

## Data sheet

# Exhaust gas temperature sensor

## Type MBT 5111



The MBT 5111 is a heavy-duty temperature sensor that can be used for measuring and regulating exhaust gas from diesel engines, turbines and compressors within stationary and marine applications.

This temperature sensor is based on a type K thermo couple, which measures temperatures up to 800 °C. The slim construction gives a short reaction time of  $t_{0.5^{\circ}} = 2$  sec. in water.

All parts in contact with the media are made of stainless steel AISI 316 Ti. The sensor is delivered with a 6 m extension cable as standard.

### Features

- For measuring exhaust gas in stationary and marine:
  - diesel engines
  - turbines
  - compressors
- With thermocouple for up to 800 °C media temperature
- MBT 5111 with adjustable insertion length up to 150 mm using moveable compression fitting

### Approvals

Lloyds Register of Shipping, LR  
 Germanischer Lloyd, GL  
 Det Norske Veritas, DNV  
 Registro Italiano Navale, RINA

Nippon Kaiji Kyokai, NKK  
 American Bureau of Shipping, ABS  
 Korean Register of Shipping, KRS  
 Bureau Veritas, BV  
 China Classification Society, CCS

Technical data

Main specifications

Sensing element	1 x NiCr-Ni or 2x NiCr-Ni, type K
Measuring range	-40 – 800 °C
Thermocouple design	According to EN 61515
Tolerances	According to EN 60584-2 Class 2
Protection tube	AISI 316 Ti

Response times

Type	Indicative response times	
	Water 0.2 m/s	
	t <sub>0.5</sub>	t <sub>0.9</sub>
MBT 5111 ø12	15 s	45 s
MBT 5111 ø6	2 s	5 s
With pocket	12 s	38 s

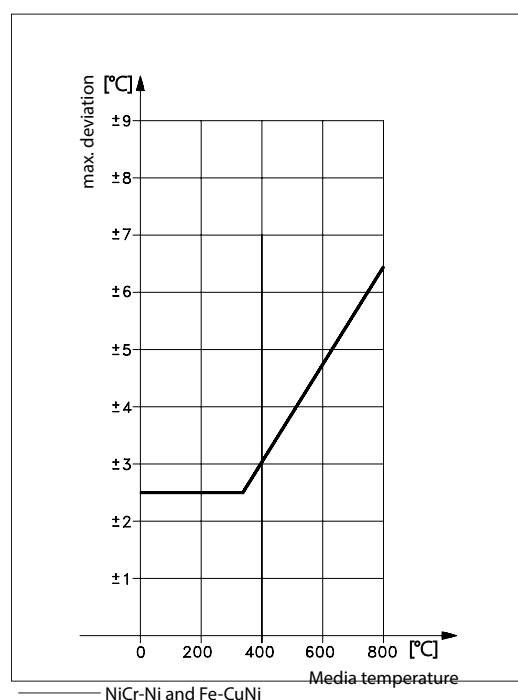
Mechanical and environmental specifications

Ambient temperature	Depending on cable	
Vibration stability	Shock	100 g / 6 ms
	Vibrations	4 g sine function 2 – 100 Hz, measured acc. to IEC 60068-2-6
Cable	MBT 5111 ø12	2 x 1.5 mm <sup>2</sup> , armoured silicone (max. 200 °C)
	MBT 5111 ø6	2 x 0.5 mm <sup>2</sup> , armoured teflon (max. 260 °C)
Enclosure	IP65 according to IEC 60529	

Net weight

MBT 5111 ø12	0.45 kg
MBT 5111 ø6	0.16 kg
1 m cable increases net weight with	approx. 40 g

Sensor tolerance EN 60584-2 Class 2



Ordering standard

Type MBT 5111	Sensor		Cable	Accessories		
<b>Thermocouple</b> 1 × Type K, max 800 °C	0			0000	Length of flexible tube None	
2 × Type K, max 800 °C	1			0030	0.3 m	
Other	9			0100	1.0 m	
				1000	10 m	
				xxx0	Other	
<b>Protection Tube</b> ø4.5 mm	0				<b>Accessories</b> None	
ø6.0 mm	1			0		Flexible tube
ø8.0 mm	2			1		Spring
Other	9			2		Other
						<b>Ajustable fitting for cable</b> None
<b>Tolerance</b> Class 2 IEC 60584-2	0			9	Other	
Other	9					<b>Connection (plug)</b> None
<b>Design</b> Straight protection tube	0			0	Jäger straight	
Bended protection tube (90 ° as standard)	1			1	ITT Cannon	
				3	Other	
				9		
<b>Protection tube, outside length</b> 100 mm		0100			<b>Cable length</b> 01.0 m	
500 mm		0500		0100		02.0 m
1000 mm		1000		0200		10.0 m
xxxx mm		xxxx		1000		xx,x m
				xxxx		
<b>Connection type</b> None		0			<b>Cable type</b> PFA thermocouple cable, screen, 260 °C	
Ajustable fitting, 1 piece		1				FEP thermocouple cable, screen, 205 °C
Fixed fitting		3				Other
Other		9				
						<b>Connection thread</b>
None		0 0	1		0 0	
¼" – 18NPT		1	2		1	
G ½ A		4	9		2	
Other		9			9	

Preferred versions

**Mounting**

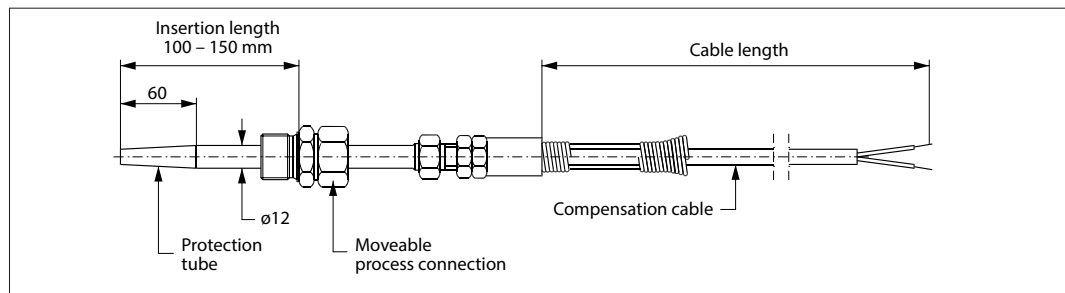
The free insertion length may not exceed 25 × sensor diameter, e.g. 150 mm with a 6 mm sensor diameter.

