



TECHNICAL SERVICE BULLETIN

	Group
	50 - CHASSIS
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Subject	Date
TIRE AND WHEEL VIBRATION AND RADIAL FORCE VARIATION	10-2001
	Model
	All Models 0

DESCRIPTION:

This bulletin provides guidelines when using a dynamic wheel balance machine capable of providing road force measurement data, such as the Hunter GSP9700 Vibration Control System.

Tire and wheel vibration may be caused by:

- Imbalance
- Wheel Damage or Out-of Round
- Tire RFV (Radial Force Variation)

Imbalance is normally addressed first because it is the most common cause of vibration. A well maintained off-vehicle two-plane dynamic wheel balancer can accurately correct this condition.

If a vibration or shake still exists after an imbalance has been corrected, a possible wheel out-of round condition should be addressed next.

Wheel Damage or Out-of Round conditions should be measured and corrected using the procedure outlined in the appropriate Shop Manuals in the Suspension System, Tires/Wheels section.

If the vibration condition still continues, there is a possibility that a tire may have Radial Force Variation (RFV) in excess of specifications. RFV may be defined as the amount of change in stiffness of the sidewall and footprint when a load is placed against a tire. Subtle differences in the position of the cords and belts in a tires construction can create stiff spots that make the tire roll unevenly. The stiff spots act like runout to cause vibrations at various speeds. The vibrations caused by RFV tend to appear at certain speeds and then disappear as the speed changes.

To address RFV, a wheel balancer capable of measuring RFV, such as the Hunter GSP9700 is recommended. If you do not have the recommended equipment, you may locate one in your vicinity through the Hunter website (www.gsp700.com).

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GSP9700 Web Site

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**Wheel Balance
Is Only Part Of
The Solution**

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Hunter's GSP9700 Vibration Control System can help solve vibration problems in your car.

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Hunter Engineering Company is a world leader in automotive service equipment. Hunter Engineering Company, with headquarters in St. Louis, Missouri, offers state-of-the-art wheel alignment systems, wheel balancers, brake lathes, tire changers, lift racks and brake testers. Hunter equipment is approved and used by vehicle manufacturers, automobile and

Follow the machine manufacturers procedure to measure RFV.

The following assembly RFV may be used as a guide:

- P-Metric passenger car tires ---> 18 lbs or less
- P-Metric tires on Santa Fe --->is 24 lbs or less.

If match mounting tires to in-specification wheels produces assembly RFV values that are higher, then tire replacement may be necessary. Replacing tires at lower values will probably mean good RFV tires are being replaced needlessly. Since tires can sometimes become temporarily flat-spotted, the RFV should not be measured until the vehicle is driven at least 10 miles. Tire pressure must also be adjusted to the usage pressure on the vehicles tire pressure label on the drivers door or B-Pillar.

In cases where the wheel vibration condition cannot be improved to an acceptable level using the above procedure, the Hyundai Technical Assistance line should be contacted for further instructions.