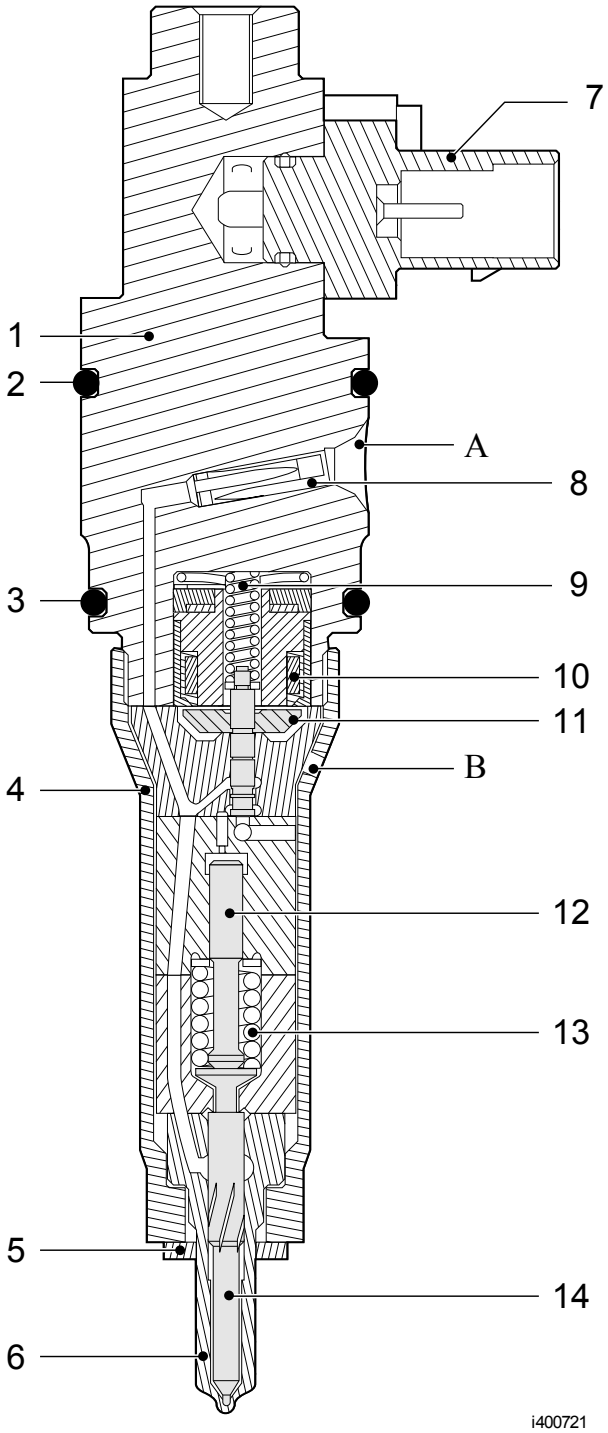
# Injector (B421, B422, B423, B424, B425, B426)

## General

The pump unit supplies fuel to the injector. The injector consists essentially of two parts. The top part is a metal housing (1), to which the electrical connector (7) is attached. The coil (10) and spring (9) that open and close the valve (11) are also in the housing. The bottom part closely resembles a conventional injector. The valve (11) and its guide are in this part, the nozzle holder (4). Below this are the plunger (12) and spring (13) and, finally, the nozzle (6), with the injector needle (14) inside. The washer (5) is under the nozzle holder.

The fuel enters the injector via the supply (A), in which the bar filter (8) is pressed. The return fuel leaves the injector via the opening (B) and flows into the cylinder head return duct.

