

# Thermowells for temperature probes for thermal energy meters

Basic type 902440



Operating Manual



90244000T90Z001K000

V1.00/EN/00753604/2021-05-20

**Further information and downloads**



[qr-902440-en.jumo.info](https://qr-902440-en.jumo.info)

<b>1</b>	<b>Safety information</b> .....	<b>4</b>
1.1	Warning symbols .....	4
1.2	Note symbols .....	4
<b>2</b>	<b>Introduction</b> .....	<b>5</b>
2.1	Identification marking .....	6
<b>3</b>	<b>Technical data</b> .....	<b>7</b>
3.1	General data .....	7
3.2	Max. temperature of the immersion sleeves according to the type examination certificate ..	7
3.3	Dimensions .....	8
3.4	Maximum flow velocity .....	10
<b>4</b>	<b>Installation</b> .....	<b>11</b>
4.1	Selection of the insertion length .....	11
4.2	Thermowells in welded sockets .....	11
4.3	Welding thermowells .....	12
4.4	Installation examples .....	12
<b>5</b>	<b>China RoHS</b> .....	<b>14</b>

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# 1 Safety information

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## 1.1 Warning symbols



### WARNING!

This symbol in connection with the signal word indicates that **personal injury** may occur if the respective precautionary measures are not carried out.

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### CAUTION!

This symbol in connection with the signal word indicates that **material damage or data loss** will occur if the respective precautionary measures are not taken.

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## 1.2 Note symbols



### NOTE!

This symbol refers to **important information** about the product, its handling, or additional benefits.

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### REFERENCE!

This symbol refers to **additional information** in other sections, chapters, or other manuals.

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### DISPOSAL!

At the end of its service life, the device and any batteries present do not belong in the trash! Please ensure that they are **disposed of** properly and in an **environmentally friendly** manner.

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### General information

This manual contains information that must be observed in the interest of your own safety and to avoid material damage. This information is supported by symbols which are used in this manual as indicated.

Please read this manual before starting up the device. Store this manual in a place that is accessible to all users at all times.

If difficulties occur during startup, please do not intervene in any way that could jeopardize your warranty rights!

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The following standards, laws, and directives apply to the use of the temperature probe pair for measuring the forward flow and reverse flow temperature in a heat exchanger system:

- Product standard DIN EN 1434
- Directive 2014/32/EU, Annex I and MI-004
- German Weights and Measures Act (MessEG)
- German Weights and Measures Directive (MessEV)

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All installation and maintenance work must be performed by specialist staff trained for this task.

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All notes listed in the installation instructions must be observed.

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Identification markings and metrology-relevant safety markings/main stamps must not be damaged or removed – otherwise the temperature probes are no longer admissible for use!

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### **CAUTION!**

#### **Risk of burns!**

The installation process must be carried out by trained personnel.

When using water additives (corrosion protection, etc.), the operator must make sure there is sufficient corrosion resistance before installing the thermowells.

- ▶ Drain the pipeline system or seal off the thermowell's installation location to relieve pressure.
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## 2 Introduction

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### 2.1 Identification marking



#### NOTE!

When installing temperature probes in thermowells, it must be ensured that the admissible degree of tolerance between the temperature probe's outer diameter and the inner diameter of the thermowell is adhered to.

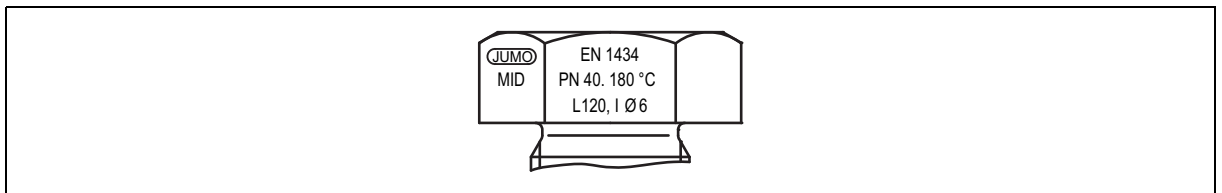
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There are two possible versions of thermowells:

