

The ME Performance Level 'c' series of GEFRA are pressure transmitters for using in high temperature environment.

The main characteristic of this series is the capability to read temperature of the media up to 400°C.

The constructive principle is based on the hydraulic transmission of the pressure.

The fluid-filled system assures the temperature stability. The physical measure is transformed in a electrical measure by means of the strain-gauge technology.

#### MAIN FEATURES

- Pressure ranges from:  
0-35 to 0-2000 bar / 0-500 to 0-30000 psi
- Accuracy:  $< \pm 0.25\%$  FSO (H);  $< \pm 0.5\%$  FSO (M)
- Fluid-filled system for temperature stability
- Mercury filling volume:  
ME0 (30mm<sup>3</sup>); ME1, ME2 (40mm<sup>3</sup>)
- 1/2-20UNF, M18x1.5 standard threads; other types available on request
- Autozero function on board / external option
- Standard diaphragm is 15-5 PH stainless steel with GTP coating
- 17-7 PH corrugated diaphragm with GTP coating for ranges below 100 bar-1500 psi

*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.

The procedure is permitted only with pressure at zero.

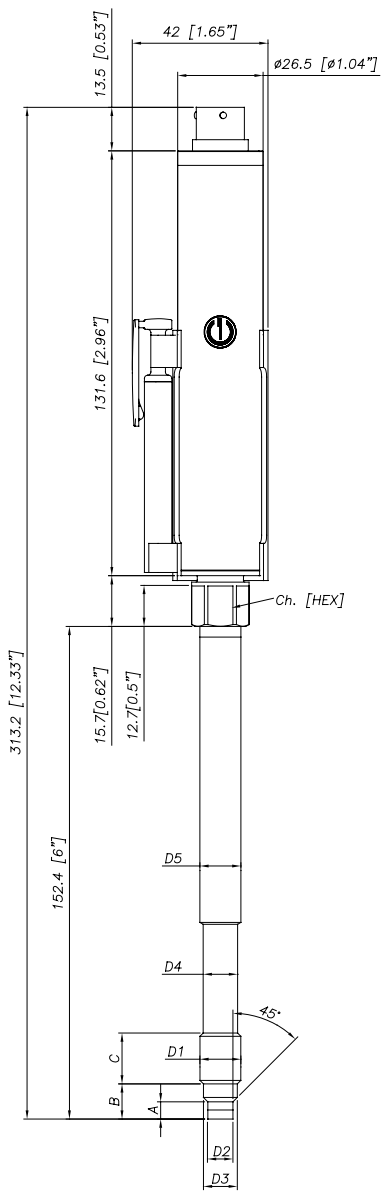
#### TECHNICAL SPECIFICATIONS

Accuracy (1)	<b>H</b> $< \pm 0.25\%$ FSO (100...2000 bar) <b>M</b> $< \pm 0.5\%$ FSO (35...2000 bar)
Resolution	16 bit
Measurement range	0..35 to 0..2000bar 0..500 to 0..30000psi
Maximum overpressure (without degrading performances)	2 x FS 1.5 x FS above 1000bar/15000psi
Measurement principle	Extensimetric
Power supply	13...30Vdc
Maximum current absorption	23mA (40mA with relay optional)
Output signal Full Scale FSO	20mA
Zero balance (tolerance $\pm 0.25\%$ FSO)	4mA
Response time (10...90% FSO)	8ms
Output noise (RMS 10-400Hz)	$< 0.025\%$ FSO
Calibration signal	80% FSO
Power supply polarity reverse protection	YES
Compensated temperature range housing	0...+85°C
Operating temperature range housing	-30...+85°C
Storage temperature range housing	-40...+125°C
Thermal drift in compensated range: Zero / Calibration / Sensibility	$< 0.02\%$ FSO/°C
Diaphragm maximum temperature	400°C / 750°F
Zero drift due to change in process temperature (zero)	$< 0.02$ bar/°C
Standard material in contact with process medium	Diaphragm: • 15-5PH with GTP coating • 17-7 PH corrugated diaphragm with GTP coating for ranges $< 100$ bar (1500psi) Stem: • 17-4 PH
Thermocouple (model ME2)	STD : type "J" (isolated junction)
Protection degree (with 6-pole female connector)	IP65

