

Wheel to Tire Runout Minimization

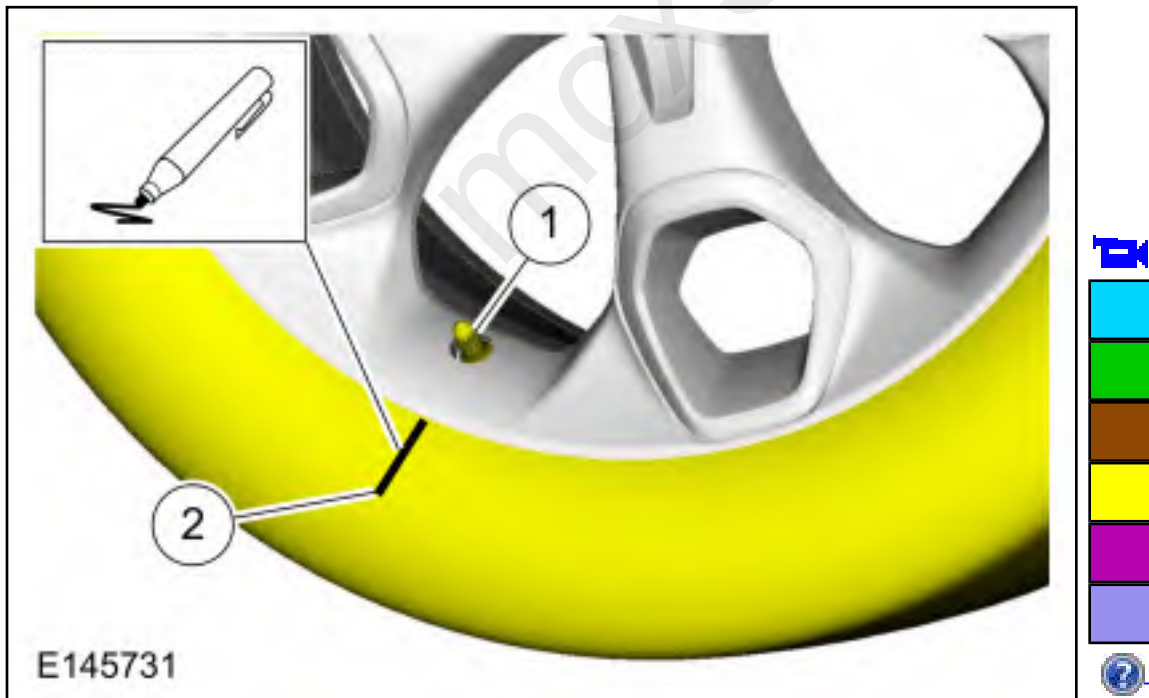
Check

NOTE: Road Force® values in illustrations are shown in pounds.

NOTE: Match mounting is a technique used to reduce radial runout or road force on wheel and tire assemblies. Excessive runout is a source of ride quality complaints and match mounting can be used to minimize the runout. Match mounting can be accomplished by changing the position of the tire on the wheel.

NOTE: Position the wheel and tire assembly on a tire machine and put a reference mark on the tire sidewall at the valve stem position.

1. Valve stem
2. Reference mark



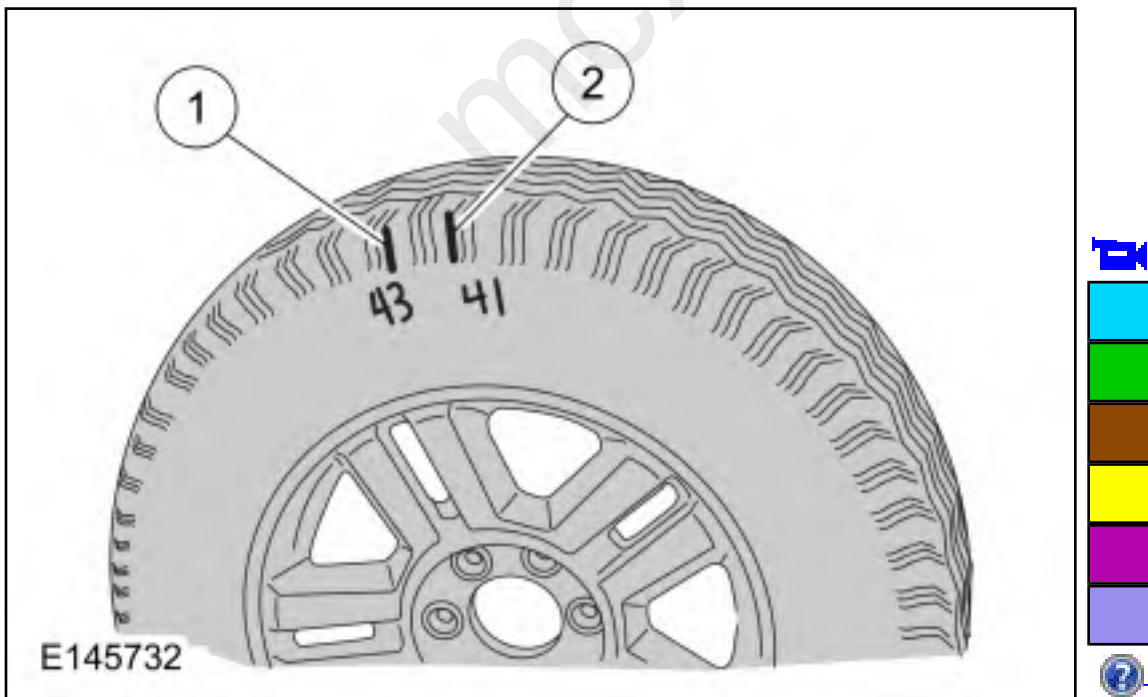
2. **NOTICE:** For vehicles equipped with a TPMS, the sensor may be damaged by incorrect tire mounting or dismounting. Dismount the tire from the wheel as instructed in the

