

High Temperature Pressure Sensor

Type 6058A...

for Glow Plug Adapter with Small Diameter

Pressure sensor Type 6058A... is designed specifically for use in glow plug adapters with small diameters where the use of a sensor Type 6056A... is not possible. Sensors with special lengths are not necessary. This greatly simplifies the preparation for combustion analysis measurements and storekeeping.

- Ideal for measurements with glow plug adapter Type 6544Q...
- Good temperature stability of the sensitivity
- Acceleration compensated
- Front diameter $\varnothing 4,0$ mm
- Low thermal shock error and long life due to front seal
- High sensitivity
- Highly miniaturized plug connection (M3 size)

Description

In Type 6058A... the PiezoStar, a new piezoelectric crystal from Kistler is used with which a sensitivity of -17 pC/bar and high thermal stability is achieved. The sensitivity changes by not more than $\pm 0,5$ % over a temperature range of $200 \dots \pm 50$ °C. The front seal allows good heat dissipation permitting a maximum operating temperature of 400 °C for brief duration.

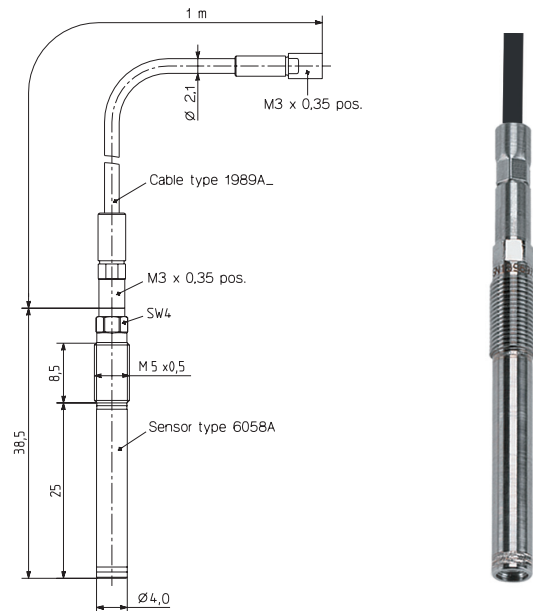
The connector enables pressure sensors of standard length to be installed in varying length glow plug adapters. This distinctly simplifies the preparation for indicating measurements and storekeeping.

Application

The miniature sensor is used typically in glow plug adapters for pressure measurement in diesel engines (Fig. 3); see also data sheet 6542Q_000-570.

However, due to its small dimensions, it can also be used in engines with complex structural geometries in indicating bores.

The rugged, turned diaphragm also allows measurements beyond the knocking limit; at the same time, thanks to its low thermal shock error, very accurate thermodynamic investigations are still assured.



Technical Data

Measuring range	bar	0 ... 250
Calibrated ranges	bar	0 ... 50, 0 ... 100, 0 ... 150, 0 ... 250
Overload	bar	300
Sensitivity	pC/bar	≈ -17
Natural frequency, nominal	kHz	≈ 160
Linearity in all ranges (at 23 °C)	%/FSO	$\leq \pm 0,4$
Acceleration sensitivity	bar/g	$< 0,0005$
Operating temperature range	°C	$-20 \dots 350$
temperature min./max.		$-50 \dots 400$
Sensitivity shift		
200 ... ± 50 °C	%	$\leq \pm 0,5$
23 ... 350 °C	%	$\leq \pm 2$
Short term drift (thermal shock)		
(at 1500 1/min, $p_{mi} = 9$ bar)		
Δp (Short term drift)	bar	$\leq \pm 0,5$
Δp_{mi}	%	$\leq \pm 2$
Δp_{max}	%	$\leq \pm 1$
Insulation resistance at 23 °C	Ω	$\geq 10^{13}$
Shock resistance	g	2 000
Tightening torque	N·m	1,2
Capacitance, without cable	pF	5
Weight with cable	g	30
Connector, ceramic insulator	–	M3x0,35

Mounting in Glow Plug Adapter

Sensor Type 6058A... is typically used in glow plug adapters (Fig. 3). For this purpose, Kistler offers the customized optimum adapters of the Type 6544Q... (see also data sheet 6542Q_000-570). These are provided with a hole bored according to requirements (Fig. 1) for the sensor mounting, and have been specially optimized with regard to signal quality and longevity. As a general rule, we would advise against the use of a self-manufactured glow plug adapter. On request, Kistler will provide an engine-specific adapter drawing for your use.

