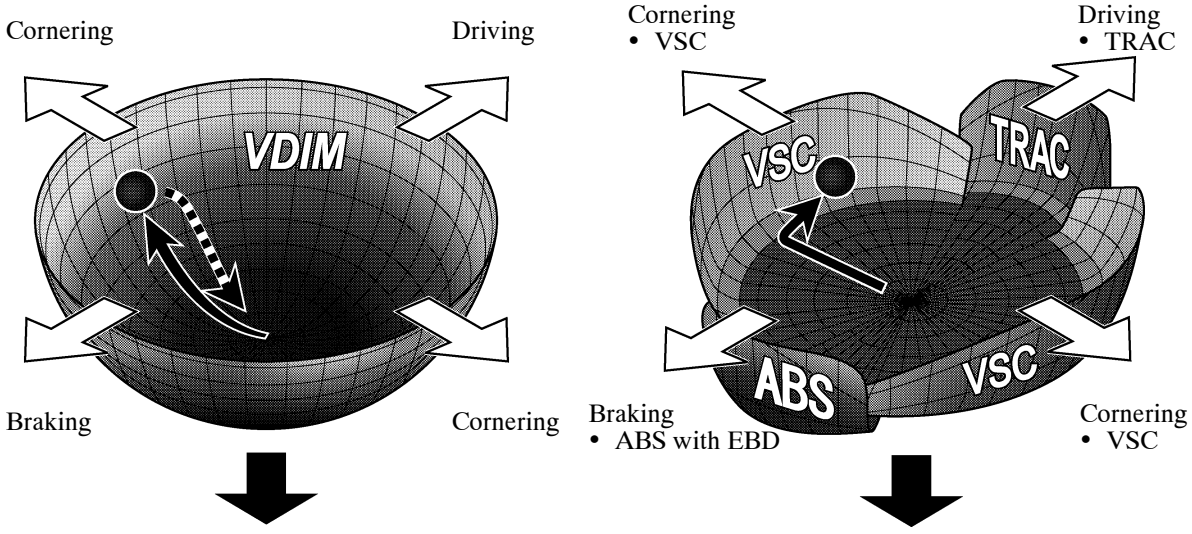
## ■ VDIM

### 1. General

A new concept of vehicle motion control called VDIM (Vehicle Dynamics Integrated Management) is used, which integrates brake control, drive force control, and steering control.

- Conventional vehicles use a combination of independent functions such as the ABS, EBD, Brake Assist, TRAC, VSC and EPS. In contrast, the VDIM integrates the operations of these systems to enhance the dynamic performance of the vehicle to "run, turn, and stop".
- In the past, ABS, EBD, Brake Assist, TRAC and VSC acted independently, with control starting at the limit of vehicle running, cornering and stopping performance. With VDIM however, control begins earlier in order to ensure that the vehicle does not exceed its behavioral limits.



