




## Wheels And Tires

### Safety Precautions

 **WARNING:** Vehicle may have multiple drive wheels. Do not use engine to power the driveline unless all drive wheels are elevated off the ground. Drive wheels in contact with ground could cause unexpected vehicle movement. Failure to follow this instruction may result in serious personal injury.


 **WARNING:** Always match the tire size to the wheel size during assembly. Incorrect matching can result in tire bead damage or tire separation from the wheel. Failure to follow this instruction may result in serious personal injury to technician or vehicle occupant(s).

 **WARNING:** Before servicing any tire, ask the customer if anyone injected a tire sealant into the tire. Tire sealants may be flammable and can burn or explode if exposed to an ignition source. Failure to follow this instruction may result in serious personal injury.


 **WARNING:** Replacement wheels must be equivalent to the original equipment wheels in:


- load carrying capacity.
- diameter, width and offset.
- pilot hole and bolt circle.

Combined load carrying capacity of replacement wheels for a given axle, must be equal to or greater than that axle's gross axle weight rating (GAWR) identified on the vehicle's Safety Compliance Certification Label. All other specifications should be evaluated by measurement of both the original wheel and the replacement wheel. If specifications are not equivalent, the safety and handling of the vehicle may be degraded, which may result in serious injury to the vehicle occupant(s).

 **WARNING:** Never use wheels different than the original equipment. Additionally, never use wheel nuts different than the original equipment. Failure to follow these instructions may result in damage to the wheel or mounting system. This damage could cause the wheel to come off while the vehicle is being driven, which could result in serious personal injury or death to vehicle occupant(s).

 **WARNING:** Always wear eye protection when servicing a vehicle. Failure to follow this instruction may result in serious personal injury.

 **WARNING:** Keep eyes away from valve stem when deflating tires. Reduce air pressure in tire as much as possible by pushing in valve core plunger prior to removing the core. Escaping air can carry particles that can injure the eyes. Failure to follow these instructions may result in serious personal injury.

 **WARNING:** Only use replacement tires that are the same size, load index, speed rating and type (such as P-metric versus LT-metric or all-season versus all-terrain) as those originally provided by Ford. The recommended tire and wheel size may be found on either the Safety Compliance Certification Label or the Tire Label, which is located on the B-pillar or edge of the driver's door. If the information is not found on these labels, consult a Ford dealer. Use of any tire or wheel not recommended by Ford can affect the safety

and performance of the vehicle, which could result in an increased risk of loss of vehicle control, vehicle rollover, personal injury and death. Additionally, the use of non-recommended tires and wheels could cause steering, suspension, axle or transfer case/power transfer unit failure.

**NOTICE:** Do not clean aluminum wheels with steel wool, abrasive-type cleaners or strong detergents or damage to the wheel finish may occur. Use Wheel and Tire Cleaner ZC-27-A or -B or equivalent.

Factory-installed tires and wheels are designed to operate satisfactorily with loads up to and including full-rated load capacity when inflated to recommended inflation pressures.

Correct tire pressure and driving techniques have an important influence on tire life. Heavy cornering, excessively rapid acceleration and unnecessary sharp braking increase tire wear.

To equalize tire wear, the tires should be rotated at recommended intervals.

### Tire Pressure Monitoring System (TPMS)

**NOTE:** The Smart Junction Box (SJB) is also identified as the Generic Electronic Module (GEM).

The Tire Pressure Monitoring System (TPMS) includes:

- the [SJB](#), [TPMS](#) functionality is integrated within the [SJB](#).
- four tire pressure sensors.
- four tire pressure sensor cradles.
- four tire pressure sensor straps.
- an Instrument Cluster (IC) indicator.
- a message center (if equipped).

### Tire Pressure Monitoring System (TPMS) Module

The [SJB](#) contains the [TPMS](#) functionality. Refer to [Tire Pressure Monitoring System](#) in Diagnosis and Testing for [TPMS](#) fault diagnosis and repair.

The [SJB](#) compares the information of each tire pressure sensor transmission against a pressure limit. If the [SJB](#) determines that the tire pressure has fallen below the low limit, the [SJB](#) communicates this to the [IC](#) on the vehicle communication bus.

### Tire Pressure Monitoring System (TPMS) Pressure Sensor

The [SJB](#) monitors the air pressure in the 4 road tires with tire pressure sensors. The sensors transmit radio frequency signals to the [SJB](#) approximately every 60 seconds when the vehicle speed exceeds 32 km/h (20 mph).

The tire pressure sensors are battery operated and are mounted to metal brackets (called cradles) on the wheels inside the tires. The sensors are mounted 180 degrees from the valve stem.

The tire pressure sensor can be serviced separately from the cradle and the strap.

### Tire Pressure Monitoring System (TPMS) Pressure Sensor Cradle

The tire pressure sensor cradles are mounted to the wheels with metal straps and have an adhesive strip to aid in their retention to the wheel.

The sensor cradle is available with the strap in a kit. To service the sensor cradle, the strap must be removed and discarded.

### **Tire Pressure Monitoring System (TPMS) Pressure Sensor Strap**

The sensor strap keeps the sensor and the cradle retained to the wheel. A factory-installed strap is joined together with a one-time-use buckle and a dealer-installed strap is joined together with a worm gear (similar to a radiator hose clamp). Both straps should be discarded after removal and should not be reused.

The cradle and strap are available as a strap kit. There are several different strap kits available based on wheel diameter.

### **Instrument Cluster (IC) and Message Center**

The [IC](#) illuminates the [TPMS](#) indicator when it receives a message from the [SJB](#) to do so and displays the appropriate message(s) in the message center (if equipped).

The [IC](#) and message center are diagnosed and serviced in their own respective workshop manual sections. Refer to the appropriate section in Group [413](#) for the procedure.

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