General Mounting

When mounting the adapter, it is essential to comply with the tightening torque of 1,2 N·m. The sensor should therefore be mounted with cable connected and socket wrench Type 1300A14 and the torque wrench Type 1300A17.

A slotted mounting key must be used for sensors with PiezoSmart. The mounting bore must either be exactly $\varnothing 5,7$ mm (with step drill) or larger than $\varnothing 7,5$ mm. The mounting key Type 1300B14 is for $\varnothing 5,7$ mm. The mounting key Type 1300B14Q01 is for $\varnothing \geq 7,5$ mm.

Direct Mounting

Sensor Type 6058A... can be mounted directly in the cylinder head (Fig. 2). When drilling the hole, bore specifications (Fig. 1) must be held exactly.

The following Kistler tools:

Step drill	Type 1300A18
Tap	Type 1357A
Reaming tool	Type 1300A111

enable you to maintain the tolerances required. The hole must be drilled in one work holding fixture. Before mounting the sensors, in particular the sealing surface in the hole must be checked; use of the reaming tool Type 1300A111 is mandatory. You will find additional information on drilling the hole and mounting in the instruction manual. Your Kistler distributor will provide you with further information such as, for example, concerning the preferred location of the indicating bore in the combustion chamber.

Sleeve Mounting

Where space allows or if the sensor must be mounted through the water jacket of the cylinder head, we recommend the use of a mounting sleeve. Mounting sleeves are manufactured to customer specifications. Fig. 4 shows a version with M6x0,5 thread. An additional advantage of mounting sleeves is that the actual sensor bore in the sleeve can be very precisely machined. On request, Kistler will provide drawings for your particular mounting situation.

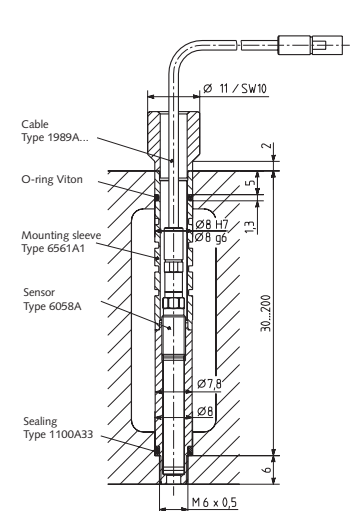
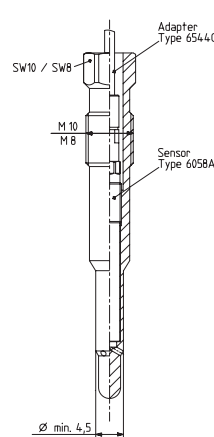
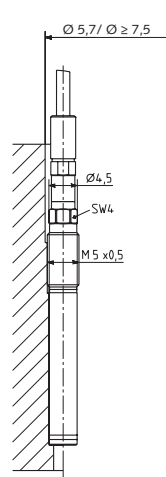
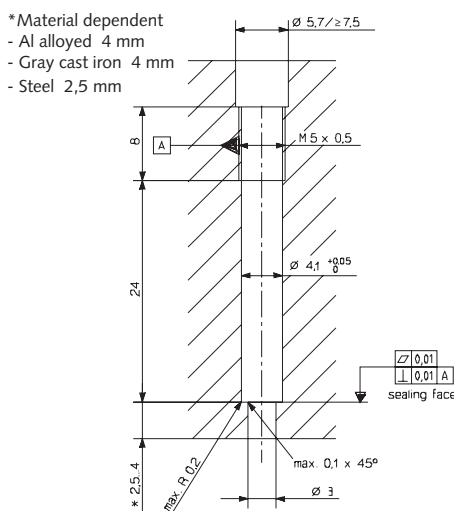


