

ENGINE 642 in MODEL 164.1 /8, 203.0 /2, 221.0 /1, 251.0 /1 up to Model Year 2008

ENGINE 642 in MODEL 209.3 /4, 211.0 /2 /6, 219.3

ENGINE 642

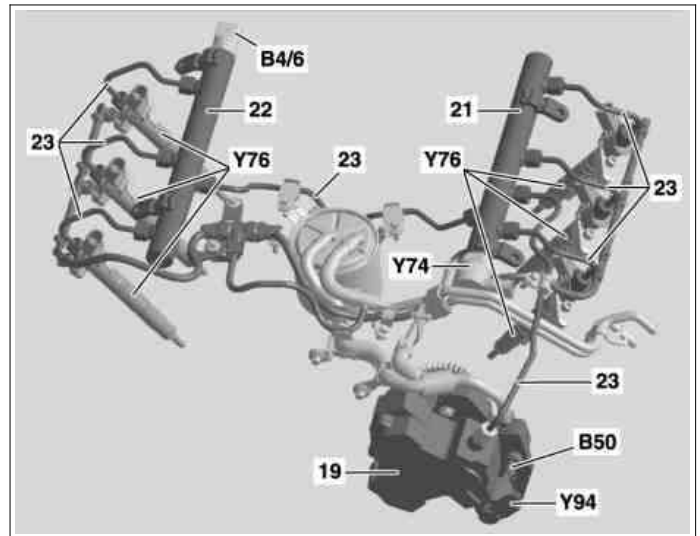
**in MODEL 461.3,
463.3 up to 31.5.12**

Shown except OM 642.920/940/950 with code (494) USA version

21 Left rail

Y74 Pressure control valve

Y94 Quantity control valve



P07.16-2768-11

Location

The pressure regulator valve is screwed in at the front in the left rail.

Task

The pressure regulator valve controls the high pressure circuit together with the quantity control valve.

Open pressure regulator valve, except OM 642.920/940/950 with code (494) USA version, except OM 642.920 with code (498) Japan version, except OM 642.920 in model 211.024

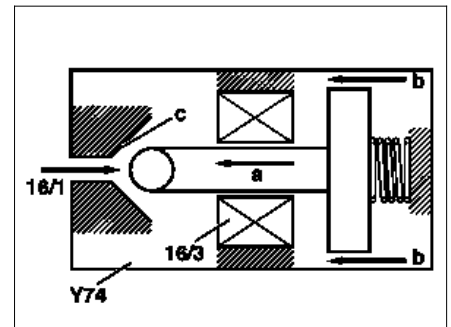
16/1 High pressure feed

16/3 Coil

a Magnetic force

b Spring force

c Ball seat



P07.16-0250-01

Closed pressure regulator valve, except OM 642.920/940/950 with code (494) USA version, except OM 642.920 with code (498) Japan version, except OM 642.920 in model 211.024

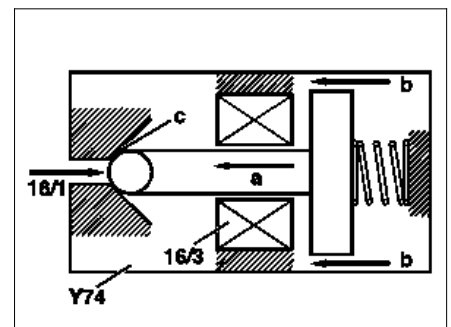
16/1 High pressure feed

16/3 Coil

a Magnetic force

b Spring force

c Ball seat

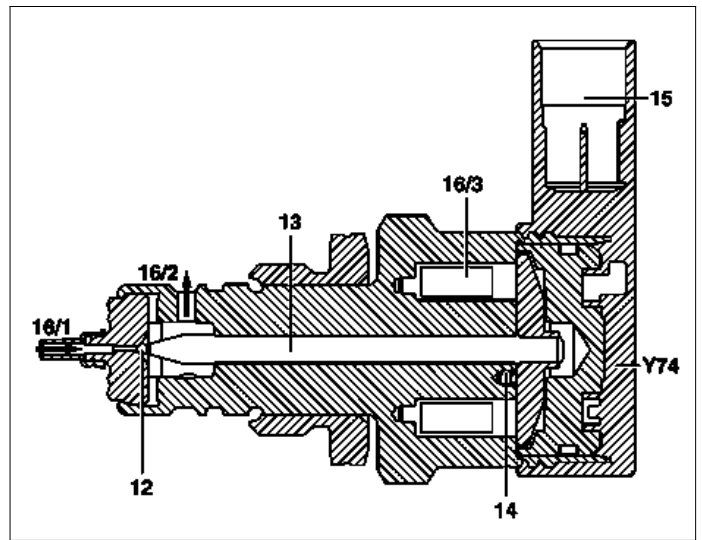


P07.16-0275-01

Open pressure regulator valve, OM 642.920/940/950 with code (494) USA version, OM 642.920 with code (498) Japan version, OM 642.920 in model 211.024

- 12 *Ball seat*
- 13 *Valve bolt*
- 14 *Spring*
- 15 *Plug connection*
- 16/1 *High pressure feed*
- 16/2 *High pressure discharge*
- 16/3 *Coil*

- Y74 *Pressure control valve*



P07.16-2923-11

Function, except OM 642.920/940/950 with code (494) USA version, except OM 642.920 with code (498) Japan version, except OM 642.920 in model 211.024

The high pressure in the left rail is applied via the high pressure feed at the ball seat of the pressure regulator valve. The rail pressure is controlled by the pressure regulator valve building up a magnetic force corresponding to the specified pressure by means of a control current from the CDI control unit (N3/9). This magnetic force equals a certain outlet flow cross-section at the ball seat. The rail pressure alters according to the amount of flowing fuel. The current rail pressure is signaled by the rail pressure sensor to the CDI control unit (B4/6). Fuel flows through the fuel return line back to the fuel tank.

In a deenergized state the pressure regulator valve is closed as the spring force presses the ball into the ball seat. At engine start, the pressure regulator valve is held closed due to spring force. When driving, the pressure regulator valve is open continuously, i.e. the CDI control unit continuously actuates the pressure regulator valve with the control current.

At start, the pressure regulator valve is closed against the spring force by the magnetic force. In this operating status and for the purpose of heating up the fuel (up to around 20 °C fuel temperature), the rail pressure is regulated by the pressure regulator valve only.

In the overrun mode, the pressure regulator valve is also closed, i.e. the magnetic force of the coil and spring force act against the pressure at the high pressure feed.

Function in OM 642.920/940/950 with code (494) USA version, OM 642.920 with code (498) Japan version, OM 642.920 in model 211.024

The high pressure in the left rail is applied via the high pressure feed at the ball seat of the pressure regulator valve. The rail pressure is regulated by the pressure regulator valve by building up a magnetic force corresponding to the specified pressure by means of a control current from the CDI control unit. This magnetic force equals a certain outlet flow cross-section at the ball seat. The rail pressure alters according to the amount of flowing fuel. The current rail pressure is signaled by the rail pressure sensor to the CDI control unit. Fuel flows through the fuel return line back to the fuel tank. In the deenergized state the pressure regulator valve is opened as the spring force presses the ball out of the ball seat.

In idle, in overrun mode and in the area of small injection quantities, the rail pressure is regulated by the pressure regulator valve and the quantity control valve.