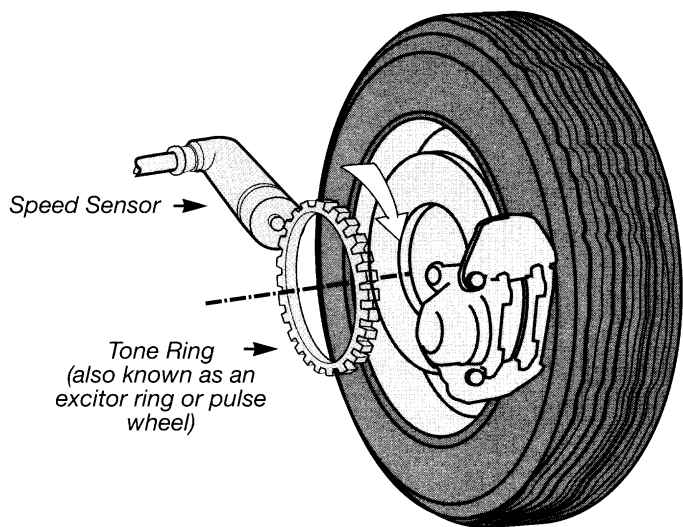


Bendix Brake

B.B.A. 96-05 August 1996



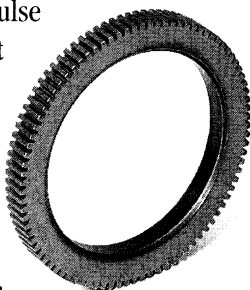
ABS Tone Rings



Simply stated, anti-lock brake systems (ABS) work by measuring the rate of speed at which a vehicle's wheels are slowing down when the brakes are applied. If the wheels are turning too slowly in relationship to the actual speed of the vehicle, the vehicle's computer makes the appropriate adjustments to help lessen the possibility of a wheel lock-up.

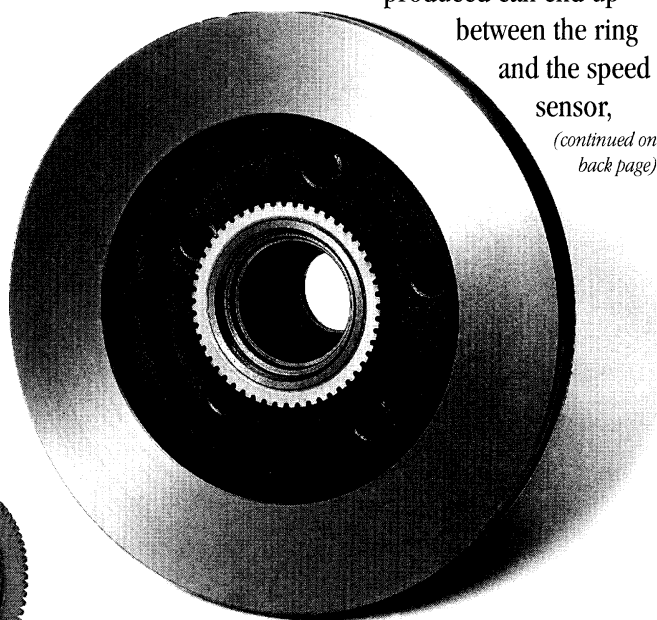
In a typical front wheel application, wheel deceleration measurement is accomplished by the use of a speed sensor and a tone ring. The sensor is rigidly mounted on the vehicle at a fixed distance from the tone ring. The tone ring (also called an excitor ring or pulse wheel) is usually mounted to the inner hat surface of the rotor, the constant velocity (CV) joint or some other surface that rotates along with the wheel.

The typical tone ring looks like a gear or sprocket, with teeth along its outer circumference. The sensor has a magnetic



field that is interrupted as these teeth pass by, creating an electrical current. This current is continuously translated by the vehicle's on-board computer into a speed reading. If, during braking action, the computer determines that a wheel(s) is slowing down at such a high rate that lock-up is imminent, it automatically applies and releases the hydraulic pressure to that (and other) wheel(s), thus reducing the potential for a wheel lock-up and the accompanying loss of vehicle control.

Because of their location at the wheel, tone rings are susceptible to road conditions such as dirt, mud, brake dust and grime. In addition, tone rings must be thoroughly cleaned following any rotor servicing, as the metal filings produced can end up



between the ring and the speed sensor,

(continued on back page)

Bendix brand rotors are sold with the tone ring already attached. Attempting to press a tone ring on or off can result in damage to the ring or improper installation on the rotor.

interfering with the magnetic field. A tone ring can also have a tooth damaged or knocked off by debris from the road, which could result in erroneous readings causing the ABS to malfunction. In addition, tone rings pressed onto CV joints have been known to crack in service, also leading to erroneous readings.

As stated earlier, the sensor must remain a fixed distance from the tone ring in order to transmit the proper speed reading to the computer. This distance (or air gap) must be checked whenever the rotor is removed and re-

installed on the vehicle, using a non-magnetic feeler gauge.

Most quality suppliers (such as Bendix, of course!) sell rotors for ABS equipped vehicles with tone rings already attached where applicable. Tone rings are installed on the rotor in the manufacturing process and are generally not serviceable in the field. In many cases, attempting to press a tone ring on or off can result in damage to the ring or improper installation on the rotor.

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