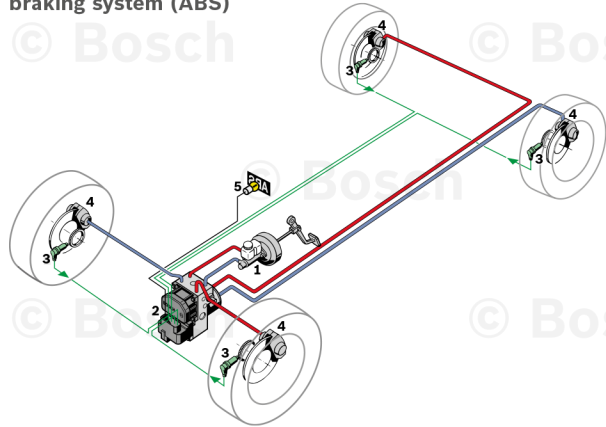


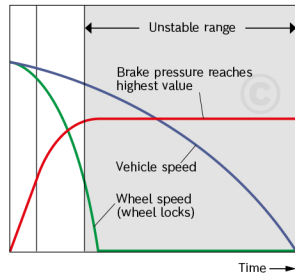
Antilock Braking System

System overview: brake equipment with antilock braking system (ABS)

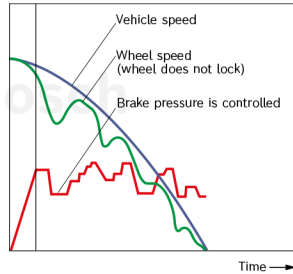


- 1 Control device with brake booster and brake master cylinder
- 2 Hydraulic unit with add-on ECU
- 3 Wheel-speed sensors
- 4 Wheel brake with wheel-brake cylinder
- 5 ABS indicator lamp

Braking without ABS

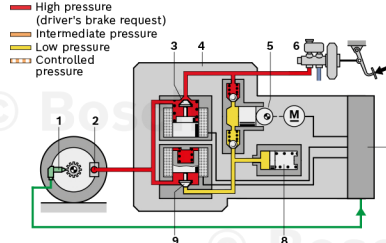


Braking with ABS

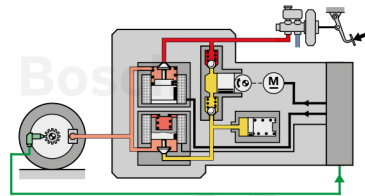


Brake pressure in the hydraulic system

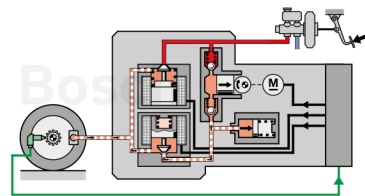
Build up pressure (normal position):
inlet valve open, outlet valve closed



Keep pressure constant:
inlet valve closed, outlet valve closed

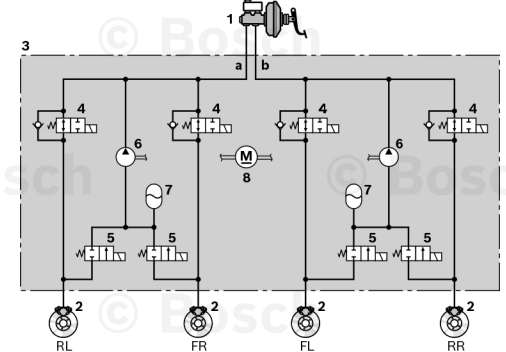


Relieve pressure:
inlet valve closed, outlet valve open



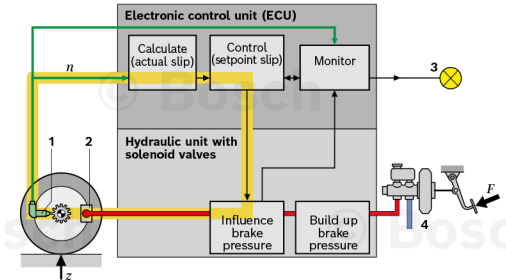
- 1 Wheel-speed sensor
- 2 Wheel-brake cylinder
- 3 Inlet valve
- 4 Hydraulic unit
- 5 Return pump
- 6 Brake master cylinder
- 7 ABS ECU
- 8 Accumulator
- 9 Outlet valve

Hydraulic system of an antilock braking system



- a Brake circuit 1
- b Brake circuit 2
- 1 Brake master cylinder
- 2 Wheel-brake cylinder
- 3 Hydraulic unit
- 4 Inlet valves
- 5 Outlet valves
- 6 Return pump
- 7 Accumulator
- 8 Pump motor
- F Front
- R Rear
- R Right
- L Left

ABS control loop



- 1 Wheel-speed sensor
- 2 Wheel-brake cylinder
- 3 ABS indicator lamp
- 4 Control device with brake booster and brake master cylinder
- z Disturbance values (e.g. road condition)
- n Wheel speed
- F Braking force