

Mold Cavity Pressure Sensor

with front: \varnothing 4 mm

Type 6167A...

Patent No. US 6,212,963

Quartz sensor for cavity pressure up to 200 bar in plastics injection molding.

- for low pressure injection molding
- Suitable for low viscosity materials
- Sensor with membrane

Description

The quartz sensor for mold cavity pressure Type 6167A... has a front of 4 mm diameter. An O-ring seals the annular gap of $<10 \mu\text{m}$ between sensor and mounting bore and thereby also center aligns the sensor in the bore.

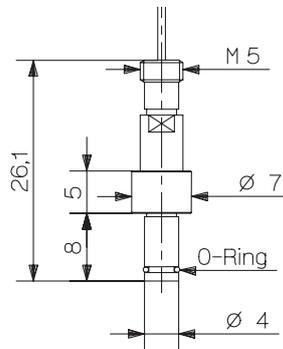
The electrical charge produced by the sensor ($\text{pC} = \text{picocoulomb}$) is converted by the Kistler charge amplifier into a proportional voltage of 0 ... 10 V. The length of the sensor cable has no influence.

The pressure acts directly on the entire front of the sensor and is transferred to the quartz measuring element, which produces an electrical charge proportional to the pressure.

All parts of the sensor are corrosion-resistant. The exchangeable cable is screwed to the sensor with a tight seal. The connector is self-locking and splash-proof.

This product complies with the **CE** standard 89/336/EEC.

The sensor 6167AE is provided with a single-wire cable with a very small cross-sectional area and can be installed flexibly in the injection mold. The single-wire cable is exchangeable and can be cut to length as required. With the single-wire technique, electrical shielding is provided by the mold. It is therefore essential for the cable and connector to be completely integrated in the mold. To ensure easy installation, a connector is included which is self-locking and splash-proof. With multi-cavity systems Type 6829A..., the sensor basic type is supplied with a single-wire cable, but without connector and mounting plate.



Application

This sensor measures mold cavity pressures up to 200 bar; it is particularly suitable for industrial applications for monitoring and open and closed loop control of the process. The diaphragm design of the sensor prevents low viscosity melts between sensor and bore from affecting the measuring result.

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

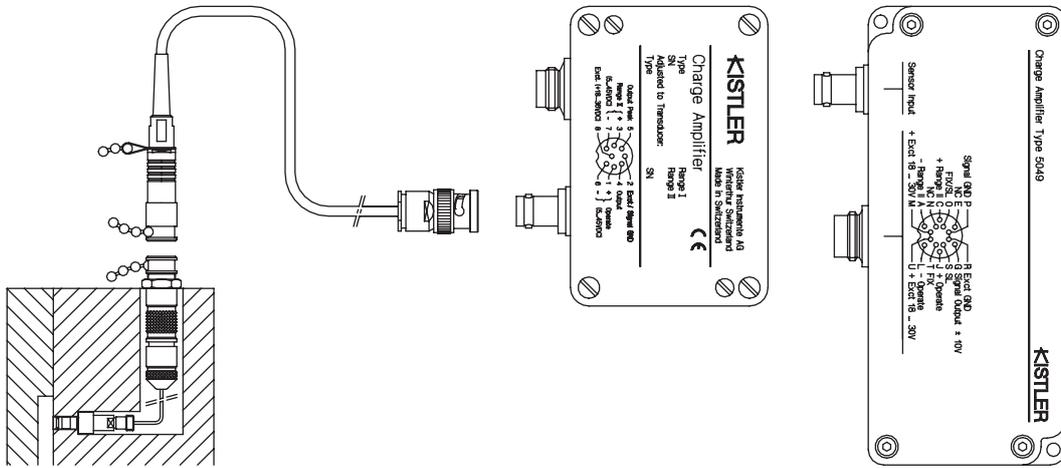
Technical Data Type 6167A... and 6167AE

Range	bar	0 ... 200
Overload	bar	500
Sensitivity	pC/bar	$\approx -16,5$
Linearity, all ranges	% FSO	$\leq \pm 1$
Natural frequency	kHz	≈ 150
Operating temperature range		
Mold (sensor, cable, connector)	$^{\circ}\text{C}$	0 ... 200*
Melt (at front of sensor)	$^{\circ}\text{C}$	< 450
Temperature coefficient of sensitivity	%/ $^{\circ}\text{C}$	$\pm 0,02$
Insulation resistance		
at 20 $^{\circ}\text{C}$	$\text{T}\Omega$	> 10
at 200 $^{\circ}\text{C}$	$\text{T}\Omega$	> 1

* During machine faults, the mold temperature may rise to 240 $^{\circ}\text{C}$ without damaging the sensor; however, this may lead to measuring errors.