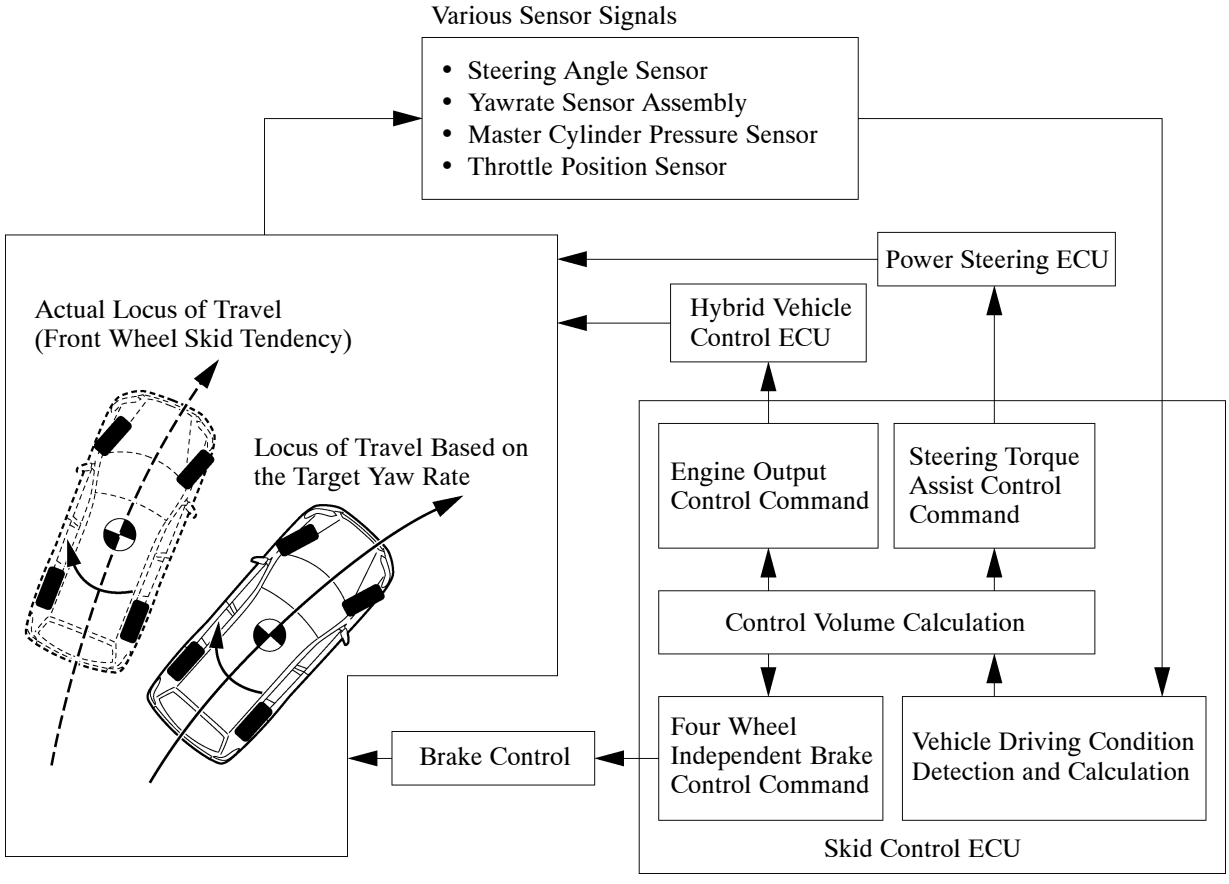

**VDIM** **Conventional**

## 2. Outline of Steering Cooperative Control Function

### General

VDIM performs coordinated control of VSC, EPS (Electric Power Steering) and THS-II (TOYOTA Hybrid System-II). By integrating these preventive safety functions, VDIM ensures driving stability and maneuverability of the vehicle.

- If the vehicle loses stability due to wheel slippage, this function performs brake control by applying brake pressure to the wheels. At the same time, EPS provides steering torque assist control to facilitate the driver's steering maneuvers.

