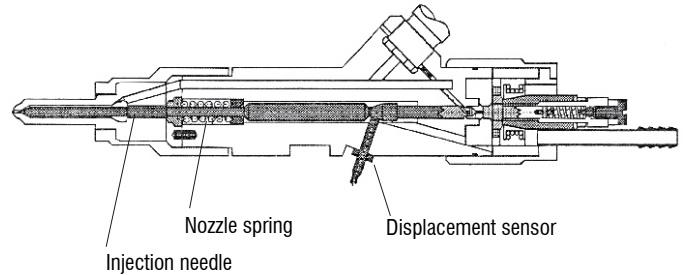


A085

Eddy current sensors

eddyNCDT



## Displacement/timing measurement in the common rail injector

Diesel engines of the latest generation no longer have a diesel injection pump to supply fuel, but instead utilise the common rail principle. In order to optimise the injector configuration for the respective engine model it is necessary to know the exact displacement/time behavior of the needle valve. This information is provided by an eddy current sensor built into the injector.

Due to the physical limitations (i.e. practically no installation space), a sensor with very small dimensions is required. The solution here is the miniature version of the EU05 eddy current sensor for commercial vehicle injectors and the ES05 sensor for passenger car injectors.

### Reasons for choosing the system

- Non-contact measurement as displacement transformation inevitable
- High temperature resistance
- Temperature-compensated measurement
- High system speed as the injection process is in the micron to millisecond range
- Resistant to electromagnetic fields (solenoid valve)
- Resistant to fuels

### Requirements for the measurement system

- Measuring range: 500 $\mu$ m
- Resolution: 1 $\mu$ m
- Bandwidth: 100kHz

### Environmental conditions

- Temperature: 100 °C
- Medium: fuel
- Interference field: electromagnetic field

### System design

- DT3301 (01) Controller
- SCD3/8 Power cable
- SCA3/5 Signal cable
- EC3/2 Cable extension
- EA3200 Adaption board
- EU05 (65) Sensor; alternative EU05 (93)