PRODUCT **INFORMATION**

OIL PRESSURE AND OIL LEVEL SENSORS

FOR OPTIMUM ENGINE OIL SUPPLY

Following the introduction of Pierburg oil pressure sensors, Motorservice has now added oil level sensors to its product range. Motorservice relies on proven expertise in the field of sensors and oil supply and plans to expand the two sensor groups in the long term.

With these oil pressure sensors, Motorservice currently covers over 38 million passenger cars and commercial vehicles. The oil level sensors are currently available for a worldwide fleet of more than 93 million cars.

Supplying the engine with the appropriate engine oil is essential for smooth engine running and for the durability of the engine. When it comes to oil coolers, oil pumps, oil filters, oil pressure sensors and oil level sensors, Motorservice relies on quality and expertise. The oil pressure and oil level sensors check the optimum supply of engine oil to all moving parts and thus provide lasting protection against engine damage.

Oil level sensor

Oil pressure sensors

In addition to oil level sensors, the Motorservice range also includes engine oil pans. The sensors are compatible with the engine oil pans in some cases. You can find further information on the website.

Item no.: 7.14595.01.0

OIL PRESSURE SENSORS

The oil pressure sensor continuously measures the oil pressure in the engine and sends the information to the engine control unit. The sensor thereby ensures a sufficient oil supply and prevents consequential damage. Modern vehicles also use the data from the oil pressure sensor for optimum engine performance and optimised fuel consumption. Unlike oil pressure switches, which only trigger an alarm when the oil pressure falls below a certain value, oil pressure sensors provide precise values. If the oil pressure sensor is triggered when the oil pressure is too low, this can, for instance, indicate oil loss, but may also be the result of a defective oil pump or other defects.

PRINCIPLE OF OPERATION

A piezoresistive cell measures the engine oil pressure. The piezoresistive effect is based on the change in electrical resistance in a material under pressure (or tension). An expansion measuring device can be used for this purpose. Alternatively, capacitive sensor elements are used to measure the pressure. The sensor processes this information and sends the pressure values to the engine control unit via a pulse width modulation signal.

CURRENTLY AVAILABLE SENSORS

Item no.	OEM	Ref. no.*	Example applications
7.14595.00.0	BMW, PSA	12617592532, 7592532, 9802152780	C4 CACTUS 1.2 PureTech 130c; ASTRA Mk VIII (L) Sports Tourer 1.2
7.14595.01.0	PSA	9674035780	C4 CACTUS 1.2 THP 110; ASTRA Mk VIII (L) Sports Tourer 1.2
7.14595.02.0	GM	12637356, 55488247	COLORADO Crew Cab Pickup 3.6; ASTRA K Van / Hatchback 1.6 CDTI
7.14595.03.0	Ford	FM5Q-9D290-AA	B-MAX Van (JK) 1.5 TDCi; MONDEO V Turnier (CF) 1.5 TDCi
7.14595.04.0	GM	12621234, 12673134	TS Sport Wagon 6.2 V; SUBURBAN 2500 SUV 6.0 FLEX 4WD
7.14595.05.0	Audi, VW	04C 906 060 C, 04C906060C	A5 (8T3) 2.0 TDI; Q2 (GAB, GAG) 35 TDI quattro
7.14595.06.0	FCA	05149064AA, 05149064AB	RAM 1500 Crew Cab Pickup 4.7; GRAND VOYAGER V (RT) 2.8 CRD
7.14595.07.0	GM	12621649, 12674782	RENDEZVOUS 3.6 AWD; ATS Coupe 3.6 FLEX AWD
7.14595.08.0	FCA	05149062AA	300C (LX, LE) 5.7 AWD; GRAND CHEROKEE III (WH, WK) 5.7 V8 4x4
7.14595.09.0	FCA	68295556AA	GRAND CHEROKEE VAN (WK2) V6 VVT; WRANGLER III (JK) 3.6 V6
7.14595.10.0	GM	12616646	AVALANCHE 5.3 Flex Fuel; CORVETTE Convertible (C6) Z06 7.0; SILVERADO 1500 6.0 AWD; TAHOE (B2W) 5.3 Flex Fuel AWD
7.14595.11.0	Nissan, Renault	25070-CD00A	350Z Coupe (Z33) 3.5 (BAZ33); 350Z Roadster (Z33) 3.5 (BAZ33)
7.14595.12.0	Audi, VW	06E 906 054	A3 Limousine (8VS, 8VM) RS3 quattro; A5 (F53, F5P) RS5 TFSI quattro; TT Roadster (FV9, FVR) 2.5 RS TFSI quattro; A8 D4 (4H2, 4H8, 4HC, 4HL) 3.0 TFSI quattro
7.14595.13.0	HKMC	94750-2M454	TUCSON (TL, TLE) 1.6 CRDi hybrid 48V All-wheel
7.14595.14.0	Daimler Truck, Detroit Diesel	A0071530828, A0111539228	ACTROS MP2 / MP3 2536 LS; TRAVEGO (O 580) O 580-16 RHD, O 580-17 RHD
7.14595.15.0	DAF, Kenworth, Paccar, Peterbilt	1826281, 2041678, 2127356	XF FTG 460, FTN 460; XF 105 FAS 105.510; FAR 105.510; CF FT 450 HYBRID

* The reference numbers given are for comparison purposes only and must not be used on invoices to the consumer.

