



The companies ARMATURENBAU GmbH and MANOTHERM Beierfeld GmbH supply mechanical and electrical contact thermometers. Among others, clamp and screw connections are used as connections to the process. Different dimensional markings at the conical screw connections by varying manufacturers in connection with the screwed thread length lead to recurring misunderstandings between customer and manufacturer. Due to the conical geometry of those thread types, only a part of the applicable thread length can be screwed since male and female thread cannot be screwed into one another entirely. The theoretical reference plane, which is achieved via manual force, is the so-called "hand-tight engagement"  $i_2$ , which indicates the beginning of the sealing. The dimension is standardized and is e.g.  $i_2 = 8.8128$  mm after the beginning of the thread for the  $\frac{1}{2}$ " NPT (thread length  $i = 19$  mm), see also the illustration below. Of course, this dimension varies for other conical threads. With the aid of tools, higher tightening torques are achieved, which further increases the screw-in depth.

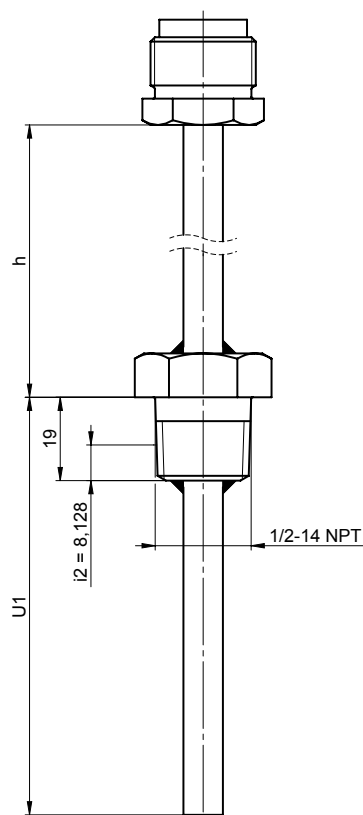
In order to be able to guarantee clear indications for the lengths of the measuring inserts and stems in dialogues between customer and manufacturer, a defined dimensional marking is required. Other manufacturers may mark the lengths differently – partly up to the hand-tight engagement, partly up to the thread end on the hexagonal.

In contrast to the mechanical temperature measurement, where the stem length always has to be shorter than the thermowell drilling depth, the measuring insert length in the electrical temperature measurement has to be  $(3 \pm 1)$  mm longer than the drilling depth according to DIN 43 735. This guarantees a spring preload of the measuring insert, and thus that the thermal resistance between measuring insert and thermowell is as low as possible.

Due to this, particular attention has to be paid to the installation lengths, especially concerning re-orders of measuring inserts as well as in case of the installation of ARMATURENBAU/MANOTHERM-instruments into thermowells of other manufacturers. In order to avoid incorrect deliveries or measuring errors, it is highly recommended to determine and report the length of the defective measuring insert or the actual depth of the thermowell in each case of replacement delivery.

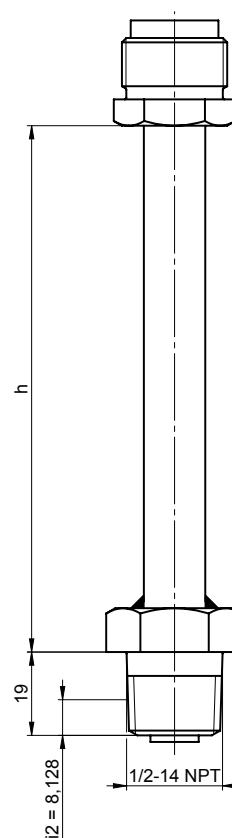
ARMATURENBAU and MANOTHERM mark the lengths according to DIN 43 772, DIN 13 190 as well as DIN 43 735 directly up to the thread end. The hand-tight engagements are obtained from the respective thread standards and are marked with  $i_2$  in all relevant data sheets of the electrical temperature measurement. Furthermore, a formula for the calculation of the measuring insert length can be found in those relevant data sheets.

Thermowell with  $\frac{1}{2}$ " NPT-Thread



The actual installation length  $U_1$  is shortened by approx. 11 mm (0.43").

Neck Tube with  $\frac{1}{2}$ " NPT-Thread



The actual neck tube length  $h$  is extended by approx. 11 mm (0.43").

