

Compact M5 Pressure Sensor

Type 6054AR...

for Minimal Mounting Space

Type 6054AR... is used to achieve precise measurements when limited space is available for the sensor. Due to its high resonance frequency it is suitable for measurements at high power engines where high vibrations are present. A long service life is reached due to the rugged design.

- Very compact packaging
- Low sensitivity to solid borne sound
- High resonant frequency
- Highly miniaturised connector (M3 size)

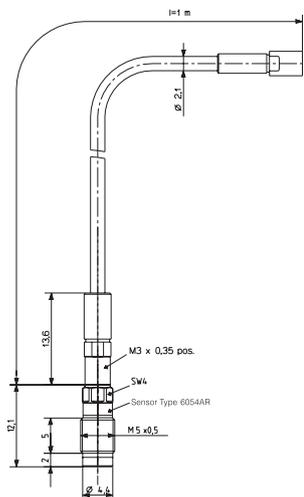
Description

Type 6054AR... is a complete new design despite the well known M5 dimensions. It is based on the new PiezoStar® crystal from Kistler. In face of the compact size the sensitivity of Type 6054AR... is remarkable -14 pC/bar with high temperature stability. The new designed front sealing permits good heat transfer. This allows the sensor to be used in engines with high specific power and thus high temperatures. Combined with the flame guard Type 6539A1Q01 the sensor achieves a high thermodynamic accuracy. Due to the compact size and the high resonance frequency the noise of engine vibrations, for example valve slap, is kept to a minimum.

Application

Sensor Type 6054AR... needs little mounting space. It can be mounted in the Type 6052C... bore. The access bore can be as small as 5,7 mm if the Type 6054AR... is used solely. That way the Type 6054AR... is applicable for small engines, compact multi-valve engines as well as for motorcycle engines and vehicle combustion analysis.

The sensor comes with 1 m cable. The robust steel sheathed cable Type 1989A311 is used for all standard applications. When used where engine oil is present, for example when routed through the valve cover, the oil proof cable Type 1989A711 is recommended.



Technical Data

Range	bar	0 ... 300
Calibrated partial range	bar	0 ... 100, 0 ... 200 0 ... 300
Overload	bar	300
Sensitivity	pC/bar	≈ -14
Natural frequency (sensor)	kHz	≈ 150
Linearity in all ranges (at 23 °C)	%/FSO	$\leq \pm 0,3$
Acceleration sensitivity		
axial	bar/g	$< 0,0002$
radial	bar/g	$< 0,0002$
Operating temperature range	°C	-20 ... 350
Temperature min./max.		-50 ... 400
Sensitivity change		
200±50 °C	%	$\leq \pm 0,5$
23 ... 200 °C	%	$\leq 1,5$
Thermal shock error		
(at 1 500 1/min, $p_{mi} = 9$ bar)		
Δp (short time drift)	bar	$\leq \pm 0,5$
Δp_{mi}	%	$\leq \pm 2$
Δp_{max}	%	$\leq \pm 1,0$
Insulation resistance at 23 °C	Ω	$\geq 10^{13}$
Shock resistance	g	2 000
Tightening torque	N·m	1,5
Capacitance, without cable	pF	5
Weight with cable	g	25
Connector, ceramic insulator	-	M3x0,35

Mounting

When mounting the adapter, it is essential to comply with the tightening torque of approx. 1,5 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 6056A... 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 1300A22
Tap	Type 1357A
Reaming tool	Type 1300A79

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 1300A99 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.

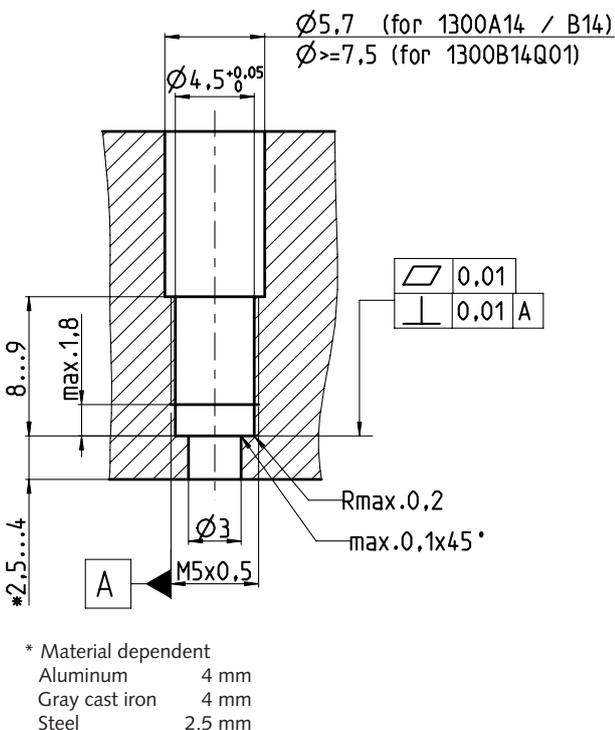


Fig. 1: Mounting bore

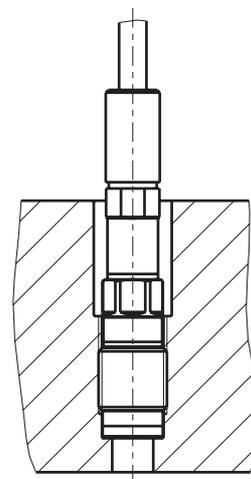


Fig. 2: Direct mounting

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Included Accessories

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

Type/Art. No.

