

Configurable sensor sets



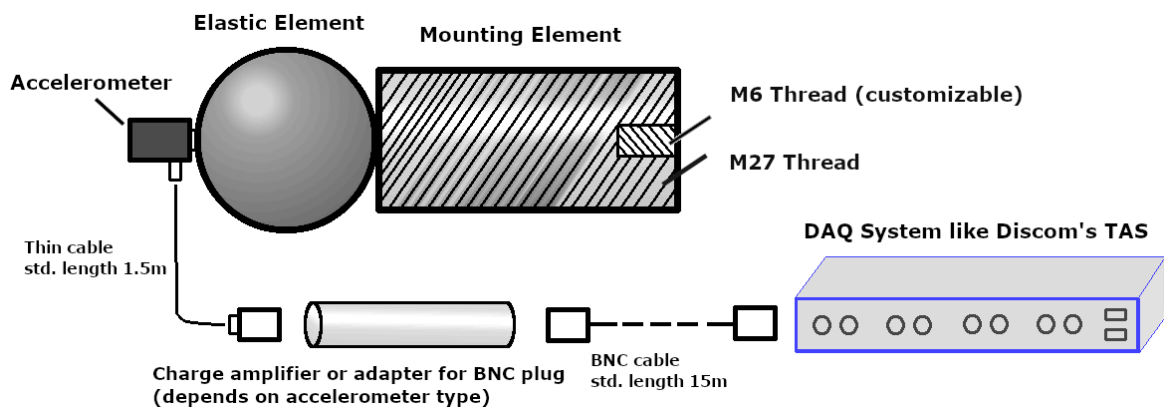
- ✓ Configurable sensor sets consisting of wide range of accelerometers combined with different types of elastic elements enable optimal solution for industrial testing
- ✓ Robust, high quality, wide bandwidth, low noise piezo accelerometers for structure-borne noise measurement
- ✓ Elastic elements to mechanically and electrically decouple mounting and accelerometer

Structure-Borne Noise Sensors with Elastic Elements

Discom offers a variety of structure-borne noise sensors, consisting of piezo accelerometers and elastic elements as mounting adapters.

- small and very light accelerometers offer high bandwidth
- silicon ball or tube as elastic element for mounting prevents resonance with machinery
- electrical isolation from device under test
- accelerometer and elastic element combinations offer a wide range of industrial measurement solutions
- piezo accelerometers available as IEPE (same as ICP® or CCLD®) and charge versions

A sensor set consists of a combination of accelerometer, elastic element, cables, and amplifier or adapter.



1 [Accelerometers](#)

1.1 [KS91E, KS91E1, KS91E3](#)

The **KS91E** types are Discom's standard **IEPE**-compatible accelerometers.

1.2 [KS91F1, KS91F2](#)

The **KS91F** types are **IEPE** accelerometers with high sensitivity. The **KS91F2**'s main sensitivity is in **transverse direction**.

1.3 [KS91D, KS91D1](#)

The **KS91D** accelerometers have a **charge** output and require additional signal conditioning with a charge-to-IEPE preamplifier.

2

2.1 [BKS03](#)

Discom's standard elastic element for slightly **rounded** or **tilted** surfaces.

2.2 [BKS10, BKS10HD, BKS10Triax](#)

For **tighter** spaces.
BKS10HD has increased shore hardness.

2.3 [MSV18](#)

Elastic element for **magnetic** sensor.

3 [Sets and Combinations](#)

3.1 [Combination Matrix](#)

3.2 [Standart Combinations](#)

3.3 [Spare parts](#)

1.1 Accelerometers KS91E, KS91E1, KS91E3

| KS91E, KS91E1, KS91E3 – Basic Specifications | | |
|--|---|-------------------------------------|
| Sensor Type | IEPE-subminiature accelerometer with ring-shaped probe | |
| Piezo Design | shear design | |
| Sensitivity | 10mV/g ±10% | |
| Range | ±600g (peak) | |
| Linear Frequency Range | ±3dB | 0.3 Hz .. 23 kHz |
| | ±10% | 0.6 Hz .. 18 kHz |
| | ±5% | 0.9 Hz .. 15 kHz |
| Operating Temperature | -40°C .. +120°C | |
| Connector | M3, female | |
| Mechanical | | |
| Dimensions (∅ / h) | KS91E: 7.8mm / 11.6mm KS91E1: 7.8mm / 15.5mm KS91E3: 7.8mm / 16.4mm | |
| Weight | KS91E: 1.6g KS91E1: 1.65g KS91E3: 1.65g | without cable |
| Types & Mounting Adapters | | |
| KS91E | BKS03 | cable <i>radial</i> |
| KS91E1 | BKS10, BKS10HD | cable <i>axial</i> |
| KS91E3 | MVS18 | cable <i>axial</i> , special thread |



