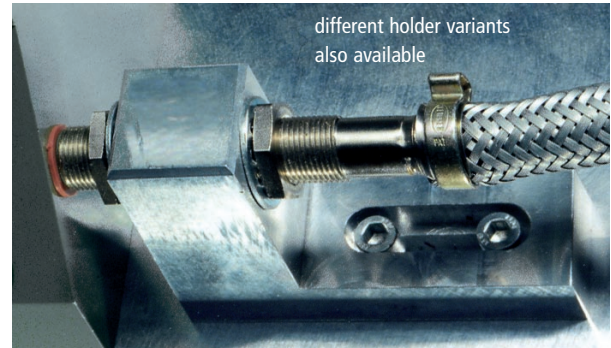


Inductive load sensor technology

Axial displacement sensor DSA 50

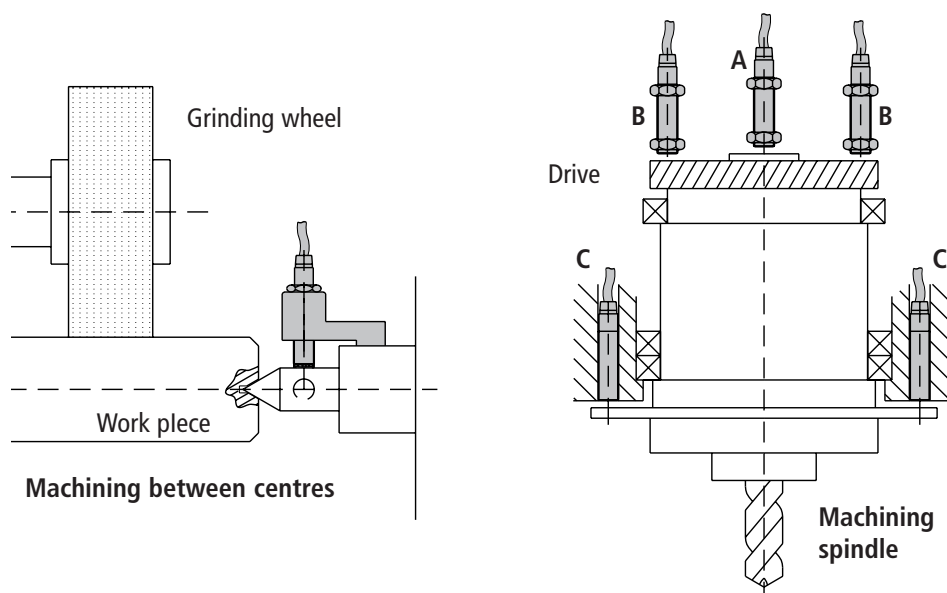
**High-resolution sensor
for measurement of:
Force and Displacement
between two parts**



Example of use: The diagrams here show a number of possible measuring points. In the case of **machining between centres**, 2 displacement sensors fitted in the normal and tangential force axes are suitable. In the case of a **machining spindle**, one sensor (Sensor **A**) is sufficient. Two sensors (**B**) are necessary on a hollow spindle. Two sensors in Position **C** allow front instead of rear measurement.

We shall be glad to help you choose suitable reference and measuring points. We also design and construct special holders by agreement with our customers.

Smaller displacement sensors for axial and radial measurements are available.



All force-transmitting parts in machines and fixtures, like e.g. housings, spindles, carriages, holders, etc., are deformed elastically by the forces acting on them, i.e. they are upset, stretched, bent or twisted. Different types of deformation often occur simultaneously, especially if a number of different forces and/or moments are acting on the force-transmitting parts.

As a result of this deformation and the air gap between the parts, a positively detectable displacement occurs between 2 points

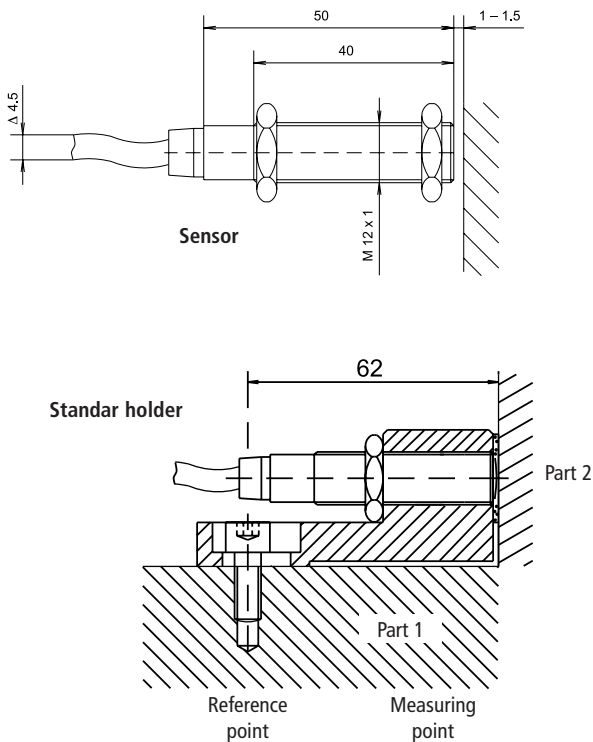
(reference point and measuring point) on the surface between the two force-transmitting parts.