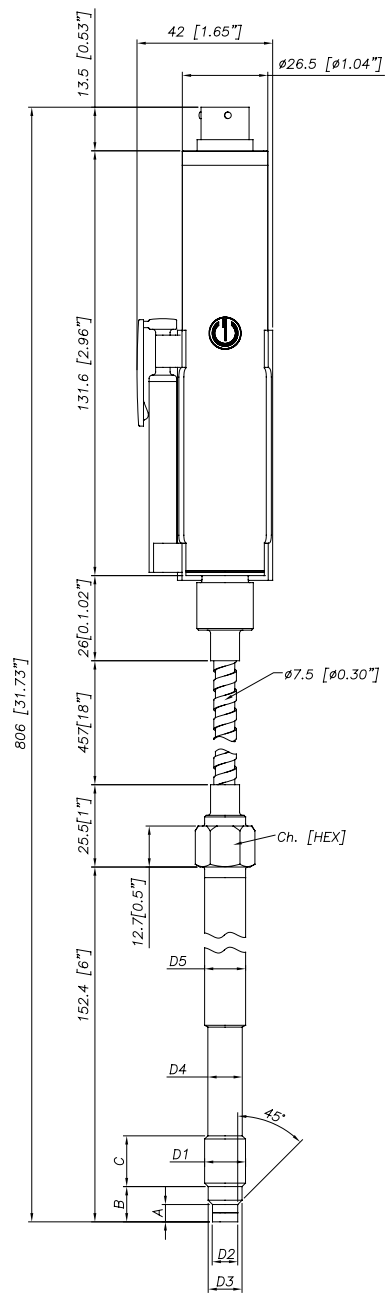
FSO = Full scale output : (1) BFSL method (Best Fit Straight Line): includes combined effects of Non-Linearity, Hysteresis and Repeatability.

# MECHANICAL DIMENSIONS

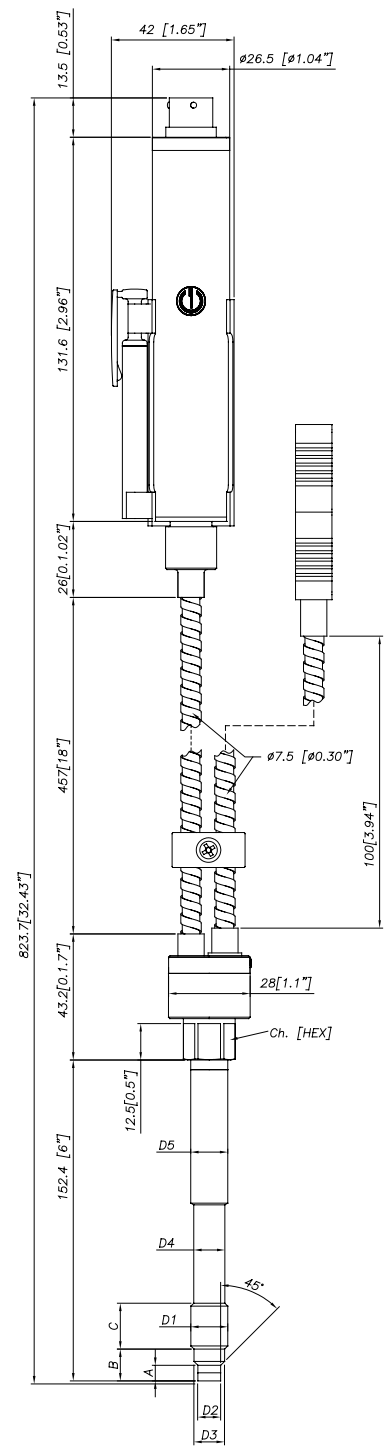
**ME0**



**ME1**



**ME2**



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\"]