Fig. 1: Dimensions of the mounting bore

Fig. 2: Direct mounting

Fig. 3: Mounting in glow plug adapter

Fig. 4: Mounting in mounting sleeve

6058A_000-573e-07.07

Included Accessories **Type/Art. No.**

- Cable according ordering key
- Coupling M3x0,35 neg. – BNC pos. 1706

Optional Accessories **Type/Art. No.**

- Coupling M3x0,35 neg. – BNC pos. 1706
- Cable 1989A
- Mounting key
 - ø5,6 mm, not slotted 1300A14
 - ø5,6 mm, slotted 1300B14
 - ø7,3 mm, slotted 1300B14Q01
- Torque wrench 1 ... 6 N·m 1300A17
- Special drilling tool 1300A18
- Special screw tap M5x0,5 1357A
- Mounting sleeve 6561A1...
- O-ring for mounting sleeve 5.110.055
- Adapter for pressure generator Type 6904 6591
- Finishing tool for bore 1300A111
- Temperature probe 6058AT

Ordering Key

		Type 6058A
Without PiezoSmart®	–	□
With PiezoSmart®	S	□
Cable Type		
Without cable	–	□
Viton®	4	□
Cable Length		
Without cable	–	
1 m	1	
2 m	2	
Cable with special length, L stated in m (L _{min} = 0,15 m/L _{max} = 3,5 m)	9	

Ordering Examples: Type 6058A...

- Version without cable Type 6058A
- Version with 1 m Viton®-cable Type 6058A41
- Version with PiezoSmart and 2 m Viton-cable Type 6058AS42

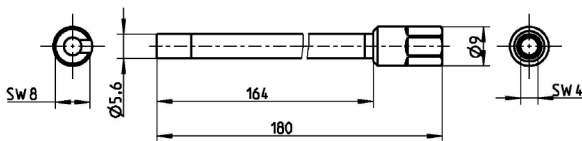


Fig. 5: Mounting key Type 1300A14

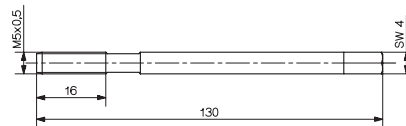


Fig. 6: Special tap Type 1357A

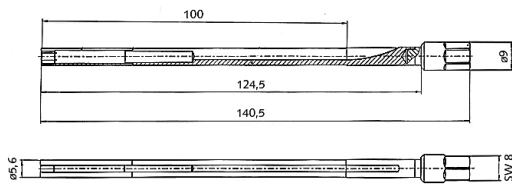


Fig. 7: Mounting key ø5,6 mm, slotted, Type 1300B14

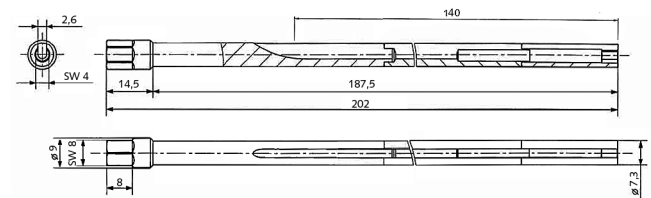


Fig. 8: Mounting key ø7,3 mm, slotted, Type 1300B14Q01

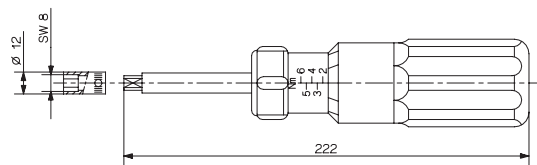


Fig. 9: Torque wrench Type 1300A17

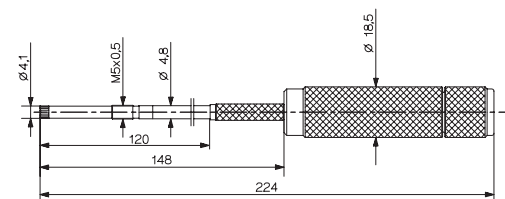


Fig. 10: Reaming tool Type 1300A111

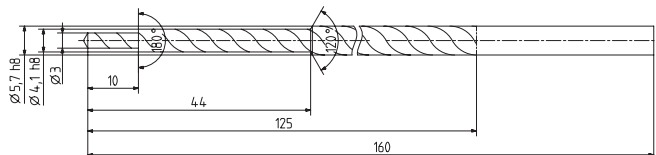


Fig. 11: Step drill Type 1300A18

Viton® is a registered trademark of DuPont Performance Elastomers

6058A_000-573e-07.07