

P3TCP / P3MBP

Ultra-high pressure
transducers for up to
15,000 bar



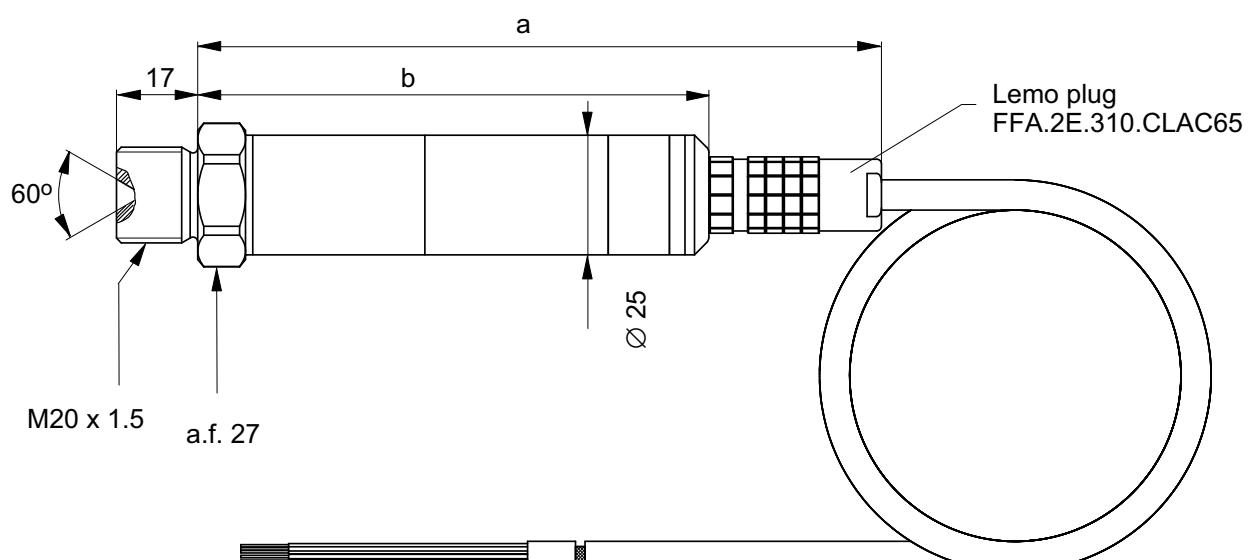
Special features

- For static and dynamic pressure variance, pressure peaks and pressure fluctuations
- Principle of measurement: foil strain gage
- Monolithic design, measuring body has no welded seam
- High number of load cycles

Top Class

- Better temperature response
- Individually documented values
- Improved accuracy class
- Closer sensitivity tolerance (suitable for parallel connection, for differential pressure measurement, for example)

Dimensions (in mm; 1 mm = 0.03937 inches)



Connection cable

1-Kab 170-3; 3 m
1-Kab 170-7; 7 m
(as an option)

	a	b
P3MBP BlueLine	143	107
P3 Top Class BlueLine	132	96

Specifications P3MBP BlueLine per DIN 16086

Type	P3MBP BlueLine			
Mechanical input quantities				
Pressure type	absolute pressure			
Principle of measurement	foil strain gage			
Measuring range, 0 bar...	bar	5000	10000	15000
Accuracy class¹⁾		0.3	0.5	0.75
Output characteristics				
Nominal (rated) sensitivity	mV/V	1		
Sensitivity tolerance	%	< ± 0.3	< ± 0.6	< ± 0.8
Effect of temperature on zero signal in the nominal (rated) excitation voltage range per 10K, rel. to nominal (rated) sensitivity				
in the nominal (rated) temperature range	%	± 0.1	± 0.2	± 0.2
in the operating temperature range	%	± 0.15	± 0.25	± 0.25
Effect of temperature on sensitivity in the nominal (rated) excitation voltage range per 10K, rel. to actual value				
in the nominal (rated) temperature range	%	± 0.1	± 0.2	± 0.2
in the operating temperature range	%	± 0.3	± 0.4	± 0.4
Characteristic curve deviation (setting of initial point)	%	0.3	0.5	0.75
Repeatability per DIN 1319	%	< ± 0.05		

¹⁾ Accuracy class is not a DIN 16086 concept. The figure conforms to the maximum single deviation; that is the characteristic curve deviation (setting of initial point) and deviations as a result of temperature, related to a difference of 10 K.

