testo 338
Portable Soot and Particulate Meter

Versatile, digital display of particulates

testo 338 soot and particulate meter
Designed to deliver quick readings using state-of-the-art technology

The testo 338 is the answer to the ever-increasing number of state and local regulations affecting diesel engine soot and particulate emissions. The 338 doesn't require specialized training or certification to operate and provides a digital reading in mg/m³ mass units or FSN/Bosch number values. The 338 can also help to quickly determine if the diesel particulate trap or control pollution device is working correctly. The completely automated 338 is hardened for real life applications in shops, shipyards, or for diesel engine exhaust and emissions checks in the field.

A new era in particulate measurement
The testo 338 provides a quick check of soot and particulate emissions in diesel engines.

- Mining and oil drilling operations
- Marine terminals and ocean ships
- Industrial applications
- Bus and truck fleets

Determine efficiency and compliance
The testo 338 is the first automatic portable meter to measure an engine's smoke / soot output

The visible exhaust smoke is one of the first signals that an engine may be wasting fuel, may not be set-up efficiently, or could be non-compliant with regulations. The popular hand pump testing is slow, inefficient, and requires a subjective evaulation of the results. The testo 338 eliminates the inadequacies of hand pump testing and delivers fast, consistent, and repeatable direct readout results.

One instrument, many applications
Thanks to its rugged and portable design, the testo 338 can be used anywhere, at any time.

Everything you need fits right in your tool box. Need some extra protection? Add the available TopSafe protection boot to keep your 338 free from the dirt and grime of your work site.

Automatic test
Until the arrival of the testo 338, technicians had only two options to measure soot and particulate emissions; the hand pump or a bulky and expensive lab testing machine requiring specialized training to operate. The testo 338 is the first automatic portable soot and particulate meter that requires no additional equipment for sample analysis. Its intuitive operation allows for easy and immediate use with a high level of accuracy.

Direct readout
The bright, backlit display works well under the hood or in low lit areas. Large digits display the Filter Smoke Number (FSN) or Bosch values, plus the soot concentration in mg/m^3. The 338 combines the convenience of a handheld with some of the high quality features in a laboratory instrument.

What makes the testo 338 so unique?
State-of-the-art technology

The testo 338 provides the perfect combination of accuracy with convenience

Documentation and data management is easier than ever. Store up to 200 readings internally or output the data using the wireless IrDA printer or the optional Bluetooth transfer to the comptuer for more permanent record keeping.

Key features at a glance

• Rugged housing for harsh environments

• Bright, backlit display for easy readouts

• Wireless printout or PC data storage

• Quick and easy to operate

Measurement at the touch of a button

Specifically designed for tough industrial applications, the testo 338 provides quick and accurate readings while standing up to strong vibrations, dirt, and oil. It is ergonomically designed for the technician's ease of use with a comfortable, lightweight pistol grip, yet is rugged enough to stand up to daily testing in any environment, and provides a precise way to read previously complicated measurements.

With the testo 338, you have data storage at your fingertips and can download your readings to testo's easyEmissions software for additional analysis or documentation.

The testo 338 and its accessories

The testo 338 kit includes the testo 338 soot and particulate meter, the gas sampling probe, power supply, and instrument case. Accessories and spare parts can be ordered at any time. The testo 338 is also available with optional Bluetooth.

	Product	Order No.
	testo 338 without Bluetooth	0632 3381
	testo 338 with Bluetooth	0632 3382
	Gas Sampling Probe 11" long, outer diameter 0.32"	0600 7570
	TopSafe protective boot protects against dirt and oil	0440 2330
	Instrument Case	0516 0002
	Power Supply	0554 1096
	IR Printer Fast Testo printer with wireless IrDA interface	0554 0549
	Spare thermal printer paper 6 rolls of printer paper	0554 0568
	EasyEmissions software	0554 3334
	Spare particle filter	0554 1101
	Spare filter paper	0554 0146
	Spare rechargable battery 2,600 mA	0515 0107