#### Version 1

Inner diameter of the thermowell: (6 +0.08/-0.00) mm

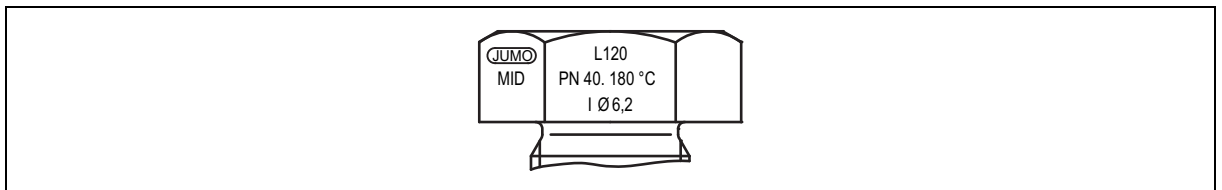
This version complies with the standard DIN EN 1434-2 and is preferred. The thermowell is marked by an appropriate DIN EN 1434 standard reference and the insertion length, as well as pressure stage, inner diameter, maximum operating temperature, and JUMO company logo.



#### Version 2

Inner diameter of the thermowell: (6.2 +0.00/-0.05) mm

This version does not comply with specifications from standards, but has the right metrological features nonetheless. Compared with version 1, the marking makes no reference to DIN EN 1434.



### 3.1 General data

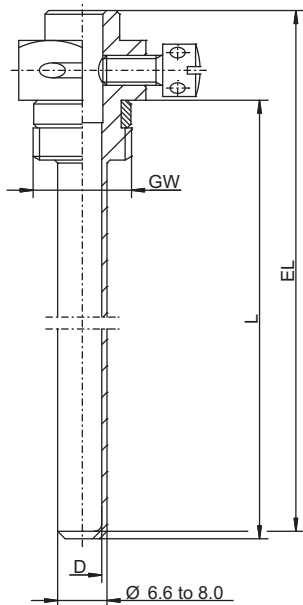
Process connection	Screws G 1/4, G 3/8, G 1/2, G 3/4 or welding in
Protection tube Material	Stainless steel 1.4571 Stainless steel 1.4435 Brass
Insertion lengths Stainless steel Brass	L = 68 to 400 mm L = 28 to 165 mm

### 3.2 Max. temperature of the immersion sleeves according to the type examination certificate

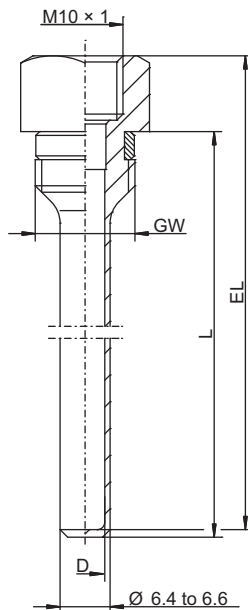
Basic type	Material	Internal diameter of protection tube D in mm	Insertion length L in mm	Thread	Max. temperature in °C
902440/40 902440/41	Brass	5.0 to 6.0	28 to 115	M10 to G 1/4	105
902440/40 902440/41					
902440/40 902440/41	Brass	5.0 to 6.0	35 to 115	M10 to G 1/2	105
902440/40 902440/41					
902440/40 902440/41	Brass	5.0 to 5.2	40 to 115	M10 to G 1/4	150
902440/40 902440/41					
902440/40 902440/41	Brass	5.0 to 5.2	50 to 115	M14 to G 1/2	150
902440/40 902440/41					
902440/40 902440/41	Brass	5.0 to 6.0	68 to 165	G 1/4 to G 1/2	150
902440/40 902440/41					
902440/42	Stainless steel	5.0 to 6.0	68 to 285	G 1/4 to G 1/2	150
902440/42	Stainless steel	6.0	85 to 280	M10 to G 1/2	180
902440/43	Stainless steel	6.2	85 to 280	M10 to G 1/2	180
902440/44	Stainless steel	6.05	120 to 400	G 3/8 to G 3/4	180
902440/45	Stainless steel	6.2	85 to 280	M10 to G 1/2	180

