ELECTRONIC STABILITY CONTROL [ESC]

Electronic Stability Control (ESC) also known as Electronic Stability Program (ESP) or Dynamic Stability Control (DSC) in some vehicles, designed to enhance vehicle stability and reduce the risk of skidding or loss of control.

Main Components:

* Sensors.
* Electronic Control Unit.
* Hydraulic Modulator.
* Brake Actuator.
* Steering Angle Sensor.
* Yaw Rate Sensor.
* Lateral Acceleration Sensor.
* Engine Torque Control.

OPERATION:

1. Monitoring: Sensors continuously check the car’s speed, direction, and how it's moving.

2. Detection: If the car starts to slide or lose control, the sensors send this information to the ECU.

3. Decision Making: The ECU compares the car’s actual movement with where the driver wants to go (based on steering).

4. Action: The ECU decides which wheels to brake and how much to reduce engine power to help the car regain control.

* For example: if the car is sliding outward (oversteer), the ECU might apply the brake on one front wheel to straighten the car.

BENEFITS OF ESC:

* Stability: Helps keep the car stable and on the intended path.
* Safety: Reduces the risk of skidding and rollovers.
* Assistance: Helps drivers maintain control, especially in emergencies.