procedure. Failure to follow these instructions may result in TPMS component damage.

NOTE: Always make sure that the final high spot and measurement values are permanently marked on the inward sidewall of the tire for reference during future wheel and tire service.

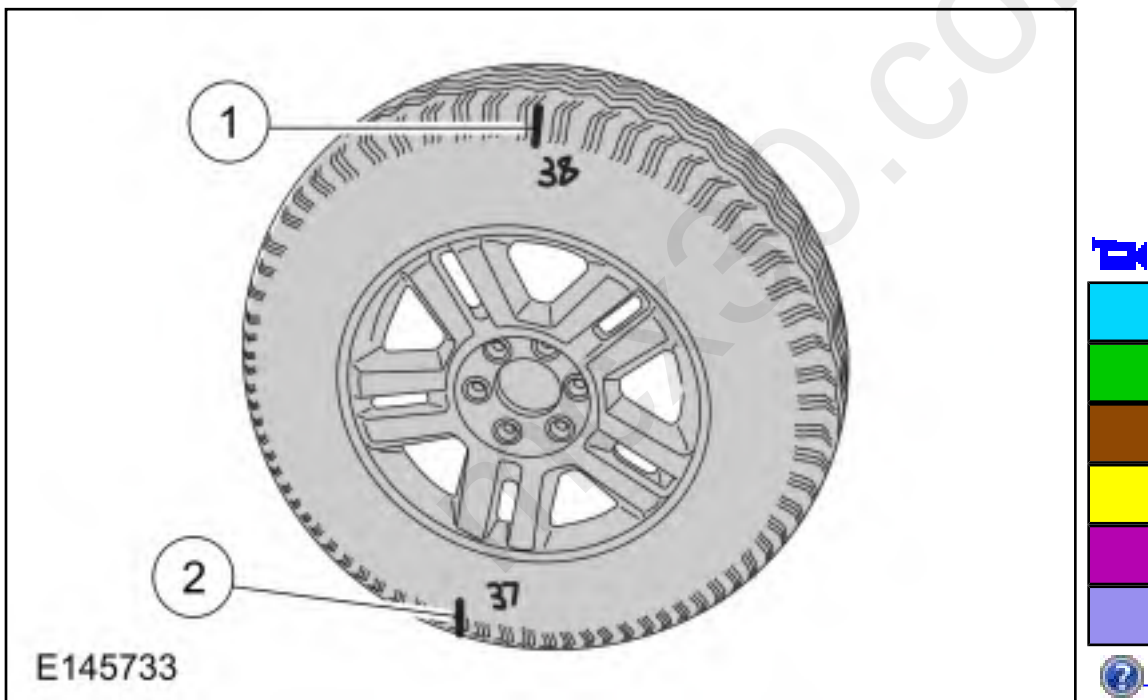
Marker. Using a suitable tire machine, separate the tire beads from the wheel.