# 3 Technical data

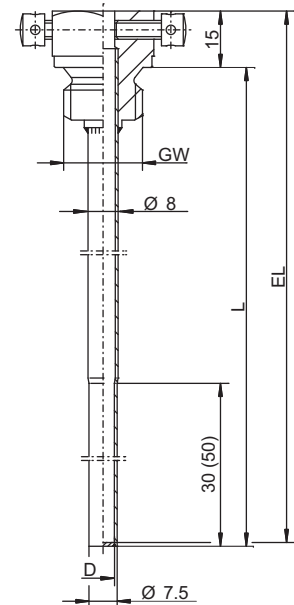
## 3.3 Dimensions



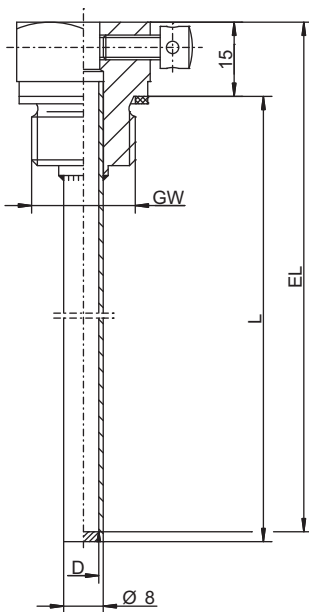
**Basic type 902440/40**



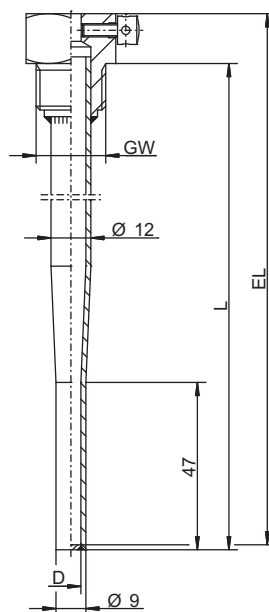
**Basic type 902440/41**



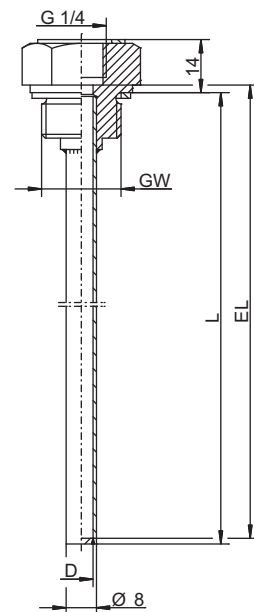
**Basic type 902440/42**



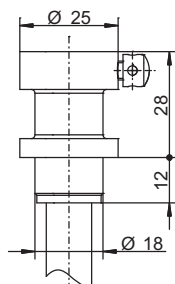
**Basic type 902440/43**



**Basic type 902440/44**



**Basic type 902440/45**



**Alternatively, process connection  
790 for basic types 902440/42,  
902440/43, and 902440/44 with  
welded-on piece**

## 3 Technical data

### 3.4 Maximum flow velocity

#### Pressure and flow calculation of protection tubes

<b>Tube 8 x 0.75 mm, reduced, pressure 40°bar, Basic type 902440/42</b>		
Flow velocity m/s		
	incl. resonance	maximum
LR = 70 L = 85	6.4	14
LR = 105 L = 120	3.2	6
LR = 140 L = 155	2.3	4.5
LR = 195 L = 210	1.5	2.8
LR = 265 L = 280	1	2.2

<b>Tube 8 x 0.9 mm, pressure 40 bar Basic type 902440/43</b>		
Flow velocity m/s		
	incl. resonance	maximum
LR = 70 L = 85	7.3	13
LR = 85 L = 100	5	10
LR = 105 L = 120	3.7	6.5
LR = 140 L = 155	2.5	5
LR = 195 L = 210	1.7	3.5
LR = 265 L = 280	1.3	2.2

<b>Tube 12 x 2.5 mm, reduced, pressure 40°bar, Basic type 902440/44</b>		
Flow velocity m/s		
	incl. resonance	maximum
LR = 105 L = 120	6.3	17.5
LR = 140 L = 155	4.5	8
LR = 150 L = 165	4.25	6
LR = 195 L = 210	3.7	5.2
LR = 210 L = 225	2.9	3.9
LR = 280 L = 295	2	3.1
LR = 385 L = 400	1.2	2

<b>Tube 6 x 0.5 mm, pressure 40 bar</b>		
Flow velocity m/s		
	incl. resonance	maximum
LR = 70 L = 85	3.3	8
LR = 105 L = 120	2.1	5.5
LR = 195 L = 210	1.1	2.2

<b>Tube 9 x 1 mm, pressure 40 bar</b>		
Flow velocity m/s		
	incl. resonance	maximum
LR = 150 L = 165	2.8	4.4

