

PRESSURE SENSORS

- Type DA with mV/V Output
- Type DTA with mV/V Output + Temperature Sensor



OPERATION & MAINTENANCE MANUAL

CONTENTS

1. INTRODUCTION
2. OPERATING RANGE & FIELD OF APPLICATION
3. DANGER AREAS
4. WASTE DISPOSAL
5. TRANSPORT & STORAGE
6. GENERAL
7. CLEANING / MAINTENANCE
8. INSTALLING / UNINSTALLING
9. CONNECTING & COMMISSIONING
10. TECHNICAL DATA
11. DIMENSIONS

1. INTRODUCTION

Gräff Pressure Transducers are precise measuring probes which obtain measuring accuracy and long life span only if they are properly handled. These operating instructions should be studied carefully before installing the sensor, thus ensuring a trouble-free operation. Nevertheless, should you encounter any difficulties, please feel free to contact our service technicians, who will be happy to offer any assistance.

2. OPERATING RANGE & FIELD OF APPLICATION

Gräff Pressure Transducers are designed exclusively for measuring and monitoring the pressure of liquid, dough-like, or pasty materials at high temperatures, provided the medium is homogeneous.

The installation location must be selected so that the maximum differential pressure does not exceed 2% of the Transducer's measuring range, relative to the membrane surface.

The temperature of both the sensing element and the electronics must remain within the limits specified in the technical data during operation. Exceeding the permissible operating temperature, even briefly, may impair the Transducers safety function. If this occurs, the Transducer must be inspected by the manufacturer.

Any use outside the operating range described above is considered improper use.

3. DANGER AREAS

There is a risk of burns across the entire heated area of the Pressure Transducer. Incorrect assembly or disassembly of the Transducer while the system is pressurised can cause hot material to escape at high pressure, posing a serious hazard.

4. WASTE DISPOSAL

Gräff Pressure Transducers are mercury-free, so they can be disposed of through standard metal recycling channels.

5. TRANSPORT & STORAGE

Gräff Pressure Transducers are shipped individually packaged, with the front diaphragm protected by a cap to prevent mechanical damage. This protective cap should always be re-fitted for any form of interim storage.

6. GENERAL

Please read this manual carefully and completely before installing the Transducer. Any damage caused by non-compliance with the operation and maintenance manual voids all warranty claims. We admit no liability for consequential damage.

Warranty:

For the sensor we grant a warranty of 12 months from the date of purchase.

The warranty includes free rectification of defects verifiably caused by the use of faulty materials or poor workmanship. The defective device shall be returned to the manufacturer immediately after the defect has become known together with original sales receipt and fault description.

The right to further claims shall be reserved.

The liability for defects does not cover natural wear and tear and transport damages as well as damages due to non-compliance with the installation instructions, local installation regulations or improper installation.

The manufacturer shall not be liable for any damages not arising on the delivered item itself, especially not for indirect damages, consequential damages, or property damages.

We shall reserve the right to repair, rectify, or replace the defective goods or refund the purchase price.

Unauthorised removal of our marking (serial number) negates the warranty.

This product is manufactured by:

Gäff GmbH
Temperature Measurement & Control Technology
Bonner Strasse 54
D-53842 Troisdorf



7. CLEANING / MAINTENANCE

To clean the membrane, sealing surface, and thread, the Transducer must be heated to at least the melting temperature of the plastic in that area. The membrane and sealing surface can be cleaned with a soft cloth, while the thread may be cleaned using a small brass brush.

Never touch the membrane during this process.

8. INSTALLING / UNINSTALLING

Installing

When installing the Pressure Transducer, ensure that the Transducer bore matches the dimensions specified in Section 11. The fit can be verified using a test pin. Before installation, apply a heat-resistant grease to the Transducer thread. If the machine component containing the bore is still at operating temperature, allow the Transducer to warm up before installation. Failing to do so may cause the Transducer to seize due to thermal expansion. When screwing the Transducer into place, ensure it does not tilt or snag in the bore. Apply turning force only to the hexagonal shaft. The Transducer head must not be rotated relative to the shaft.

Starting torque for 1/2-20 UNF = 30Nm (max.)

Starting torque for M18 x 1.5 = 50Nm (max.)

Uninstalling

The Pressure Transducer must be removed while the system is heated to at least the plastic's melting temperature. During removal, ensure that the membrane does not come into contact with any surfaces. As with installation, apply all turning force only to the hexagonal shaft. The Transducer head must not be rotated relative to the shaft. The most common cause of failure for this type of Pressure Transducer is membrane damage caused by contact with molten material during installation or removal. Even minor damage can impair Transducer performance. If any visible damage is present on the membrane, the Transducer must be inspected by the manufacturer before further use.

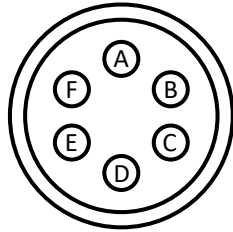
9. CONNECTIONS & COMMISSIONING

Once the Pressure Transducer has been installed as outlined in Section 8, the electrical connection must be made according to the pin assignment provided on the following page. Gräff Pressure Transducers are fitted with high-quality, robust plug connectors. If soldering the connecting cable is required, it must be carried out with great care to avoid signal transmission faults. We recommend using pre-assembled cables from Gräff, which are available from stock.

Before commissioning, the Transducer must be calibrated to the associated evaluation system. Calibration must be performed with the system heated and unpressurised. The procedure is described below.