1706

Optional Accessories

- Flame guard
- Coupling M3x0,35 neg. – BNC pos.
- Spare metal-sheathed cable, L = 1 m
- Fluoropolymer spare cable, L = 1 m
- PiezoSmart® spare metal-sheathed cable, L = 1 m, for Type 6054ARS...
- PiezoSmart® spare cable, oil-proof fluoropolymer, L = 1 m, for Type 6054ARS...
- PiezoSmart® extension cable
- Mounting wrench
 ø5,6 mm, not slotted
 ø5,6 mm, slotted
 ø7,3 mm, slotted
- Torque wrench 1 ... 6 N·m
- Step drill
- Special screw tap M5x0,5
- Adapter for pressure generator 6904
- Reaming tool
- Dummy
- Extraction tool for dummy

Type/Art. No.

6539A1Q01
 1706
 1989A311
 1989A711
 1985A8S311
 1985A8S711
 1987B...
 1300A14
 1300B14
 1300B14Q01
 1300A17
 1300A22
 1357A
 6585AQ01
 1300A79
 6405A2
 1349

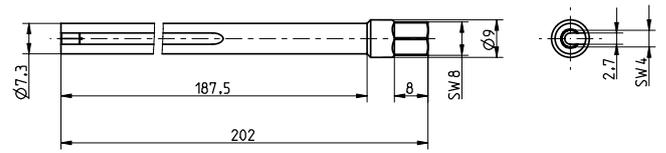


Fig. 6: Mounting wrench ø7,3 mm, slotted, Type 1300B14Q01

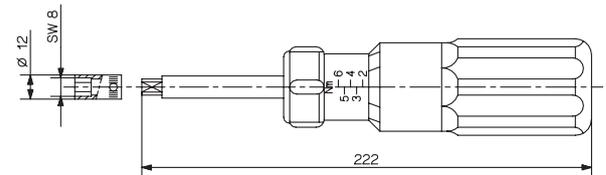


Fig. 7: Torque wrench Type 1300A17

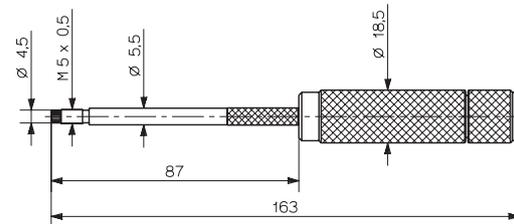


Fig. 8: Reaming tool Type 1300A79

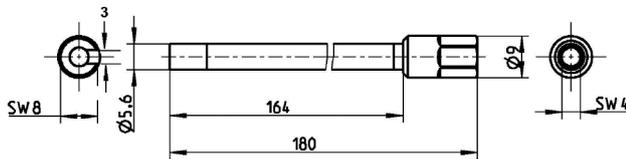


Fig. 3: Mounting wrench Type 1300A14

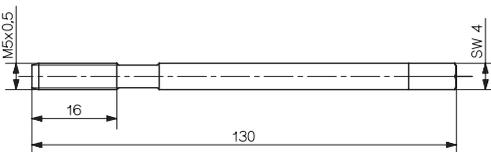


Fig. 4: Special screw tap Type 1357A

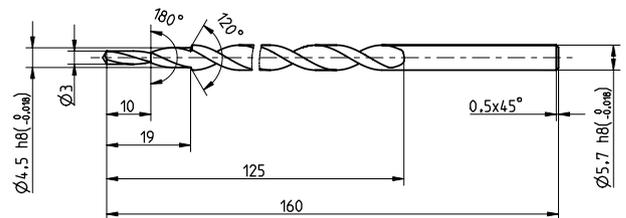


Fig. 9: Step drill Type 1300A22

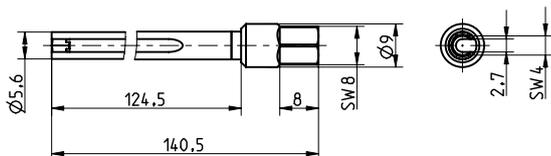


Fig. 5: Mounting wrench ø5,6 mm, slotted, Type 1300B14

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Ordering Key

		Type 6054AR		
without PiezoSmart®	-	↑	↑	↑
with PiezoSmart®	S			
Cable Type		↑	↑	↑
without cable	-			
Steel	3			
Fluoropolymer, oil-proof	7			
Cable Length		↑	↑	↑
without cable	-			
1 m	1			

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

Ordering Examples

- Version without cable **Type 6054AR**
- Version with 1 m fluoropolymer cable **Type 6054AR71**
- Version with PiezoSmart® and 1 m fluoropolymer cable **Type 6054ARS71**

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