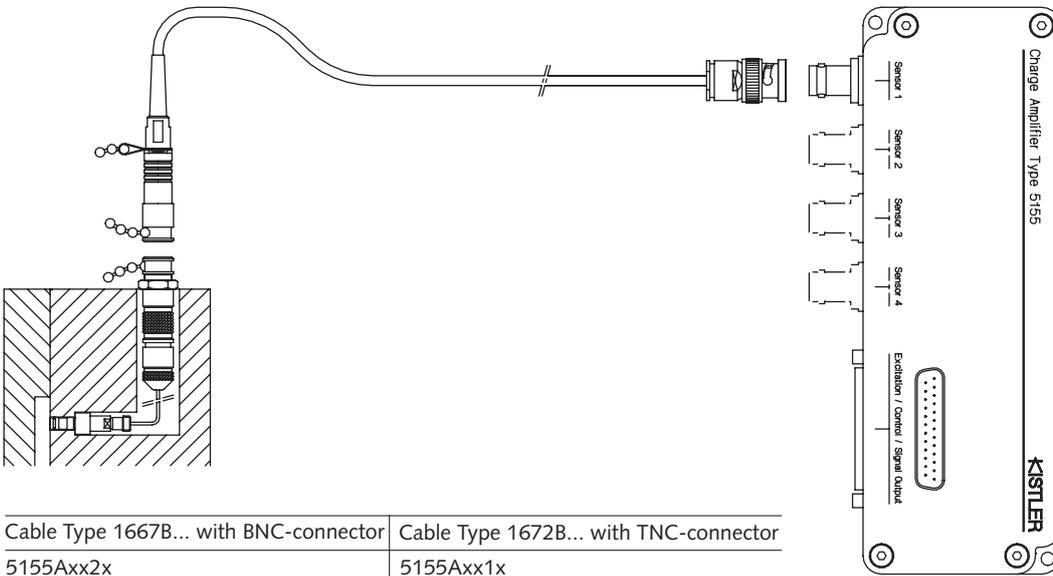
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Measuring Chain with Sensor Type 6167A... and Machine-Integrated Charge Amplifier



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

Fig. 1: Sensor Type 6167A... 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 6167A... with charge amplifier Type 5155A... (1-, 2- or 4-channel; SmartAmp optional on one channel)

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Installation Examples

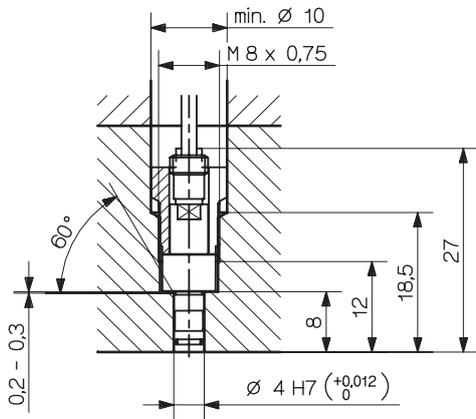


Fig. 1: Installation with mounting nut (Type 6457)

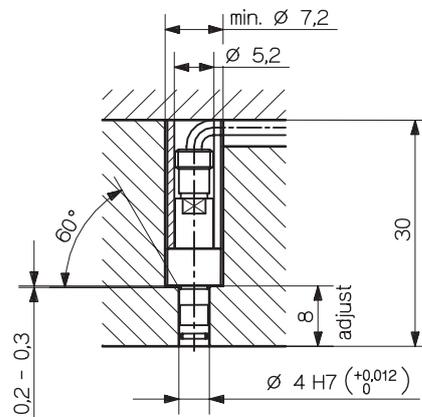


Fig. 2: Installation with spacer sleeve (Type 6459)