A similar displacement also results between a point on a force-transmitting, deforming part and a point on another, possibly non-force-transmitting part.

Because of high machine rigidity, the elastic deformations are usually extremely small, so that reproducible measurement would seem virtually impossible. However, the induction-

based high-resolution DSA 50 axial displacement sensor, with its fine measuring range of 0 to 1 mm, is capable of resolving displacements of as little as 5 µm. The robust, wear-free sensor, with low-resistance connecting cable, is suitable for continuous industrial operation. Depending on the choice of measuring and reference points and the geometry of the two force-transmitting parts, the sensor can be used for selective measurement of individual force components.

Measurements



Installation

Insert the sensor in a drilled pocket hole (M12x1 thread) at a suitable reference or measuring point between the two force-transmitting parts, adjust basic centre distance to roughly 1.25 mm, tighten or fix with adhesive. Then switch on the charge amplifier and carry out coarse adjustment of the zero point.

All involved surfaces must be clean. Make sure that, in case of any coolant intruding, the sensor mounting place should drain the liquid itself via an opening or a drill hole! The protection hose has to be fixed on at least two locations on the machine in order to avoid that any forces can be transferred via the protection hose to the sensor.

For cleaning of sensor, cable, or protection hose alcohol-based cleaning fluids have to be used, never use acetone-containing agents.

Part numbers

DSA 50 axial displacement sensor with flexible rubber disc for measuring gap, cable length 2 m, union for cable entry on charge amplifier, instruction manual (1 copy); Option: conduit for IP 68 enclosure. Part No. **017.151.DSA50**

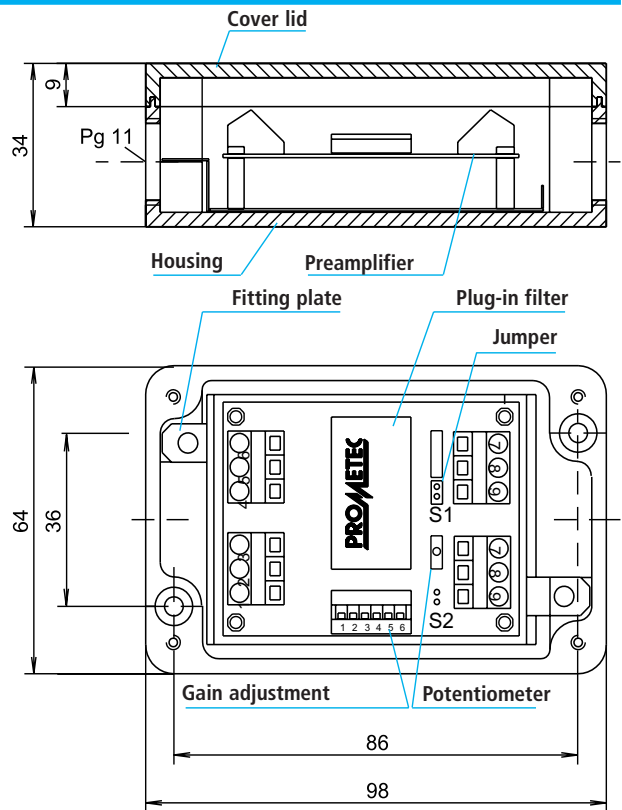
Preamplifier ISV for inductive sensors Part No. **097.820.ISU**

The 1-channel ISV preamplifier has 2 sensor inputs and cumulates the two signals at 50 % gain for each signal with the jumper in the S2 position. With the jumper in the S1 position, only sensor input S1 is connected, at 100 % gain.

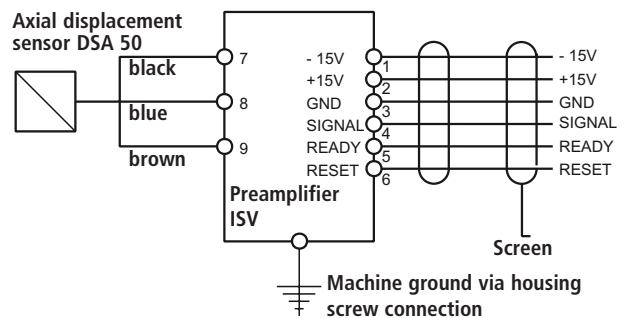
Holders for DSA 50, different materials to counteract thermal expansion:

- Standard holder
- Aluminum, Part No.: **019.230.DS50AL**
- Cast iron, Part No.: **019.230.DS50GG**
- Steel, Part No.: **019.230.DS50ST**

Preamplifier ISV



Connections



Technical data

Supply	±15 VDC, ± 10%
Output	Output ±10 V DC
Working range	1 to 1.5 mm
Sensitivity	1 V / 0.1 mm
Response threshold	5 µm approx.
Frequency range	0 to 1 kHz
Standard filter	up to 1 kHz
Amplifier range	0 to 35 dB adjustable
Temperature range	5 to 60°C (40 to 140° F)
Sensor enclosure	IP 67, salt spray, industrial climate, oil, environmentally friendly coolants
Preamplifier enclosure	IP 68, oil and coolants

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