Testo's unique gas sampling process
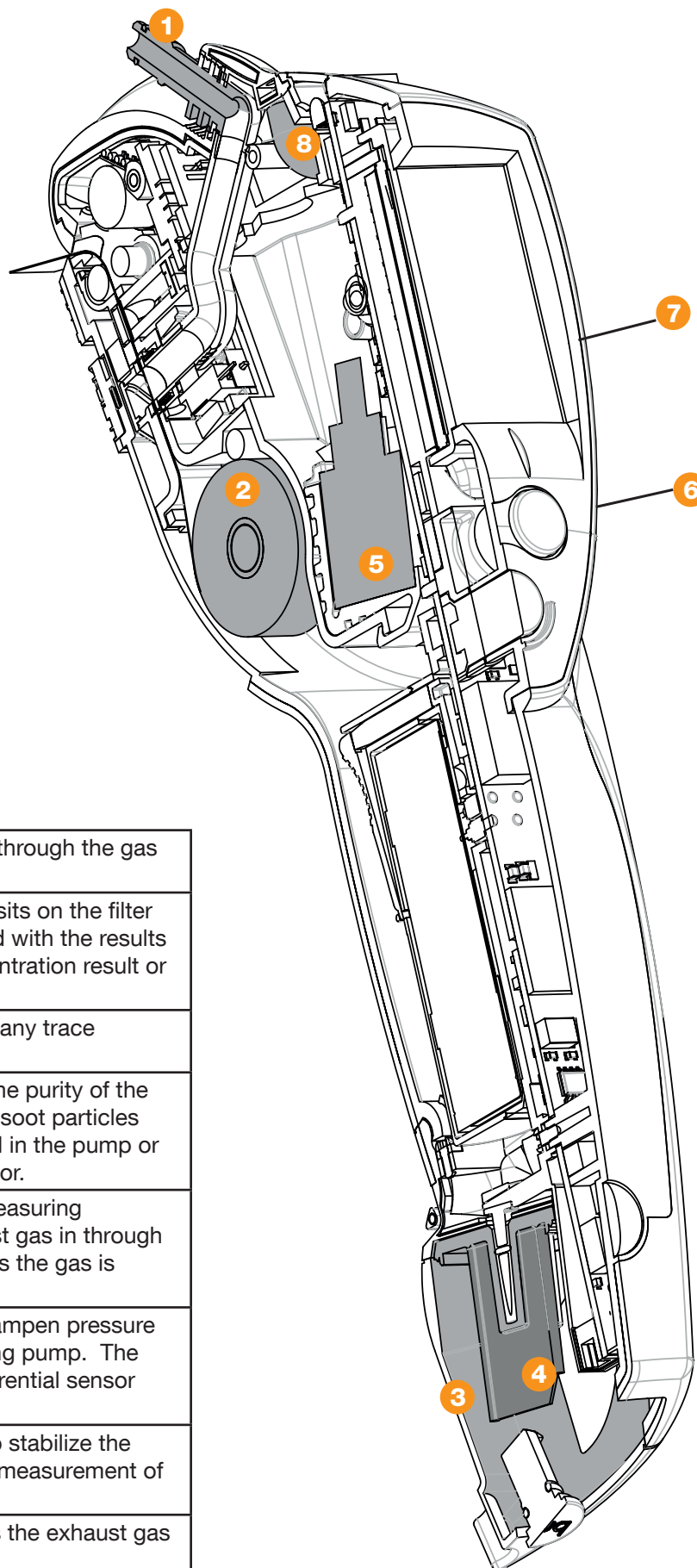
1	**The gas enters** the instrument through the gas sampling probe.
2	**The filter paper** The soot deposits on the filter paper, and is optically measured with the results shown in the mg/m³ soot concentration result or FSN or Bosch scales.
3	**The condensate trap** removes any trace humidity from the sample.
4	**The particle filter** guarantees the purity of the gas. It filters out any remaining soot particles and ensures no dirt is deposited in the pump or on the differential pressure sensor.
5	**The pump** is the heart of the measuring instrument. It draws the exhaust gas in through the sampling probe, and ensures the gas is expelled from the instrument.
6	**The gas chamber** is used to dampen pressure oscillation caused by the working pump. The dampening effect prevents differential sensor errors.
7	**The capillary** conduit is used to stabilize the press of the flowing gas for the measurement of the flow volume.
8	**The gas exhaust outlet** passes the exhaust gas into the ambient air.

Testo's unique sensor technology

The testo 338 combines the accuracy customers have come to expect from Testo with a compact and user-friendly design.

Optical sensor (Photodiode)

