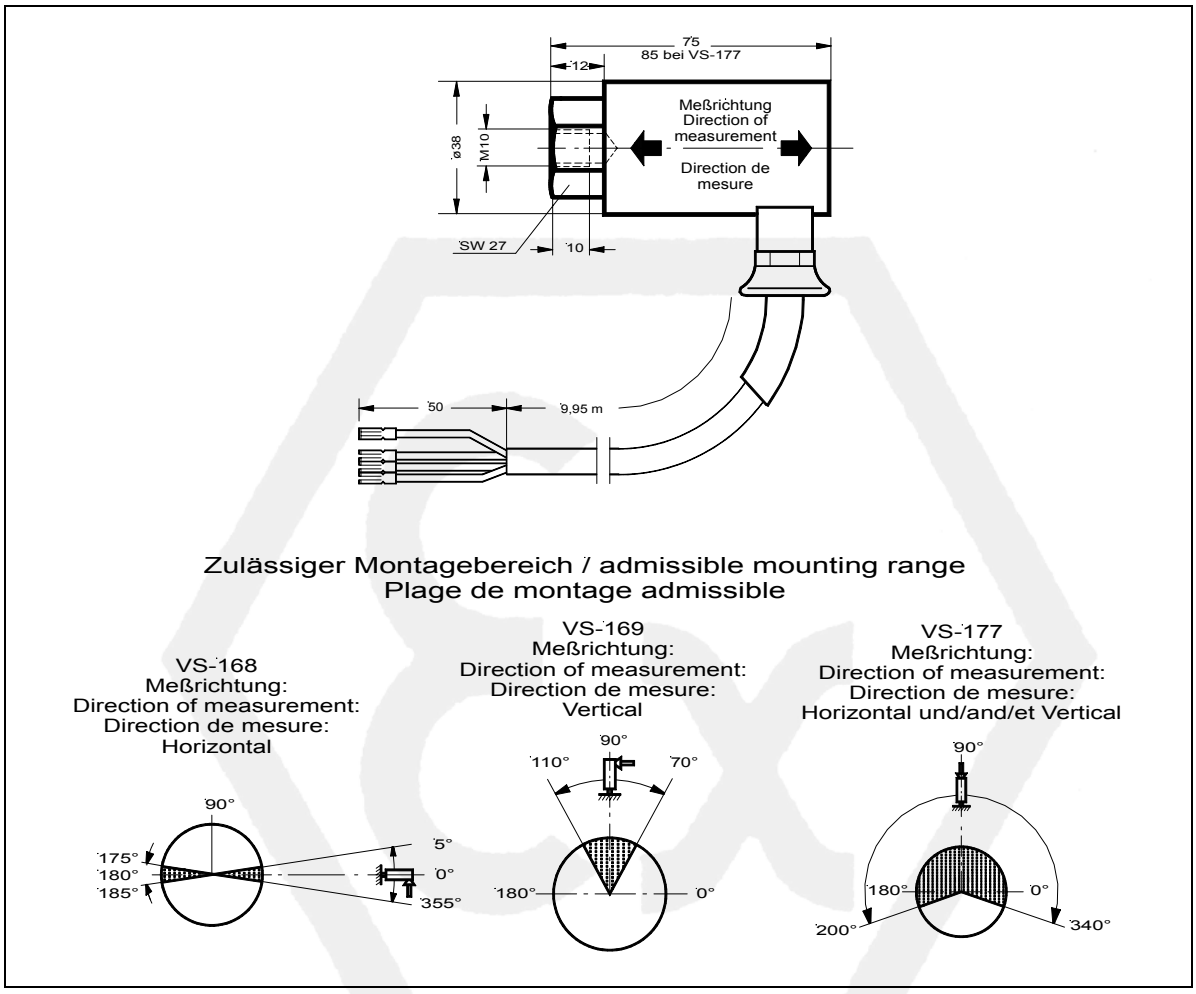
Vibration Velocity Sensors
VS - 168 / 169 / 177

Protective class: E Ex d IIC T6 in accordance with EN 50 014, EN 50 018

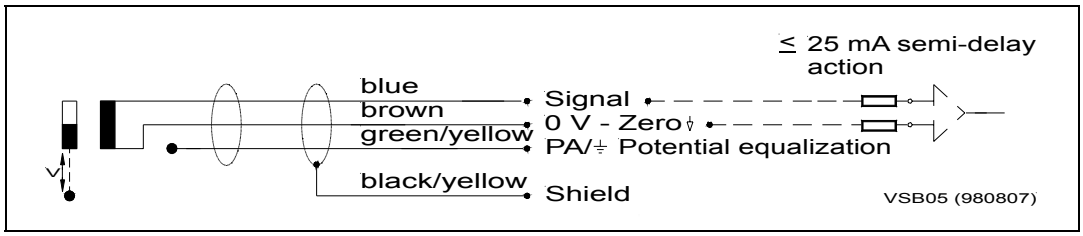


1 Application

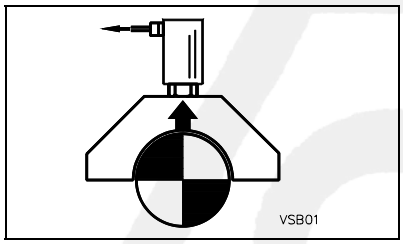
Brüel & Kjær Vibro vibration velocity sensors operate in accordance with the electrodynamic principle and are used for measuring the bearing absolute vibration of machines.