Test report P3MBP BlueLine

Prüfprotokoll test certificate / protocole d'essai			
Type: Type / type	P3MBP / Blue Line	Auftrag: order no / commission	801141172
Nennmessbereich: range / portée	5000 bar	Prüfer: examiner / contrôleur	Kozacki
IdentNr.: serial no / N° ident	143310284	Datum: test date / date d'essai	2010-09-30
Prüfergebnisse: test results / résultats d'essai			
Eingangsgröße des Messbereichs [%] Input quantity / échelle d'éssai		Ausgangsgröße [mV/V] output quantity / résultats	
0	0.0000	50	0.4981
100	1.0006	55	0.4993
50	0.4991	0	0.0001
Die Prüfergebnisse über 3000 Bar sind extrapolierte Werte. Der maximale Prüfdruck beträgt 3000 Bar. The test results exceeding 3000 Bar are extrapolated values. The maximum pressure for testing amounts to 3000 Bar. Les résultats d'essai supérieurs à 3000 Bar sont des valeurs extrapolées. La pression maximale d'essai est de 3000 Bar.			
Aus den Prüfergebnissen berechnete und sonstige messtechnische Eigenschaften : measured characteristics calculated from the measuring results and other values caractéristiques calculées à partir des résultats d'essai			
Kennwert C [mV/V] sensitivity / sensibilité	1.0006		
Kennlinienabweichung, Anfangspunkteinstellung [%vC] combined error / erreur combinée	0.150		
Relative Umkehrspanne [%vC] relative hysteresis / hystérèse résultante	0.124		
Allgemeine Zusatzinformationen: general information / informations complémentaires			
Alle weiteren messtechnischen Eigenschaften des Aufnehmers sind durch Typprüfungen und laufende Produktabnahmen des Qualitätswesens abgesichert. All other metrological characteristics of the transducer are verified by type testing and regular product audits of the quality department. Toutes les autres caractéristiques transductrices sont vérifiées par le service qualité au moyen d'essais et d'audits réguliers sur le produit.		Akreditiertes DKD-Kalibrierlaboratorium und EBM-Prüflaboratorium Accredited DKD calibration laboratory and EBM testing laboratory Laboratoire accrédité par le DKD et laboratoire d'essai EBM	
Zertifiziert nach ISO 9001 und ISO/IEC 17025 (DKE-00101) und ISO 14001	DKE-Zertifikat Nr. DKE-00101 vom 02.07.2010	Akkreditiertes DKD-Kalibrierlaboratorium und EBM-Prüflaboratorium Accredited DKD calibration laboratory and EBM testing laboratory Laboratoire accrédité par le DKD et laboratoire d'essai EBM	DKE-Zertifikat Nr. DKE-00101 vom 02.07.2010
Hettlinger Baldwin Messtechnik GmbH	Im Tiefen See 46	D-64295 Darmstadt	230.00.10409PP KF916
Ausgabe 10/2010 Version b 05.01.2011 / Moer			

Information on the linearity of the individual transducer

Information on the sensitivity, characteristic curve deviation and rel. reversibility error of the individual transducer.

