

Cavity Pressure Sensor

in Adapter with Front: $\varnothing 4 \text{ mm}$

Type 6155AE

Patent No. US 6,212,963

Quartz sensor with single-wire cable mounted in a robust adapter. For use in mold cavity pressure measurement up to 2000 bar in the injection molding of plastics.

- Suitable for standard molds with cavity inserts
- Removal of inserts possible without disassembling sensor
- Sensor front machinable, without diaphragm

Description

The quartz sensor for mold cavity pressure Type 6155AE is integrated in an adapter and has a 4 mm diameter front face. The entire front surface is machinable and can be made to fit the cavity contour. The small cross-sectional area of the single-wire cable allows flexibility of installation. Shielding in the single-wire technique is provided by the mold. It is therefore essential for the cable and connector to be integrated in the mold.

The pressure acts over the entire front of the sensor and is transmitted to the quartz measuring element, which produces a proportional electric charge ($pC = \text{Picocolomb}$). This is converted into a 0 ... 10 V output from a standard charge amplifier.

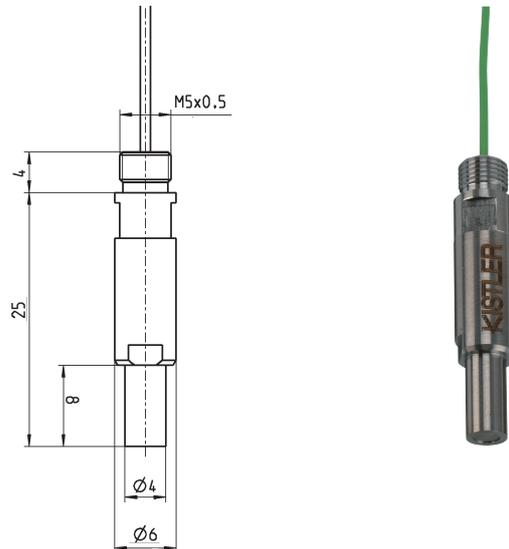
All sensor components are corrosion proof. The single-wire connector is self-locking and water resistant.

This product complies with the I standard 89/336/EEC.

Application

The sensor is mainly suitable for industrial applications for monitoring and open loop/closed loop control in thermoplastic injection molding machines. It is installed into the insert retaining or bolster plate and protrudes at right angles into the insert plate. With the sensor in place, the sensor front and the cavity wall are flush. The connector is also fitted in the retaining plate, allowing the insert to be removed without separating sensor and cable. This ensures easier servicing and insert exchanges.

Caution! This sensor may never be used for gases or liquids!

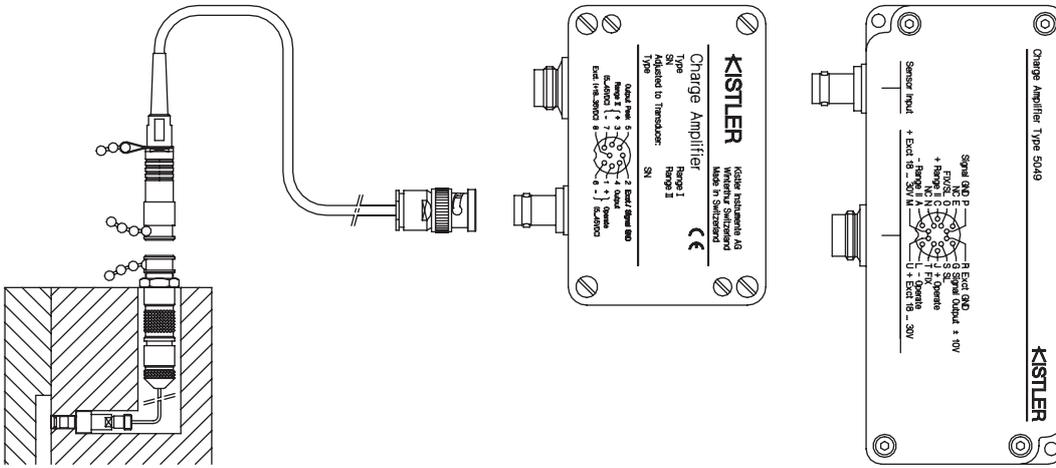


Technical Data

Range	bar	0 ... 2000
Overload	bar	2500
Sensitivity	pC/bar	$\approx -2,5$
Linearity, all ranges	% FSO	$\leq \pm 1$
Natural frequency	kHz	≈ 100
Operating temperature range		
Mold (sensor, cable, connector)	$^{\circ}\text{C}$	0 ... 200*
Melt (on sensor front face)	$^{\circ}\text{C}$	<450
Temperature coefficient of sensitivity	%/ $^{\circ}\text{C}$	$\leq \pm 0,02$
Insulation resistance		
at 20 $^{\circ}\text{C}$	T Ω	>10
at 200 $^{\circ}\text{C}$	T Ω	>1