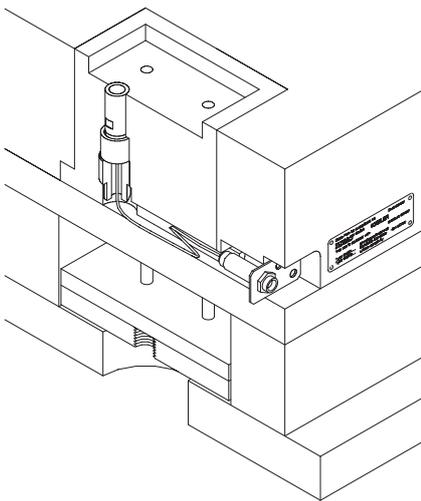


Fig. 3: Sensor, cable, mounting plate (Art. No. 3.520.328) and identification label (Art. No. 3.520.842)

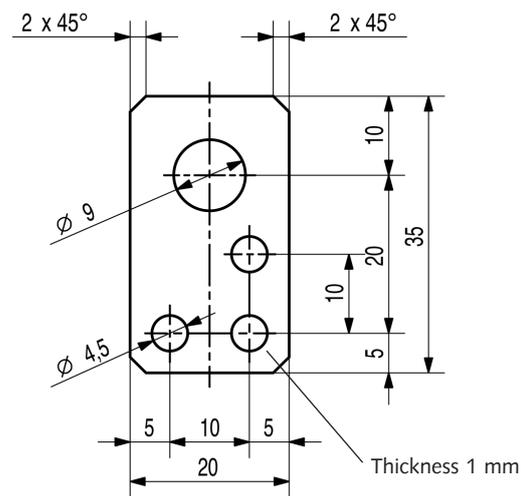


Fig. 4: Mounting plate (Art. No. 3.520.328)

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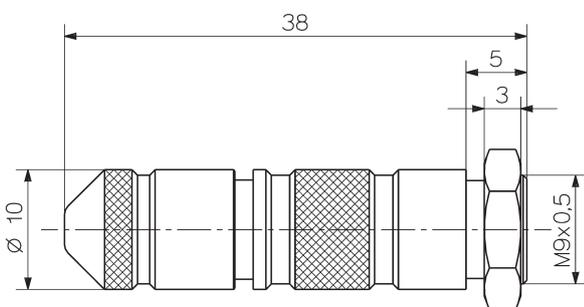


Fig. 5: Connector (Type 1839)

Accessories Included

- Mounting nut Art. No. 6457
- Mounting plate 3.520.328
- Identification label 3.520.842
- Connector (for single-wire technique only) 1839
- Single-wire cable, with the length of 1,5 m (ready installed with sensor, for single-wire technique only) 1666A2
- O-ring, diameter 2,5 x 0,65 mm 1100A57

Optional Accessories

- High temperature extension cable sheathed in steel braiding, Fischer SE102A014 – TNC pos., Length 2 m Type 1672A2
- High temperature extension cable sheathed in steel braiding, Fischer SE102A014 – TNC pos., Length 5 m 1672A5
- High temperature extension cable, Teflon Fischer SE102A014 – BNC pos., Length 2 m 1667B2
- High temperature extension cable, Teflon Fischer SE102A014 – BNC pos., Length 5 m 1667B5
- Mounting piece for connectors 1401
- Dummy sensor 6545
- Spacer sleeve 6459

Set of accessories Type 1300A81 consisting of: Art. No.

- Step drill, diameter 7,2/3,85 5.210.156
- Countersink 5.210.158
- Twist drill, diameter 10 mm 5.210.159
- Reamer, diameter 4H7 5.210.155
- Tap M8 x 0,75 5.210.161
- Finishing tool 7.110.296
- Hexagonal socket wrench 5.210.118
- Lapping tool 7.110.298
- Limit plug gage, diameter 4H7 5.210.162
- Checking tool 7.110.300
- Clamp 3.050.175
- Fork wrench SW4/SW5 5.210.164

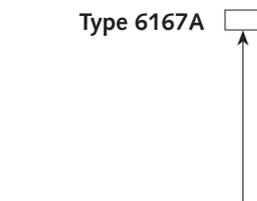
Mounting Accessories

- Socket wrench Type 1383
- Extraction tool 1315A
- O-ring tool for exchanging the cable 1364

Ordering Key

Cable

Coaxial cable, L in m	0,2
	0,4
	0,6
	0,8
Coaxial cable with special lengths, specify L in m (L _{min} = 0,1 m / L _{max} = 5 m)	sp
with single-wire cable (L = 1,5 m)	E
with single-wire cable (L = 5 m)	E1



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