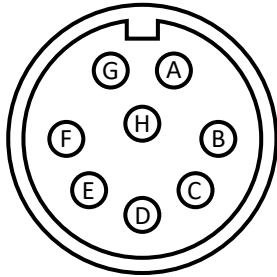


Plug type in sensor: **PT 02A-10-6P**



Pin	Function	Colour Coding
A	Signal +	YELLOW
B	Signal -	WHITE
C	Supply +	BROWN
D	Supply -	GREEN
E	No Function	PINK
F	Calibration 80%	GREY

Plug type in sensor: **8P PC06A-12-8P**



Pin	Function	Colour Coding
A	Signal +	YELLOW
B	Signal -	WHITE
C	Supply +	BROWN
D	Supply -	GREEN
E	Calibration 80%	PINK
F	Calibration 80%	GREY
G	N/A	N/A
H	N/A	N/A



10. TECHNICAL DATA

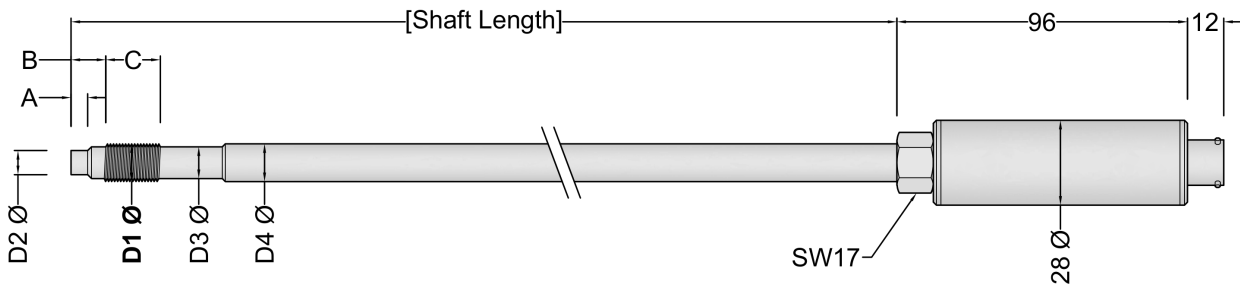
Pressure range:	50 – 2000 Bar, 750 – 10,000 PSI
Supply voltage:	6 – 10V [DC]
Output signal:	2mV/V, 2.5mV/V, 3.3mV/V
Bridge resistance:	350 Ω
Insulation Resistance:	1000 MΩ @ 50C°
Calibration point:	80% of measuring range
Accuracy:	≤ ± 0.50% FSO
Maximum load:	150% of measuring range
Zero deviation with temperature variations at the diaphragm:	≤ ± 0.003% from final value / C°
Zero deviation with temperature variations at the measuring head:	≤ ± 0.003% from final value / C°
EMC:	Electromagnetic disturbances and electromagnetic susceptibility according to EN 61326
Housing Material:	Stainless Steel [1.4571]
Diaphragm Material:	Stainless Steel (with high flexible special non-stick coating)
Capillary Extension Material:	Stainless Steel
Storage Temperature:	-20°C to 125°C
Maximum Temperature (Diaphragm):	300°C (No filling fluid) / 450°C (NaK filling fluid)
Maximum Temperature (Measuring Head):	125°C
Relative Humidity:	20% to 95% condensation
Maximum Overload Pressure:	2x final value
Calibration Point:	80% of final value
Maximum calibration deviation:	5% of final value
Reproducibility:	± 0.10% of final value
Filling Liquid:	Mercury free, Silicone free, NaK free*
Ingress Protection:	Housing = IP65, Plug = IP55

**Unless specified otherwise*

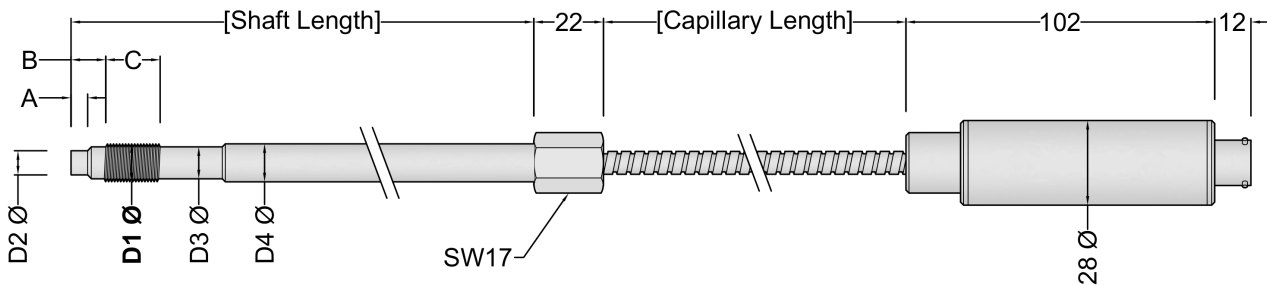
11. DIMENSIONS

D1	D2	D3	D4	A	B	C
M18 x 1.5	10.1 \varnothing [+0.05]	16.1 \varnothing [+0.1]	20.0 \varnothing [+0.2]	6.1 [-0.1]	4.0 [-0.2]	25.0
½" UNF 2A	7.9 \varnothing [+0.05]	10.7 \varnothing [+0.1]	13.0 \varnothing [+0.2]	5.7 [-0.1]	3.2 [-0.2]	19.0

Fixed Shaft



Flexible Shaft



Flexible Shaft + Thermocouple

