GEFRAN

# TPS
*PRESSURE TRANSDUCER*




### *Main features*

- *Ranges: from 0...10 bar to 0...1000 bar (0...150psi to 0...15000psi)*
- *Accuracy: ± 0.15% FS typical*
- *Protection rating: IP65/IP67*
- *Wetted parts 17-4PH*
- *Temperature range -40...+120°C*

Series TPS transducers are based on the extensimetric measurement principle with strain gauges on metal base.
An innovative mechanical structure makes the transducer completely insensitive to tightening during installation.
This transducer is suitable for all those applications where in addition to ruggedness and reliability high accuracy is required.

## TECHNICAL DATA

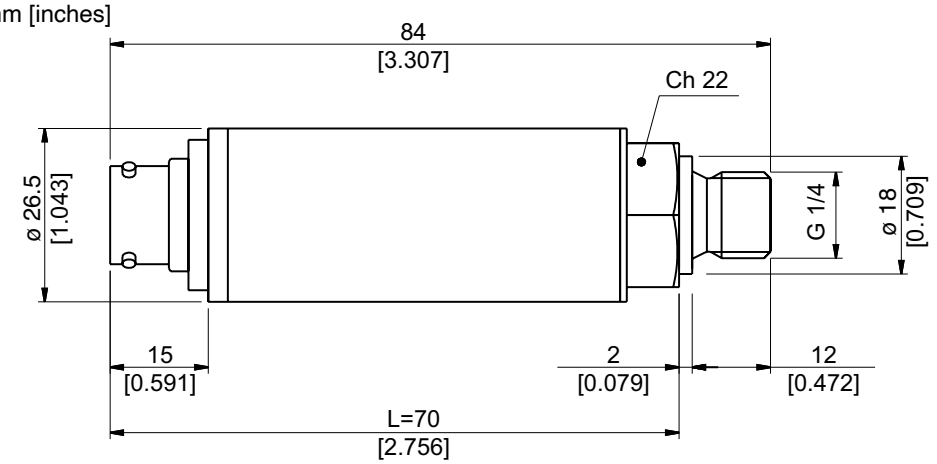
| | |
|---|---|
| Accuracy (**1**) | ± 0.15% FS typical; ± 0.2% FS max >200bar/3000psi<br>± 0.25% FS typical; ± 0.5% FS max ≤200bar/3000psi |
| Resolution | Infinite |
| Overpressure (without degrading performance) (**2**) | See table |
| Pressure containment (Burst test) (**3**) | See table |
| Wetted parts | Fluid compatible with INOX 17-4PH Stainless Steel |
| Body materials | INOX AISI 304 Stainless Steel and Nylon 66GF35V0 |
| 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 offset and span setting | ± 0.5% FS |
| Output voltage (sensitivity) | 10...40bar / 150...500psi 1,5mV/V<br>50...60bar / 750...1000psi 2mV/V<br>100...1000bar / 1500...15000psi 3mV/V |
| Long term stability | < 0.1% FS per year |
| Operating temperature range (process) (**5**) | -40...+120°C (-40...+248°F) |
| Compensated temperature range (**4**) | -20...+85°C (-4...+185°F) |
| Storage temperature range | -40...+125°C (-40...+257°F) |
| Temperature effects over compensated range (zero-span) | ± 0.01% FS/°C typical (± 0.02% FS/°C max.) |
| Mounting position effects | Negligible |
| Humidity | Up to 100% RH non condensing |
| Weight | 130 gr. nominal |
| Mechanical shock | 100 g / 11 msec. according to IEC 60068-2-27 |
| Vibrations | 20 g max @ 10-2000Hz according to IEC 60068-2-6 |
| Ingress protection | IP65/IP66/IP67 |