KS91E1/KS91D1/KS91F1



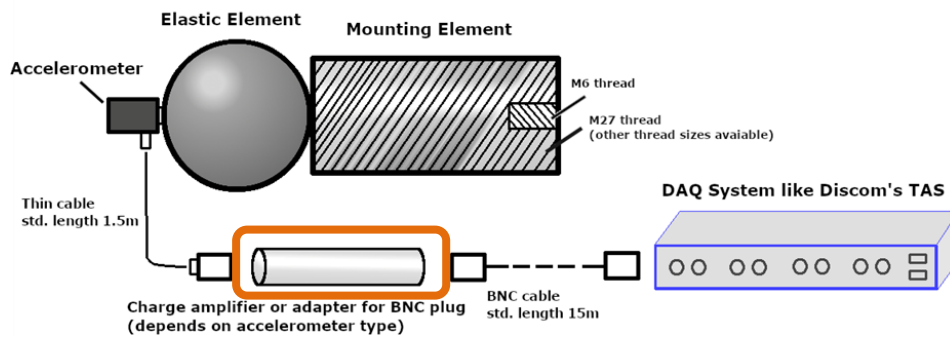
KS91E/KS91D

1.2 Accelerometers KS91F1, KS91F2

| KS91F1, KS91F2 – Basic Specifications | | | |
|---------------------------------------|--|--|--|
| Sensor Type | IEPE accelerometer with ring-shaped, insulated probe made of stainless steel | | compatible with all of Discom's TAD inputs |
| Piezo Design | shear design | | |
| Sensitivity | 25mV/g ±20% | | |
| Range | ±240g (peak) | | |
| Linear Frequency Range KS91F1 | ±3dB ±10% ±5% | 0.3 Hz .. 30 kHz 0.6 Hz .. 18 kHz 0.9 Hz .. 15 kHz | |
| Linear Frequency Range KS91F2 | ±3dB ±10% ±5% | 0.6 Hz .. 12.5 kHz 1.1 Hz .. 8.0 kHz 1.5 Hz .. 6.8 kHz | |
| Operating Temperature | -30°C .. +120°C | | |
| Connector | M3, female | | |
| Mechanical | | | |
| Dimensions (∅ / h) | KS91F1: 7.8mm / 15.5mm KS91F2: 8.5mm / 16.0mm | | |
| Weight | KS91F1: 1.65g KS91F2: 2.6g | | without cable |
| Types & Mounting Adapters | | | |
| KS91F1 | BKS10, BKS10HD | | cable axial |

1.3 Accelerometers KS91D, KS91D1

| KS91D, KS91D1 – Basic Specifications | | |
|--------------------------------------|--|---|
| Sensor Type | charge accelerometer with electrically isolated stainless steel ring | charge-to-IEPE preamplifier needed to connect to TAD input – Discom offers according preamplifiers ¹ |
| Piezo Design | shear design | |
| Sensitivity | 2.5pC/g ±10% | |
| Range ¹ | ±4000g (peak) | |
| Linear Frequency Range | ±3dB ±10% ±5% | 0.05 Hz .. 23 kHz 0.1 Hz .. 18 kHz 0.15 Hz .. 15 kHz |
| Ceramic / Piezo Capacitance | 250pF ±10% | |
| Operating Temperature | -40°C .. +150°C | |
| Connector | M3, female | |
| Mechanical | | |
| Dimensions (∅ / h) | KS91D: 7.8mm / 11.6mm KS91D1: 7.8mm / 15.5mm | |
| Weight | KS91D: 1.8g KS91D1: 1.85g | without cable |
| Types & Mounting Adapters | | |
| KS91D | BKS03 | cable <i>radial</i> |
| KS91D1 | BKS10, BKS10HD | cable <i>axial</i> |



| ¹ Range with various Amplifiers | | |
|--|---------------------------|-----------|
| Amplifier | Charge Conversion [mV/pC] | Range [g] |
| 422E51 | 100 | 40 |
| 422E52 | 10 | 400 |
| 422E53 | 1 | 4000 |

2 Elastic Elements

The elastic elements provide optimal mounting options for industrial applications, while damping vibrations from the machinery.



