

High-Temperature Pressure Sensor

for Combustion Engine Measurements

Type 6045A...

This uncooled sensor has very high sensitivity and excellent thermodynamic characteristics. It is mounted with shoulder sealing in an M8x0,75 bore.

- Mounting dimensions compatible with pressure sensor Type 6041A...
- Low thermal shock error
- Long service life
- High accuracy
- High sensitivity

Description

The Type 6045A... uses a PiezoStar® crystal for very high sensitivity in a compact form.

The mounting dimensions of this sensor are compatible with the water-cooled sensor Type 6041A... . The durable optimized diaphragm with low thermal shock sensitivity guarantees precise measurement. Very efficient heat dissipation allows a maximum operating temperature of 400 °C.

Applications

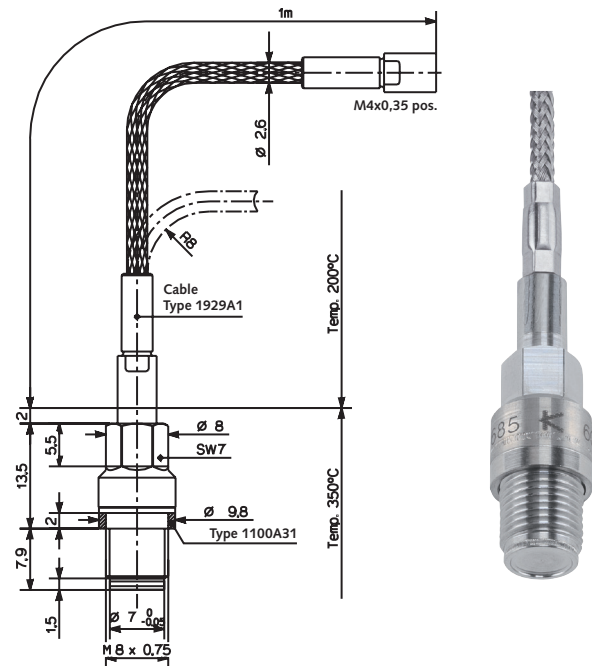
The 6045A... is an excellent general purpose engine sensor. Its robust construction makes it suitable for both knock measurement and thermodynamic investigations.

As an uncooled design it is also ideally suited for onboard use in over-the-road testing.

It is supplied with a integral cable, a rugged metal-braided version Type 6045A31 being used for standard applications.

U20 Version

For applications mainly in the knocking range or at very high pressure rises, use of Type 6045A...U20 with reinforced diaphragm (heavy duty version) is recommended.



Technical Data

Measuring range	bar	0 ... 250
Calibrated partial ranges	bar	0 ... 100, 0 ... 150 0 ... 200, 0 ... 250
Overload	bar	300
Sensitivity	pC/bar	≈-45
Natural frequency (measuring element)	kHz	>80
Linearity, all ranges (at 23 °C)	%/FSO	≤±0,4
Acceleration sensitivity		
axial	bar/g	≤0,0008
radial	bar/g	≤0,0008
Operating temperature range	°C	-20 ... 350
Temperature, min./max.	°C	-50 ... 400
Sensitivity shift		
250 °C ±100 °C	%	≤±0,7
23 ... 350 °C	%	≤±2
Thermal shock error		
(at 1 500 1/min, p _{mi} = 9 bar)		
Δp (short-term drift)	bar	≤±0,3
Δp _{mi}	%	≤±1,5
Δp _{max}	%	≤±1
Insulation resistance at 20 °C	Ω	≥10 ¹³
Tightening torque	N·m	6
Capacitance, without cable	pF	6
Weight with cable	g	28,5
Connector, ceramic insulator	-	M4x0,35

Technical Data

Type 6045A...U20 (other specification as for Type 6045A...)

Sensitivity	pC/bar	≈ -44
Measuring range	bar	0 ... 300
Calibrated partial range	bar	0 ... 100, 0 ... 200 0 ... 300
Overload	bar	350
Acceleration sensitivity	bar/g	< 0,001
Sensitivity shift 250 °C ± 100 °C	%	≤ ± 1
Thermal shock error (at 1 500 1/min, p _{mi} = 9 bar)		
Δp (short time drift)	bar	≤ ± 0,5
Δp _{mi}	%	≤ ± 2
Δp _{max}	%	≤ ± 1

Mounting

Direct:

The pressure sensor Type 6045A... can be installed in directly flush with the combustion chamber or recessed into an M8×0,75 bore. Figure 2 shows the first arrangement, which is preferable in order to avoid pipe oscillations. The bore must be exactly to specification (Figure 1). Kistler's tap Type 1361 allows you to achieve the required tolerances.

Sleeve:

Where space allows or if the cylinder head water jacket is damaged, it is advisable to use a mounting sleeve, custom versions of which are manufactured. Figure 3 shows the design of a sleeve with an M12×1,25 thread. Another advantage of sleeves is that the actual sensor bore can be machined very accurately in the sleeve. Kistler will prepare drawings for your particular situation on request.