FS = Full Scale Output
**1** Includes combined effects of Non-Linearity BFSL (Best Fit Straight Line), Hysteresis and Repeatability
**2** tested for more than 1000 strokes with single duration < 2msec.
**3** tested for more than 100 strokes with single duration < 2msec.
**4** temperature outside compensated range may cause zero signal drift
**5** ambient and/or electronics part temperature must not exceed 105°C

| **MEASUR. RANGE (Bar)** | **10** | **16** | **20** | **25** | **30** | **35** | **40** | **50** | **60** | **100** | **160** | **200** | **250** | **350** | **400** | **500** | **600** | **700** | **1000** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Overpressure | 20 | 32 | 40 | 50 | 60 | 70 | 80 | 100 | 120 | 200 | 320 | 400 | 500 | 700 | 800 | 1000 | 1200 | 1400 | 2000 |
| Burst test | 40 | 64 | 80 | 100 | 120 | 140 | 160 | 200 | 240 | 400 | 640 | 800 | 1000 | 1400 | 1600 | 2000 | 2400 | 2500 | 2500 |

## INSTALLATION DRAWINGS

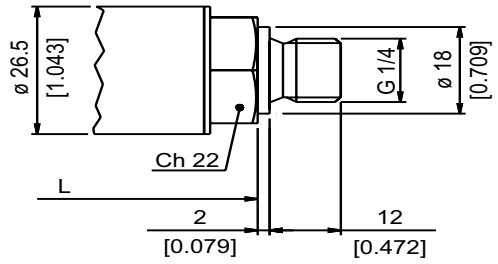
Dimensions: mm [inches]