The free insertion length is defined as the part of the outermost sensor end that is not supported by a pocket or a drilled hole in the machinery.

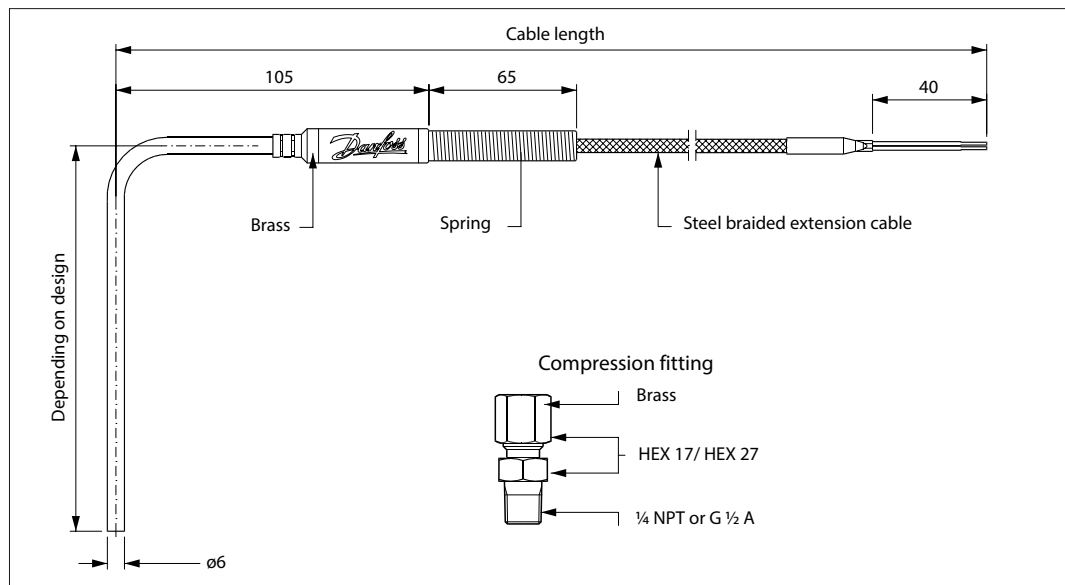
The free length of the cable must be supported for every ½ meter (= 100 × cable diameter).

Dimensions

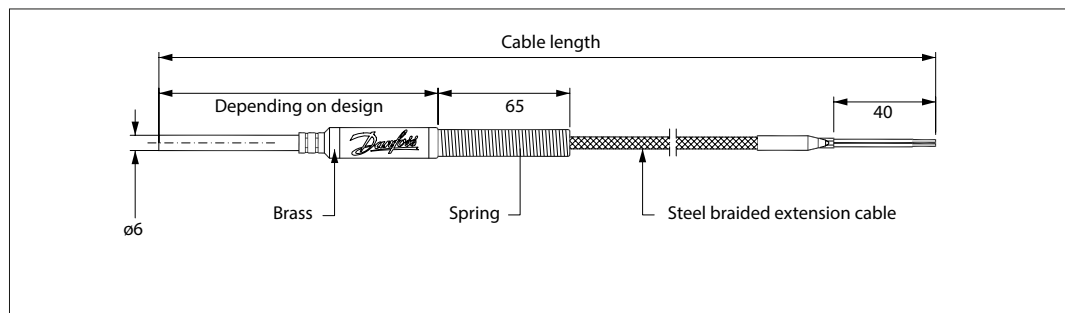
MBT 5111 –  $\phi 12$  version



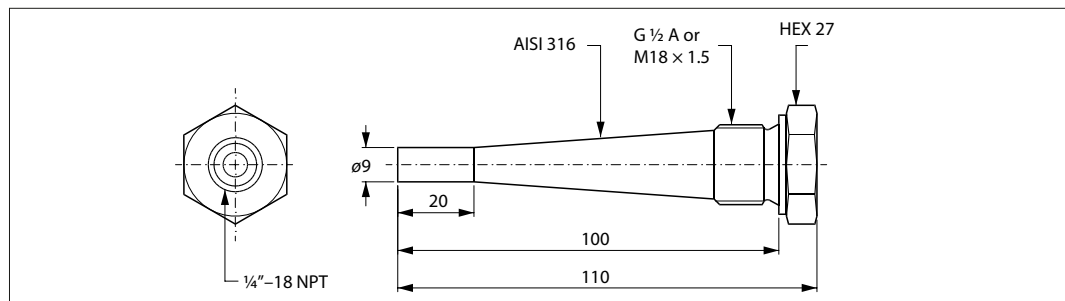
MBT 5111 –  $\phi 6$  angle version



MBT 5111 –  $\phi 6$  straight version



Pocket for MBT 5111 –  $\phi 6$  version ((To be used together with compression fitting))



All dimensions are in millimeters