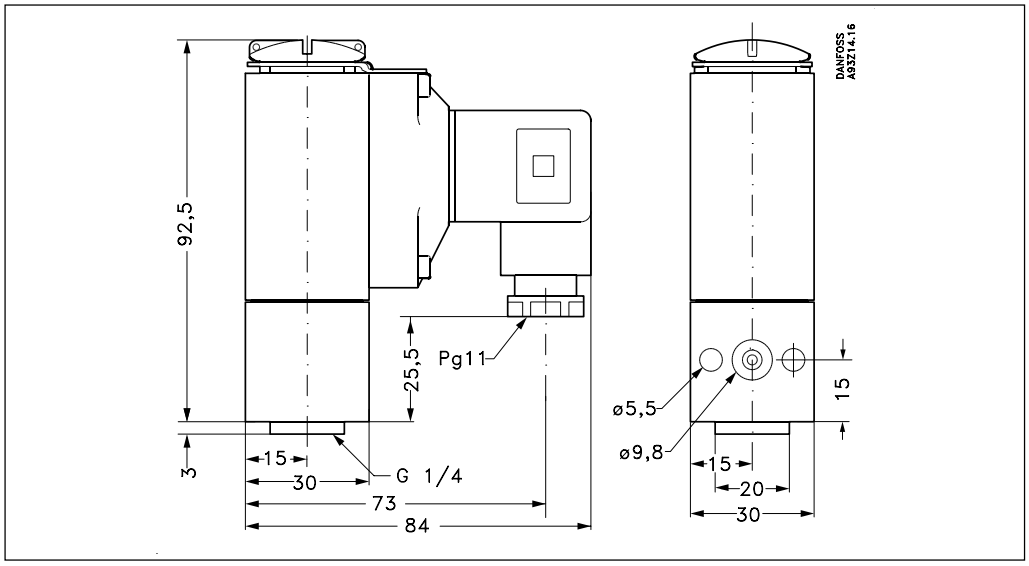
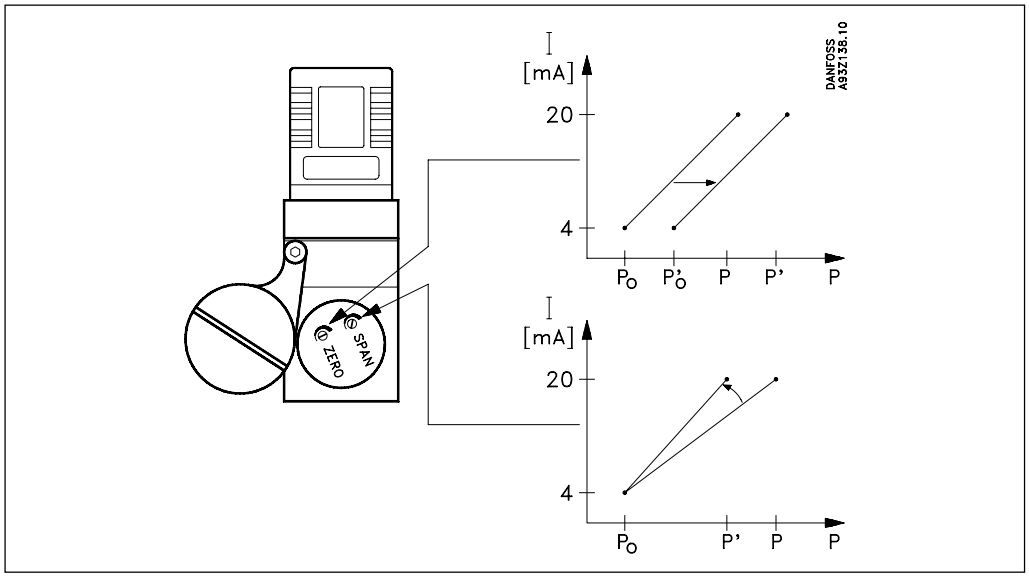
Heavy-duty Pressure Transmitters, type MBS 5050

