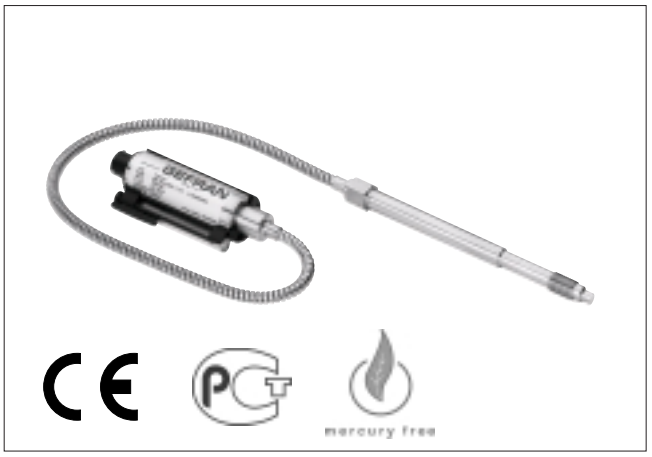
GEFRAN

NaK FILLED MELT PRESSURE TRANSMITTERS

KN SERIES *Voltage output*



The KN Series are for use in high temperature applications where the process temperatures may reach 538°C (1000°F) such as high temperature engineered polymers. The K Series utilizes standard melt pressure principles and construction, but uses a near incompressible NAK (Sodium Potassium) for pressure transmission.
The K Series strain sensing technology is bonded foil strain gage.

MAIN FEATURES

- Pressure ranges from:
  0-35 ato 0-1000 bar / 0-500 to 0-150000 psi
- Accuracy: < ±0.25% FSO (H); < ±0.5% FSO (M)
- Hydraulic transmission system for pressure signal guarantees stability at working temperature (NaK).
  Liquid conforming to RoHS Directive.
  NaK is defined as a safe substance (GRAS).
- Quantity of NaK contained per model:
  KN0 series (30mm^3) [0.00183 in^3], KN1, KN2, KN3 (40mm^3) [0.00244 in^3]
- 1/2-20UNF, M18x1.5 standard threads; other types available on request
- Autozero function on board / external option
- Stem drift Autocompensation function (SP version)
- Inconel 718 diaphragm with GTP coating for temperatures up to 538°C (1000°F)
- 15-5 PH diaphragm with GTP coating for temperatures up to 400°C (750°F)
- HastelloyC276 diaphragm for temperatures up to 300°C (570°F)
- 17-7 PH corrugated diaphragm with GTP coating for ranges below 100 bar-1500 psi
- Material of stem 17-4PH

GTP (advanced protection)
Coating with high resistance against corrosion, abrasion and high temperature

AUTOZERO FUNCTION

All signal variations in the absence of pressure can be eliminated by using the Autozero function.
This function is activated by closing a magnetic contact located on the transmitter housing.
he procedure is permitted only with pressure at zero.

AUTO-COMPENSATED INFLUENCE OF MELT TEMPERATURE

Thanks to internal self-compensation, the KSP series transmitter cancels the effect of pressure signal variation caused by variation of Melt temperature. This reduces at the minimum the read error caused by heating of the filling fluid (typical of all sensors built with “filled” technology).
The drift values declared in the version with Autocompensation are valid for media temperatures up to 500°C.

