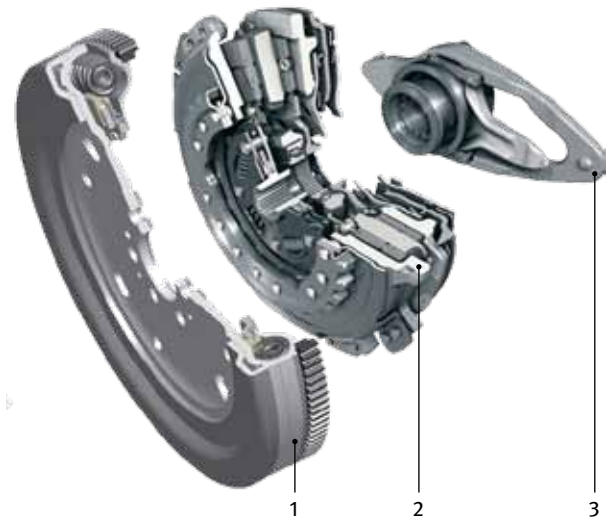


2 Design and operating principle of the dry double clutch system

Three core components make up the double clutch system: dual mass flywheel (DMF), double clutch and engagement system. These components are controlled by the gearbox mechatronics which comprise the electronic control unit and the electro-hydraulic control unit. The mechatronic system is housed in the gearbox, which consists of two gear sets operating independently of each other.

During operation the mechatronic system processes the following information:

- Transmission input rotational speed
- Input shaft speed of both transmissions
- Wheel speed and road speed
- Gear lever position
- Accelerator pedal position (acceleration or deceleration)



1 Dual mass flywheel

2 Double clutch

3 Engagement system

Using this data, the vehicle mechatronics anticipate the next gear to be selected and engage it by means of gear actuators and shift forks. Two positioning cylinders, one each to actuate the engagement levers, open and close both clutches.

The system is configured such that both clutches are disengaged during engine downtime and idling. They are engaged only when the engagement levers are actuated. During operation one clutch is always engaged, thereby ensuring continuous power transmission by one gear set. The next gear is already preselected by the other gear set whose clutch is still disengaged. To change gear one clutch disengages while simultaneously the other engages. Power is now transmitted by the earlier preselected gear. This way gears can be changed without interrupting the tractive force.

Gearbox schematic

