

Thermocouple Insert for EEx-d omniset TEC 300

***Nipple style
Mineral insulated insert diameter 6 mm
TC type K / J / T***



Description

The TEC 300 insert consists of a mineral insulated cable of 6 mm diameter with 150 mm free connection wires for the assembly of temperature transmitters or terminal blocks. The style of the insert and the ending of the conductor cables are of a spring loaded kind. In this way the tip of the insert is pressed against the bottom of the thermowell guaranteeing the very best thermal contact and excellent resistance to vibrations. At the same time the spring compensate for thermal expansion.

Application

The TEC 300 is the interchangeable thermocouple insert for the EEx d line. It can be used for installation in Ex-proof TSC 262, TSC 264 and TSC 266 thermocouple thermometers and in the TC compact TMT 162 thermometer. The insert is normally installed in appropriate protection wells as it cannot be used on its own for heavy applications.

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Technical data

| | | |
|---------------------------------|--------------------------------|---|
| Mineral insulated insert | Type of thermocouple: | K (NiCr / NiAl) according to IEC 584 or ANSI MC 96.1 J (Fe / CuNi) according to IEC 584 or ANSI MC 96.1 T (Cu / CuNi) according to IEC 584 or ANSI MC 96.1 |
| | Tolerance: | class 2 or class 1 according to IEC 584-2 |
| | Operating temperature: | -40°C + 1150°C for type K -40°C + 720°C for type J -40°C + 370°C for type T (max. temperature according to ASTM E 608) |
| | Resistance against insulation: | > 1000 MΩ of test tension 500 V at ambient temperature (according to ASTM E 608) |
| | Electrical connections: | free wires 150 mm |
| | Rod: | mineral insulated cable |
| | Coating: | AISI 316 / W.1.4401 or INCONEL® 600 / W.2.4816 |
| | Standard diameter: | 6 mm |
| | Values of response time: | tested in water at 0.4 m/s $t_{50} = 2 \text{ s}$ $t_{90} = 5 \text{ s}$ for grounded junction $t_{50} = 2.5 \text{ s}$ $t_{90} = 7 \text{ s}$ for insulated junction |

Installation

The spring loaded lamination nipple always guarantees perfect contact with the bottom of the thermowell for a rapid response time. It is necessary to calculate the length ML depending on the threading of the thermowell.

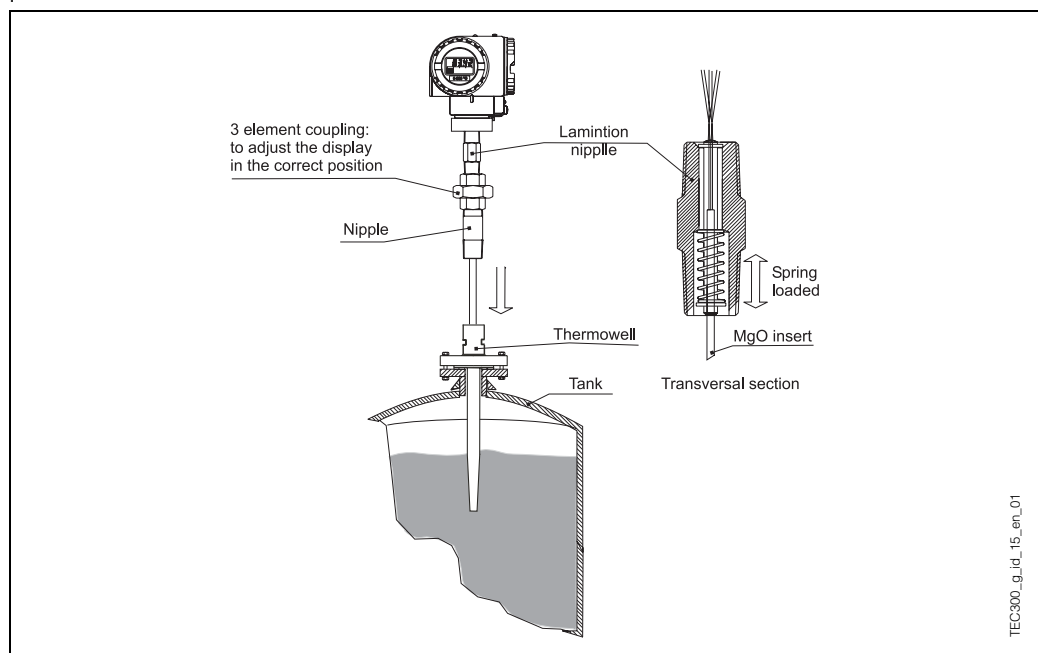
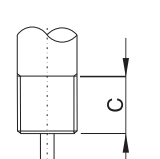
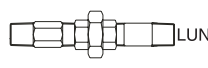
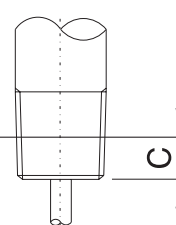
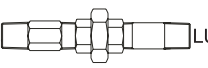
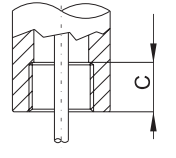
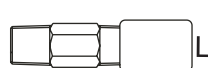
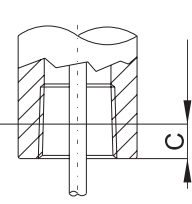
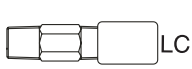