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\"]

**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)

## SELF DIAGNOSTICS

Below the conditions detected by the sensor self-diagnostics:

- Cut cable / device non connected / broken power supply, output <3.6mA
- Pin detachment, output >21mA
- Pressure above 200% of the span, output >21mA
- Voltage monitor in case of overvoltage/undervoltage/voltage variation in the electronics, output <3.6mA
- Program sequence error, output <3.6mA
- Overtemperature on the electronics, output <3.6mA
- Error on the primary element output or on the first amplification stage, output <3.6mA

## OPTIONAL RELAY OUTPUT FOR EXCESS PRESSURE PROTECTION

Safety relay characteristics:

- Activation threshold to be defined in the order code
- Rated carry current: 1A
- Rated voltage: 24Vdc  $\pm$  20%
- Switch accuracy: 2 x sensor accuracy
- Hysteresis: 2% FSO

SUPPLY	OUTPUT	RELAY STATUS
OFF	-	OPEN
ON	< X%fs	CLOSED
ON	> X%fs	OPEN
ON	output < 3,6mA	OPEN
ON	output > 21mA	OPEN

## NAMUR COMPLIANCE

The sensors are tested according to Namur NE21 recommendations. The same compatibility is valid for the NE43 Namur recommendation with the following sensor behaviour in case of breakdown:

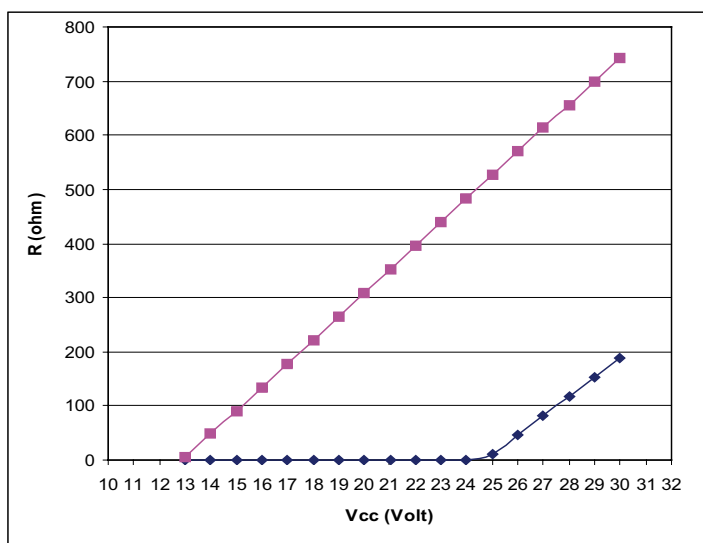
- Cut cable: breakdown information as the signal is <3,6mA
- Device not connected: breakdown information as the signal is <3,6mA
- Broken power-supply: breakdown information as the signal is <3,6mA or in case of performance problems:
- most common failures on primary sensors: the signal goes to >21mA

Note: in all the remaining situations, the output signal is always included between 3,6 and 21mA.



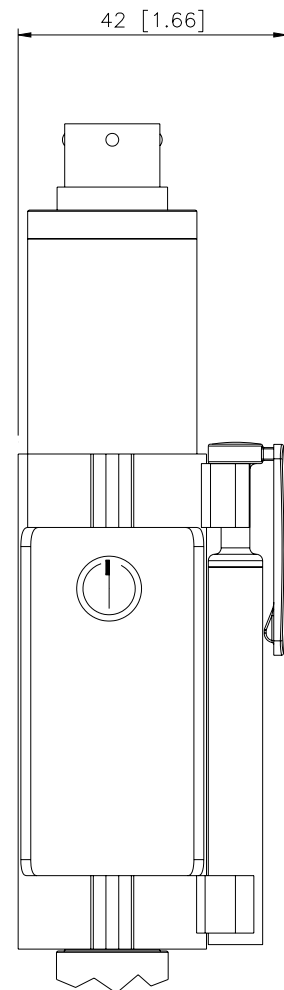
**Recommendation:** the error level set by the customer (e.g. maximum pressure value) has to be inside the nominal range.

