GEFRAN

TPH

TRANSDUCER FOR HIGH PRESSURE

Main features

- *Ranges: from: 0...1000 to 0...5000 bar*
- *Accuracy: ± 0.1% FSO typical*
- *Protection: IP65/IP67*
- *Internal calibration signal*
- *Wetted parts: 15-5PH / 17-4PH stainless steel*
- *Operating temperature: -30...+120°C*
- *Measurement diaphragm with monolithic stainless steel structure*
- *Suitable for measuring static and dynamic pressure **

Series TPH transducers for high pressure are based on the extensimetric measurement principle with strain gauge on stainless steel. The measurement diaphragm with monolithic structure makes the transmitter highly efficient, reliable, and safe – extremely important factors in high-pressure applications.
The entire mechanical structure, with vent holes, is designed to guarantee safety and makes the transducer suitable for measuring both static and dynamic pressure, even under harsh conditions.

The TPH is particularly suitable for applications in high and very high pressure hydraulic circuits, such as (for example) on test benches or on waterjet cutting machines. State of the art components and high precision machining make the TPH the ideal product for all above requirements, where is needed the non-amplified transducer with mV/V output.

TECHNICAL DATA

Accuracy (**1**)	± 0.1% FSO typical; ± 0.2% FSO max
Resolution	Infinite
Overpressure (without degrading)	2 x FS (max 6000 bar)
Burst pressure	3 x FS (max 7500 bar)
Pressure media	Inox 15-5PH (1.4545) / 17-4PH (1.4542)
Body materials	Inox AISI 304 (1.4301)
Measurement principle	Bonded Strain gauge on steel (4 active elements)
Power supply	10 (max 15) Vdc/ac RMS
Common mode voltage	Typical 5V @ 10V supply
Output impedance	350 Ω (±1)
Load impedance	> 1000 KΩ
Insulation resistance	> 1000 MΩ @ 50Volt
Zero and span setting	±0.5%FSO
Output voltage (sensitivity)	1 mV/V nominal
Calibration signal	80% FSO nominal (see diagram)
Long-term stability	< 0.2% FSO/Year (at rated condition)
Operating temperature range (process) (**3**)	-30...+120°C (-22...+248°F)
Compensated temperature range (**2**)	-10...+85°C (14...+185°F)
Storage temperature range	-30...+105°C (-22...+221°F)
Temperature effects over compensated range (zero-span)	±0.01% FSO/°C typical (±0.020% FSO/°C max.)
Mounting position effects	Negligible
Humidity	Up to 100%RH non condensing
Weight	330 gr. nominal
Mechanical shock	100g/11msec, according to IEC 60068-2-27
Vibrations	20g max a 10...2000Hz, according to IEC 60068-2-6
Ingress protection	IP65/IP66/IP67

FSO = Full Scale Output

***** Infinite number of cycles for dynamic measurement cycles with range between 0 and 70%FS

1 Includes combined effects of Non-Linearity BFSL (Best Fit Straight Line), Hysteresis and Repeatability.

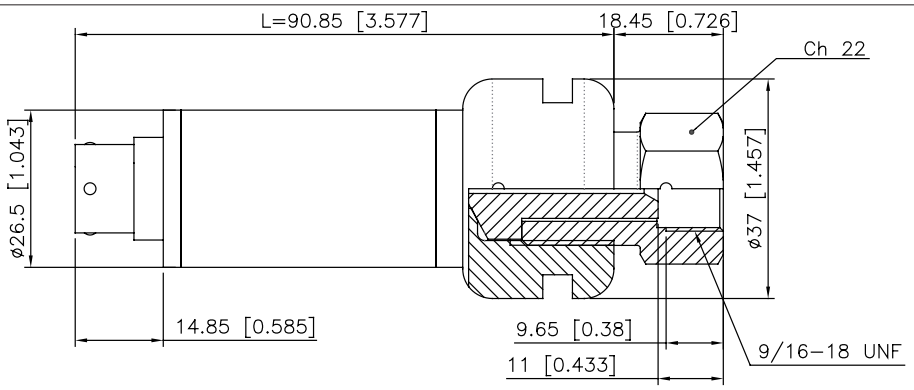
2 temperatures outside compensated range may cause zero signal drift