BKS03 with M27 thread, BKS10 and BKS10 Triaxial with adapter to BKS03 thread

2.1 BKS03

Can be applied to slightly rounded or tilted surfaces.

Max. deviation from vertical direction: 5°

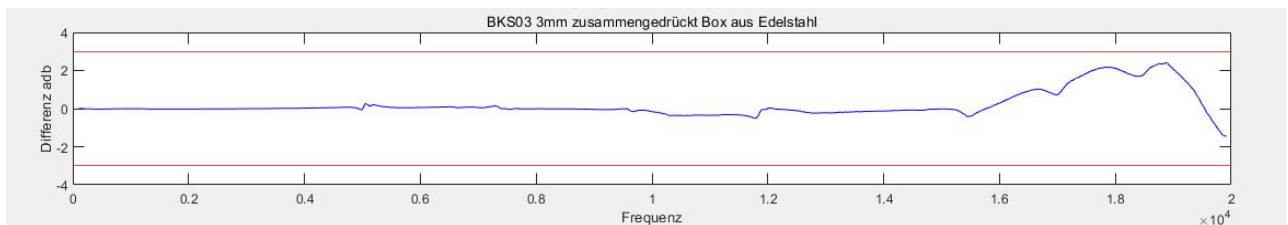
Smooth (finished) surfaces recommended.

Press in by 2 to 3.5 mm (press-on force 15 – 25 N).



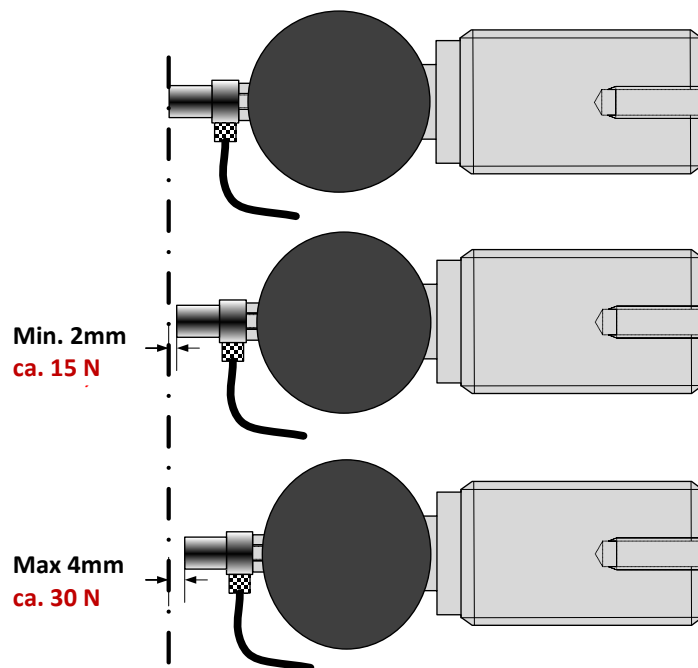
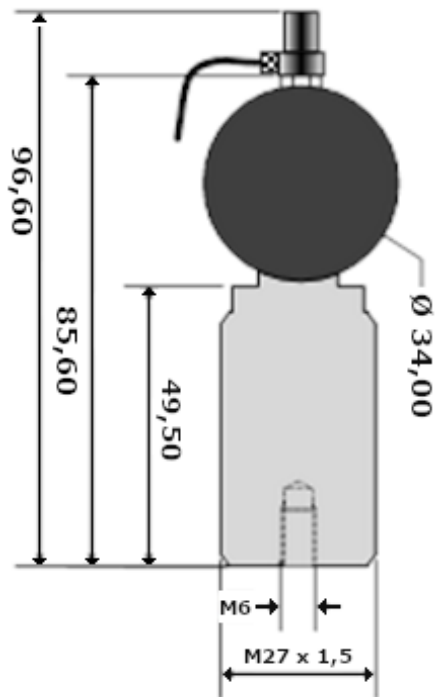
BKS03 (here combined with [KS91E](#) Accelerometer)

Reference measurement comparing a 3mm pressed-on BKS03 with a fixed mounted KS91E:



Deviation between sensors is < 3 dB up to 20 kHz.