- Resistant to cavitation, liquid hammer and pressure peaks
- Overload pressure 10-20× measuring range
- Durability: >10 million cycles
- For use in severe industrial environments:
  - High vibration stability
  - Wetted parts of acid resistant steel
- CE-marked: EMC protected in accordance with EU EMC directive
- Zero point and span adjustment
- Temperature compensated, linearized and laser calibrated
- 4-20 mA output signal

Dimensions



Adjustment
Zero: –5 ... +20% FS
Span: –5 ... +5% FS



Technical data

Performance (IEC 770)

Accuracy (at reference conditions)	±0.2% FS (typ.) ±0.5% FS (max.)
Non-linearity (Best fit straight line)	< ±0.2% FS
Hysteresis and repeatability	≤ ±0.1% FS
Thermal zero point shift	≤ ±0.1% FS/10K (typ.) ≤ ±0.2 %FS/10K (max.)
Thermal sensitivity (span) shift	≤ ±0.1% FS/10K (typ.) ≤ ±0.2 %FS/10K (max.)
Response time (liquids)	< 4 ms
Overload (static) and burst pressure	10-20×FS - depending on measuring range Max overload: 1500 bar Max. burst: 2000 bar
Durability, P: 10-90% FS	>10×10^6 cycles

Electrical specifications

Nom. output signal	4 to 20 mA
Supply voltage, V_{supply} (polarity protected)	10 to 30 V d.c.
Voltage dependency	< 0.05% FS/10K
Current limitation (linear output signal up to 1.5× nom. range)	28 mA (typ.)
Load resistance R_L (field of operation)	$R_L \leq \frac{V_{supply} - 10\ V}{0.02\ A}$ [Ω]

Environmental conditions

Operating temperature range				–40 to 85°C
Compensated temperature range				0 to 80°C
Transport temperature range				–50 to 85°C
EMC-Emission				EN 50081-1
EMC-Immunity	Electrostatic discharge		Air mode 8 kV	EN 50082-2 (IEC 801-2)
			Contact mode 4 kV	EN 50082-2 (IEC 801-2)
	RF	field	10 V/m, 26 MHz - 1 GHz	EN 50082-2 (IEC 801-3)
		conducted	10 V_{rms}, 150 kHz - 30 MHz	EN 50082-2 (IEC 801-6)
	Transient	burst	4 kV (CM), Clamp	EN 50082-2 (IEC 801-4)
		surge	1 kV (CM,DM), Rg = 42 Ω	EN 50082-2 (IEC 801-5)
Insulation resistance				> 100 MΩ at 100 V d.c.
Mains frequency test			500 V, 50 Hz	SEN 361503
Vibration stability	Sinusoidal		20 g, 25 Hz - 2 kHz	IEC 68-2-6
	Random		7,5 g_{rms}, 5 Hz - 1 kHz	IEC 68-2-34, IEC 68-2-36
Shock resistance	Shock		500 g / 1 ms	IEC 68-2-27
	Free fall			IEC 68-2-32
Enclosure	DIN 43650 Plug			IP 65 - IEC 529

Mechanical characteristics

Materials	Wetted parts	DIN 17440-1.4404 (AISI 316 L)
	Enclosure	AlSi12/Al4261
Weight		0.4 kg

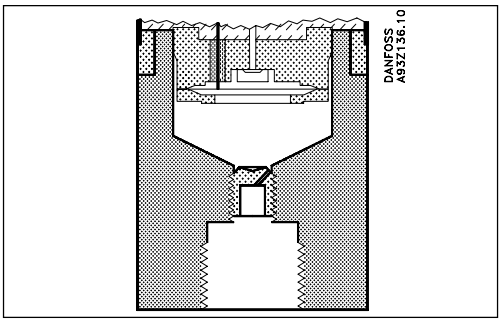
Application and media conditions

MBS 5050 with integrated pulse-snubber is specially suited for hydraulic applications where cavitation, liquid hammer or pressure peaks may occur – influences that often cause a short but extreme excess of the measuring range of the transmitter.