White LED

Filter paper

Sensor entry

Gas pipe

Filter paper roll
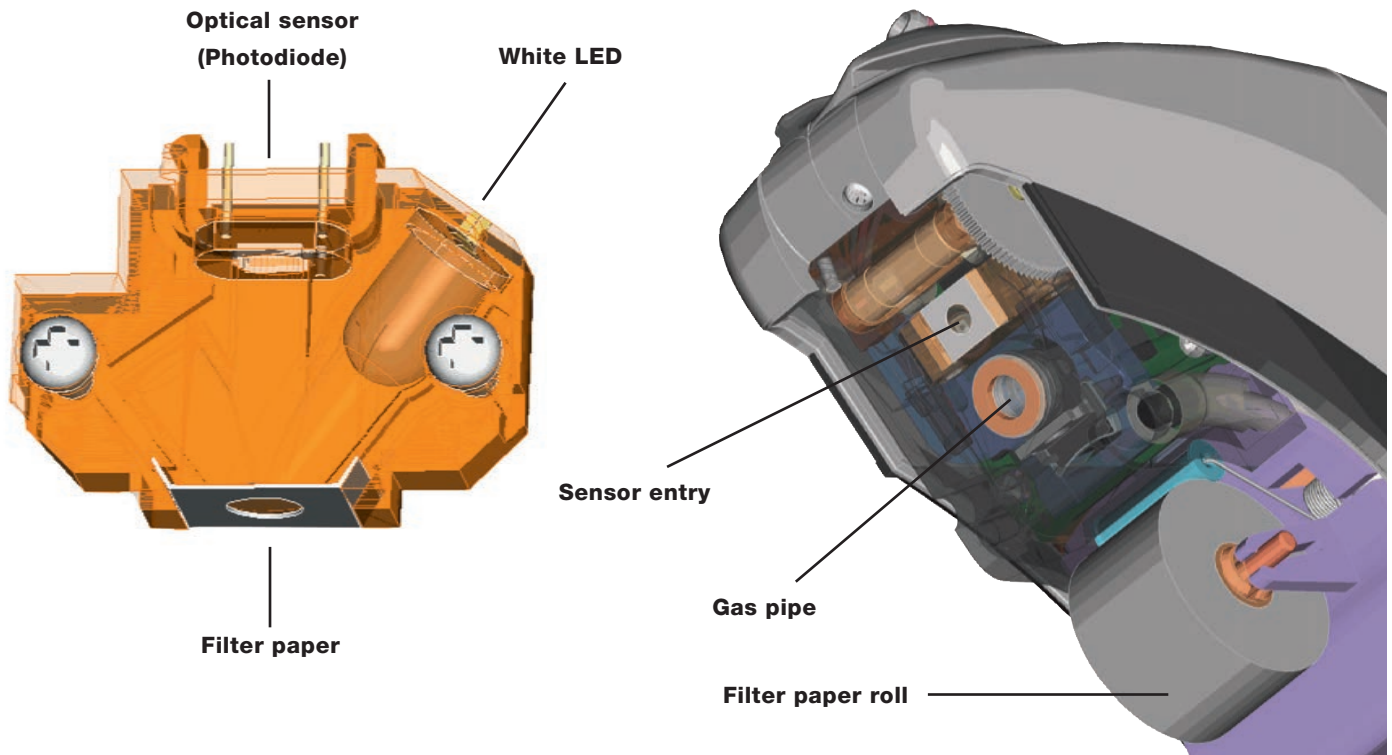
The key to Testo technology - the sensors.
The testo 338 contains optical, temperature, and differential pressure sensors. Together, they provide a consistent and complete smoke spot test result. The optical sensor (consisting of a photodiode and a white LED) reads the filter paper with defined light intensity. The lower the reflection, the stronger the soot level. The differential pressure sensor determines the volume of the exhaust gas probe, depending on the temperature and altitude (which is set manually). Finally, the tempeature sensor automatically meaures the temperature required for the exhaust gas measurement. The results of all three sensors provide the overall particulate density, which directly determines the soot concentration in mg/m^3, Filter Smoke Number (FSN), and the Bosch number.

Technical data.

General technical data	
Measuring principle	Filter loading
Operating temperature	41 to 113°F (+5 to +45°C)
Memory	200 readings
Data interfaces	IrDA/optional Bluetooth
Measurement period	< 60s per measurement cycle
Protection class	IP 40
Exhaust gas temperature	Single measurements up to 932°F (+500 °C)
Overpressure	up to 300 mbar*
Rech. batt.	Lithium ion
Battery life	Approx. 4 hrs continuous operation
Warranty	2 years

*at higher pressures, a higher measurement inaccuracy occurs

Sensor types	
Units	FSN / Bosch number / Soot concentration (mg/m^3)
Measuring range	FSN/Bosch number* 0 to 2.5 Soot concentration 0 to 70 mg/m^3
Resolution	FSN / Bosch number* 0.01 Soot concentration max. 0.01 mg/m^3
Reproducibility	FSN/Bosch number*: < 0.08 FSN Soot concentration < 1.5 mg/m^3 (0 to 5 mg/m^3) < 1.25 mg/m^3 + 5 % of m.v. (5 to 70 mg/m^3)
Measuring probe volume (Automatic switching)	0.2 litres (range: 0.2 to 2.5 FSN) 0.4 litres (range: 0 to 0.3 FSN)

*at reference conditions 1,000 mbar, 77°F (+25 °C)

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Subject to change, including technical changes, without notice.

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