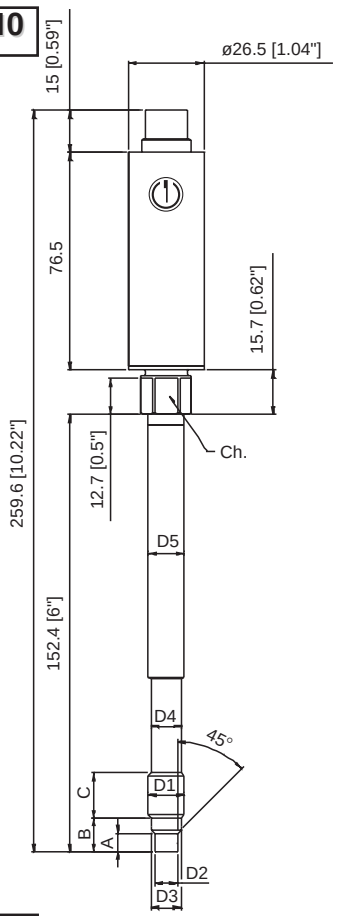
TECHNICAL SPECIFICATIONS

Accuracy (1)	**H** <±0.25%FSO (100...1000 bar) **M** <±0.5%FSO (35...1000 bar)
Resolution	Infinite
Measurement range	0..35 to 0..1000bar 0..500 to 0..15000psi
Maximum overpressure (without degrading performances)	2 x FS
Measurement principle	Extensimetric
Power supply	15...30Vdc N, C 10...30Vdc B, M
Maximum current absorption	25mA
Insulation resistance (at 50Vdc)	>1000 MOhm
Output signal Full Scale (FSO)	5Vdc (M) - 10Vdc (N) 5,1Vdc (B) - 10,1Vdc (C)
Zero balance (tolerance ± 0.25% FSO)	0Vdc (M, N) 0.1Vdc (B, C)
Zero signals adjustment (tolerance ± 0.25% FSO)	“Autozero” function
Span adjustment within ± 5% FSO	See Melt Manual
Maximum allowed load	1mA
Response time (10...90% FSO)	~ 1ms
Output noise (RMS 10-400Hz)	< 0.025% FSO
Calibration signal	80% FSO
Output short circuit and reverse polarity protection	YES
Compensated temperature range	0...+85°C
Operating temperature range	-30...+105°C
Storage temperature range	-40...+125°C
Thermal drift in compesated range: Zero / Calibration / Sensibility	< 0.02% FSO/°C
Diaphragm maximum temperature	538°C/1000°F
Zero drift (zero)	< 3,5bar/100°C / < 28 psi/100°F
Zero drift temperature for Autocompensated version (SP) within the temperature range 20°C-500°C inclusive the drift temperature of the housing	< 0.005 bar/°C 100 ≤ p < 500 bar 0.0022 %FS/°C p ≥ 500 bar
Thermocouple (model KN2)	STD: type “J” (isolated junction)
Protection degree (with 6-pole female connector)	IP65

FSO = Full Scale Output
(1) BFSL method (Best Fit Straight Line): includes combined effects of Non-Linearity, Hysteresis and Repeatability.

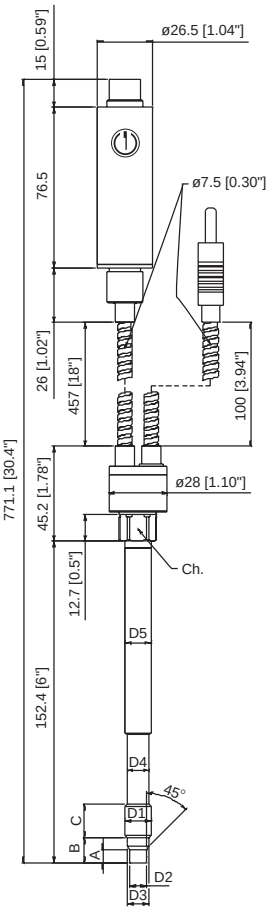
MECHANICAL DIMENSIONS

KN0

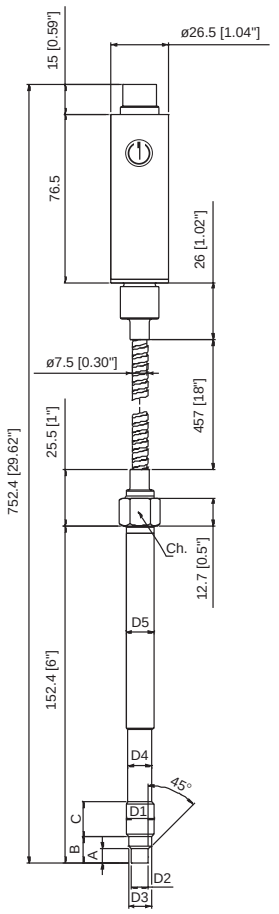


D1	**1/2 - 20UNF**
D2	ø7.8 -0.05 [ø0.31" -0.002]
D3	ø10.5 -0.025 [ø0.41" -0.001]
D4	ø10.67 [ø0.42"]
D5	ø12.7 [ø0.5"]
A	5.56 -0.26 [0.22" -0.01]
B	11.2 [0.44"]
C	15.74 [0.62"]
Ch [Hex]	16 [5/8"]

