

# Cylinder Pressure Sensor for Continuous Monitoring

Type 6351A

Sensor with M5 mounting thread and swivel nut designed with optimum service life for continuous cylinder pressure monitoring in diesel and gas engines. Thanks to its very small size, it is particularly suitable for compact engines where there is only a limited amount of space available for mounting a sensor. Because of its very high long term stability and low thermal shock, this sensor is suitable for demanding monitoring and control tasks.

- Very small size
- Easy mounting
- Long service life

### Description

The piezoelectric sensor is connected to the charge amplifier by an integral cable. The small but very robust sensor can be used both for performance evaluation and determining the knock limit on gas engines. Because the time constant in the charge amplifier is short, a stable output signal is ensured, even during rapid changes in engine load and engine speed. The life expectancy of the sensor has been designed so that an average service life of >16 000 hours can be achieved in a 4-stroke engine running at 1500 rpm.

### Application

This sensor is especially suitable for fast running diesel and gas engines; the very small size permits the sensor to be incorporated into engine components (e.g. mounting in the gas injection valve). The sensor is not suitable for slow running 2-stroke engines or engines using heavy fuel oil.



### Technical data

Measuring range		
Range	bar	0 ... 250
Sensitivity		
Range I ( $\pm 0,5\%$ )	mV/bar	15
Overload	bar	300
Linearity	% FSO	$\leq \pm 1\%$
Sensitivity to acceleration	bar/g	0,001
Operating temperature range		
Sensor	$^{\circ}\text{C}$	-50 ... 350
Connector with charge amplifier	$^{\circ}\text{C}$	-10 ... 85
Thermal shock at 1 500 rpm,		
$p_{mi} = 9$ bar	bar	$\leq \pm 0,5$
Change in sensitivity		
200 $\pm$ 50 $^{\circ}\text{C}$	%	$\leq \pm 2$
200 $\pm$ 50 $^{\circ}\text{C}$	%	$\leq \pm 1$
Frequency range (-3 dB)	Hz	0,032 ... 20 000
Output voltage (with 1 mA load)		
max.	V	4,4 ... 5
min.	V	>0
Signal span	V	4
Zero point	V	1 ... 1,1
Supply voltage	VDC	7 ... 32
Output impedance	$\Omega$	100
DIN connector	M12x1	IP67
Weight	g	140
Tightening torque	N·m	2
Connector	8 pin	M12x1

**Mounting**

In order to minimize thermal stress on the sensor, it should be located so that good heat dissipation to colder components can occur. Optimum sensor life is achieved at an average temperature of 200 ... 250 °C in the sensor body. In addition, an angled gas channel can reduce the effect of flame on the diaphragm and thereby minimize the short term drift of the sensor. The gas channel (distance from sensor diaphragm to combustion chamber) must be selected in such a way that no pipe oscillations occur. Superimposed on the cylinder pressure, these gas oscillations impair the signal quality and reduce the service life of the sensor.

**Ordering code**

Cylinder pressure sensor for continuous monitoring

**Type**

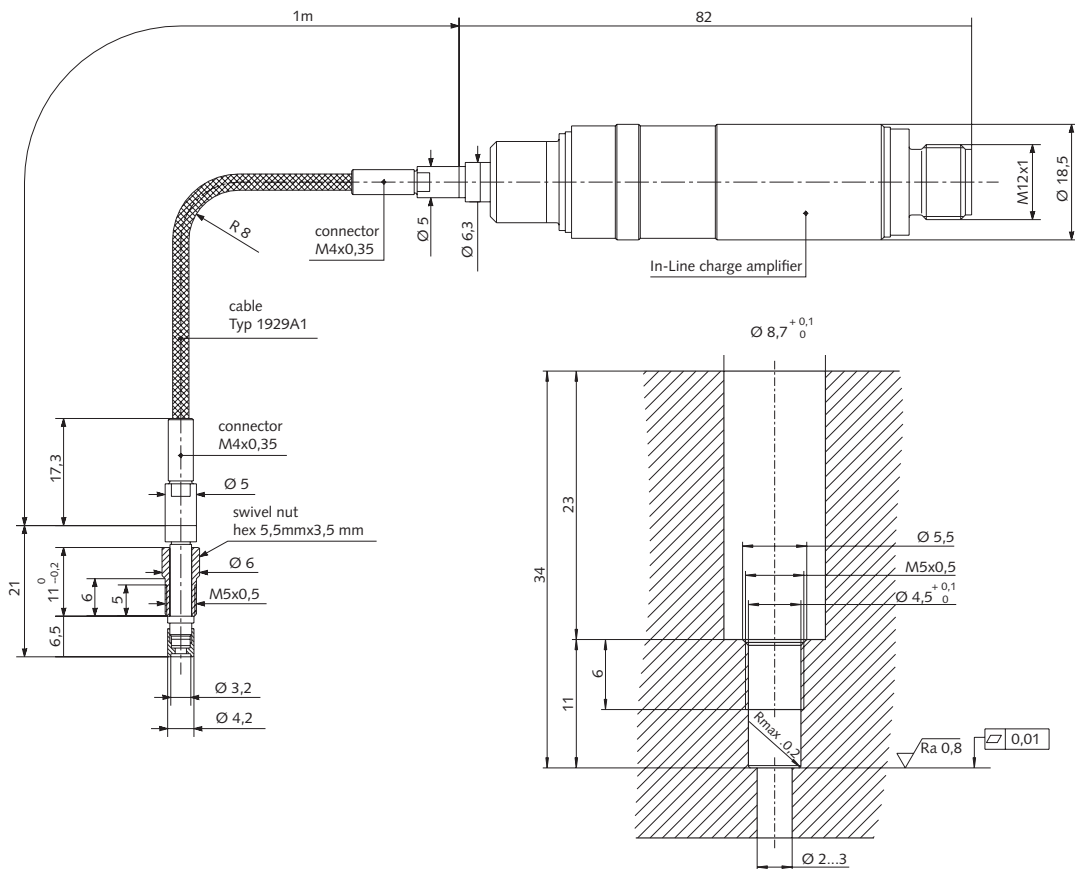
6351A

**Accessories**

- Torque wrench 1... 6 N·m
- Mounting wrench A/F 5,5
- Connecting cable M12x1; (10m)
- Connecting cable M12x1; (20m)

**Type**

- 1300A17
- 1300A9
- 1700A69
- 1700A69A1



**Connecting cables**

Type 1700A69, plug M12x1, sensor side, cable length l = 10 m, one free cable end with 3 wires	black = GND	Standard cable, without range selection
	blue = signal 2,5 Vpp = 250 bar	
	brown = power supply 7 ... 32 VDC	
Type 1787A..., plug M12x1, sensor side, cable length A5 = 5 m, A20 = 20 m one free cable end with 8 wires	Pin allocation, see instruction manual chapter 3.2.5	For calibration only, measurement ranges and time constants can be changed