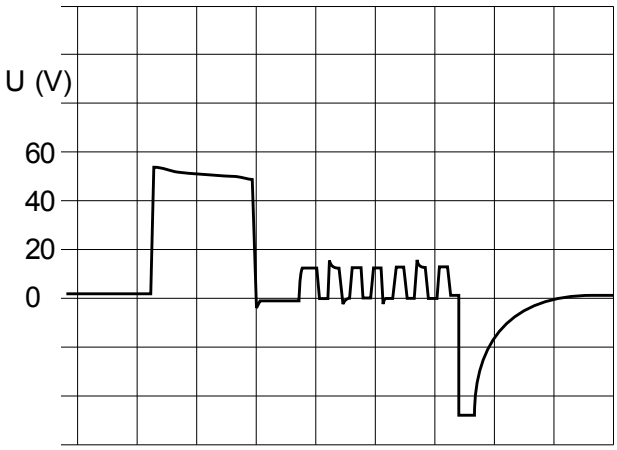



A. Fuel supply
B. Return opening
1. Injector body
2. O-ring
3. O-ring
4. Nozzle holder
5. Washer
6. Nozzle
7. Electrical connection
8. Bar filter

9. Spring
10. Coil
11. Valve
12. Plunger
13. Plunger spring
14. Injector needle

## Electrical control

The injector is activated with a voltage of approximately 50 V. This voltage is discharged by a capacitor in the PMCI-2 electronic unit. The current increases rapidly because of this relatively high voltage. As a result, the valve in the injector opens quickly. This is the pull phase. If the current were not limited, it would become too high and damage the coil in the injector. The increase in current is limited by switching to pulsating control of approximately 12 V after discharging the capacitor. This is the hold phase. The current now remains high enough to hold the valve open. The length of the pull phase stays practically the same under all circumstances. The length of the hold phase varies depending on the calculations carried out by the electronic unit. When the injector is deactivated, a negative induction peak is created by switching off the current through the injector coil.



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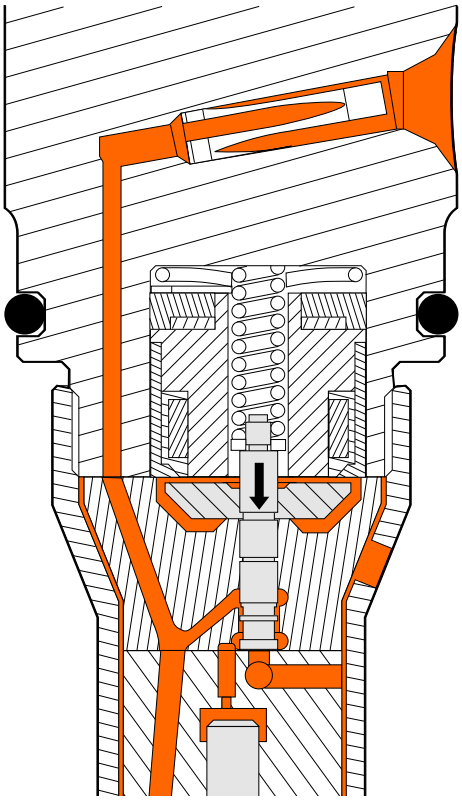
## Operation

In the rest position, the valve is pushed down by the spring above the valve. The opening to the return is now closed.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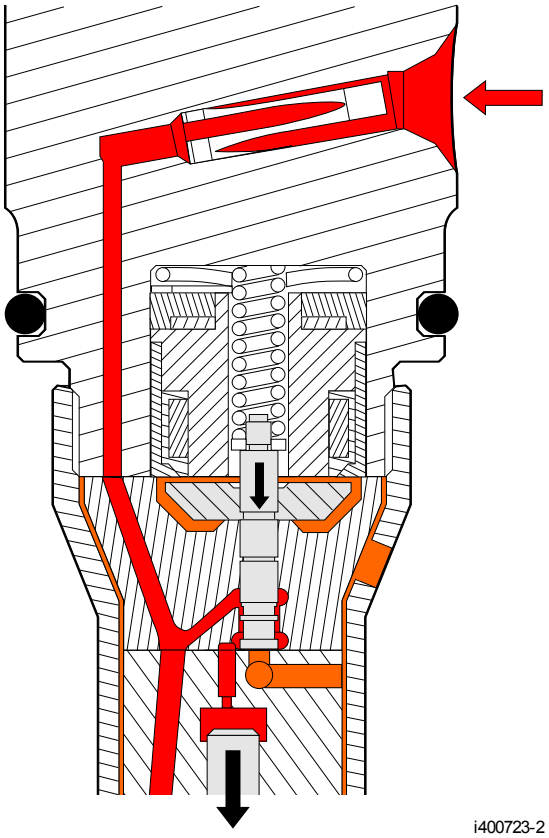
Even though fuel is now supplied to the injector, this does not mean that it immediately starts injecting. The same fuel pressure that must lift the injector needle also pushes down the plunger, along with the plunger spring. The injector needle cannot yet be lifted.



