

Vibration Velocity Sensors VS - 068 / 069 / 077 / 079



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.

2 Connection Diagram



2.1 Polarity



With the illustrated direction of movement of the bearing shell, a positive polarity signal is produced at the white wire of the cable.

3 Technical Data

3.1 General Data

Sensor cable

Length

Housing

Fixing

Protective class as per DIN 40 050 Weight of sensor without cable EMC Teflon cable; PTFE (C) $2 \times 0.38 \text{ mm}^2$; shielded

5 m; wire ends: open Extension of the sensor connecting cable to a max. of 200 m is possible (wiht a terminal box)

stainless steel; hermetically sealed

Central mounting by means of stud M10 x 25; DIN 914; A2F max. tightening torque 87 Nm

IP 66

approx. 500 g

EN 50082-2: 1995 Pkt. 1.1, 1.2, 1.4, 2.1, 2.2 EN 50081-2: 1994 Pkt. 1.1, 1.2

3.2 Technical data for VS-068 and VS-069



Typical frequency response and sensitivity

Internal impedance	$4 k\Omega \pm 5 \%$
Transverse sensitivity	≤ 7 %
Natural frequency fo	8 Hz ± 10 %
Operating temperature range	-40 + 80 °C (short-term max. + 100 °C)
Max. admissible vibration displacement	± 0,45 mm
Cable protection	Flexible steel protective hose encased with PU material
Magnetic field sensitivity	<u>< 0,03 mm / s</u> 0,1 mT

Technical data for VS-077 3.3

Measuring parameter Measuring principle

Vibration velocity

electrodynamic



Typical frequency response and sensitivity

Internal impedance	$3 \text{ k}\Omega \pm 5 \%$
Transverse sensitivity	\leq 5 %
Natural frequency fo	15 Hz \pm 2 %
Operating temperature range	-40 + 80 °C
Max. admissible vibration displacement	± 1 mm
Cable protection	Flexible steel protective hose encased with PU material
Magnetic field sensitivity	<u>< 0,024 mm / s</u> 0,1 mT

3.4 Technical data for VS-079



Typical frequency response and sensitivity

Internal impedance	$3 \text{ k}\Omega \pm 5 \%$
Transverse sensitivity	\leq 6 %
Natural frequency fo	15 Hz \pm 5 %
Operating temperature range	-40 + 200 °C
Max. admissible vibration displacement	± 1 mm
Cable protection	Rust-free stainless-steel, not encased
Magnetic field sensitivity	<u>< 0,024 mm / s</u> 0,1 mT

4 Mounting Instructions

4.1 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

4.2 Preparing the steel protective conduit

Adapt the steel protective conduit to the site conditions by taking the following steps:

- If the protective conduit has a braided shield, to ensure a clean cut through the braided wrap a strip of metallised adhesive tape around the area where the cut is to be made before starting the cut.
- Cut the protective conduit with a suitable cutting tool, e.g. metal saw, cutting disc.
- De-burr the cut end.

4.3 Mounting steel protective hose at VS-068 / 069 / 077



- To achieve the optimum shielding performance of AC-331 according VDE 0245 and DIN 47250 part 4, the protective conduit with connector should be assembled as follows:
- Cut protective conduit to appropriate length (see 3.2).
- Disassemble connector and slide pressure screw (long version) over the conduit.
- Slide sealing ring over the conduit with tapered edge facing the pressure screw.
- Uncover the outer jacket of the conduit with care leaving a section as long as 1.5 x the width of the brass-thrust collar.
- Cut copper shield with scissors flush with the conduit.
- Slide brass-thrust collar (with taper side as shown) over the conduit as illustrated above.
- Screw brass ferrule into the conduit until it stops.
- Assemble the rest of the individual components and tighten so that the O-ring is not movable.
- For liquid-tight installations install the additional O-ring at the connector thread side.

4.4 Fixing steel protective conduit at VS-079



- Cut protective conduit to appropriate length (see 3.2)
- Slide the union nut and sealing ring on steel protective hose behind the cutting point
- Screw the inner tube onto the steel protective conduit
- Slide steel protective hose slide over sensor cable and fix protective hose joint to the sensor and the steel protective hose
- Adjust sensor cable length to suit and ansulate
- Solder screen onto sensor cable; protect soldering joint by means of shrink tubing and rubber bushing
- Fix end sleeves to cable ends