KN2

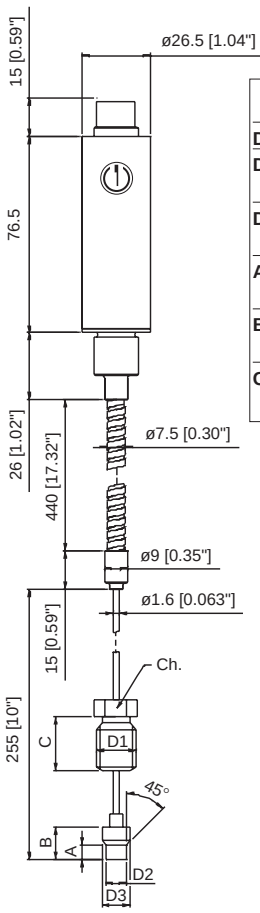


KN1



D1	**M18x1.5**
D2	ø10 -0.05 [ø0.394" -0.002]
D3	ø16 -0.08 [ø0.63" -0.003]
D4	ø16 -0.4 [ø0.63" -0.016]
D5	ø18 [ø0.71"]
A	6 -0.26 [0.24" -0.01]
B	14.8 -0.4 [0.58" -0.016]
C	19 [0.75"]
Ch [Hex]	19 [3/4"]

KN3



Capillare esposto Exposed capillary	
D1	1/2-20UNF
D2	.307/.305" [7.80/7.75mm]
D3	.414/.412" [10.52/10.46mm]
A	.125/.120" [3.18/3.05mm]
B	.318/.312" [8.08/7.92mm]
C	.81" [20.6mm]

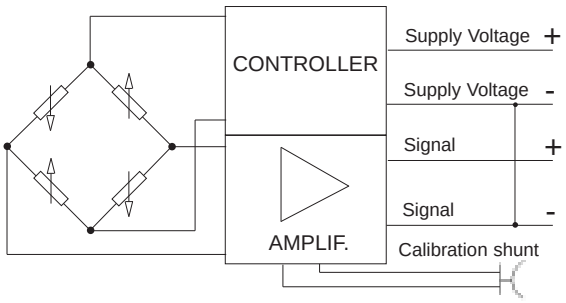
NOTE : dimensions refer to rigid stem length option "4" (153 mm – 6")

WARNING : For installation use a maximum tightening torque of 56 Nm(500 in-lb)

ELECTRICAL CONNECTIONS

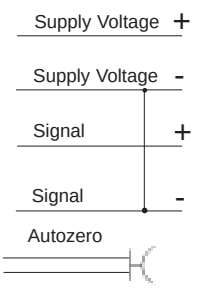
VOLTAGE OUTPUT (M, N, B, C)

Power supply 15..30Vdc



MAGNETIC AUTOZERO

6-pin
C
D
A
B
E - F

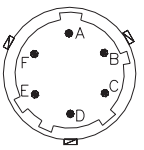


EXTERNAL AUTOZERO

6-pin
C
D
A
B
E - F

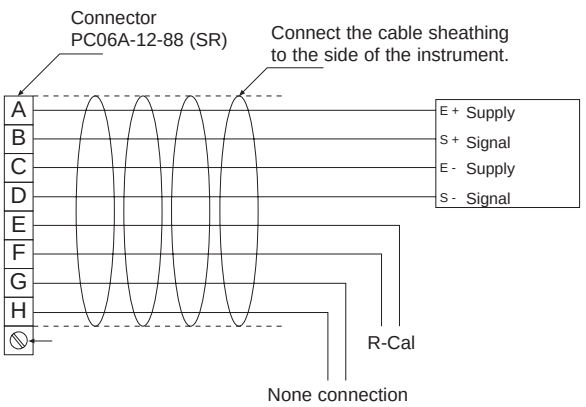
Shield drain wire is tied to connector via cable clamp

6 pin connector
VPT07RA10-6PT2
(PT02A-10-6P)



8 pin connector
PC02E-12-8P Bendix

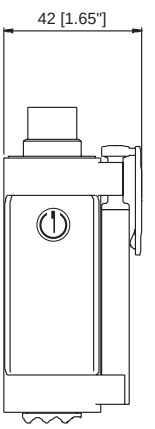
8-pin connector



Magnetic Autozero version
A = Excitation + (white)
B = Signal + (red)
C = Excitation - (green)
D = Signal - (black)
E = R-Cal (blue)
F = R-Cal (brown)
G = no connection
H = no connection

External Autozero version
A = Excitation + (white)
B = Signal + (red)
C = Excitation - (green)
D = Signal - (black)
E = Autozero (blue)
F = Autozero (brown)
G = no connection
H = no connection

AUTOZERO FUNCTION



The Autozero function is activated through a magnetic contact (external magnet supplied with the sensor). See the manual for a complete Autozero function explanation.