Specifications P3 Top Class BlueLine per DIN 16086

Type		P3 Top Class BlueLine		
Mechanical input quantities				
Pressure type		absolute pressure		
Principle of measurement		foil strain gage		
Measuring range, 0 bar...	bar	5000	10000	15000
Accuracy class¹⁾		0.25	0.4	0.6
Output characteristics				
Nominal (rated) sensitivity	mV/V	1		
Sensitivity tolerance	%	< ± 0.2	< ± 0.4	< ± 0.8
Zero signal tolerance	%	< ± 1		
Creep upon unloading 15 min	%	< ± 0.03		
Effect of temperature on zero signal in the nominal (rated) excitation voltage range per 10K, rel. to nominal (rated) sensitivity				
in the nominal (rated) temperature range	%	± 0.05		
in the operating temperature range	%	± 0.10		
Effect of temperature on sensitivity in the nominal (rated) excitation voltage range per 10K, rel. to actual value				
in the nominal (rated) temperature range over 0 °C	%	± 0.05		
in the nominal (rated) temperature range below 0 °C	%	± 0.1		
in the operating temperature range	%	± 0.2		
Characteristic curve deviation (setting of initial point)	%	0.25	0.4	0.6
Rel. interpolation error (max. deviation of a cubic interpolation function over the test series)	%	0.05	0.25	-
Long-term stability of zero signal and span (data per year)	%	0.2		
Repeatability per DIN 1319	%	< ± 0.05		

¹⁾ Accuracy class is not a DIN 16086 concept. The figure conforms to the maximum single deviation; that is the characteristic curve deviation (setting of initial point) and deviations as a result of temperature, related to a difference of 10 K.

Extended test report

<p>Page 1</p> <div style="border: 1px solid black; padding: 10px;"> <p>Hottinger Baldwin Messtechnik GmbH Im Tiefen See 45 D-5423 Darmstadt</p> <p>Zertifiziert nach ISO 9001 und ISO 14001 ISO 9001 und ISO 14001 zertifiziert. Zertifikat-Nr. 02 3001 und ISO 14001 Akten-Nr. 20 17017 Ausstellungszeitraum 20 17017</p> <p>Akkreditierung gemäß ISO 7000</p> <p>Prüfprotokoll Test certificare / procédé d'essai</p> <p>Typ: P3 Auftrag: 8010210001</p> <p>Messbereich in bar: 5000Bar Prüfer: Schmitl</p> <p>Identifiz.: 110210001 Datum: 15.02.2007</p> <p>Nennempfindlichkeit - Ausgangsspanne in mV/V Nominal sensitivity, nominal output span in mV/V</p> <p>Prüfergebnisse: test results / résultats d'essai</p> <p>Eingangsgröße in bar input quantity / valeur d'entrée</p> <p>Ausgangsgröße in mV/V output quantity / signe de sortie</p> <p>Steigende Last - fallende Last increasing load - decreasing load</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>0</td><td>0.0000</td><td>0.0000</td></tr> <tr><td>1000</td><td>0.1980</td><td>0.1981</td></tr> <tr><td>2000</td><td>0.3970</td><td>0.3975</td></tr> <tr><td>2500</td><td>0.4968</td><td>0.4973</td></tr> <tr><td>3000</td><td>0.5967</td><td>0.5973</td></tr> <tr><td>4000</td><td>0.7970</td><td>0.7977</td></tr> <tr><td>5000</td><td>0.9981</td><td>0.9981</td></tr> </table> <p>Aus den Prüfergebnissen berechnete messtechnische Kenngrößen: Numerical calculation of the quantities calculated from the test results. Calcul des quantités calculées à partir des résultats d'essai.