THVA

Thermowell pocket for KFK03 ∅ 8mm

thermokon®
HOME OF SENSOR TECHNOLOGY

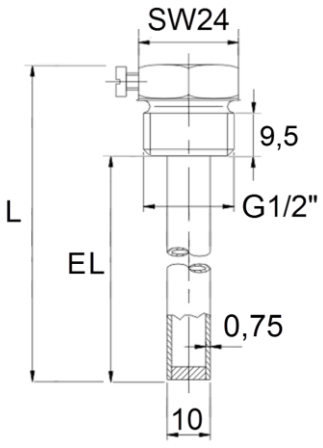
Data sheet

Subject to technical changes
Issue date: 03.09.2026 • A121

» Order information

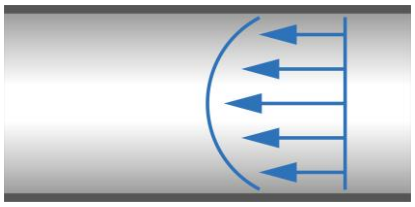
Type	Length (mm)	Installation length (mm) *(w/o. thread)*	maximum flow velocity	Item No.
Typ THVA100	95	75	15,5 m /s	584180
Typ THVA150	145	125	10 m /s	584197
Typ THVA200	195	175	7,3 m / s	584203
Typ THVA250	245	225	5,4 m / s	594738
Typ THVA350	345	325	2,3 m / s	675444

» Technical data in detail

Packaging unit	1 piece
Material	pipe: 1.4571 (V4A) turned part: 1.4404 (V4A)
Compressive strength	Up to 40 bar
Operating ambient temp.	Up to 260 °C
Description	Thermowell pocket stainless steel for temperature sensor KFK03 with Ø=8 mm
Dimensions (mm)	

» Immersion length

Rule of thumb: The thermowell should be positioned so that it extends approximately one-third to one-half of the pipe diameter into the flow. Alternatively, the immersion length should be at least 50 mm. This ensures that the measuring point is located as close as possible to the center of the flow profile.

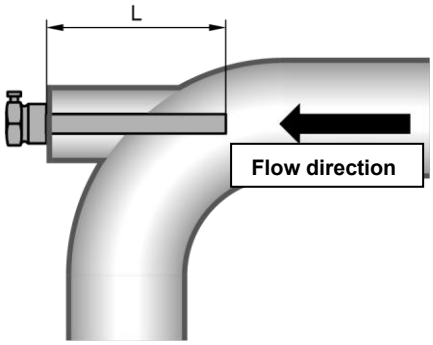


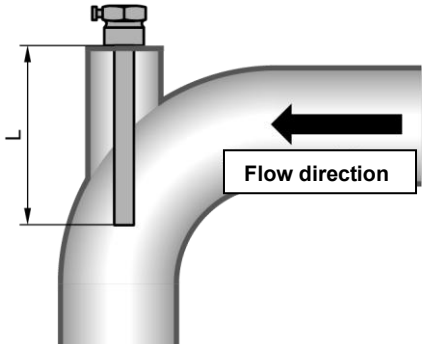
An immersion length that is too short can lead to measurement errors. A thermowell that is too long increases the risk of vibration and the resulting fatigue failure.

» Installation location

For installation of the thermowell, locations with the most favorable flow conditions should be selected. The following are preferred:

- straight pipe sections with the most uniform flow possible,
- sufficient distance from pumps, control valves, and pipe bends, installation in a pipe bend for small nominal pipe diameters, as this allows the thermowell to extend further into the flow.

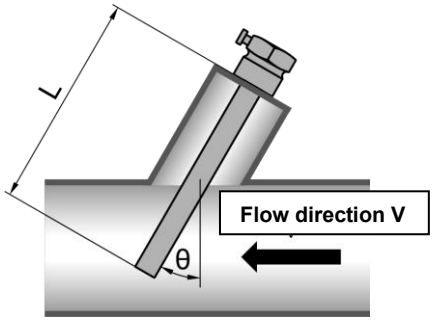




» Installation orientatiion

An inclined installation of the thermowell relative to the flow direction, for example at the “3 o’clock” or “9 o’clock” position, can reduce deposits and air pockets. At the same time, the mechanical load on the thermowell caused by the flow is reduced.

The greater the angle between the thermowell and the flow direction, the lower the effective flow velocity acting on the thermowell. It decreases according to the cosine of the angle:
$\mathbf{V_{cross_axial} = V_{flow} \times \cos(\theta)}$ for $\mathbf{\theta = 0..30°}$.



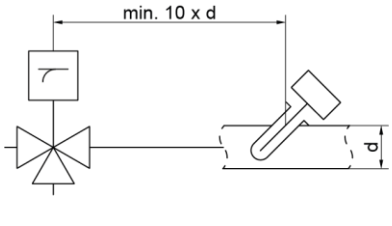
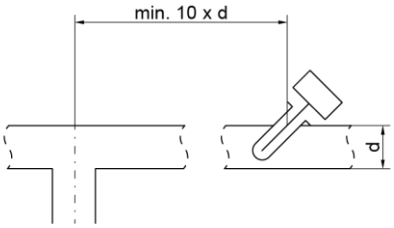
» Special considerations for 90° installation

In a 90° installation, the thermowell extends into the flow perpendicular to the pipe axis. From a vibration standpoint, this installation arrangement is considered particularly critical. As the flow passes around the thermowell, vortices form downstream of the thermowell (vortex shedding). These vortices can induce mechanical vibrations in the thermowell. If the excitation frequency is close to one of the thermowell's natural frequencies, significant vibration amplitudes may occur. If such loading persists for a sufficient period, there is a risk of fatigue failure. Pressure surges generated by pumps can further increase the flow velocity and intensify these effects.

For assessing this loading, the *American Society of Mechanical Engineers (ASME)* describes a corresponding calculation method in the *PTC 19.3 TW* standard. This method also forms the basis of the calculations presented here. The calculations were performed based on typical HVAC applications and the following assumptions:

- Medium temperatures < 100 °C (no steam)
- Operating pressures < 20 bar

Under these conditions, a 90° installation is theoretically permissible up to the product-specific maximum flow velocity (see table under Ordering Information).

However, from a vibration engineering perspective, an inclined installation position or installation in a pipe bend is recommended whenever possible. Due to the reduced flow impact, vibration excitation of the thermowell is minimized, thereby increasing its expected service life.

A straight pipe section of > 10 × d must be provided upstream of the thermowell.