Non-perpendicular application or rounded surface will reduce linearity range.



Press-on specification BKS03:

In engaged position, the elastic element should be pressed in by 3 mm or a force of 25 N.

2.2 BKS10, BKS10HD, BKS10Triax

For tight spaces.

To be applied to flat surfaces.

Max. deviation from vertical direction: 2°

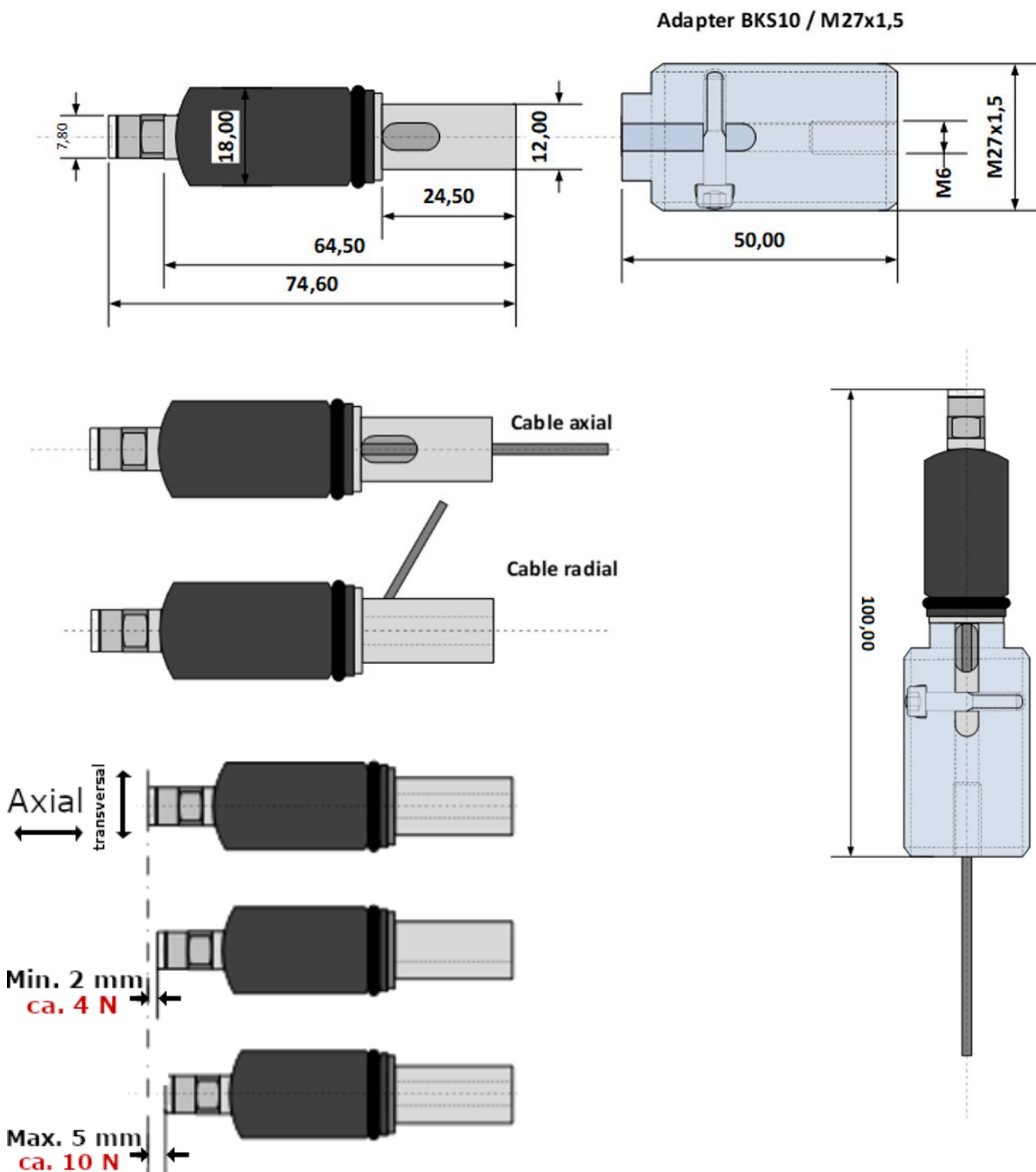
Smooth (finished) surfaces required.

