

# Piezotron quartz pressure sensor

Type 6613CP

## For engine diagnostics

Piezoelectric sensor with integrated amplifier (Piezotron) for periodical measurement of cylinder pressure in large bore engines, suitable for all types of fuel, e.g. HFO, Diesel and various types of gas.

- Robust design
- M10x1 mounting thread
- Suitable for knock detection

### Description

The sensor and the Piezotron amplifier are connected by a strong, fluorelastomer coated cable. The quartz-measuring element is extremely stable and provides a very accurate signal over the whole life time. The sensor has an M10x1 mounting thread for mounting into the Kistler Thompson-Adapter Type 6513A or Type 6513AK for measuring at the indicator valve.

The sensor has been designed so that a life of several thousand operating hours can be achieved in diesel and gas engines, but individual sensor life time is strongly dependent on application.

### Application

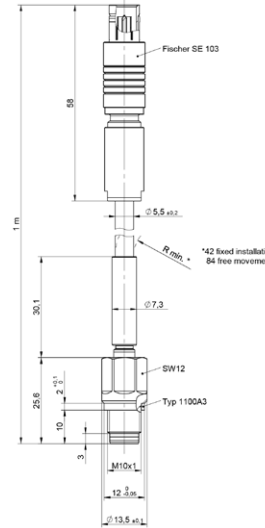
Type 6613CP is mainly used for periodical measurement of cylinder pressure at the indicator valve.

#### 2-stroke engines

It's recommended to use the sensor with adapter Type 6513A

#### 4-stroke engines

It's recommended to use the sensor with adapter Type 6513AK, as the higher operating temperature of 4-stroke engines necessitates additional cooling to reduce the temperature of the sensor and maximize the life time.



### Technical data

Range	bar	0 ... 250
Overload	bar	300
Sensitivity	mV/bar	-20
Natural frequency	kHz	≈90
Linearity, all ranges	%FSO	≤±1
Acceleration sensitivity		
axial	bar/g	<0,002
transverse	bar/g	<0,001
Operating temperature range		
Front part of sensor	°C	-50 ... 350
Hex-nut to connector	°C	-50 ... 150
Electronics in plug	°C	-50 ... 90
Sensitivity shift		
200 ... ±150 °C	%	3,5
200±50 °C	%	≈1
Thermal shock		
at 1 500 1/min, IMEP = 9 bar		
Δp	bar	≤±0,5
ΔIMEP	%	≤±2
Supply current	mA	4
Output bias	VDC	9 ... 14
Time constant at 20 °C	s	≈900
Time constant at 200 °C	s	> 100
Time constant at 350 °C	s	≈5
Output impedance	Ω	<100
Shock resistance	g	2 000
Tightening torque	N·m	15
Weight	g	160
Plug	Type	Fischer SE 103 pos.

## Mounting

In order to minimize thermal stress on the sensor, it should be located so that good heat dissipation to colder components is possible. This can normally be achieved by a set-back location. Optimum sensor life is achieved at an average temperature of 200 ... 300 °C in the sensor body. An angled gas channel can also reduce the effect of flame on the diaphragm, and thereby minimize the short term drift of the sensor. In order to prevent pipe oscillations, the lengths of the gas channel should not exceed 30 mm. Strong gas oscillations occur when the gas column between sensor and combustion chamber resonates. Superimposed on the cylinder pressure, these pressure oscillations impose an additional load on the sensor, resulting in reduced life of the sensor.

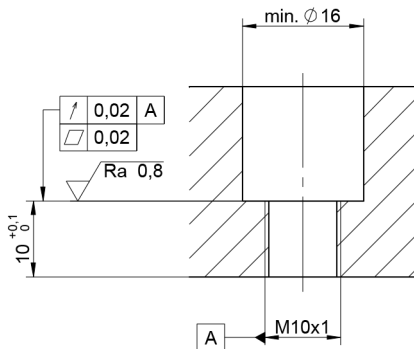


Fig. 1: Mounting bore (4-stroke application) for flush mounting

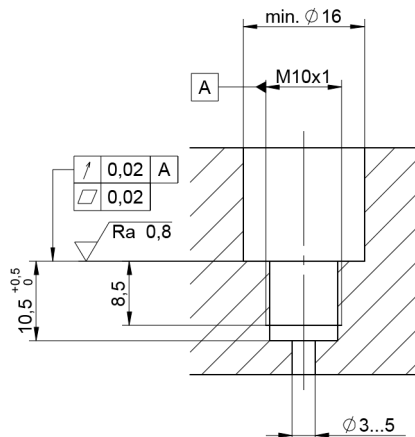


Fig. 2: Mounting bore (4-stroke application) for recessed mounting with additional gas channel. Admissible bore length depends on the application. Too long bore may interfere the quality of the measuring results

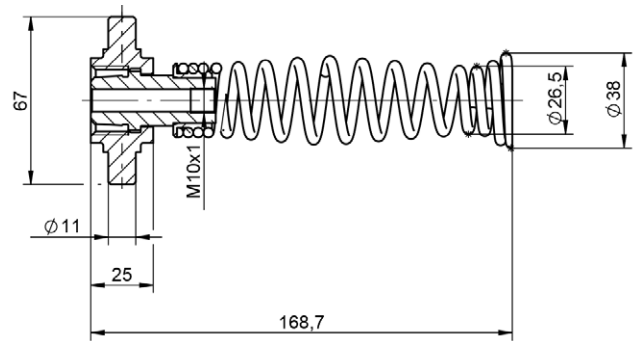


Fig. 3a: Thompson adapter Type 6513A

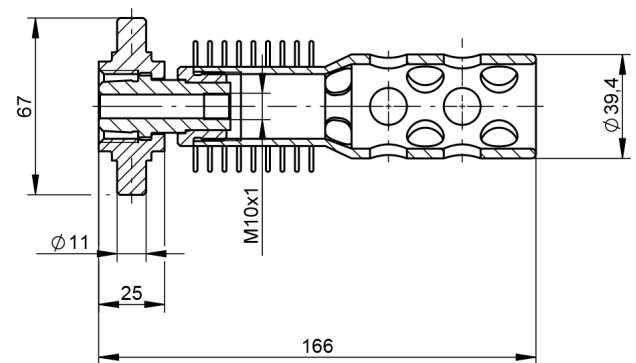


Fig. 3b: Thompson adapter with cooling fins Type 6513AK

## Accessories

- |  |             |
|--|-------------|
| • Nickel seal                                    | Type 1100A3 |
| • Thompson adapter                               | 6513A       |
| • Thompson adapter with cooling fins             | 6513AK      |
| • Connecting cable Fischer KE103 neg. – BNC pos. | 1673A2/A5   |
| • Engine Peak Meter                              | 2516B1      |

## Mounting accessories

- |  |              |
|--|--------------|
| • Torque wrench 8 ... 40 N·m                               | Type 1300A11 |
| • Fork wrench hex. 18 mm for torque wrench                 | 1300A13      |
| • Tubular socket wrench hex. 14 mm for Ø18 mm fitting hole | 1300B6       |
| • Special key for Thompson adapter Type 6513A              | 1300A1       |

## Ordering Code

- |   |             |
|---|-------------|
| • Piezotron quartz pressure sensor for engine diagnostics | Type 6613CP |
|---|-------------|