

# High-Temperature Pressure Sensor

Type 6052C...

## for Engine Measuring Technology

High-temperature pressure sensor with very small dimensions are ideal for use in internal combustion engines with complex structural geometry of the cylinder head. The sensor is installed with front sealing in an M5x0,5 bore.

- Good temperature stability of the sensitivity
- High sensitivity
- Low thermal shock error
- Long service life due to front seal

### Description

Type 6052C... uses a piezoelectric crystal which achieves high sensitivity in conjunction with an extremely small sensor structure. This sensitivity varies by not more than  $\pm 1,0\%$  in the operating temperature range. The passive acceleration compensation patented by Kistler keeps the influence of engine vibrations to a minimum.

The front seal allows very good heat dissipation and thus briefly a maximum operating temperature of 400 °C. The diaphragm, optimized by finite element calculation, produces good measuring results and ensures a long service life.

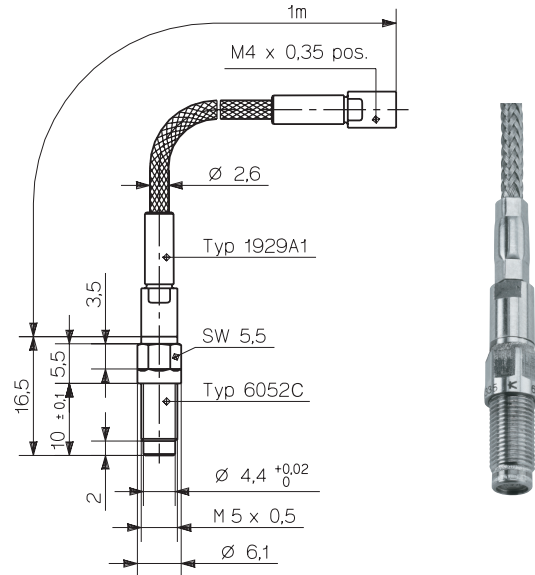
### Application

The sensor Type 6052C... is an excellent all-rounder. Its rugged construction makes it suitable for measurements at the knock limit as well as for thermodynamic investigations. This sensor is used mainly on multi-valve engines, motor cycle and other small engines and for combustion analysis.

For applications mainly in the knocking range or at very high peak pressures, use of Type 6052C...U20 with reinforced diaphragm (heavy duty version) is recommended.

Type 6052C...U40 is provided with additional damping and is suitable for applications on engines with extremely high vibrations, e.g. racing engines.

These sensors are always provided with an integrated cable. For standard applications, a rugged cable with steel braiding Type 1929A1 is used. If the sensor connector is exposed directly to engine oil, e.g. when installed through the valve cover, the oil proof cable (IP67) Type 1983AA1 is recommended.



### Technical Data

#### Type 6052C...

Measuring range	bar	0 ... 250
Calibrated partial ranges	bar	0 ... 50, 0 ... 100, 0 ... 150
Overload	bar	300
Sensitivity	pC/bar	≈ -20
Natural frequency (measuring element)	kHz	≈ 160
Linearity, all ranges (at 23 °C)	%/FSO	≤ ±0,4
Acceleration sensitivity		
axial	bar/g	< 0,0002
radial	bar/g	< 0,0005
Operating temperature range	°C	-20 ... 350
Temperature min./max.		-50 ... 400
Sensitivity change		
200 °C ± 50 °C	%	≤ ±0,5
23 ... 350 °C	%	≤ ±2
Thermal shock error		
(at 1500 1/min, p <sub>mi</sub> = 9 bar)		
Δp (short time drift)	bar	≤ ±0,5
Δp <sub>mi</sub>	%	≤ ±2
Δp <sub>max</sub>	%	≤ ±1,5
Insulation resistance at 23 °C	Ω	≥ 10 <sup>13</sup>
Shock resistance	g	2 000
Tightening torque	N·m	1,5
Capacitance, without cable	pF	5
Weight with cable	g	30
Connector, ceramic insulator	-	M4 x 0,35



**Accessories Included**

- Cable according to ordering key
- Coupling M4 neg. – BNC pos.

