


PI 2166

For technical personnel only!

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PRODUCT INFORMATION

NITROGEN OXIDE / NOX SENSORS FOR PASSENGER CARS AND TRUCKS

FROM THE SPECIALIST FOR EMISSION CONTROL



With nitrogen oxide or NOx sensors, Motorservice is enlarging its product range in the field of exhaust gas sensor systems from Pierburg.

The available item numbers cover a global vehicle fleet of more than 40 million vehicles, including utility vehicles from the “big seven” – DAF, IVECO, MAN, Mercedes-Benz, Renault, Scania and Volvo.

These sensors are a key component for reducing harmful nitrogen oxides, NOx for short.

See the following pages for further technical background information

SENSORS FROM PIERBURG –

TAILOR-MADE OFFER, WIDE MARKET COVERAGE

Our sensors in OE quality have proven themselves millions of times over across the globe. They are indispensable components, and several of them can often be found installed in one vehicle. That is why we keep on expanding our product range. High operating temperatures and aggressive exhaust gas place high demands on NOx sensors. You should therefore choose products from the specialist for emission control.

All content including pictures and diagrams is subject to change. For assignment and replacement, refer to the current catalogues or systems based on TecAlliance.



NITROGEN OXIDE / NOx SENSORS FOR TRUCKS

Pierburg no.	OEM	Ref. no.	Example vehicles / application
7.14350.00.0	Mercedes-Benz	A 006 153 73 28	Actros MP2 / MP3 12L + 16L
7.14350.01.0	Mercedes-Benz	A 008 153 98 28	Actros MP4 / MP5 7.7L, 10.7L, 12.8L, 15.6L
7.14350.02.0	Mercedes-Benz	A 008 153 99 28	Actros MP4 / MP5 7.7L, 10.7L, 12.8L, 15.6L
7.14350.03.0	Mercedes-Benz	A 009 153 00 28	Actros MP4 / MP5 7.7L, 10.7L, 12.8L, 15.6L
7.14350.04.0	Mercedes-Benz	A 009 153 01 28	Actros MP4 / MP5 7.7L, 10.7L, 12.8L, 15.6L
7.14350.05.0	Mercedes-Benz	A 010 153 14 28	Actros MP4 / MP5 7.7L, 10.7L, 12.8L, 15.6L
7.14350.06.0	Mercedes-Benz	A 010 153 16 28	Actros MP4 / MP5 7.7L, 10.7L, 12.8L, 15.6L
7.14350.08.0	Volvo / Renault	22827991	FE / FH / FL / FM 7.1L, 7.7L, 8.8L, 12.8L
7.14350.09.0	Volvo / Renault	22827993	FH / FL / FM 7.1L, 7.7L, 8.8L, 12.8L, 16.1L
7.14350.10.0	Volvo / Renault	22827995	FE / FH / FL / FM 5.1L, 7.1L, 7.7L, 12.8L, 16.1L
7.14350.11.0	Scania	1872080	P, G, R, T series 8.9L, 9.3L, 10.6L, 11.7L, 12.7L, 15.6L, 16.4L
7.14350.12.0	Iveco	5801754015	Eurocargo / Stralis / Trakker 3.9L, 5.9L, 7.8L, 8.7L, 10.3L, 11.1L, 12.9L
7.14350.13.0	Iveco	5801777219	Stralis / Trakker 7.8L, 8.7L, 10.3L, 11.1L, 12.9L
7.14350.14.0	Iveco	5801754016	Eurocargo 3.9L, 4.5L, 5.9L, 6.7L
7.14350.15.0	Iveco	5801754014	Eurocargo / Stralis / Trakker 3.9L, 5.9L, 7.8L, 8.7L, 10.3L, 11.1L, 12.9L
7.14350.16.0	MAN	51.15408-0000	TGA / TGL / TGM / TGS 4.6L, 6.8L, 9.0L, 10.5L, 12.4L, 12.8L
7.14350.17.0	MAN	51.15408-0011	TGA / TGL / TGM / TGS 4.6L, 6.8L, 9.0L, 10.5L, 12.4L, 12.8L
7.14350.18.0	DAF	1744683	CF / XF 5.9L, 6.7L, 9.2L, 12.9L
7.14350.19.0	DAF	1793380	CF / XF 5.9L, 6.7L, 9.2L, 12.9L
7.14350.20.0	DAF	1793379	CF / XF 5.9L, 6.7L, 9.2L, 12.9L
7.14350.21.0	DAF	1705572	CF / LF 3.8L, 4.5L, 5.9L, 6.7L, 9.2L, 12.9L