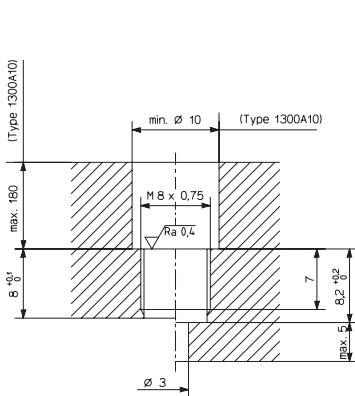


Fig. 1: Mounting bore

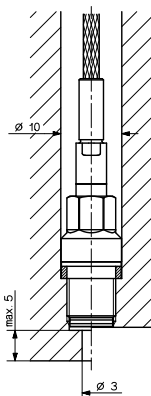


Fig. 2: Direct mounting

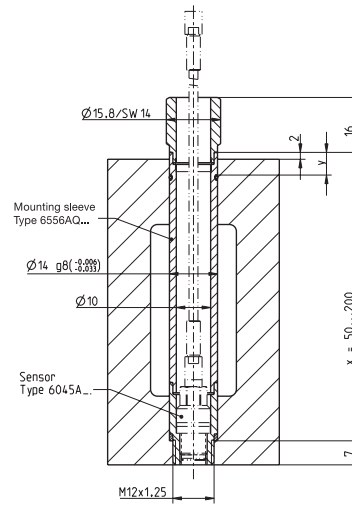


Fig. 3: Sleeve mounting with Type 6556AQ...

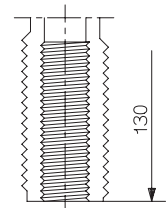


Fig. 4: M8×0,75 tap Type 1361

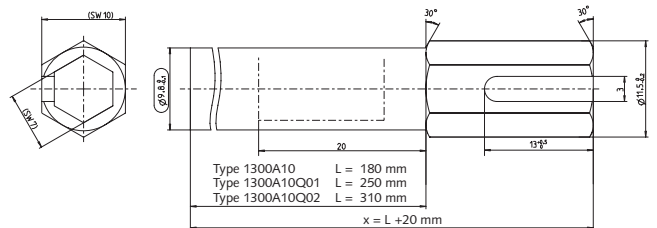


Fig. 5: Mounting key SW10/SW7 Type 1300A10...

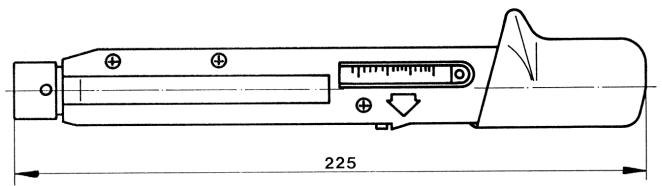


Fig. 6: 4 ... 20 N-m torque wrench Type 1300A39

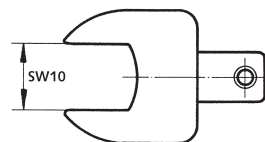


Fig. 7: SW10 wrench jaw insert for mounting and torque wrench Type 1300A123

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Included Accessory

- Adapter M4 neg. – BNC pos.

Type/Art. No.
1705

Optional Accessories

- Spare metal-sheathed cable, L = 1 m
- Spare PiezoSmart® metal-sheathed cable for type 6045AS...
- PiezoSmart® extension cable
- Cr-Ni seal ring
- Adapter M4 neg. – KIAG 10-32 neg.
- Dummy sensor
- Extraction tool Type 6477
- Mounting sleeve M12x1,25 (custom made)
- O-Ring 11x1,5 mm for Type 6556AQ...
- Adapter for pressure generator Type 6904
- Adapter for pressure generator Type 6905A
- Tap M8x0,75
- Mounting key SW10/SW7 (L = 180)
- Mounting key SW10/SW7 (L = 250)
- Mounting key SW10/SW7 (L = 310)
- Torque wrench (4 ... 20 N·m)
- Wrench jaw insert SW10 for Type 1300A10 and Type 1300A39
- Engine adapter M14/M8
- Temperature dummy

Type/Art. No.
1929A1
1985A1S311
1987B...
1100A31
1700A13
6477
1319
6556AQ...
5.110.210
6589
6929
1361
1300A10
1300A10Q01
1300A10Q02
1300A39
1300A123
6589Q1
6045AT

Ordering Key

Type 6045A 3

Without PiezoSmart®	–
With PiezoSmart®	5

Metal-sheathed cable	3
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Cable Length

1 m	1
2 m	2
Cable with special length, L, specified in m (L _{min} = 0,15 m/L _{max} = 3,5 m)	9

Version

Standard	–
Reinforced diaphragm	U20

For PiezoSmart® specifications please refer to the PiezoSmart brochure doc. no. 100-421

Ordering Example

- Version with 1 m cable
- Version with PiezoSmart, 3 m cable

Type
6045A31
6045AS39

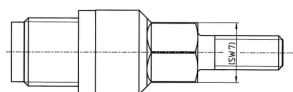


Fig. 8: Dummy sensor Type 6477

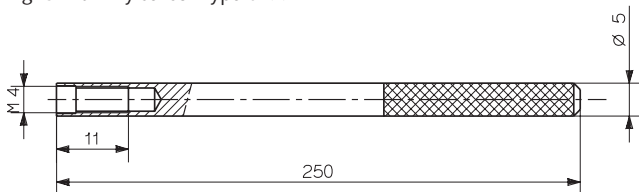


Fig. 9: Extraction tool for dummy sensor Type 1319

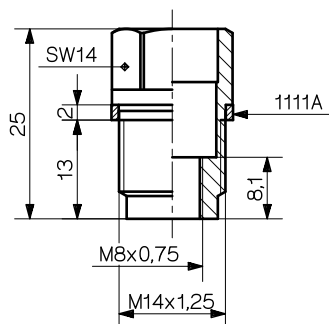


Fig. 10: Adapter Type 6589Q01

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