

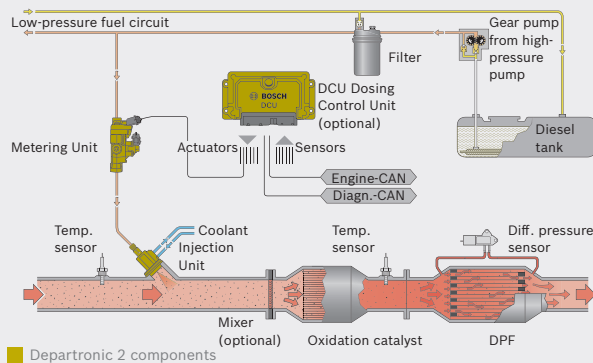
# Diesel Systems

## Departronic 2 – Diesel Dosing System for particulate filter regeneration



**BOSCH**  
Invented for life

### Departronic 2: System integration, example



### Customer benefits

- ▶ Robust and maintenance-free
- ▶ Longer oil-change intervals compared to internal engine regeneration measures
- ▶ Efficient regeneration thanks to the ideal adaptation of injection timing and quantity
- ▶ Control of the two Bosch systems with one Dosing Control Unit (DCU) is possible: Departronic 2 and Denoxtronic 2.2 (Urea Dosing System for SCR-Systems)
- ▶ Supply from the low-pressure circuit of the diesel injection system is possible
- ▶ Full software support
- ▶ 12 or 24 Volt operation

All over the world, diesel engines have to comply with a large number of emission targets which include ever stricter particulate emission limits. This is why more and more diesel engines are being equipped with a closed (wall flow) diesel particulate filter.

These particulate filters need to be regenerated in order to remove the trapped soot. One way is to actively regenerate the filter at regular intervals in order to reliably burn off the stored particulates. To do this, temperatures of around 600°C in the particulate filter are required. Exhaust temperatures this high could be achieved via internal engine measures alone. This can, however, lead to a dilution of the engine lubrication oil and reduced oil-change intervals.

Alternatively, the targeted injection of diesel fuel into the exhaust gas via the Departronic helps to significantly reduce or even avoid the need for internal engine measures. This procedure increases the efficiency of active regeneration and thus saves fuel.

Developed from the first Departronic generation which has been successfully in series production since 2006, we began series production of the second generation with several well-known customers in February 2010. This system generation features enhanced functions, mainly regarding spray droplet size, fuel supply pressure conditions and full software support.

### Possible applications

Departronic 2 is primarily designed for use in the heavy-duty sector in on- and off-highway applications. Further possible applications exist in the medium-duty and marine segments, as well as in exhaust systems from Bosch Emission Systems GmbH (BESG).

**Technical features**

Maximum injected quantity	
Low-Flow valve	4.8 g/s @ 6 bar
High-Flow valve	6.7 g/s @ 6 bar
Extra-High-Flow valve	8.6 g/s @ 6 bar
Spray quality	100 µm SMD (Sauter Mean Diameter)
Operating voltage	12 V/24 V
Electrical interfaces Metering Unit	Bosch standard or customer specific connector
Useful lifetime	3,000 dosing hours
HD	1.2 million km (vehicle)
MD	0.75 million km (vehicle)
Dimensions Metering Unit	L x W x H: 127 x 117 x 63 mm
Dimensions Injection Unit	L x W x H: 81 x 44 x 62 mm
Line between Metering and Injection Unit	
Length	1 – 2.5 m
Inner diameter	4 mm
Fields of application	MD, HD, OHW
Emission target	JPNLT, US13, Euro VI, Tier 4 final/ Euro Stage 4

**Functional principle**

The Metering Unit is supplied with diesel fuel from the low-pressure circuit via a flexible inlet line. The diesel fuel supply is controlled by means of a shut-off valve. This valve is opened during regeneration of the particulate filter, so that the dosing valve in the Metering Unit can meter the required amount of diesel fuel for the Injection Unit.

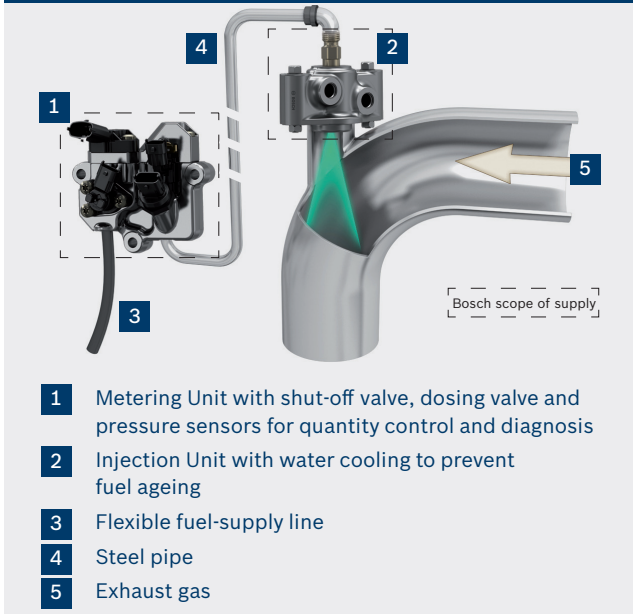
Depending on several signals (e.g. engine load, pressure in the Metering Unit) the software integrated in the Control Unit calculates the required dosing quantity and converts this into a triggering signal for the dosing valve.

The particulate filter is not actively regenerated on a continuous basis but only as required. This calls for special measures between active regeneration phases in order to protect the injection valve mounted on the exhaust pipe from soot deposits. For this reason the Departronic has an injection valve with a needle that opens outwards. This reliable and durable design has already been proven in the system's first generation.

**Outlook**

Future hydrocarbon injection developments will focus on the specific requirements of smaller engines and on customer specific solutions.

**Departronic 2: Components and installation example**



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**Robert Bosch GmbH**  
Diesel Systems

Postfach 30 02 20  
70442 Stuttgart  
Germany  
diesel@bosch.com

[www.future-with-diesel.com](http://www.future-with-diesel.com)

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