NOTE

When replacing the NOx sensor, pay attention to its positioning.
Especially when working on vehicles with several NOx sensors,
swapping them can cause malfunctions.

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NITROGEN OXIDE / NOx SENSORS FOR PASSENGER CARS

Pierburg no.	OEM	Ref. no.	Example vehicles / application
7.13557.00.0	Citroën, Peugeot, DS, Opel, Vauxhall	98 211 209 80	208, 308, C4, DS3, DS4, DS5, Expert, Jumpy, Vivaro c, Zafira Life (1.6 and 2.0 Hdi)
7.13557.01.0	Renault, Nissan, Opel, Vauxhall, Fiat	22 79 054 33R, 93 463 067, 22790-00Q0F	Movano B, Master III, Trafic III, NV300, NV400, Talento (1.6 and 2.3 dCi)
7.13557.02.0	BMW	13 62 8 589 846	1 / 2 / 3 / 5 series, X3 / X4 / X6 (B47, N47, M57, N57 engines)
7.13557.03.0	Citroën, Peugeot, DS, Opel, Vauxhall	98 211 211 80	3008, 5008, 508, C5, DS7, Expert, Jumpy, Vivaro C, Zafira Life
7.13557.04.0	Renault, Nissan, Opel, Vauxhall, Fiat	22060-00Q0E, 6.000.620.236, 93 457 719, 22 79 085 39R	NV300, Vivaro B, Trafic III, Talento
7.13557.05.0	Mercedes-Benz	A 000 905 84 11	GLC 220 / 250 d, S class S300 / 350, Sprinter 210 / 211 / 213 / 216 / 218 CDI, Vito, V class
7.13557.06.0	Mercedes-Benz	A 000 905 34 03	CLS 220 / 250 d, E class E220 / 250 CDI, GLK 200 / 220 / 250 CDI, Sprinter 310 / 313 / 314 CDI
7.13557.07.0	Mercedes-Benz	A 000 905 35 03	C class 180 / 200 / 220 / 250 d, GL 200 / 350 CDI, GLE 250 / 350 d, GLS 350 d, M class 280 / 300 CDI.
7.13557.08.0	Mercedes-Benz	A 000 905 44 10	Sprinter 313 / 314 / 315 / 316 / 319 CDI, - 3.5t / 4.6t / 5t
7.13557.09.0	Mercedes-Benz	A 000 905 85 11	C class 200 / 220 / 250 / 300 d, SLK / SLC 250 d, Marco Polo Camper, V class CDI, Vito Mixto / Tourer
7.13557.10.0	Mercedes-Benz	A 000 905 15 12	C class 180 / 200 / 220 / 250 d, E class E220 / 250 CDI, GL class 350 CDI, S / M / R class
7.13557.11.0	Mercedes-Benz	A 000 905 36 03	CLS 220 / 250 / 350 CDI, E class E220 / 250 / 350 CDI, S / M class CDI, Sprinter 213 / 216 / 413 / 416
7.13557.12.0	Mercedes-Benz	A 000 905 86 11	A class 180 / 200 / 220 CDI, B class 180 / 200 / 220 CDI, CLA 200 / 220 CDI
7.13557.13.0	Mercedes-Benz	A 000 905 91 12	Sprinter 311 / 314 / 315 / 316 / 411 / 414 / 415 / 416 CDI
7.13557.14.0	Mercedes-Benz	A 000 905 16 12	C class 180 / 200 / 220 / 250 d, GL class, S class 320 / 350 d
7.13557.15.0	Mercedes-Benz	A 000 905 14 12	CLS 220 / 250 / 350 d, E class E220 / 250 / 300 / 350 CDI
7.13557.16.0	Mercedes-Benz	A 000 905 09 14	A class 180 / 200 / 220 CDI, B class 180 / 200 / 220 CDI, CLA 200 / 220 CDI
7.13557.17.0	Mercedes-Benz	A 000 905 81 11	Sprinter 311 / 314 / 315 / 316 / 411 / 414 / 415 / 416 CDI
7.13557.18.0	Mercedes-Benz	A 000 905 43 10	CLS 220 / 250 / 350 d, E class E220 / 250 / 300 / 350 CDI, GLK 200 / 220 / 250 CDI, S class
7.13557.19.0	Mercedes-Benz	A 000 905 63 04	A class 180 / 200 / 220 CDI, C class 180 / 200 / 220 / 250 d, CLA 180 / 200 / 220 / 250 CDI
7.13557.20.0	Mercedes-Benz	A 000 905 83 11	G350 / 400 d, Marco Polo 160 / 170 / 180 / 200 CDI, Vito 109 / 111 / 114 / 119 CDI