Cable is protected inside of elastic element.

Press in by 2 to 5 mm (pressure force 4 – 10 N).

The BKS10HD has an increased shore hardness.

Press-on specification: BKS 10 (black) 4 mm = 10N; BKS10HD (blue) 3 mm = 25 N.



2.3 MVS18

Magnetically attached, works only with magnetic surfaces.

Different magnet sizes and strengths available.

Cable with coaxial connector that can turn and resist high force:



MVS2018

3.1 Combination Matrix

The following table shows the available combinations of accelerometer and elastic element for mounting.

| Elastic Element Accelerometer | BKS03 | BKS10 | BKS10HD | BKS10 Triax | MVS18 |
|--|-------|------------------|---------|----------------|-------|
| KS91E cable radial IEPE, 10mV/g | ✓ | (✓) ¹ | | | |
| KS91E1 cable <i>axial</i> IEPE, 10mV/g | | ✓ | ✓ | | |
| KS91E3 cable <i>axial</i> , special thread IEPE, 10mV/g | | | | | ✓ |
| KS91F1 cable <i>axial</i> IEPE, 25mV/g | | ✓ | ✓ | | |
| KS91F2 cable <i>axial</i> , Piezo radial IEPE, 25mV/g | | ✓ | ✓ | | |
| KS91D cable radial Charge, 2.5pC/g | ✓ | (✓) ¹ | | | |
| KS91D1 cable <i>axial</i> Charge, 2.5pC/g | | ✓ | ✓ | | |
| B&K 4519-001 cable radial IEPE, 100mV/g | ✓ | | | | |
| PCB 356A32 cable <i>axial</i> , 4-pin connector Triax IEPE, 100mV/g | | | | ✓ | |
| PCB 356A03 cable <i>axial</i> , 4-pin connector Triax IEPE, 10mV/g | ✓ | | | | |

¹Adapter required (Art.: 02623)

Other accelerometer/ mounting options are available on demand!

3.2 Standard Combinations

This table shows the most frequent component combinations which can be ordered as a set:

| Standard sensor sets for Discom measurement systems | | | |
|---|---------------|----------------------|---|
| Order No. | Accelerometer | Elastic element | Scope of delivery |
| 1-DC/BKS03D | KS91D | BKS03 ¹ | <ul style="list-style-type: none"> ✓ External charge-to-IEPE Amplifier (10mV/pC) ✓ 15m BNC cable ✓ 1.5m sensor cable |
| 1-DC/BKS03E | KS91E | BKS03 ¹ | <ul style="list-style-type: none"> ✓ Built-in IEPE Amplifier (10mV/g) ✓ 15m BNC cable ✓ 1.5m sensor cable |
| 1-DC/BKS03TRI | 356A03 | BKS03 ¹ | <ul style="list-style-type: none"> ✓ Built-in IEPE Amplifier (10mV/g) ✓ 3x 15m BNC cable ✓ 3m sensor cable |
| 1-DC/BKS10 | KS91E | BKS10 ² | <ul style="list-style-type: none"> ✓ Built-in Amplifier (10mV/g) ✓ 15m BNC cable ✓ 1.5m sensor cable |
| 1-DC/BKS10D | KS91D1 | BKS10 ² | <ul style="list-style-type: none"> ✓ External charge-to-IEPE Amplifier (10mV/pC) ✓ 15m BNC cable ✓ 1.5m sensor cable |
| 1-DC/BKS10HD | KS91E1 | BKS10HD ³ | <ul style="list-style-type: none"> ✓ Built-in IEPE Amplifier (10mV/g) ✓ 15m BNC cable ✓ 1.5m sensor cable |
| 1-DC/MVS18 | KS91E3 | MVS18 ⁴ | <ul style="list-style-type: none"> ✓ Built-in IEPE Amplifier (10mV/g) ✓ 15m BNC cable ✓ 3m sensor cable |