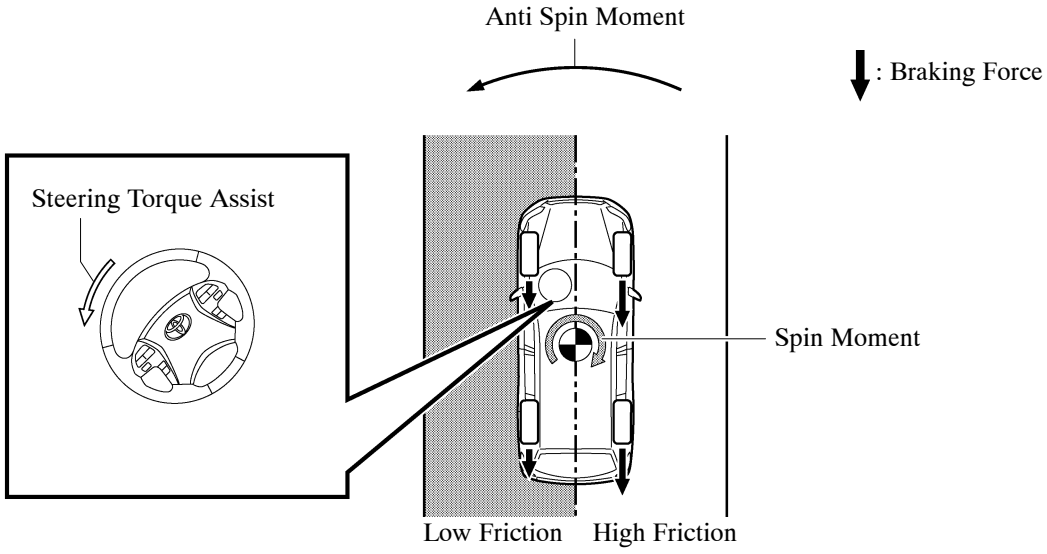



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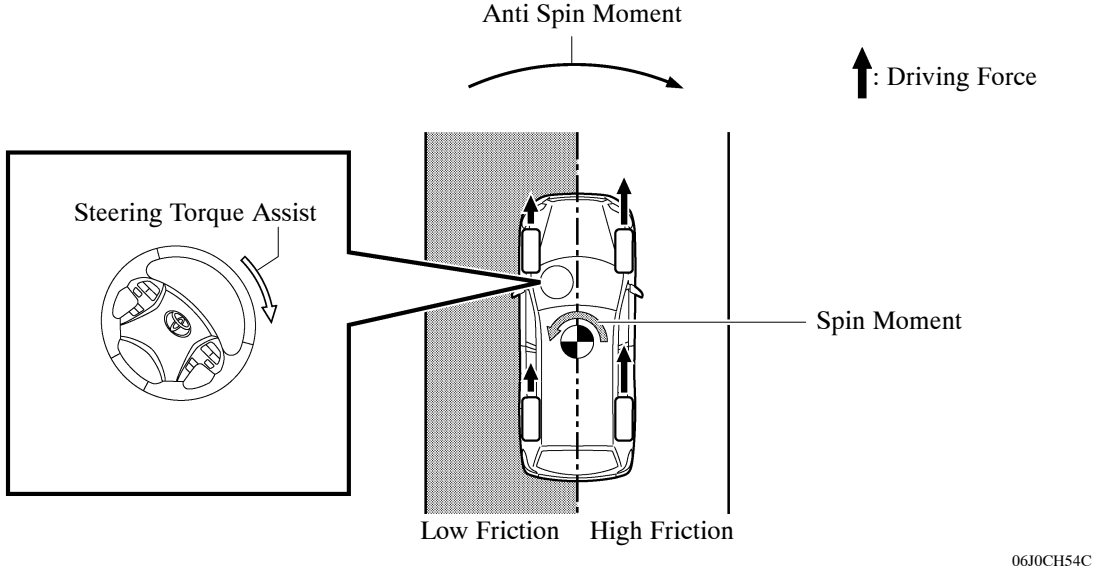
### Braking Control on Split Friction Roads

When braking on a split friction road, the vehicle tends to deflect toward the higher friction side due to the difference between the braking forces on the left and right sides. With VDIM, the power steering ECU receives command signals from the skid control ECU. Based on these signals, the power steering ECU operates the motor for the electric power steering to reduce the effect of the difference between the braking forces on the left and right sides, assisting steering operation. This enables the driver to make steering corrections more easily.