The integrated pulse-snubber is in principle designed as a nozzle mounted in the passage between the measured medium and the pressure sensitive element of the transmitter.

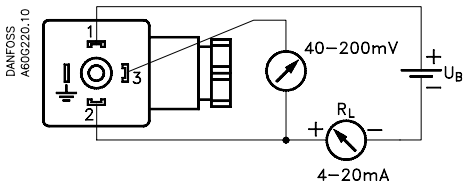
Application
Cavitation, liquid hammer and pressure peaks may occur in hydraulic systems with changes in flow velocity, e.g. fast closing of a valve or pump starts and stops.

The problem may occur on the inlet and outlet side, even at rather low operating pressures.



Media condition
Clogging of the nozzle may occur in liquids containing particles. Mounting the transmitter in an upright position minimizes the risk of clogging, because the flow in the nozzle is restricted to the start-up period when the dead volume behind the nozzle fills, and furthermore because the nozzle orifice is relatively big (0.3 mm). The media viscosity has only little effect on the response time. Even at a viscosities up to 100 cSt, the response time will not exceed 4 ms.

Electrical connections DIN 43650 (Others on request)



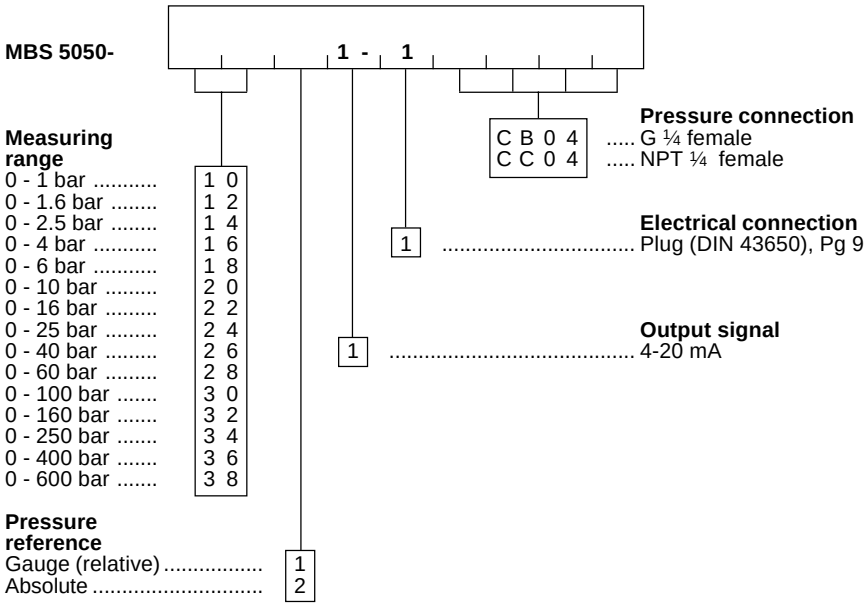
1. Supply +
2. Supply –
3. Function test

⏚ Connected to MBS transmitter enclosure

Ordering Standard version with DIN 43650 plug

Pressure connection	Pressure range P_e	Type no.	**Code no.**
G $^1/_4$ female	0 - 160 bar	MBS 5050 3211-1CB04	**060N1158**
	0 - 250 bar	MBS 5050 3411-1CB04	**060N1159**
	0 - 400 bar	MBS 5050 3611-1CB04	**060N1160**
	0 - 600 bar	MBS 5050 3811-1CB04	**060N1161**

Ordering, Special versions



Danfoss pressure transmitter programme

Danfoss Pressure and Temperature Controls offers the following product programme of Heavy-duty Transmitters:

Data Sheets:

Heavy-duty Transmitters, type MBS 2050	IK.21.I1.—
Heavy-duty Transmitters, type MBS 3050	IK.21.J1.—
Heavy-duty Transmitters, type MBS 4050	IK.20.Z3.—

Articles:

The Liquid (Water) Hammer Phenomena	IH.20.C1.—

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