BACKGROUND INFORMATION

“Nitrogen oxide” is the collective term for gaseous pollutants such as nitrogen monoxide (NO), nitrogen dioxide (NO₂) and nitrous oxide (N₂O). These substances increasingly arise at high combustion temperatures and when there is an excess of oxygen ($\lambda > 1$).

In diesel engines, NOx sensors (01) are intended for metering the urea injection (04) in the SCR catalytic converter (SCR = selective catalytic reduction). If two NOx sensors are installed, the second NOx sensor (03) monitors the functioning of the SCR catalytic converter (02).

NOx sensors are installed in utility vehicles as from EURO VI as standard.

In the case of direct injection petrol engines, the NOx sensor monitors the loading state of the NOx catalytic converter.

METHOD OF OPERATION

The NOx sensor works according to a similar principle as the wideband lambda sensor and, similar to it, requires sensor heating which brings the sensor up to operating temperature (approx. 700°C).

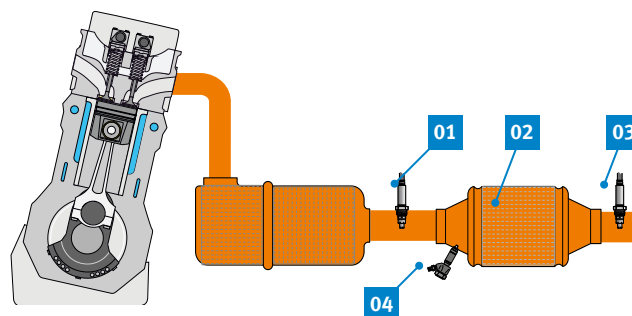
The NOx sensor consists of two chambers arranged one after the other:

The amount of residual oxygen in the exhaust gas is determined in the first chamber. This can be achieved by applying a voltage which “pumps” the oxygen out of the cell.

Depending on the vehicle type and position of the sensor, the NOx sensor may therefore take on the function of a lambda sensor and replace it.

NOx is broken down into its constituent parts, nitrogen and oxygen, in the second chamber. The amount of oxygen that results as part of this process is measured by an additional pump electrode.

The “pump current” expended for this is proportional to the NOx concentration in the exhaust gas. It is evaluated by the control unit at the NOx sensor and reported to the engine control unit via CAN bus.



NOx sensors in the diesel engine

INFORMATION FOR THE REPAIR SHOP

- Make sure the NOx sensor and the NOx catalytic converter are working and positioned correctly.
- Prevent overheating of or damage to the NOx sensor or the NOx catalytic converter.
- If a NOx sensor ages, it may send incorrect signals to the control unit. This may result in the engine entering a limp home function with increased fuel consumption.
- The NOx sensor may be stored as faulty in the fault code memory, even though the cause is a defective NOx catalytic converter.
- Due to the aggressive exhaust gas, NOx sensors only have a limited durability. If two NOx sensors are installed, we therefore recommend that both sensors are exchanged during replacement.
- Note the tightening torques for the sensor head on exhaust tract: 50 Nm $\pm$ 10 Nm.
- Read the instruction leaflet for more information.