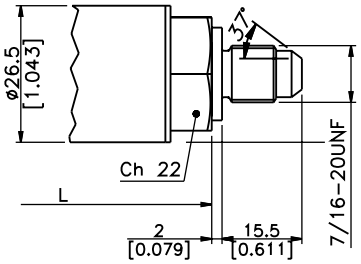

Recommended tightening torque: 30 Nm
Maximum tightening torque: 40 Nm

## PRESSURE CONNECTION

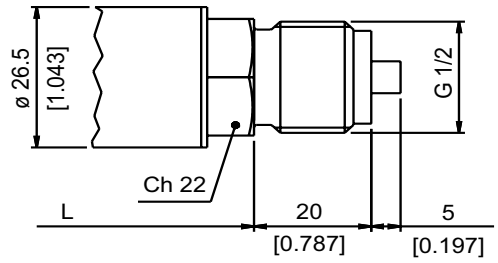
**(1) G 1/4 MALE (DIN 3852-A)**



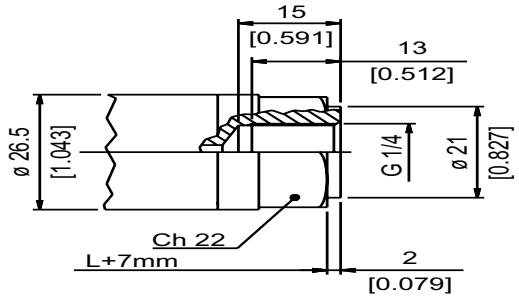

**(2) SAE 04 AS4395 - E**




**(3) G 1/2 A (DIN 16288)**

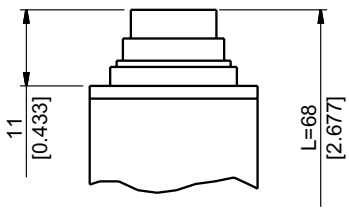



**(4) G 1/4 FEMALE**

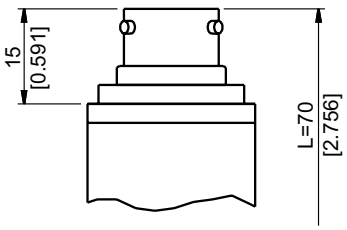



## ELECTRICAL CONNECTION

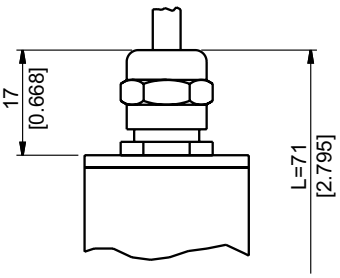
**P - 7 pole connector**



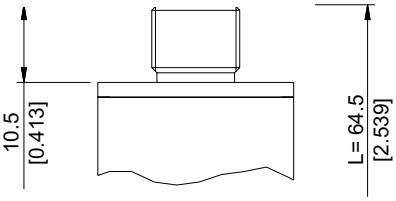

**V - 6 pole connector**



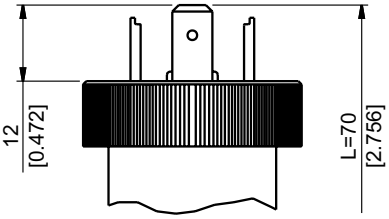

**F - 6 pole cable**



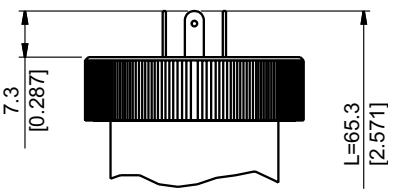

**Z - 4 pole connector M12 x 1**




**E - 4 pole connector solenoid**

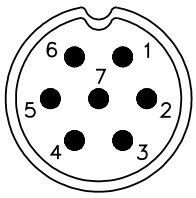



**M - 4 pole connector microsolenoid**



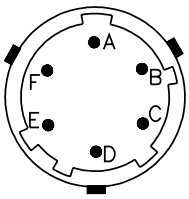
## ELECTRICAL CONNECTION - Connectors

**P - 7-pole connector**



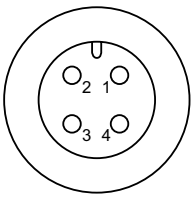

Male connettor 09-127-09-07
Protection IP67

**V - 6-pole connector**



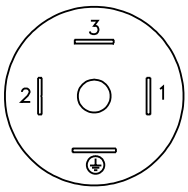

Male connettor VPT02A10-6PT2
Protection IP66

**Z - 4 pole M12 x 1 male connector**



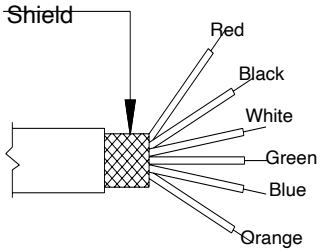

Male connettor 4 pole series 713
Protection IP67

**E - 4 pole solenoid connector**
**M - 4 pole microsolenoid connector**




Solenoid DIN 43650A - ISO4400 Protection IP65
Microsolenoid DIN 43650C - ISO4400 Protection IP65

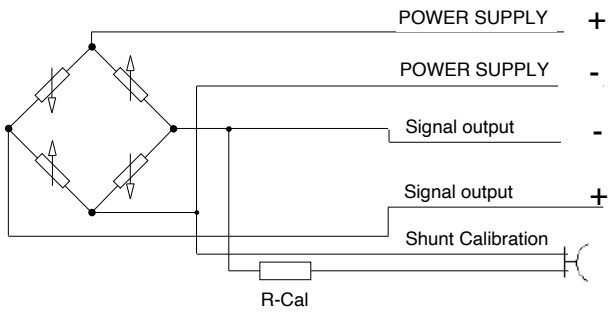
**F - 6 pole cable**




**F** - Shielded cable 6 x 0.25 - 1m.

## ELECTRICAL CONNECTION - connection diagrams

**mV/V output**




| Code V | Code P | Code F | Code E/M | Code Z |
|---|---|---|---|---|
| C | 1 | White | 3 | 1 |
| D | 2 | Green | ⏚ | 2 |
| B | 4 | Black or Yellow | 2 | 4 |
| A | 3 | Red | 1 | 3 |
| E - F | 5 - 6 | Blue/ Orange or Violet | *Not available* | *Not available* |
| | 7 | | | |

Cable shield connected to transducer body

## ACCESSORIES ON REQUEST

| | | | |
|---|---|---|---|
| **Connectors** | | **Connection P** | |
| | | 7 pole female cable connector, Prot. IP67 | **CON 321** |
| **Connection E** | | | |
| 3 pole connector + ground DIN43650A ISO4400 Prot. IP65 | **CON 006** | **Connection P** 7 pole female cable connector, Prot. IP40 | **CON 320** |
| **Connection M** | | | |
| 3 pole connector + ground DIN43650C ISO4400 Prot. IP65 | **CON 008** | **Connection P** 7 pole female cable connector 90°, Prot. IP40 | **CON 322** |
| **Connection Z** | | | |
| 4 pole female cable connector M12x1 Prot. IP67 | **CON 293** | **Connection V** 6 pole female cable connector, Prot. IP66 | **CON 300** |
| **Connection Z** | | **O-ring** | |
| 4 pole female cable connector, 90° M12x1 Prot. IP67 | **CON 050** | O-ring seal for G1/4 gas male pressure connector (1) | **RON 300** |