Fig. 1: Measuring point of the temperature with display

Selection of the insert

In order to easily select the correct connection to the thermowell refer to the table below. All of the information related to the threading of the extension neck is indicated. The following pages explain in detail how to calculate the length of the immersion ML of the insert for each type of thermometer coupling / thermowell.

| Connection to the thermowell | | | | | |
|---|----------|-----------|--------|--|---|
| Type | Male | | | | |
| | Thread | Digit (*) | C (mm) | Engagement | Neck model |
| Cylindrical | G 1/2" | D | 15 |  conGAS_g_dd_09_xx_01 |  LUN nckLUN_g_dd_15_xx_01 |
| | G 3/4" | F | 15 | | |
| | M 14x1.5 | V | 14 | | |
| | M 18x1.5 | W | 14 | | |
| Conical | 1/2" NPT | N | 8 |  conNPT_g_dd_09_xx_01 |  LUN nckLUN_g_dd_15_xx_01 |
| | 3/4" NPT | P | 8.5 | | |
| (*) see order code TEC 300: connection to the well (the letter identifies the option) | | | | | |

| Connection to the thermowell | | | | | |
|---|----------|-----------|--------|---|--|
| Type | Female | | | | |
| | Thread | Digit (*) | C (mm) | Engagement | Neck model |
| Cylindrical | M 24x1.5 | U | 16 |  com24_g_dd_09_xx_1 |  LC nckLCx_g_gd_15_xx_01 |
| Conical | 1/2" NPT | 5 | 8 |  conNPT_g_dd_09_xx_02 |  LC nckLCx_g_gd_15_xx_01 |
| | 3/4" NPT | 6 | 8.5 | |  LU nckLUX_g_dd_15_xx_01 |
| (*) see order code TEC 300: connection to the thermowell (the letter identifies the option) | | | | | |

Thermowell selection and calculation of length ML

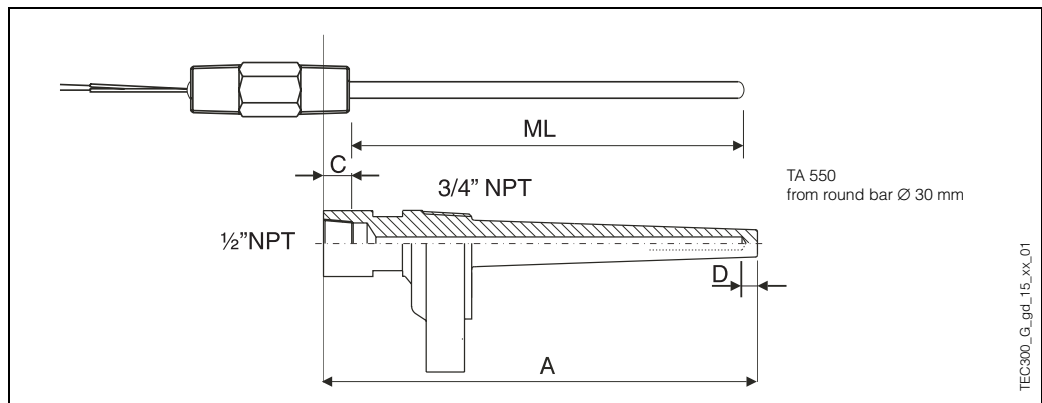
Selection of the well for TEC 300 with neck type L