3. Lubricate the tire beads using a suitable fast drying, corrosion inhibiting tire bead lubricant. Position the tire 180 degrees (half-way around) on the rim so the valve stem reference mark is now opposite the valve stem.
4. Re-inflate the wheel and tire assembly to the specified air pressure and measure the assembly again using a suitable dial indicator or Hunter Road Force® 9700 Series Wheel Balancer. Mark the second high spot on the tire.
5. If the runout or Road Force is reduced to within specifications, the concern has been resolved. Balance the assembly and install on the vehicle using the Wheel-to-Hub Optimization procedure.
6. If the second runout or Road Force® measurement is still not within specification and both high spots are close to each other (within 101.6 mm [4 in]), the root cause is probably the tire (the high spot followed the tire).
 1. First high spot on the tire
 2. Second high spot on the tire



8. To be SURE that the tire is causing the high runout, it is necessary to have 2 runout or Road Force® measurements that are not within specification and the high spots must be in approximately the same location on the tire's sidewall. If the tire is the cause, install a new tire, balance the assembly and install on the vehicle using the Wheel-to-Hub Optimization procedure. If the second high spot is not within 101.6 mm (4 in) of the first high spot, proceed to the next step.
9. If the second high spot is still above specification and is within 101.6 mm (4 in) of being opposite the first high spot on the wheel, the root cause is probably the wheel (the high spot followed the wheel). Dismount the tire from the wheel, mount the wheel on a balancer and check the wheel runout. If the wheel runout exceeds 1.14 mm (0.0449 in), install a new wheel, balance the assembly and install on the vehicle using the Wheel-to-Hub Optimization procedure. Refer to: [Wheel to Hub Runout Minimization](#) (204-04A Wheels and Tires, General Procedures).

1. First high spot on the tire
2. Second high spot on the tire

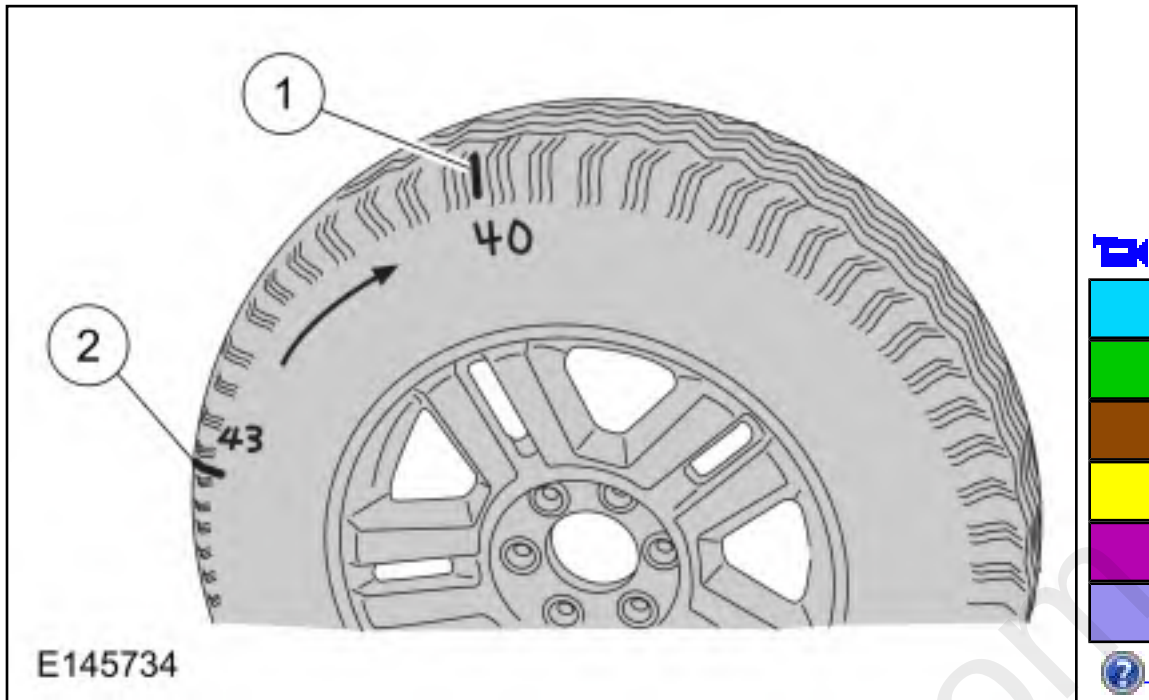


11. **NOTE:** If the second high spot did not follow the wheel or the tire and the runout is still not within specification, improvements may be made by rotating the tire 90 degrees (one-fourth turn).

Draw an arrow on the tire sidewall from the second high spot towards the first high spot (in the shortest direction).

1. First high spot on the tire

2. Second high spot on the tire



13. Separate the tire beads from the wheel and rotate the tire 90 degrees (one-fourth turn) in the direction of the arrow.

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