## EXTENSION CABLES

| | |
|---|---|
| 6 pole female connector (CON 300) + 2 m (6.5 ft) of cable (6x0.25) | **C02W** |
| 6 pole female connector (CON 300) + 4 m (13 ft) of cable (6x0.25) | **C04W** |
| 6 pole female connector (CON 300) + 6 m (20 ft) of cable (6x0.25) | **C06W** |
| 6 pole female connector (CON 300) + 8 m (25 ft) of cable (6x0.25) | **C08W** |
| 6 pole female connector (CON 300) + 10 m (33 ft) of cable (6x0.25) | **C10W** |
| 6 pole female connector (CON 300) + 15 m (50 ft) of cable (6x0.25) | **C15W** |
| 6 pole female connector (CON 300) + 20 m (66 ft) of cable (6x0.25) | **C20W** |
| 6 pole female connector (CON 300) + 25 m (82 ft) of cable (6x0.25) | **C25W** |
| 6 pole female connector (CON 300) + 30 m (100 ft) of cable (6x0.25) | **C30W** |
| Other lengths | **on request** |

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

## ORDERING INFORMATION

Pressure transducer **TPS** ☐ ☐ ☐☐☐☐ ☐ ☐

| PRESSURE CONNECTION | |
|---|---|
| **Standard** | |
| G 1/4 gas male | **1** |
| **On request** | |
| 7/16-20 UNF-2A male (SAE 4 for AS4395-E) | **2** |
| G 1/2A (DIN 16288) | **3** |
| G 1/4 gas female | **4** |
| 1/8-27 NPT female | **5** |
| 1/4-18 NPT female | **6** |
| 1/4-18 NPT male | **7** |
| M14 x 1.5 male | **8** |
| 1/8-27 NPT male | **9** |
| G 1/4 male (DIN 3852-E) | **E** |
| M12 x 1.5 male | **R** |
| 7/16-20 UNF-2A male (SAE 4 for J1926-2) (*) | **K** |
| 7/16-20 UNF-2A female (SAE 4) | **F** |

(*) Max. working pressure: 630 bar (9137 psi)

| ELECTRICAL CONNECTION | |
|---|---|
| 4-pole connector solenoid | **E*** |
| shielded cable | **F** |
| 4-pole connector | **Z*** |
| 4-pole connector microsolenoid | **M*** |
| 7 pole connector | **P** |
| 6 pole connector | **V** |

(*) Calibration signal not available

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

| ACCURACY | |
|---|---|
| **T** | ±0.15% FS typical >200bar/3000psi<br>±0.25% FS typical ≤200bar/3000psi |

| MEASUREMENT RANGE | | | |
|---|---|---|---|
| | **bar** | | **psi** |
| **B01D** | 0..10 | **P15D** | 0..150 |
| **B16U** | 0..16 | **P25D** | 0..250 |
| **B02D** | 0..20 | **P03C** | 0..300 |
| **B25U** | 0..25 | | |
| **B03D** | 0..30 | | |
| **B35U** | 0..35 | **P05C** | 0..500 |
| **B04D** | 0..40 | | |
| **B05D** | 0..50 | **P75D** | 0..750 |
| **B06D** | 0..60 | **P01M** | 0..1000 |
| **B01C** | 0..100 | **P15C** | 0..1500 |
| **B16D** | 0..160 | **P02M** | 0..2000 |
| **B02C** | 0..200 | **P25C** | 0..2500 |
| **B25D** | 0..250 | **P03M** | 0..3000 |
| **B35D** | 0..350 | **P04M** | 0..4000 |
| **B04C** | 0..400 | **P05M** | 0..5000 |
| **B05C** | 0..500 | **P75C** | 0..7500 |
| **B06C** | 0..600 | | |
| **B07C** | 0..700 | **P10M** | 0..10000 |
| **B01M** | 0..1000 | **P15M** | 0..15000 |

**CALIBRATION STANDARDS**

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

Ex.: **TPS - 4 - V - B07C - T**
Pressure transducer TPS with G 1/4 female process connection, 6 pole connector, 0...700 bar measurement range, ± 0.15% FS accuracy.

**GEFRAN spa** reserves the right to make any kind of design or functional modification at any moment without prior notice

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