- A = total length of the thermowell
- C = thread engagement
- D = thickness of pit base*
- F = expansion length of spring under pressure
- ML = immersion length

(*) For the thickness of the thermowell bottom D, refer to the technical information TI 138T/02 related to the TA range of thermowells

| Formula for the calculation of ML - Neck L | | | | |
|--|----------------------|------------------------|--------|--------|
| TW model | TEC 300 threading at | Formula ⁽¹⁾ | C (mm) | D (mm) |
| TA 550 | 1/2" NPT | ML = A-11 | 8 | 6 |

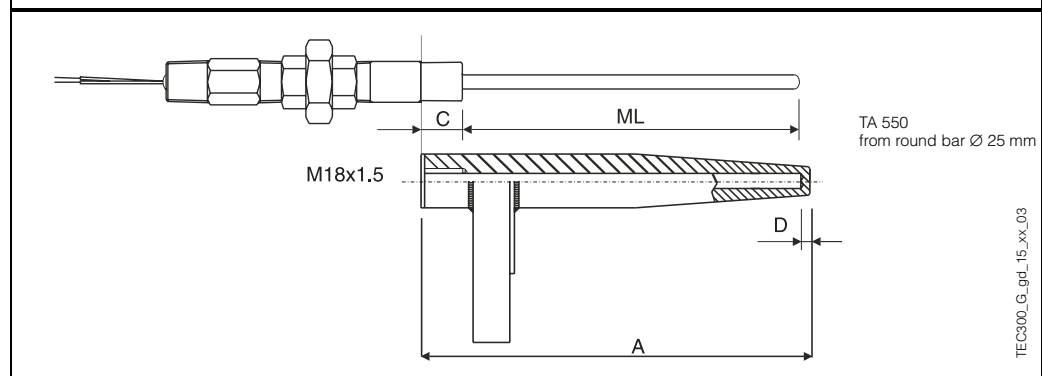
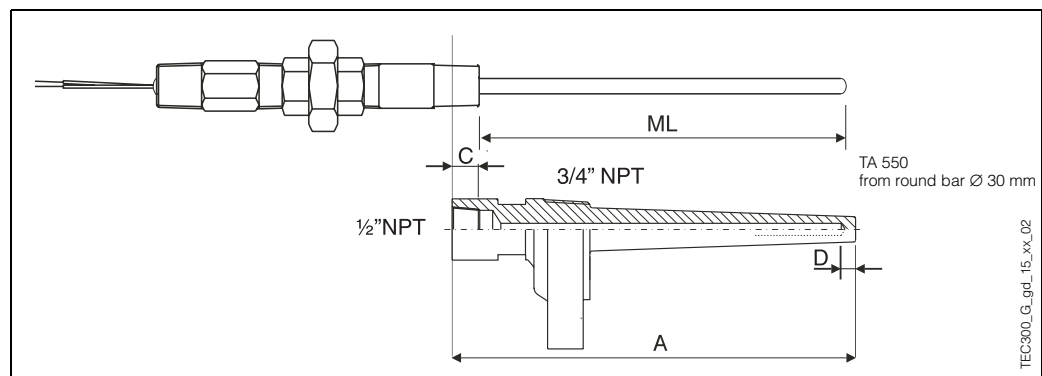
Tab. 1: (1) Calculation of ML means: $ML=A-(D+C)+F$



Selection of the well for TEC 300 with neck type LUN

| Formula for the calculation of ML - Neck LUN | | | | |
|--|----------------------|------------------------|--------|--------|
| TW model | TEC 300 threading at | Formula ⁽¹⁾ | C (mm) | D (mm) |
| TA 550 | 1/2" NPT | ML = A-11 | 8 | 6 |
| TW 15 | M18x1.5 | ML = A-12 | 14 | 3 |