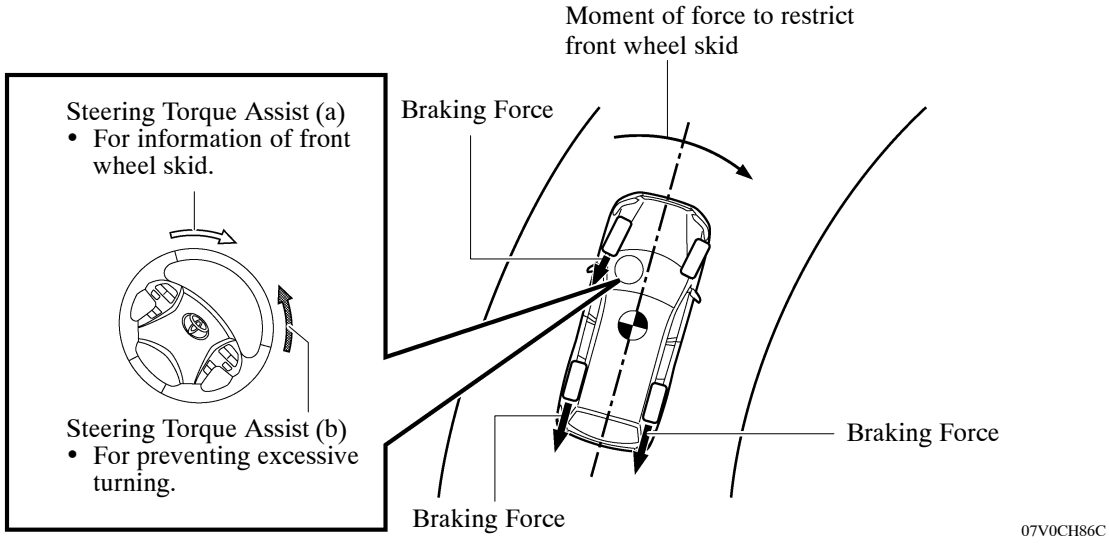

### Accelerating when Surface Resistance Differs between Wheels on Both Sides

When accelerating on a split friction road, the vehicle tends to deflect toward lower friction side due to the driving force difference between the left and right sides. With VDIM, the skid control ECU performs braking control of the drive wheel on the low friction side (TRAC function) and transmits command signals to the power steering ECU. Based on these signals, the power steering ECU operates the motor for the EPS to reduce the effect of the driving force difference between the left and right sides, assisting steering operation. As a result, proper motive force and vehicle stability is ensured.



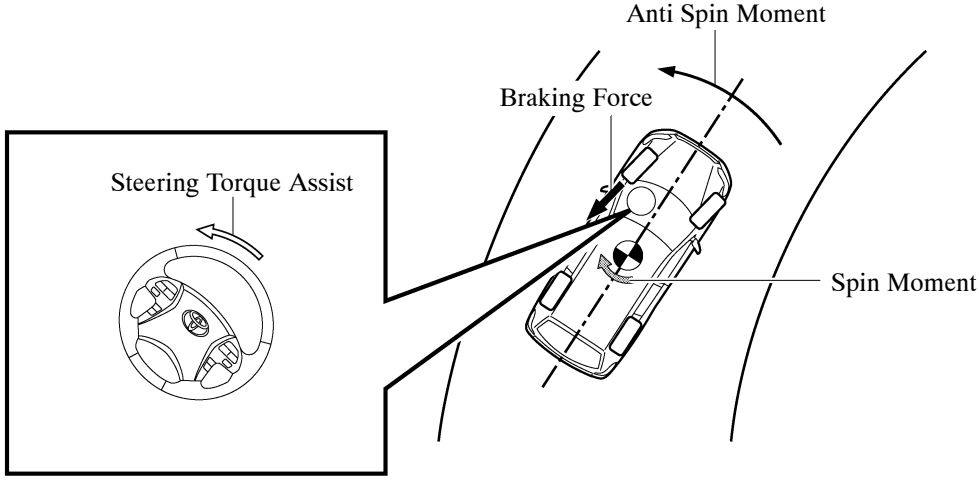
### Front Wheel Skid Control

- When front wheel skidding is detected, engine output is limited and braking control is performed based on the amount of front wheel skid tendency. Accordingly, a moment of force is generated in the vehicle turning direction to limit front wheel skid tendency.
- In the case of a front wheel skid tendency, steering torque assist (a) is provided to inform the driver of the front wheel skid.
- If the driver turns the steering wheel excessively, steering torque assist (b) is provided. This enables the driver to prevent excessive steering wheel operation.




### Rear Wheel Skid Control

- When rear wheel skidding is detected, brake force is applied to mainly the outer wheels according to the amount of rear wheel skid tendency. Accordingly, an anti-spin moment is generated to limit the rear wheel skid tendency.
- With VDIM, the power steering ECU receives command signals from the skid control ECU. Based on these signals, the power steering ECU operates the motor for the electric power steering to provide steering assist to help the driver compensate for the rear wheel skid tendency. This enables the driver to operate the steering wheel more easily.




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