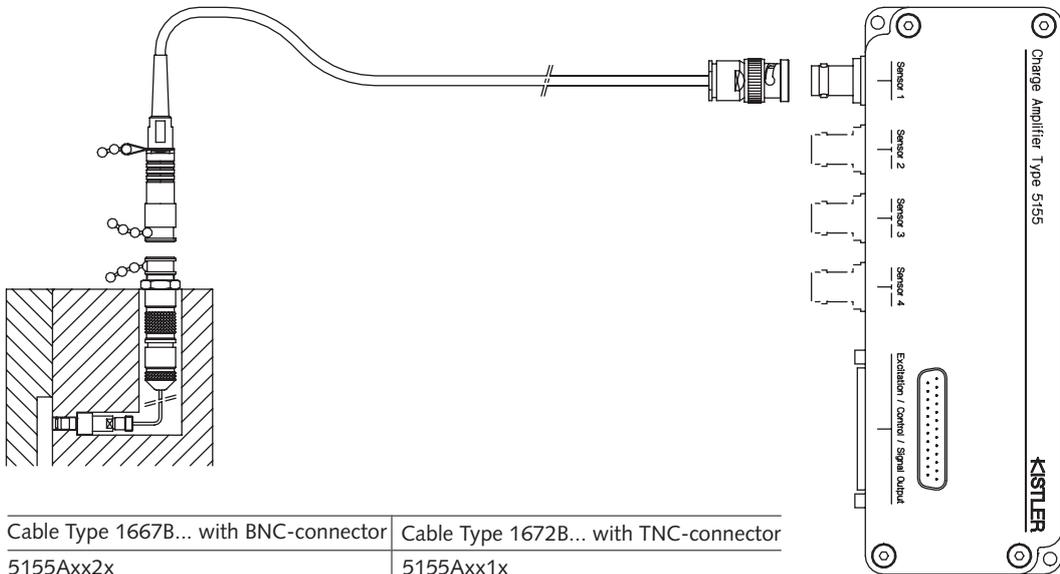
* During machine down-time, the mold temperature may be allowed to rise to 240 $^{\circ}\text{C}$ without damaging the sensor. However, measuring errors may occur.

Measuring Chain with Sensor Type 6155AE and Machine-Integrated Charge Amplifier



Cable Type 1667B... with BNC-connector	Cable Type 1672B... with TNC-connector
5039Axx2	5039Axx1
5049Axx2	5049Axx1

Fig. 1: Sensor Type 6155AE with charge amplifier Type 5039A... (1-channel) or with charge amplifier Type 5049A... (1-channel with SmartAmp)



Cable Type 1667B... with BNC-connector	Cable Type 1672B... with TNC-connector
5155Axx2x	5155Axx1x
5155Axx4x	5155Axx3x
5155Axx8x	5155Axx7x
5155AxxBx	5155AxxAx
5155AxxDx	5155AxxCx

Fig. 2: Sensor Type 6155AE with charge amplifier Type 5155A... (1-, 2- or 4-channel; SmartAmp optional on one channel)