</p> <p>Konvert. Ausgangsspanne C in mV/V Conversion factor of the output span in mV/V</p> <p>Konstantenabschätzung, Anfangspunkteinstellung in %VC constant error / initial setting</p> <p>Relative Hysterese in %C relative hysteresis / hystérésis relative</p> <p>Maximale Interpolationabweichung in %VC Maximum deviation of a cubic interpolation function through the sensor. Maximum deviation from a cubic interpolation function through the sensor. Décalage maximal d'une fonction d'interpolation cubique à travers du capteur. Décalage maximal d'une fonction d'interpolation cubique à travers du capteur.</p> <p>Koeffizienten der kubischen Ausgleichsfunktion der Form: $X = R \cdot Y^3 + S \cdot Y^2 + T \cdot Y$ (Y in mV/V, X in bar) Coefficients of a cubic approximation function through the sensor and its working points/ coefficients de la fonction d'approximation cubique du capteur et ses points de mesure et de travail.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>R</td><td>12.3943732</td></tr> <tr><td>S</td><td>-56.7869021</td></tr> <tr><td>T</td><td>5055.80103</td></tr> </table> <p>Allgemeine Zusatzinformationen: general information / renseignements complémentaires</p> <p>Angabe MMR Version 5 08.02.2007 Meier</p> <p>KPS17WIS-T Seite / Page 1 (2) 2007-02-15 09:46:09</p> </div>	0	0.0000	0.0000	1000	0.1980	0.1981	2000	0.3970	0.3975	2500	0.4968	0.4973	3000	0.5967	0.5973	4000	0.7970	0.7977	5000	0.9981	0.9981	R	12.3943732	S	-56.7869021	T	5055.80103	<p>Test report P3 Top Class BlueLine</p>	<p>Page 2</p> <div style="border: 1px solid black; padding: 10px;"> <p>Hottinger Baldwin Messtechnik GmbH Im Tiefen See 45 D-5423 Darmstadt</p> <p>Zertifiziert nach ISO 9001 und ISO 14001 ISO 9001 und ISO 14001 zertifiziert. 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Calcul des quantités calculées à partir des résultats d'essai.</p> <p>Temperaturkoeffizient des Nullsignals, bezogen auf den Raumtemperatur in °K/°C temperature coefficient of zero signal / coefficient de température du signal zéro</p> <p>Temperaturkoeffizient des Ausgangsspannes, bezogen auf den Raumtemperatur in °K/°C temperature coefficient of the output span / coefficient de température de la sensibilité</p> <p>Allgemeine Zusatzinformationen: general information / renseignements complémentaires</p> <p>Angabe MMR Version 5 08.02.2007 Meier</p> <p>KPS17WIS-T Seite / Page 2 (2) 2007-02-15 09:46:09</p> </div>	69.9	0.0553	21.3	0.0558	69.9	1.0008	21.3	0.9987
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The following data applies to P3MBP BlueLine and P3 Top Class BlueLine