3 room temperature and/or temperature of electronics must not exceed 105°C

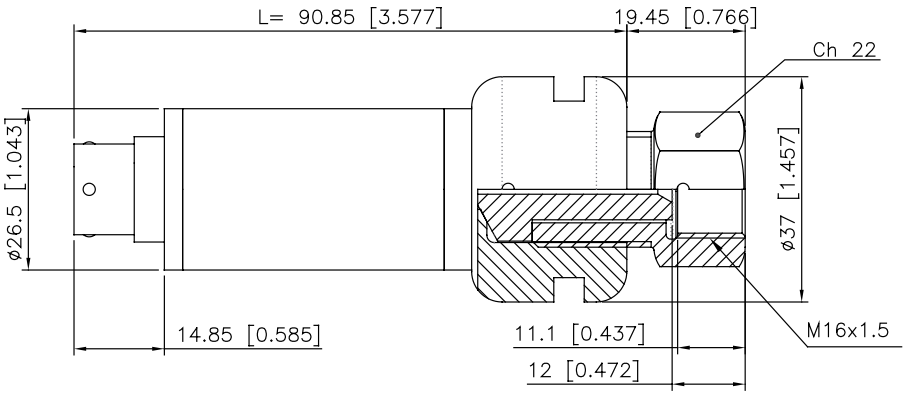
MECHANICAL DIMENSIONS - Process connections

Dimensions: mm.[inches]

Connection F-250-C
(9/16-18UNF female)
(code **D**)

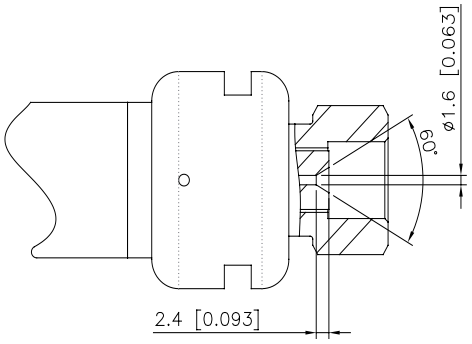


Connection
M16 x 1.5 female
(code **E**)



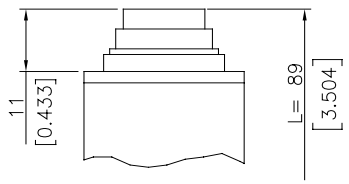
MECHANICAL DIMENSIONS – Process connections – Detail of conical seal

In high pressure applications, safety of the process connection is guaranteed entirely by the conical seal (metal on metal).
The series TPH offers two types of female connections, F250-C (D) and M16x1.5 (E), both with 60° conical seals (see drawing for mechanical details).

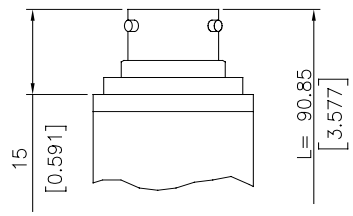


ELECTRICAL CONNECTION

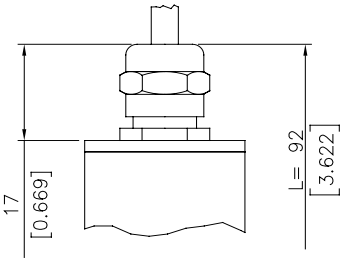
P - 7 pole connector



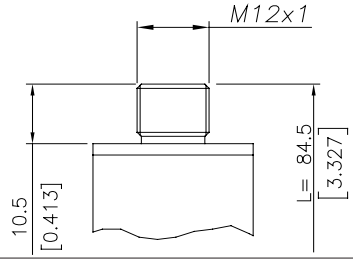
V - 6 pole connector



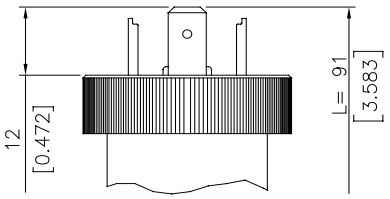
F - 6 pole cable



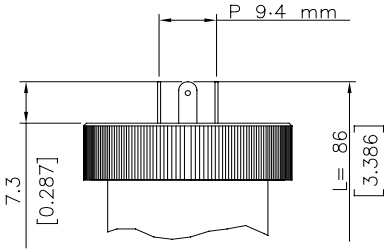
Z - 4 pole connector M12x1



E – 4 pole DIN Type A EN 175301-803

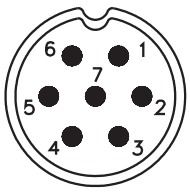


M – 4 pole MicroDin Type C-ind P 9.4 mm EN 175301-803



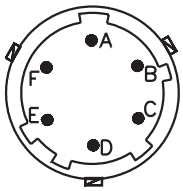
ELECTRICAL CONNECTION - Connectors

P - 7 pole connector



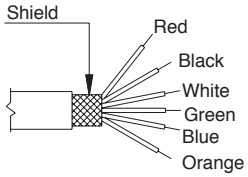
Male connector
09-0127-09-07
Protection IP67

V - 6 pole connector



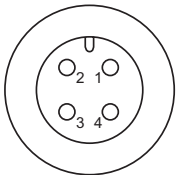
Male connector
VPT02A10-6PT2
Protection IP66

F - 6 pole cable



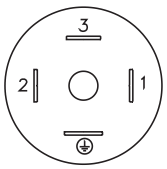
Shielded cable 6x0,25 - 1m
Protection IP65