Sensors in the VS-1xx range are permitted for use in applications in explosive areas; the appropriate PTB conformity certification is attached.

1.1 Connection Diagram



1.2 Polarity



With the illustratedirection of movement of the bearing shell, a positive polarity signal is produced at the blue wire of the cable.

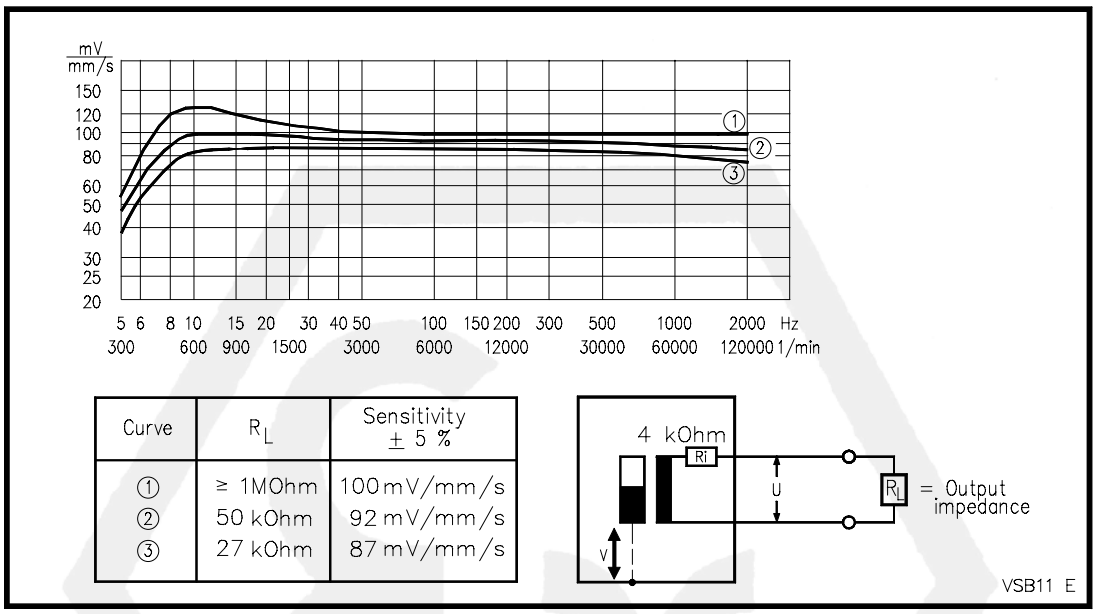
2 Technical Data

2.1 General Data

Operating temperature range	-15 ... + 65°C
Sensor cable	PVC-cable; (N) YLHCY-J 3 x 0,75 mm^2; shielded,
Length	10 m; wire ends: open Extension of the connecting cable to a max. of 200 m through an EExe terminal box is possible
Housing	stainless steel; hermetically sealed
Fixing	Central mounting by means of stud M10 x 25; DIN 914; A2F max. tightening torque 87 Nm
Protective class as per DIN 40 050	IP 65
Weight of sensor without cable	approx. 500 g
Protective class	E Ex d IIC T6
Certificate of conformity	PTB-No. Ex 84/1105
EMC	EN 50082-2: 1995 Pkt. 1.1, 1.2, 1.4, 2.1, 2.2 EN 50081-2: 1994 Pkt. 1.1, 1.2

2.2 Technical data for VS-168 und VS-169

Measuring parameter	Vibration velocity
Measuring principle	electrodynamic
Sensitivity E at f = 80 Hz	$E = \frac{100\ mV}{mm/s} \times \frac{R_L}{4\ k\Omega + R_L}$