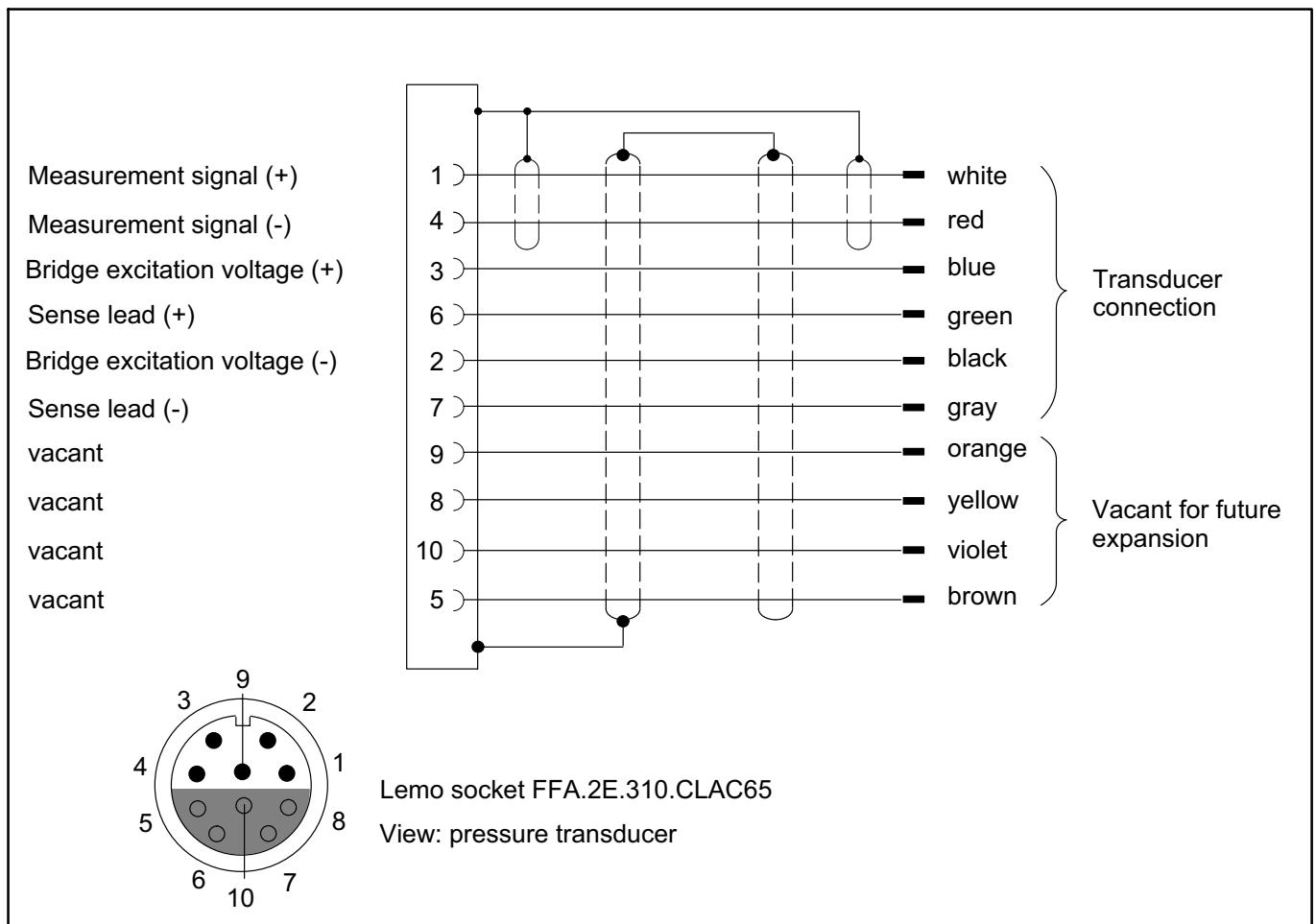
Mechanical input quantities				
Measuring range, 0 bar...	bar	5000	10000	15000
Initial value	bar	0		
Operating range at reference temperature	%	120		110
Overload limit at reference temperature	%	120		110
Test pressure	%	195	150	100
Dynamic loading				
Permissible pressure	%	100		
Permissible oscillation width to achieve a typical 10,000,000 DIN 50100 load cycles	bar	3500	5000	6000
Dead volume with supplied packing ²⁾	mm ³	615	150	100
	mm ³	200	-	-
Control volume	mm ³	approx. 1		
Output characteristics				
Fundamental resonance frequency	kHz	> 100		
Input resistance at reference temperature	Ω	350 ±5		
Output resistance at reference temperature	Ω	350 ±5		
Insulation resistance	MΩ	5000		
Electrical strength	V	90		
Excitation voltage				
Reference excitation voltage	V	5		
Nominal (rated) excitation voltage	V	0.5 ... 7.5		
Operating range	V	0.5 ... 12		
Ambient conditions				
Permissible voltage between measuring circuit and transducer ground at reference temperature	V	50		
Materials for parts which come into contact with the environment (type-dependent)		1.4301; 1.4541; 1.4542; 1.4548; 1.6354 PU / chrome-plated and nickel-plated brass		
Reference temperature	°C	+23		
Nominal (rated) temperature range	°C	-10...+80		
Operating temperature range	°C	-40...+100		
Storage temperature range	°C	-40...+100		
Impact resistance (tested to DIN 40 046)				
Impact acceleration	m/s ²	1000		
Impact duration	ms	4		
Impact form		Half sine wave		
Acceleration sensitivity per 10 m/s² for exciting frequencies of <20% of natural frequency	%	< ± 0.001		
Mechanical specifications				
Pressure connection		M20 x 1.5 with 60° inner cone for use with 56° double cone		
Electrical connection		Lemo connector ERA.2E.310.SLL		
Bending radius of the connection cable, min.				
static	mm	35		
dynamic	mm	75		
Mounting position		any		
Weight without cable, approx.	g	200		
Degree of protection		IP67		