3.3 Sensor set spare parts and for separate order

| Name | Article no. | Scope of delivery |
|---|-------------|---|
| BKS03-E Sensorset; (1-DC/ACCSET_BKS03E) | 02681 | <ul style="list-style-type: none"> -BKS03-FE elastic element [art.: 01716] -KS91E accelerometer, accelerometer sensitivity: 10mV/g; range: +-600g [art.: 01018] -Sensor cable 1.5 m [art.: 02619] -UNF10-32 / BNC adapter [art.: 00281] |

Sensor Set Components

| | | |
|--|-------|---|
| BKS03-D Sensorset; (1-DC/ACCSET_BKS03D) | 02682 | - BKS03-FE elastic element [art.: 01716] - KS91D accelerometer, sensitivity 2.7 pC/g, range: +-4000g [art.: 01021] - Sensor cable 1.5 m [art.: 02619] |
| BKS03-TRIAX Sensorset; [1-DC/ACCSET_TRI03] | 04728 | - BKS03-FE elastic element [art.: 01716] - PCB-356A03 Accelerometer Triaxial (v.2021) sensitivity: 10mV/g; range: +-500g, glued in special housing for use with BKS03 [art.: 04639] - PCB-034G10 sensor cable 3m, 4Pin/3xBNC [art.: 02840] |
| BKS10-E Sensorset; (1-DC/ACCSET_BKS10E) | 02683 | - BKS10 FE elastic element [Art.: 02616] - KS91E1 accelerometer, sensitivity: 10mV/g; range: +-700g [Art.: 02618] - Sensor cable 1.5 m [Art.: 02619] - UNF10-32 / BNC adapter [Art.: 00281] |
| BKS10-TRIAX Sensorset; (1-DC/ACCSET_TRI10) | 04729 | - BKS10-TRIAX FE elastic element [art.: 03345] - PCB-356A32 accelerometer triaxial sensitivity: 100mV/g; range: +-50g; 1-4000Hz; modified for BKS10 Triax [art.: 03335] - PCB-034K10 sensor cable 3m, 4Pin / 3xBNC [art.: 03334] |
| | | |
| KS91E Accelerometer (1-DC/ACC_KS91E) | 01018 | - KS91E accelerometer, sensitivity: 10mV/g; range: +-600g - Sensor cable 1.5 m [art.: 02619] - UNF10-32 / BNC adapter [art.: 00281] |
| KS91D Accelerometer (1-DC/ACC_KS91D) | 01021 | - KS91D Accelerometer, sensitivity: 2,7pC/g; range: +-4000g - Sensor cable 1.5 m [art.: 02619] |
| KS91E1 Accelerometer (1-DC/ACC_KS91E1) | 02618 | KS91E1 Accelerometer, sensitivity: 10mV/g; range: +-700g - Sensor cable 1.5 m [art.: 02619] - UNF10-32 / BNC adapter [art.: 00281] |
| KS91F1 Accelerometer (1-DC/ACC_KS91F1) | 03130 | KS91F1 Accelerometer, sensitivity: 25mV/g; range: +-700g - Sensor cable 1.5 m [art.: 02619] - UNF10-32 / BNC adapter [art.: 00281] |
| | | |
| Sensor cable 0,3m (1_DC/CAB_ACC_0.3) | 02854 | Sensor cable Connectors: M3/UNF10-32, length 0,3m; with silicone protective tubing |
| Sensor cable 1,5m (1-DC/CAB_ACC_1.5) | 02619 | Sensor cable (Connectors: M3/UNF10-32, length 1.5m with silicone protective tubing |
| | | |
| BKS03 FE (1-DC/EE_BKS03) | 01716 | BKS03 FE Elastic element black silicone compound, hardness: 7 Shore |
| BKS10 FE | 02616 | BKS10 FE Elastic element |

Sensor Set Components

| | | |
|---|-------|--|
| (1-DC/EE_BKS10) | | black silicone compound, hardness: 7 Shore |
| BKS10-FE HD (1-DC/EE_BKS10HD) | 03340 | BKS10-FE HD Elastic element blue silicone compound, hardness: 21 Shore |
| BKS10 Triax FE (1-DC/EE_BKS10TRI) | 03345 | BKS10 Triax FE Elastic element for Triaxialsensor blue silicone compound, hardness: 21 Shore |