected will re-select the first tire on that axle.

To move to the next axle on the vehicle, press the left button once. Once again, pressing the right button will scroll the display to the next tire on that axle. Each time the left button is pressed the display will show the next axle on the vehicle. When the left button is pressed from the last axle screen programmed in the display, the first axle will once again be shown.
Smart Wave Operation

When a Smart Wave tire alert is triggered, the warning light will illuminate, and a warning icon will appear on the TPMS Ready screen.

To access the alert, press the left button once. For both pressure alerts, the affected tire and axle will be indicated along with a number indicating the amount of pressure the tire has lost.

The same will be shown for the high temperature alert except the number will indicate the temperature of the affected tire.

Below are images that show the warning screen for each alert.

- 5 psi
  Pressure Deviation

- 12 psi
  Critical Low Pressure

195 °F
  High Temperature
The other method of initializing and testing the Smart Wave system is by using the hand held diagnostic tool.

The red button is used to power the diagnostic tool on and off.

Left Button: Initiate Function
Center Button: Setup Menu
Right Button: Learn Function

When initializing the tire pressure sensors the tool should be pointed towards the sidewall of the tire, near the valve stem and approximately two inches away from the tire.

Refer to the Smart Wave manual for complete instructions.
Smart Wave Technical Information

To access the Smart Wave manual, copy and paste the web-link shown below into your browser or visit: www.bendix.com

www.smartire.com/support/manuals

If you are unable to determine or diagnose an issue with the Smart Wave system you may also contact ABC Technical Support at:

877-427-7278
For questions regarding this webcast please contact ABC’s Technical Service Department at 877.427.7278.

Listen for the prompts for Coach Technical Support, and select the appropriate option. Support is available at this number 24/7.