## LOAD DIAGRAM



The diagram shows the optimum ratio between load and power supply for transmitters with 4...20mA output. For correct function, use a combination of load resistance and voltage that falls within the two lines in the graph above.

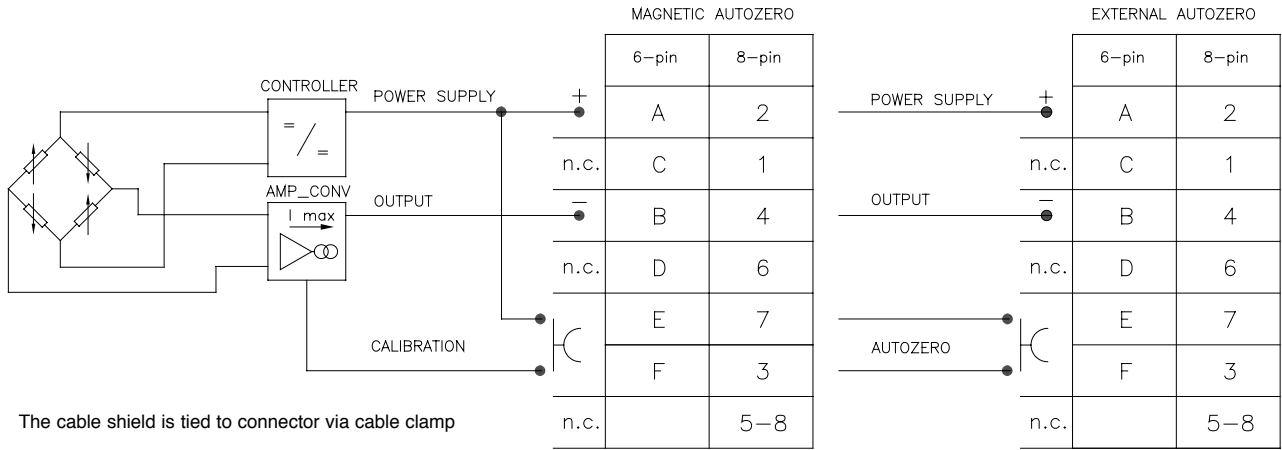
## AUTOZERO FUNCTION



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

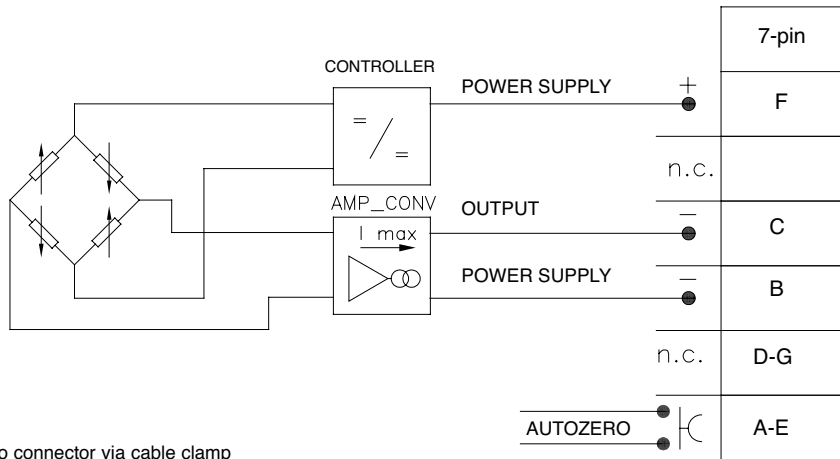
# ELECTRICAL CONNECTIONS

## CURRENT OUTPUT



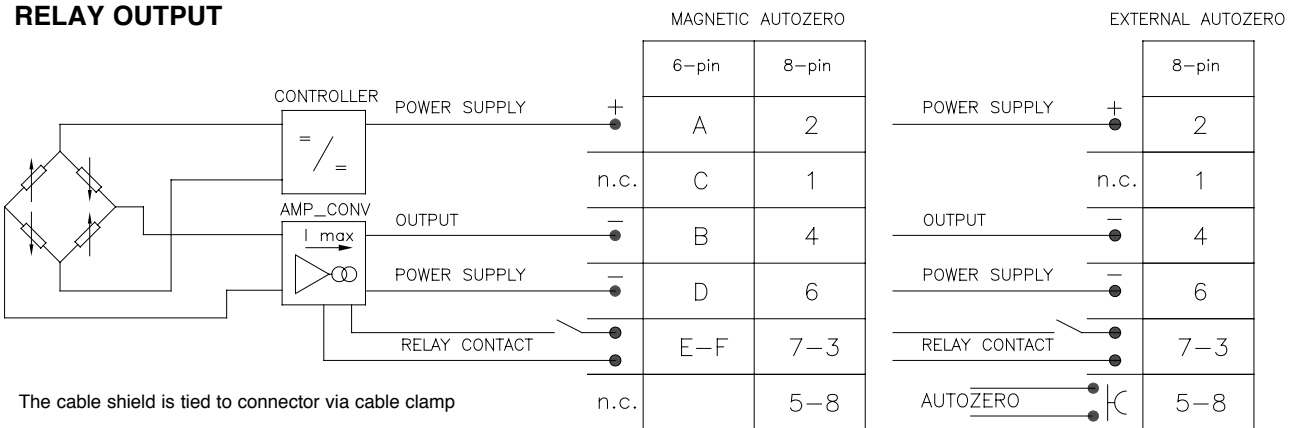