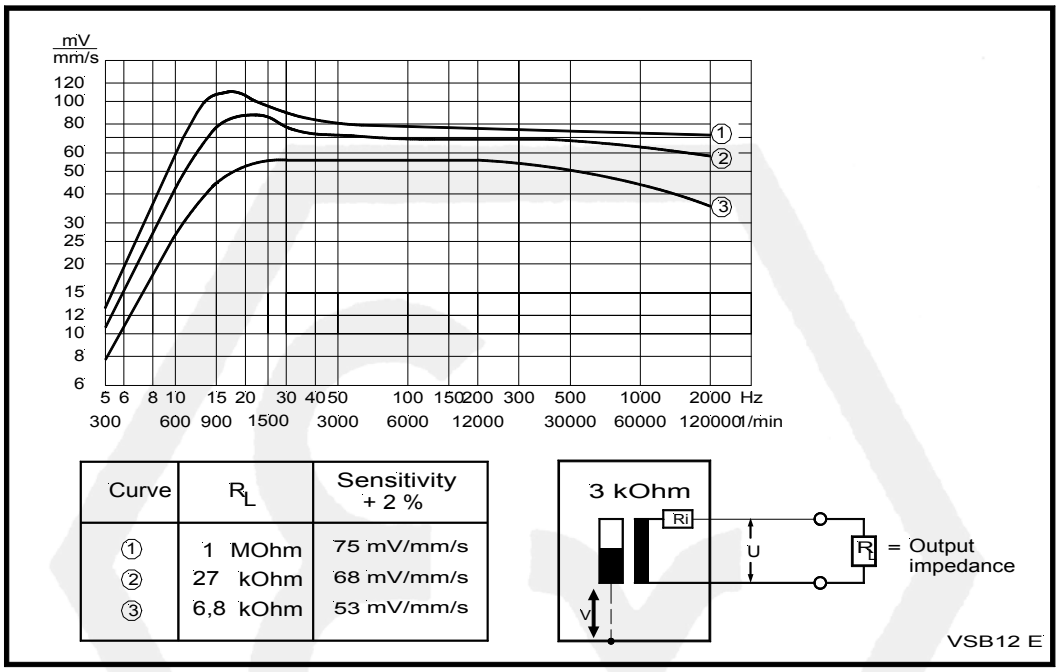


Typical frequency response and sensitivity

Internal impedance	4 kΩ ± 5 %
Transverse sensitivity	≤ 7 %
Natural frequency f_o	8 Hz ± 10 %
Max. admissible vibration displacement	± 0,45 mm

2.3 Technical data for VS-177

Measuring parameter	Vibration velocity
Measuring principle	electrodynamic
Sensitivity E at f = 80 Hz	$E = \frac{75\,mV}{mm/s} \times \frac{R_L}{3\,k\Omega + R_L}$

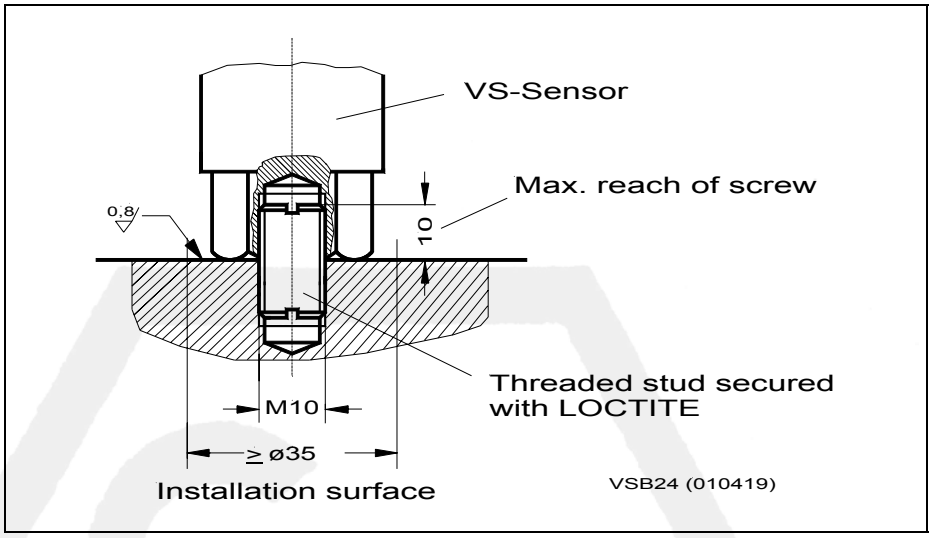


Typical frequency response and sensitivity

Internal impedance	3 kΩ ± 5 %
Transverse sensitivity	≤ 5 %
Natural frequency f_o	15 Hz ± 2 %
Max. admissible vibration displacement	± 1 mm

3 Mounting Instructions

3.1 Fastening of sensor



The following applies on principle:

- Mounting surface flat and clean, i.e. without paint, rust etc
- Threaded stud perpendicular to mounting surface; the sensor must be tightened to the mounting surface
- Secure stud with LOCTITE
  (e.g. LOCTITE 243 medium-duty, LOCTITE 270 heavy-duty)
- Avoid auxiliary fixtures for mounting; if unavoidable, the fixture should be as rigid as possible
- For protection against mechanical damage and for increase EMC safety the connection cable should be laid in flexible steel protective conduit. Bending radius r_{min} = 50 mm
- Tighten sensor directly to mounting surface
  Max. tightening torque 87 Nm

3.2 Shortening sensor cable

- Cable to be cut to length
- Solder shield onto sensor cable; protect soldering joint by means of shrink tubing and rubber bushing
- Fix end sleeves to cable ends

3.3 Mounting and cable installation in Ex-areas

With the mounting and installation the respective national requirements must be observed.

In the Federal Republic of Germany this is done according to the requirements of DIN VDE 0165 - Installation of electrical equipment in explosive areas.