OIL LEVEL SENSORS

The oil level sensor records the amount of oil in the engine – depending on the operating state – and is a central component of the engine management system. Nowadays, the sensor is often mounted on the bottom of the oil pan and measures the oil level. Depending on the version, the sensor also detects the temperature and the engine oil grade. This information is sent to the control unit.

PRINCIPLE OF OPERATION

Oil level sensors are available in three categories: float, ultrasound and heat. Motorservice offers the ultrasonic type of oil level sensors.

Item no.: 7.13500.13.0

The ultrasonic sensor is mounted in the oil pan from below and emits ultrasonic waves in the oil. These are reflected by the surface of the oil (air / oil surface). The sensor measures the time from the transmission of the ultrasonic wave to the arrival of the reflected ultrasonic wave. In this way, the fill level can be measured and output precisely. To prevent errors, an average is calculated from several measurements. In addition, the engine control unit detects special situations, such as engine start. The ultrasonic sensors also detect the temperature via another measuring element. This also has an influence on the measurement.
Special advantages of the sensor are short response times and high accuracy.

CURRENTLY AVAILABLE SENSORS

Item no.	OEM	Ref. no.*	Example applications
7.13500.00.0	BMW	12 61 7 607 910	5 Touring (E61) 525 d xDrive; 6 Cabriolet (F12) 640 i xDrive; X6 (E71, E72) xDrive 30 d
7.13500.01.0	BMW	12 61 7 501 786	5 SERIES (E60) 520 Li; Z4 Roadster (E89) sDrive 28 i
7.13500.02.0	BMW	12 61 7 638 341	4 Cabriolet (F33, F83) 428 i xDrive
7.13500.03.0	BMW	12 61 5 A74 0A3	3 (G20, G80, G28) M340 d Mild Hybrid xDrive; 5 Touring (G31) 520 d Mild Hybrid xDrive
7.13500.04.0	BMW	12 61 8 638 755	4 Gran Coupe (F36) 440 i xDrive
7.13500.05.0	BMW, Mini	12 61 5 A74 0A2	X5 (G05, F95) xDrive 45 e Plug-in Hybrid
7.13500.06.0	Audi	06K 907 637 B	ATLAS (CA1, CA2, CA3) 2.0 TSI 4motion; MAGOTAN (B8L, 0B2, 0B3) 380 TSI
7.13500.07.0	Audi	03C 907 660 T	PASSAT ALLTRACK B7 Variant (365) 1.8 TSI; PASSAT B7 (A42, A43) 1.8 TSI
7.13500.09.0	Audi	06E 907 660	PASSAT B6 Variant (3C5) 2.0 TFSI; SCIROCCO III (137, 138) 2.0 TFSI
7.13500.10.0	Audi, Porsche	03C 907 660 S	A6L C7 (4X8, 4XL) 50 TFSI quattro; A4 B8 Avant (8K5) 3.0 TFSI quattro
7.13500.11.0	Audi, Porsche	06M 907 637 B	A4 Allroad B9 (8WH, 8WJ) 50 TDI quattro; A6 Allroad C7 (4GH, 4GJ) 3.0 TDI quattro
7.13500.12.0	Audi	03C 907 660 AA	A7 Sportback (4GA, 4GF) 3.0 TDI quattro, Q7 Van (4LB) 3.0 TDI quattro
7.13500.13.0	Audi	06M 907 637 A	TOUAREG (CR7, RC8) 3.0 R 4motion; Q5 Sportback (FYT) SQ5 TFSI quattro
7.13500.14.0	Audi, VW	04E 907 660 C	Q3 (8UB, 8UG) 1.4 TFSi Flex; OCTAVIA IV Combi (NX5, PV5) 1.4 TSI
7.13500.16.0	Audi, VW	1J0 907 660 B	A6 C5 (4B2, 4B4) 3.7 quattro; A4 B6 (8E2) S4 quattro
7.13500.17.0	Audi, Porsche	1J0 907 660 F	IBIZA IV SC (6J1, 6P5) 1.4 TSI Cupra; A6 C5 Avant (4B5, 4B6) 1.8 T quattro

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

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TYPICAL DEFECTS OF OIL LEVEL AND OIL PRESSURE SENSORS

Depending on the type of sensor, the sensors are exposed to severe environmental influences such as high temperatures and pressures, which can lead to wear or material fatigue and thus to failure of the sensor. Typical problems are:

- Porous and broken seals
- Material fatigue
- Corrosion on the connections or in the sensor
- Mechanical damage due to shocks or vibrations
- Electrical fault in or on the sensor

Defective sensors can provide incorrect information. On the one hand, this can lead to false warnings and on the other hand to engine damage because a low oil level or oil pressure is not detected. Dry running without oil will damage the engine.
In addition, a defective sensor can cause startup problems. A lit indicator light may therefore indicate a low oil level or oil pressure, a defective sensor or other problems in the oil circuit.
After reading the error code and further testing, e.g. visual inspection or resistance and voltage testing, a sensor should be replaced if it is defective.