The cable shield is tied to connector via cable clamp

### EXTERNAL AUTOZERO



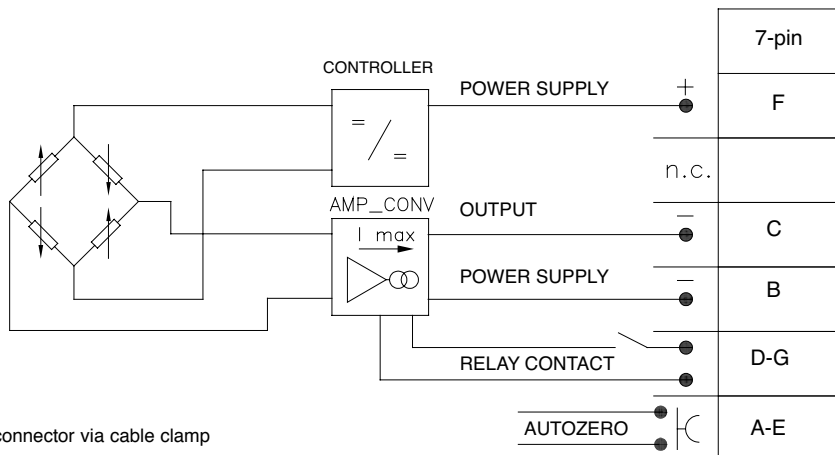
The cable shield is tied to connector via cable clamp

## RELAY OUTPUT



The cable shield is tied to connector via cable clamp

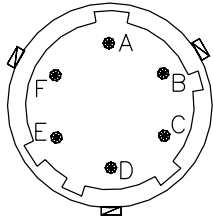
### EXTERNAL AUTOZERO



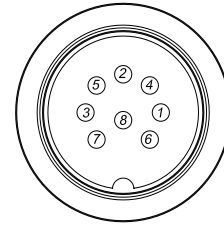
The cable shield is tied to connector via cable clamp