Z - 4 pole male connector M12 x 1



4 pin Male connector
serie 713
Protection IP67

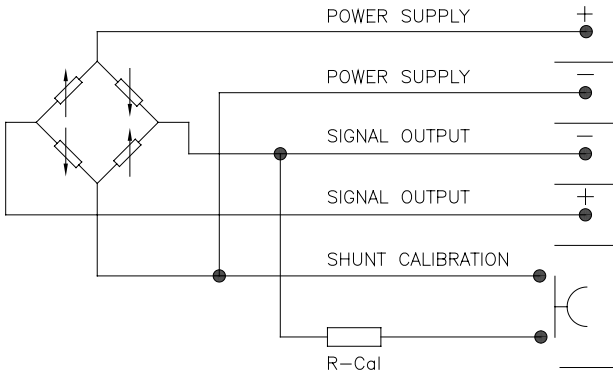
E – EN 175301-803 Type A
M – EN 175301-803 Type C-ind



4 Pin DIN Type A
Protection IP65
4 Pin MicroDIN Tipo C-industrial
Protection IP65

ELECTRICAL CONNECTION - Connection diagrams

mV/V OUTPUT



cod. V	cod. P	cod. F	cod. E/M	cod. Z
C	1	White	3	1
D	2	Green	⏚	2
B	4	Yellow or Black	2	4
A	3	Red	1	3
E	6	Blue	Not Available	Not Available
F	5	Orange o Violet	Not Available	Not Available
	7			

ACCESSORIES ON REQUEST

Connectors

Connection E 3 pole Connector + ground EN175301-803 Type A Prot. IP65	**CON 006**
Connection M 3 pole Connector + ground EN175301-803 Type C-ind Prot. IP65	**CON 008**
Connection Z 4 pole female cable connector M12x1 Prot. IP67	**CON 293**
Connection Z 4 pole female cable connector, 90°M12x1 Prot. IP67	**CON 050**
Connection P 7 pole female cable connector Prot. IP67	**CON 321**
Connection P 7 pole female cable connector Prot. IP40	**CON 320**
Connection P 7 pole female cable connector, 90° Prot. IP40	**CON 322**
Connection V 6 pole female cable connector Prot. IP66	**CON 300**

EXTENSION CABLES

6-pole female connector (CON 300) + 2 m cable (6x0.25)	**C02WLS**
6-pole female connector (CON 300) + 4 m cable (6x0.25)	**C04WLS**
6-pole female connector (CON 300) + 6 m cable (6x0.25)	**C06WLS**
6-pole female connector (CON 300) + 8 m cable (6x0.25)	**C08WLS**
6-pole female connector (CON 300) + 10 m cable (6x0.25)	**C10WLS**
6-pole female connector (CON 300) + 15 m cable (6x0.25)	**C15WLS**
6-pole female connector (CON 300) + 20 m cable (6x0.25)	**C20WLS**
6-pole female connector (CON 300) + 25 m cable (6x0.25)	**C25WLS**
6-pole female connector (CON 300) + 30 m cavo (6x0.25)	**C30WLS**
Other lengths	**on request**

Cable color code	
Pin	**Wire**
A	Red
B	Yellow/Black
C	White
D	Green
E	Blue
F	Orange

ORDERING INFORMATION

Pressure transducer **TPH** ☐ ☐ ☐ ☐ ☐

PRESSURE CONNECTION	
Standard	
F-250-C (9/16-18UNF female)	**D**
M16 x 1.5 female	**E**

ELECTRICAL CONNECTION	
Standard	
6 pole connector	**V**
7 pole connector	**P**
M12x1 connector (*)	**Z**
4/6 pole Shielded cable (**)	**F**
4 pole DIN Type A connector (*)	**E**
4 pole MicroDin Tipo C-ind (P 9.4) connector (*)	**M**

Mechanical and/or electrical characteristics differing from standard may be arranged on request.

ACCURACY	
T	±0.1%FS tipico ±0.2%FS max

MEASUREMENT RANGE				
	bar			**psi**
B01M	0..1000		**P15M**	0..15000
B15C	0..1500		**P20M**	0..20000
B02M	0..2000		**P30M**	0..30000
B35C	0..3500		**P50M**	0..50000
B04M	0..4000		**P60M**	0..60000
B05M	0..5000		**P70M**	0..70000

CALIBRATION STANDARDS

Instruments manufactured by Gefran are calibrated against precision pressure calibration equipment wich is traceable to International Standards.

(*) CAL Function not available

(**) 1 mt cable included in price of option.

Other lengths available on request at additional cost.

Sensors are manufactured in compliance with:
- EMC 2014/30/EU compatibility directive
- RoHS 2011/65/EU directive

Ex.: **TPH - D - V - B05M - T**
Pressure transducer: process connection F250-C, 6-pole connector, measurement range 0...5000 bar, accuracy class 0.1% FS.

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