2) Packing is only used for the 5000 bar measuring range

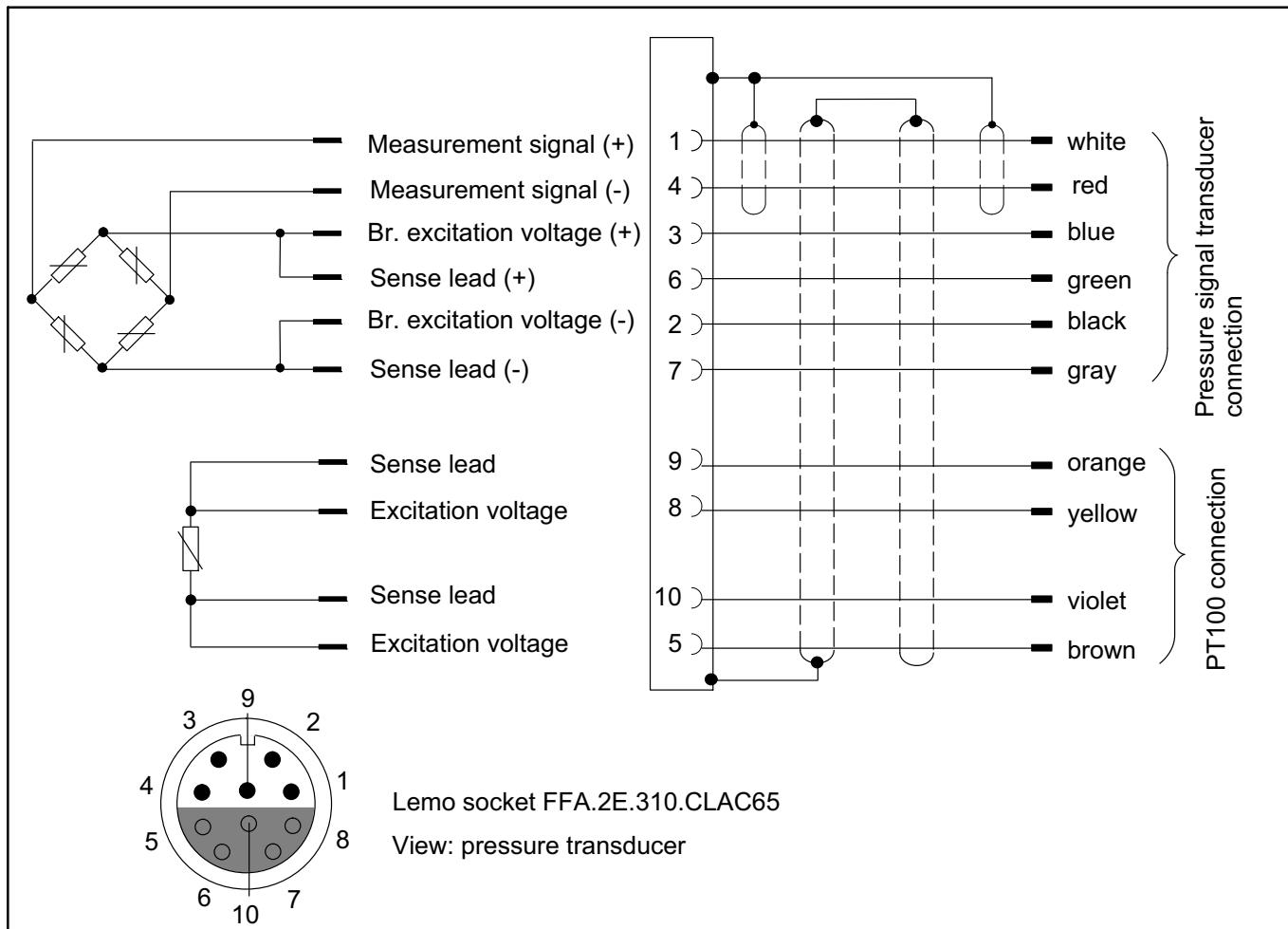
Economical, standard versions available from stock:

Measuring range, 0 bar...	Pressure type	Product number
P3MBP BlueLine		
5,000 bar	absolute pressure	1-P3MBP/5,000 BAR
10,000 bar	absolute pressure	1-P3MBP/10,000 BAR
15,000 bar	absolute pressure	1-P3MBP/15,000 BAR
P3 Top Class BlueLine		
5,000 bar	absolute pressure	1-P3TCP/5,000 BAR
10,000 bar	absolute pressure	1-P3TCP/10,000 BAR
15,000 bar	absolute pressure	1-P3TCP/15,000 BAR