## ELECTRICAL CONNECTIONS

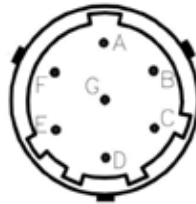
**6 pin connector VPT07RA10-6PT2  
(PT02A-10-6P)**



**8 pin connector (Binder)  
M16 DIN/EN45326 (09-0173-00-08)**



**7 pin connector (AMPHENOL) 62IN-5016-10-7P-4-M**



## ACCESSORIES

### Connectors

6-pin female connector (IP65 protection degree)  
7-pin female connector  
8-pin female connector

**CON300**  
**CON345**  
**CON026**

### Extension cables

6-pin connector with 8m (25ft) cable  
6-pin connector with 15m (50ft) cable  
6-pin connector with 25m (75ft) cable  
6-pin connector with 30m (100ft) cable

**C08WLS**  
**C15WLS**  
**C25WLS**  
**C30WLS**

### Accessories

Mounting bracket  
Dummy plug for 1/2-20UNF  
Dummy plug for M18x1.5  
Drill kit for 1/2-20UNF  
Drill kit for M18x1.5  
Cleaning kit for 1/2-20UNF  
Cleaning kit for M18x1.5  
Fixing pen clip  
Autozero pen

**SF18**  
**SC12**  
**SC18**  
**KF12**  
**KF18**  
**CT12**  
**CT18**  
**PKIT 379**  
**PKIT 378**

### Thermocouple for ME2 model

Type "J" (153mm - 6" rigid rod)

**TTER 601**

Cable color code	
Conn.	Wire
A-2	Red
B-4	Black
C-1	White
D-6	Green
E-7	Blue
F-3	Orange
5	Grey
8	Pink

# ORDER CODE

M - - - - - 0000 X 000 X 00

OUTPUT SIGNAL	
4...20mA	E

VERSION	
Rigid rod	0
Rigid + flexible rod	1
With thermocouple	2

CONNECTOR	
6 pin	6
7 pin	7
8 pin	8

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

MEASUREMENT 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
1400	B14C	20000	P20M
2000	B02M	30000	P30M

Output Relay Version  
(activation threshold):  
X=no relay    B=80%fs  
A=70%fs    C=90%fs

000= Special executions

E	External Autozero*
-	Magnetic Autozero

(\*) as an alternative to the CAL function

P	Performance Level='c'
---	-----------------------

**FLEXIBLE ROD LENGTH**  
(mm / inches)

Standard (ME0)	
0	none

Standard (ME1,ME2)	
D	457mm 18"
E	610mm 24"
F	760mm 30"

Available on request	
A	76mm 3"
B	152mm 6"
C	300mm 12"
G	914mm 36"
H	1067mm 42"
I	1220mm 48"
J	1372mm 54"
K	1520mm 60"

**RIGID ROD LENGTH**  
(mm / inches)

Standard (ME0, ME1, ME2)	
4	153mm 6"
5	318mm 12.5"

Available on request	
1	38mm 1.5"
2	50mm 2"
3	76mm 3"
6	350mm 14"
7	400mm 16"
8	456mm 18"

**THREADING**

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

Example

**ME1-6-M-B07C-1-4-D-P**

Melt pressure transducer, 4...20mA output, 6-pin connector, 1/2-20 UNF threading, 700 bar pressure range, 0.5% accuracy, 153 mm (6") rigid rod, 457 mm (18") flexible rod; Performance Level='c'.

Sensors are manufactured in compliance with:

- EMC 2004/108/CE compatibility directive
- RoHS 2002/95/CE directive
- 2006/42/CE machinery directive

Electrical installation requirements and Conformity certificate are available on our web site: [www.gefran.com](http://www.gefran.com)

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

**GEFRAN spa**  
via Sebina, 74  
25050 PROVAGLIO D'ISEO (BS) - ITALIA  
tel. 0309888.1 - fax. 0309839063  
Internet: <http://www.gefran.com>

