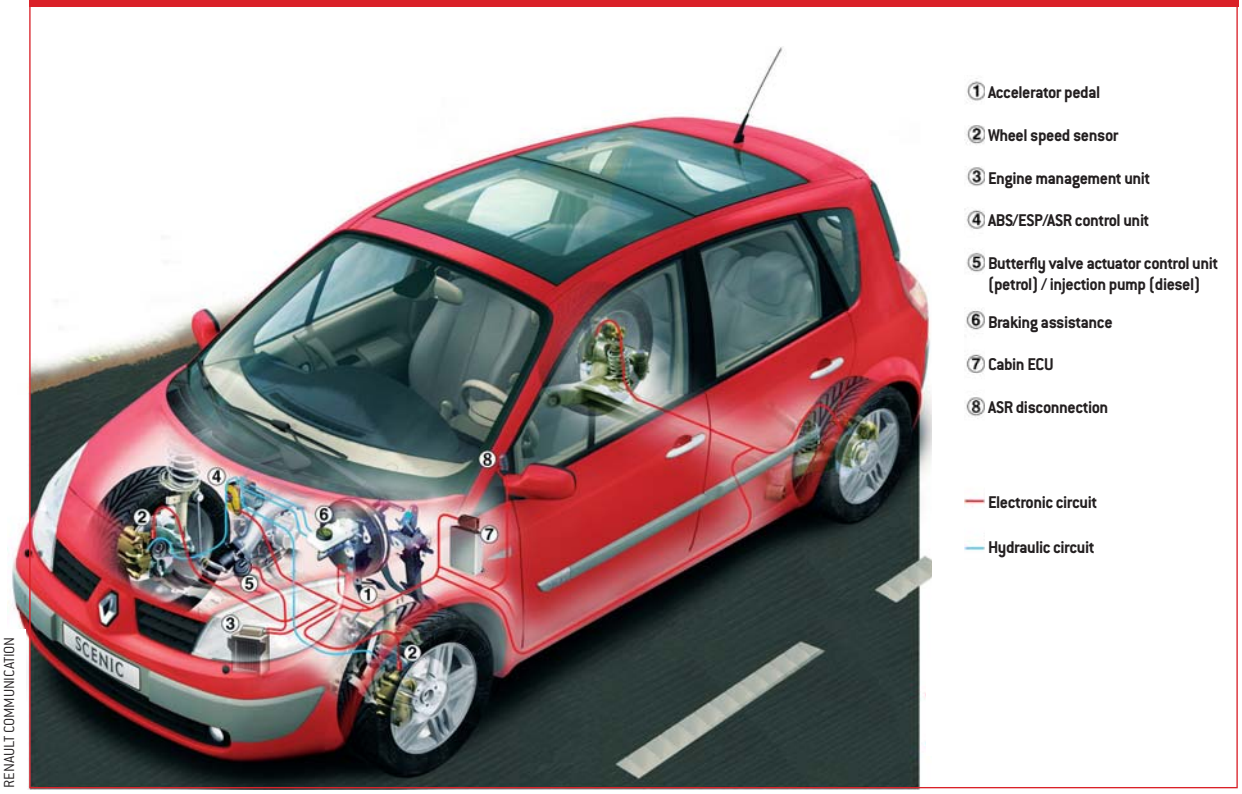
ASR active traction control system

› To guarantee that the vehicle starts perfectly on a surface offering poor grip, in conditions of ice or snow, for instance, ASR traction control **adjusts the distribution of torque between the drive wheels.**



RENAULT COMMUNICATION

› BASIC FACTS

Because of the presence of the differential, if one of the drive wheels spins on starting, the available torque is reduced accordingly. In addition to starting on snow or ice, a similar situation arises when trying to get out of a rut. If one of the drive wheels spins, the other wheel only has very low adherence, insufficient to get the car out of the rut. To resolve this problem, ASR applies braking pressure to the wheel that is spinning, thereby ensuring that all the engine torque is transferred to the wheel with good grip.

IN SHORT ›››

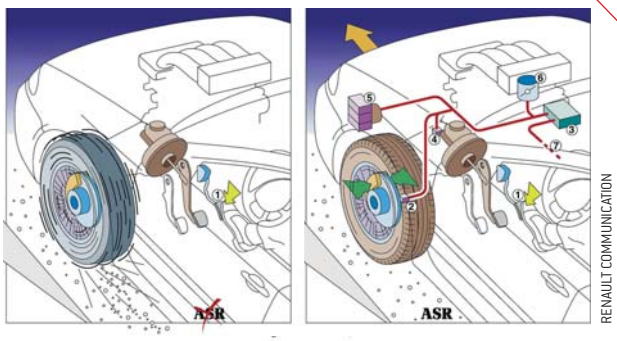
On starting, ASR lowers the torque applied to a wheel that is starting to spin and applies it to the other drive wheel. This delivers improved starting on snow, ice and, in general on any surface with low adherence.

: HOW DOES IT WORK?

To some extent ASR traction control behaves inversely to ABS. Here, the computer does not detect blocking but, conversely, a rise in the number of abnormal revolutions of the wheel. To do this, the computer constantly analyses the evolution of the frequency of the impulses that the wheel tachometers deliver. When starting with no slip, the frequency coming from each wheel increases progressively. On the other hand, a sharp increase in this frequency signals the start of wheel spin on one of the wheels. Moreover, this increase in frequency is incoherent compared to that delivered by the other wheel tachometers: the increase in the number of revolutions of the wheel concerned is incompatible with the real acceleration rate of the car. By detecting this anomaly, the ASR computer detects the wheel that is spinning and actuates its brake calliper to bring it back to a normal number of revolutions. This braking torque that the system applies to the wheel that has lost grip is transferred, via the differential, to the wheel with normal adherence, in order to give the car the maximum level of traction. However, it can happen that, on ice, for example, the wheel that had traction in its turn loses adherence. This phenomenon, as previously, is signalled by the abrupt rise in the frequency of the impulses of its tachometer. The computer then adopts a new strategy, as it would be useless to try to apply braking. It acts on the engine torque while directly communicating with the injection control unit. By reducing the power that the engine delivers, it enables the drive wheels to find adherence. From now on it will maintain this power at the limits of the wheel slip threshold during the entire starting phase.
Not only does this mode of functioning allow improved starting under the worst driving conditions, it ensures the vehicle will remain steerable by constantly maintaining wheel adherence. Lastly, ASR does not just function during starting or in a straight line. At any moment, and no matter what the topography of the road, it is able to compensate for a loss of adherence caused, for example, by a patch of oil or black ice.

A supplement to ABS and ESP

The ASR control unit is an integral part of the ESP control system. It is in fact a "module", a bundle of software functions, able to communicate and interact with ESP and ABS (see sheet), in order to respond to the features of ASR.



RENAULT COMMUNICATION

1. Accelerator pedal
2. Wheel speed sensor
3. Engine management unit
4. Brake pressure sensor
5. ABS control unit
6. Butterfly valve actuator control unit/injection pump
7. CAN