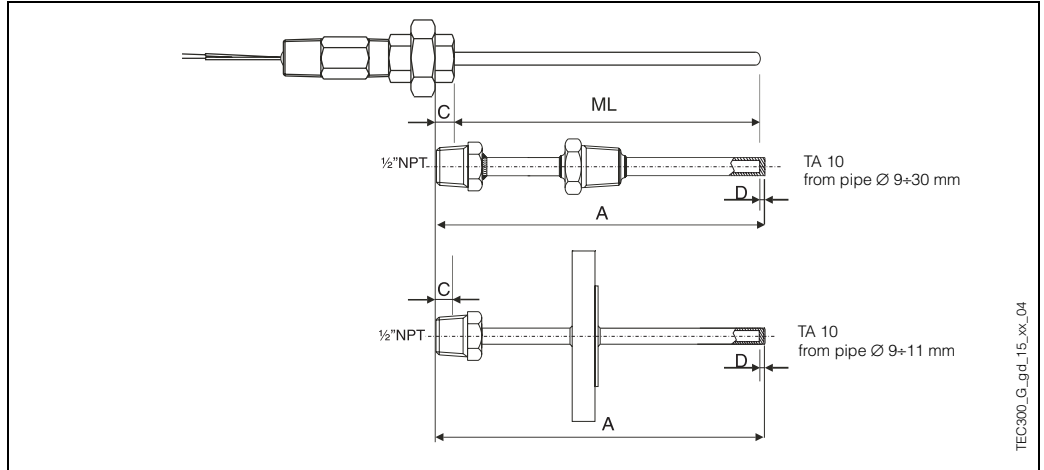
Tab. 2: (1) Calculation of ML means: $ML=A-(D+C)+F$



Selection of the well for TEC 300 with neck type LU

| Formula for the calculation of ML - Neck LU | | | | |
|---|----------------------|------------------------|--------|--------|
| TW model | TEC 300 threading at | Formula ⁽²⁾ | C (mm) | D (mm) |
| TW 10 | 1/2" NPT | ML = A-8 | 8 | 3 |
| TW 13 | M18x1.5 | ML = A-8 | 8 | 3 |

Tab. 3: (2) Calculation of ML means: $ML=A-(D+C)$

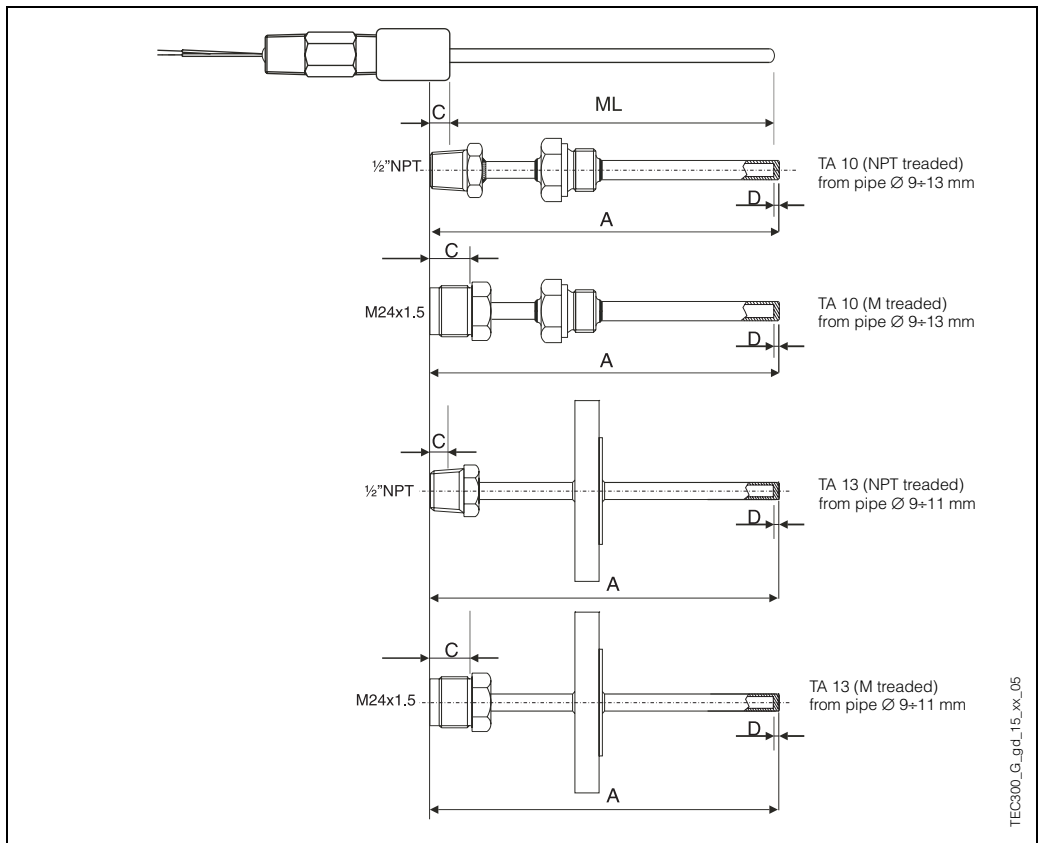


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Selection of the well for TEC 300 with neck type LC