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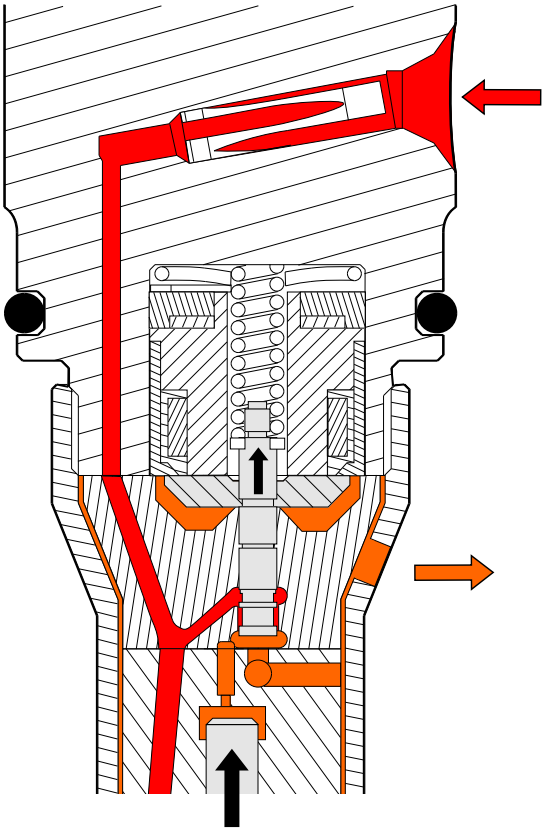
When the electronic unit activates the coil, the valve is pulled in against the pressure of the spring, and the opening to the return is released. As a result, the pressure above the plunger decreases. The fuel pressure under the injector needle now overcomes the pressure of the spring above the plunger. The injector needle is lifted and fuel is injected.

To stop injection, the fuel supply pressure to the injector is decreased by deactivating the pump unit. The injector is only deactivated once the fuel pressure is low enough. This is to allow the plunger spring to close the injector needle quickly.



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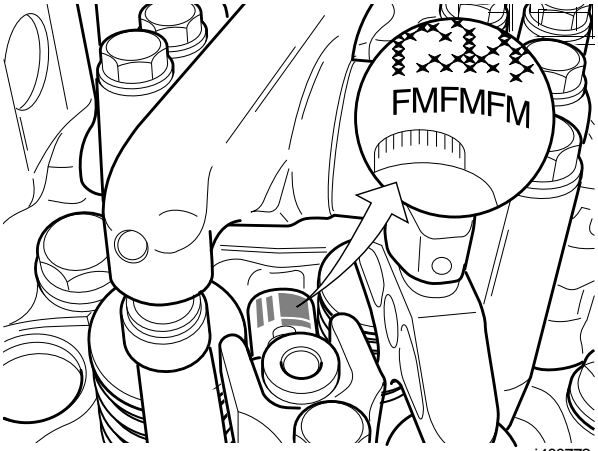
Every injector is calibrated during production to compensate for any inaccuracies and differences in

production. There is a six-letter calibration code on the housing of the electrical connections. This code is also programmed in the electronic unit so that the unit can optimize controls for fuel injection. As a result, the electronic unit can make sure that the injection timing and the quantity of fuel injected do not differ. If the injector is replaced or moved, make sure that the calibration code is programmed (again) into the electronic unit using DAVIE.

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