Pin assignment P3MBP BlueLine



Pin assignment P3 Top Class BlueLine

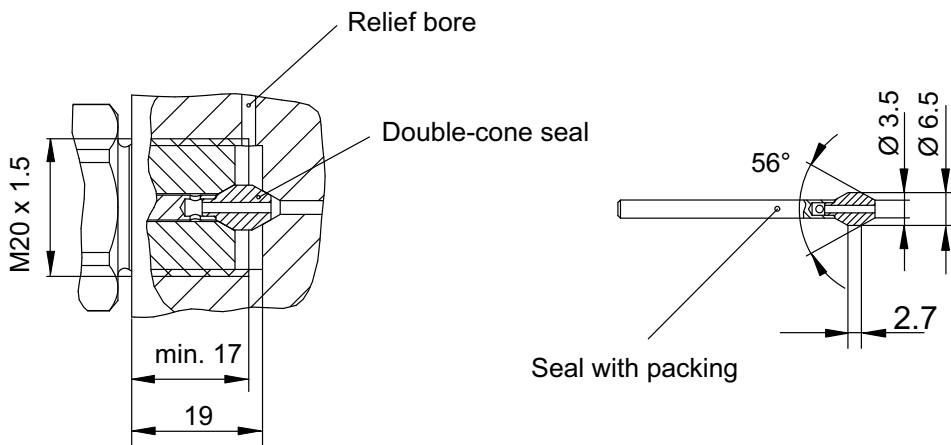


Accessories

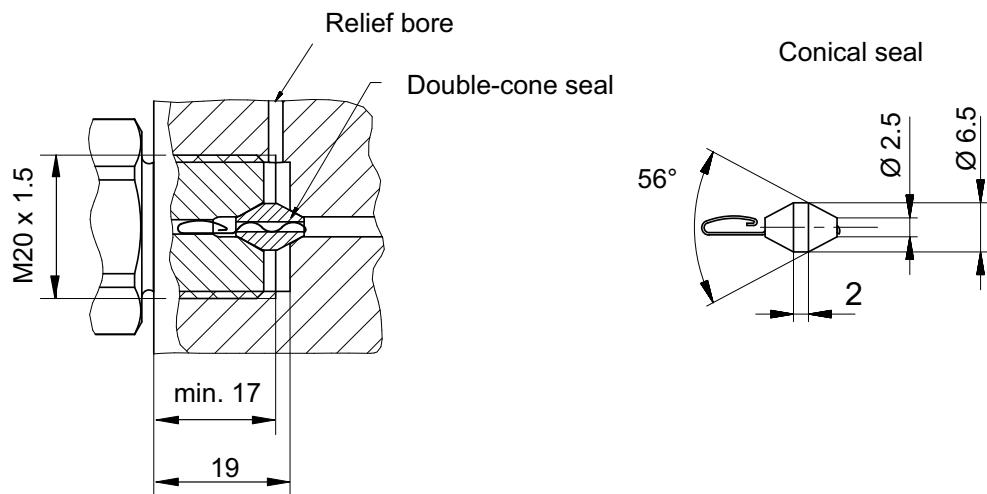
Included in scope of supply:

For 5,000 bar:	2 double-cone seals
For 10,000 bar and 15,000 bar:	2 double-cone seals incl. locking spring
Seal accessories:	
5,000 bar	2-9278.0372 bag, conical seal P3MB/5000 bar
10,000 bar	2-9278.0373 bag, conical seal P3MB/10000 bar
15,000 bar	2-9278.0375 bag, conical seal P3MB/15000 bar

Pressure transducer mounting



P3MBP 5000 bar



P3MBP 10000 bar and P3MBP 15000 bar

Subject to modifications.

All product descriptions are for general information only. They are not to be understood as a guarantee of quality or durability.

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measure and predict with confidence



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