| Formula for the calculation of ML - Neck LC | | | | |
|---|----------------------|------------------------|--------|--------|
| TW model | TEC 300 threading at | Formula ⁽²⁾ | C (mm) | D (mm) |
| TW 10 | 1/2" NPT | ML = A-8 | 8 | 3 |
| | M24x1.5 | ML = A-15 | 16 | 3 |
| TW 13 | 1/2" NPT | ML = A-8 | 8 | 3 |
| | M24x1.5 | ML = A-15 | 16 | 3 |

Tab. 4: (2) Calculation of the ML means: $ML=A-(D+C)$



TEC300_G_gd_15_xx_05

Ordering information

Sales structure

| TEC300 | | Application | |
|--|----|---|---------------------|
| | R | General purpose | |
| Connection type, material | | | |
| | A | Nipple, St.St. type L (size 1/2" only) | |
| | B | Nipple, C.S. Union, type LU | |
| | D | Nipple, St.St. Union, type LU | |
| | E | Nipple, St.St. Coupling, type LC | |
| | F | Nipple, C.S. Union+Nipple, type LUN | |
| | H | Nipple, St.St. Union+Nipple, type LUN | |
| | Y | Nipple, connection, material to specify | |
| Connection thread to thermowell | | | |
| | D | G 1/2 B male (BSP parallel) connection | |
| | F | G 3/4 B male (BSP parallel) connection | |
| | N | 1/2 NPT male connection | |
| | 5 | 1/2 NPT female connection | |
| | P | 3/4 NPT male connection | |
| | 6 | 3/4 NPT female connection | |
| | U | M 24x1.5 female connection (type LC only) | |
| | V | M 14x1.5 male connection (type LUN only) | |
| | W | M 18x1.5 male connection (type LUN only) | |
| | Y | Connection thread to specify | |
| Insertion length ML (50-4000 mm) | | | |
| | XX | mm thermowell length ML to specify | |
| | YY | mm special thermowell length ML | |
| Inset | | | |
| | AF | 1xTC IEC 584 type K, Inconel® 600 W2.4816 | |
| | AQ | 2xTC IEC 584 type K, Inconel® 600 W2.4816 | |
| | BE | 1xTC IEC 584 type J, AISI 316/W1.4401 | |
| | BP | 2xTC IEC 584 type J, AISI 316/W1.4401 | |
| | CE | 1xTC IEC 584 type T, AISI 316/W1.4401 | |
| | CP | 2xTC IEC 584 type T, AISI 316 W1.4401 | |
| | DF | 1xTC ANSI type K, Inconel® 600/W2.4816 | |
| | DQ | 2xTC ANSI type K, Inconel® 600/W2.4816 | |
| | EE | 1xTC ANSI type J, AISI 316/W1.4401 | |
| | EP | 2xTC ANSI type J, AISI 316/W1.4401 | |
| | FE | 1xTC ANSI type T, AISI 316/W1.4401 | |
| | FP | 2xTC ANSI type T, AISI 316/W1.4401 | |
| MgO type IEC 584-2 (ANSI MC 96.1) | | | |
| | 1 | Std. purity, cl.2, hot junction grounded | |
| | 2 | Std. purity, cl.1, hot junction grounded | |
| | 5 | Std. purity, cl.2, hot junction insulated | |
| | 6 | Std. purity, cl.1, hot junction insulated | |
| TEC300- | | | Complete order code |

Supplementary documentation

- | | |
|--|---------------|
| <input type="checkbox"/> Compact thermocouple thermometer - Omnigrad S TMT162C | TI 267T/02/en |
| <input type="checkbox"/> Industrial protecting tubes - Omnigrad TA series | TI 138T/02/en |
| <input type="checkbox"/> EEx d thermocouple thermometer - Omnigrad TSC 262 | TI 165T/02/en |
| <input type="checkbox"/> EEx d thermocouple thermometer - Omnigrad TSC 264 | TI 164T/02/en |
| <input type="checkbox"/> Temperature thermocouple sensor - Omnigrad S TSC 266 | TI 248T/02/en |

Subject to modification

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