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Installation Examples

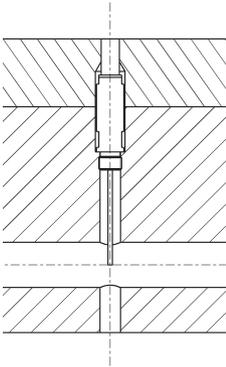


Fig. 3: Installation directly into retaining plate

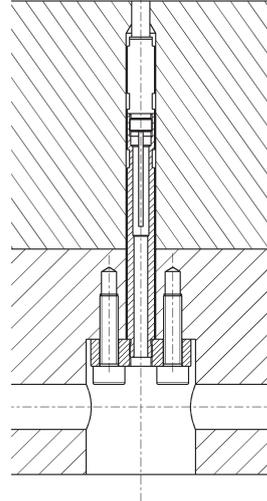


Fig. 4: Installation with 50 mm extension and holding plate

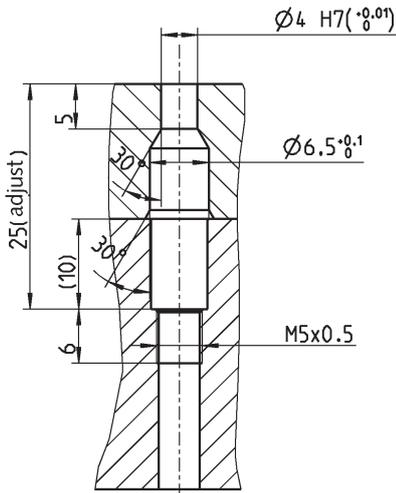


Fig. 5: Bore dimension Type 6155AE

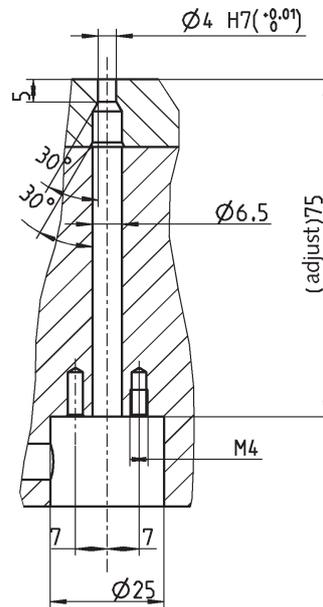


Fig. 6: Bore dimension for Type 6155AE with extension sleeve and holding plate

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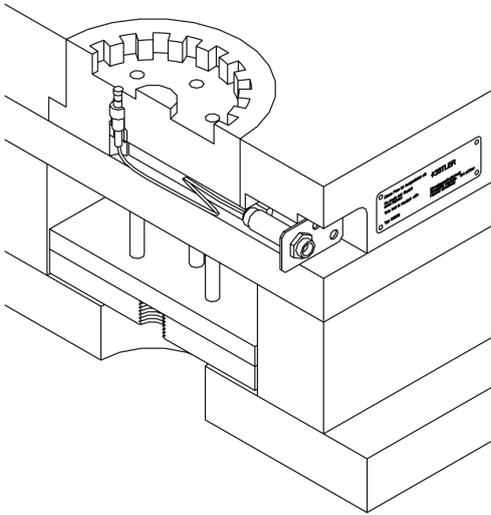


Fig. 7: Sensor, cable, connector, mounting plate and identification plate

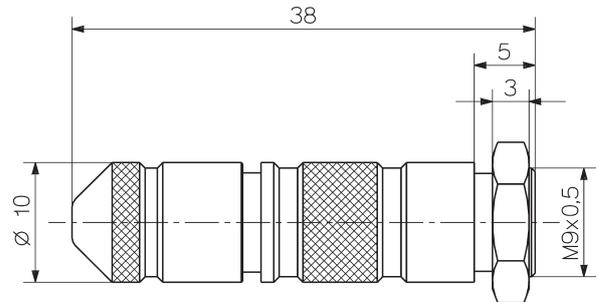


Fig. 8: Connector Type 1839

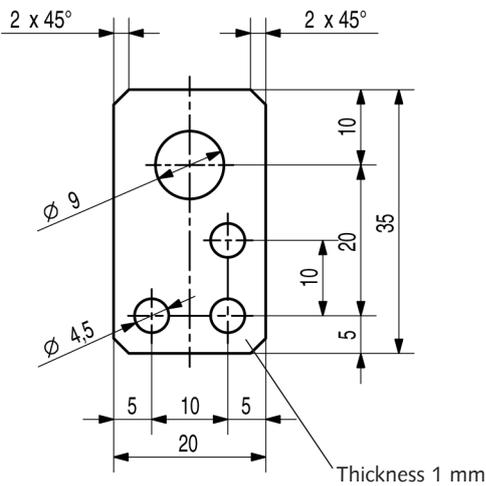


Fig. 9: Mounting plate (Art. No. 3.520.328)

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Installation

The sensor is screwed directly into the M5 thread in the bore Ø6,5 of the retaining plate (Fig. 3). Where the cavity insert is thicker, the extension 6530A20 or 6530A50 are added. The installation of the sensor with the holding plate 6540A, fitted from below, also requires the extension (Fig. 4). The front face of the sensor forms part of the cavity wall. The sensor must therefore be installed in such a way that its front face is exactly flush with the wall.

The sensor front face can be machined up to 0,5 mm.

The single-wire cable is also installed in the retaining plate. The connector supplied must be installed with the single-wire cable cut to length. The insulation of the cable must not be stripped prior to insertion into the connector. This connector is installed in the mounting plate and is then secured in a recess in the retaining plate. The identification plate should be located nearby, indicating the type of sensor and its sensitivity.

Accessories Included

	Art. No. / Type
• Spacer 0,1 mm (4 pieces)	6530A0,1
• Connector	1839
• Mounting plate	3.520.328
• Identification plate	3.520.842
• Cap with chain	7.621.004

Optional Accessories

	Type
• Extension sleeve 20 mm	6530A20
• Extension sleeve 50 mm	6530A50
• Holding plate	6540A
• Dummy sensor	6554

Ordering Key

Type

Cavity Pressure Sensor	6155AE
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