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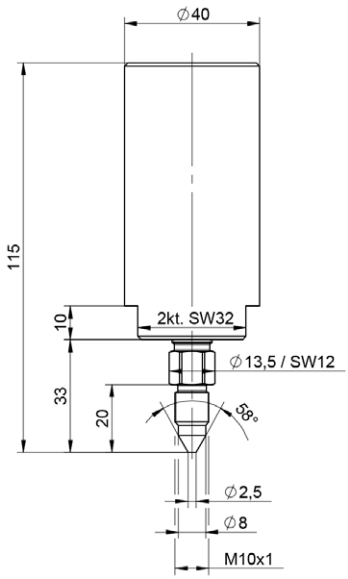
Pressure Standard

Type 6963A8000

Reference sensor for the calibration of piezoelectric high-pressure sensors

The Type 6963A8000 is a reference sensor for pressure sensor calibration systems up to 8 000 bar. It is ideally suited to quasi-static calibration procedures typically employed for piezoelectric pressure sensors.

- High sensitivity
- Exceptional linearity
- Minimal drift
- Very good thermal stability
- Insensitive to variations in mounting conditions
- SCS-accredited calibration, traceable to national and international standards



Description

The very high sensitivity, exceptional linearity and outstanding thermal stability of Type 6963A8000 emanate from a specially developed PiezoStar crystal sensing element. The sensing element is integrated into a robust stainless steel body for mechanical protection and high thermal inertia, making the Type 6963A8000 an ideal transfer standard.

Application

The Type 6963A8000 serves as transfer or working standard in calibration and quality assurance laboratories for piezoelectric pressure sensors. The sensor's 8 000 bar pressure range makes it ideally suited for high pressure measurement applications.

Working standard

As working standard, the Type 6963A8000 forms an integral part of a pressure sensor calibration system. The working standard is the reference for the definition of pressure during the calibration process, i.e. the output of a unit under test is compared to the pressure measured with the working standard.

Transfer standard

Type 6963A8000 may also be used as an intermediary to compare standards, i.e. as a transfer standard. Type 6963A8000 is calibrated at a primary laboratory and is then used to calibrate a working standard in the calibration system. In this case, the output of the working standard is compared to the pressure measured with the transfer standard.

Technical Data - Overview

Measuring range	bar	0… 8 000
Calibrated partial ranges	bar	0 ... 2 000 / 0 ... 6 000
Overload	bar	10 000
Nominal sensitivity	pC/bar	≈ –1.2
Linearity	%FSO	<0.3 %
Thermal sensitivity deviation	%/°C	<0.01
Operating temperature range	°C	25 ±5
Weight	g	680
Tightening torque	N·m	25
Mounting thread	–	M10x1
Connector (charge output)	–	KIAG 10-32

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Calibration

The reference sensor is calibrated against a high precision hydraulic piston gauge at Kislter's SCS-accredited calibration laboratory. Calibration of the Type 6963A8000 conforms to the requirements set by ISO/IEC 17025. Calibration results are documented on a multi-page calibration certificated, as shown in Figure 1.

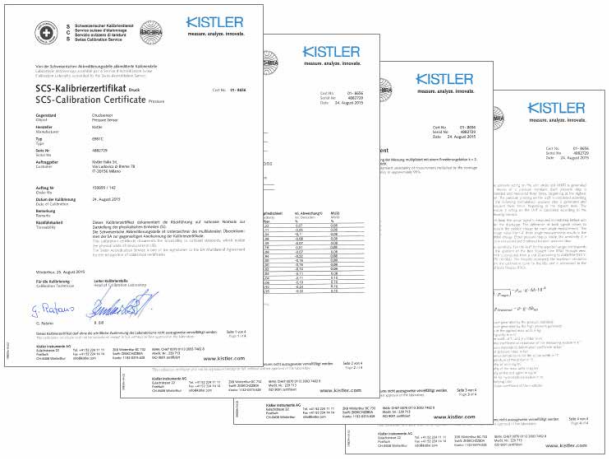

Fig.1: Calibration certificate

Calibration load is applied as steps at monotonically decreasing pressure levels, unloading the pressure after each step. The Type 6963A8000 is calibrated at 16 pressure steps, as shown in Figure 2. The sensor signal is measured immediately before and after each unloading step. The difference between these two measurements is the yielded charge per pressure step. The sensors calibration parameters, e.g. sensitivity and linearity are based on the results of multiple pressure steps over the respective calibration range.

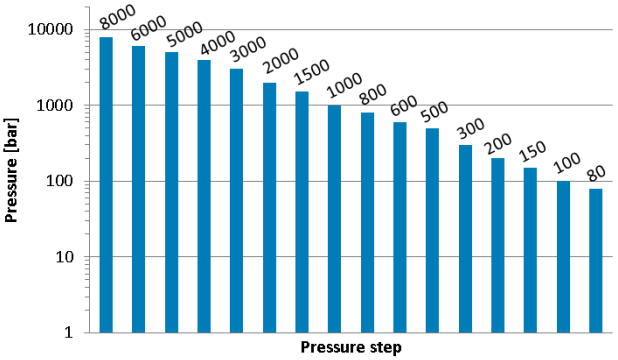

Fig. 2: Calibration pressure steps

Mounting conditions

The sensor Type 6963A8000 may be screwed directly into a M10x1 bore. Dimensions and tolerances for the mounting port are shown in Figure 3. The sensor Type 6963A8000 is tightened / removed with an open wrench, using the 12 mm hexagon flats as shown in Figure 4.

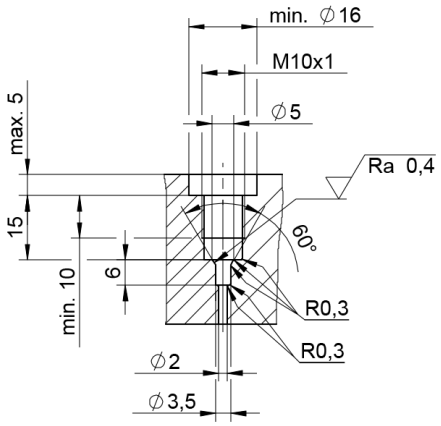

Fig. 3: Sensor mounting

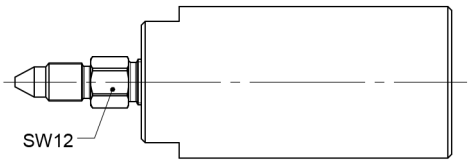

Fig. 4: Wrench flats and tightening torque