ACCESSORIES

Connectors

6-pin female connector (IP65 protection degree)	**CON300**
8-pin female connector	**CON307**

Extension cables

6-pin connector with 8m (25ft) cable	**C08WLS**
6-pin connector with 15m (50ft) cable	**C15WLS**
6-pin connector with 25m (75ft) cable	**C25WLS**
6-pin connector with 30m (100ft) cable	**C30WLS**
8-pin connector with 15m (50ft) cable	**E15WLS**
8-pin connector with 25m (75ft) cable	**E25WLS**
8-pin connector with 30m (100ft) cable	**E30WLS**
Other lengths	**on request**

Accessories

Mounting bracket	**SF18**
Dummy plug for 1/2-20UNF	**SC12**
Dummy plug for M18x1.5	**SC18**
Drill kit for 1/2-20UNF	**KF12**
Drill kit for M18x1.5	**KF18**
Cleaning kit for 1/2-20UNF	**CT12**
Cleaning kit for M18x1.5	**CT18**
Fixing pen clip	**PKIT309**
Autozero pen	**PKIT312**

Thermocouple for KN2 model

Type “J” (153mm - 6” rigid stem)	**TTER 601**

Cable color code

Conn.	Wire
A	Red
B	Black
C	White
D	Green
E	Blue
F	Orange

ORDER CODE

K - □ - □ - □ - □ - □ - □□□□ - □ - □ - □ - □ - □ - 000

Autocompensation (*)	SP
Standard	-

(*) available for ranges > to 100bar
(*) not available for version KN3

OUTPUT SIGNAL	
0 .. 5Vdc	M
0 .. 10Vdc	N
0.1 .. 5.1Vdc	B
0.1 .. 10.1Vdc	C

VERSION	
Rigid stem	0
Rigid + flexible stem	1
With thermocouple	2
Exposed capillary	3

CONNECTOR	
Standard	
6-pin	6
8-pin	8

ACCURACY CLASS	
0.25% FSO (ranges ≥ 100 bar/1500 psi)	H
0.5% FSO	M

RANGE			
bar		psi	
35	**B35U**	**500**	**P05C**
50	**B05D**	**750**	**P75D**
70	**B07D**	**1000**	**P01M**
100	**B01C**	**1500**	**P15C**
200	**B02C**	**3000**	**P03M**
350	**B35D**	**5000**	**P05M**
500	**B05C**	**7500**	**P75C**
700	**B07C**	**10000**	**P10M**
1000	**B01M**	**15000**	**P15M**

000= Standard version
Special or customized versions available on request

E	External autozero
-	Magnetic autozero

CONTACT DIAPHRAGM	
I	INCONEL 718 (538°C*)
S	15-5 PH (400°C*)
H	HASTELLOY C276 (300°C*)

* max temperature

FLEXIBLE STEM LENGTH (mm / inches) (*)		
Standard (KN0)		
0	none	
Standard (KN1, KN2)		
D	457mm	18”
E	610mm	24”
F	760mm	30”
Standard (KN3)		
L	711mm	28”
Available on request		
A	76mm	3”
B	152mm	6”
C	300mm	12”

RIGID STEM LENGTH (mm / inches) (*)		
Standard (KN0, KN1, KN2)		
4	153mm	6”
5	318mm	12.5”
Standard (KN3)		
0	none	
Available on request		
1	38mm	1.5”
2	50mm	2”
3	76mm	3”
6	350mm	14”
7	400mm	16”
8	456mm	18”

(*) max combined rigid/flexible stem length is 1000mm - 39”

THREAD	
Standard	
1	1/2 - 20 UNF
4	M18 x 1.5

Examples

KN2-6-M-B07C-1-4-D-I-000
Melt pressure transducer with type “J” thermocouple, 0..10Vdc output, 6-pin connector, 1/2-20UNF thread, 700 bar pressure range, 0.5% accuracy class, 153 mm (6”) rigid stem, 457mm (18”) flexible stem, Inconel 718 diaphragm.

KSPM0-6-M-P03M-1-4-0-I-000
Melt pressure transducer autocompensated version, rigid stem, 0..5Vdc output, 6-pin connector, 1/2-20UNF thread, 3000 psi pressure range, 0.5% accuracy class, 153 mm (6”) rigid stem Inconel 718 diaphragm.

Sensors are manufactured in compliance with:
- EMC 2004/108/CE compatibility directive
- RoHS 2002/95/CE directive

Electrical installation requirements and Conformity certificate are available on our web site: www.gefran.com

The Melt pressure transmitter/transducer are available with GOST-R certification.
The request of this version must be specified on the order.

HO03

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