**Optional Accessories**

- Spare cable with metal braiding, L = 1 m
- Spare cable oil proof of Viton®, L = 1 m
- Coupling M4 neg. – 10-32 UNF neg.
- Mounting sleeve incl. O-ring
- Mounting key SW 5,5
- Torque wrench 1 ... 6 N·m
- Special tap M5x0,5
- Step drill
- Dummy sensor (for Type 6052C...)
- Extraction tool for dummy sensor
- Adapter for pressure generator Type 6904
- O-ring for Mounting sleeve Type 6525
- Finishing tool for bore, bore depth ≤60 mm
- Finishing tool for bore, bore depth ≤170 mm
- Adapter M8x0,75
- Adapter M10x1

**Type**

1705

**Type**

- 1929A1
- 1983AA1
- 1700A13
- 6525Asp...
- 1300A9
- 1300A17
- 1357A
- 1300A51
- 6445
- 1319
- 6585A
- 5.110.078
- 1300A79
- 1300A79Q01
- 6595
- 6595A1

**Ordering Key**

Type 6052C

Without PiezoSmart®	-
With PiezoSmart®	5

**Cable Version**

With metal braiding, Type 1929A...	3
Viton®, oil proof	7

**Cable length**

1 m	1
2 m	2
Cables with special length, specify cable length L in m (L <sub>min</sub> = 0,15 m/L <sub>max</sub> = 3,5 m)	9

**Version**

Standard	-
Reinforced diaphragm	U20
Additional damping	U40

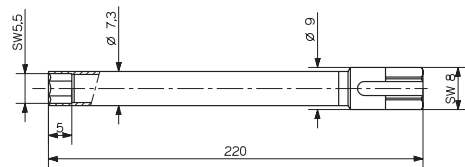


Fig. 4: Mounting key SW 5,5 Type 1300A9

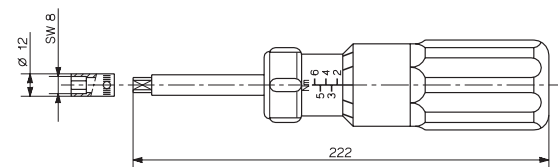


Fig. 5: Torque wrench 1 ... 6 N·m Type 1300A17

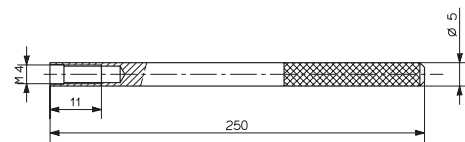


Fig. 6: Extraction tool for dummy sensor Type 1319

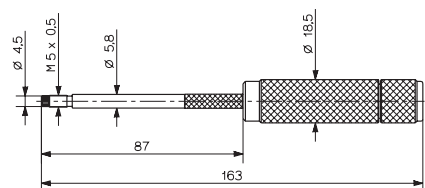


Fig. 7: Finishing tool for bore Type 1300A79

**Ordering Examples: Type 6052C...**

- Version with 1 m braided cable Type 6052C31
- Version with PiezoSmart® and 1 m Viton® cable Type 6052CS71
- Version with PiezoSmart® and 1 m Viton® cable, Type 6052CS71U20 and reinforced diaphragm
- Version with PiezoSmart®, braided cable L = 3 m Type 6052CS39U40 and additional damping L = 3 m

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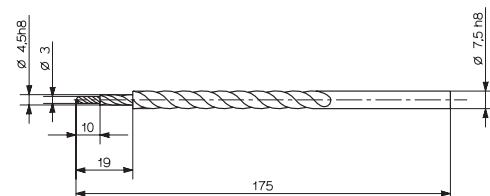


Fig. 8: Step drill Type 1300A51

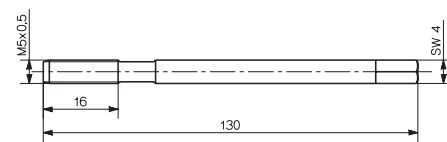


Fig. 9: Special tap M5x0,5 Type 1357A

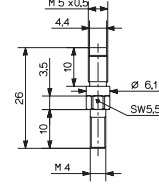


Fig. 10: Dummy sensor (for Type 6052C...)

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