LR = effective tube length (mm) without thread

L = effective tube length (mm) with thread

#### NOTE!

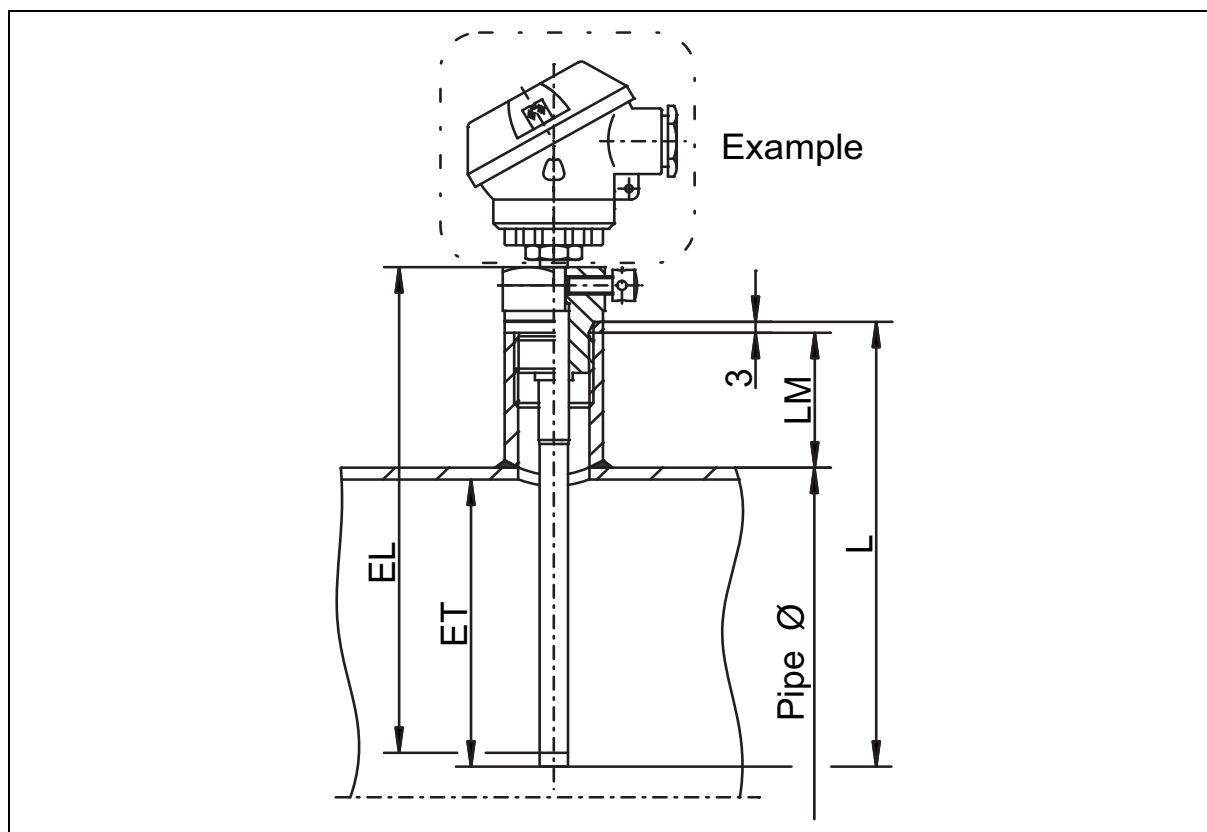


The specified values are guide values and have been determined simply using calculations. For installation in the field, the installation conditions (change of the pipeline diameter, cavitation forces, as well as pressure surges, turbulence, oscillations of pumps, etc.) are taken into account and, if necessary, new calculations are performed. The system designer is responsible for the precise design of the thermowell.

## 4.1 Selection of the insertion length

Insertion length	Nominal diameter
35 mm	DN 15 to DN 32 mm
52 mm	DN 40 to DN 65 mm
85 mm	DN 80 to DN 125 mm

## 4.2 Thermowells in welded sockets



Installation in thermowell				
DN	EL	ET	LM	L
150 mm	140 mm	-73 mm	40 mm	120 mm
200 mm	220 mm	-131 mm	70 mm	210 mm
250 mm	220 mm	-131 mm	70 mm	210 mm
300 mm	220 mm	-130 mm	70 mm	210 mm



### NOTE!

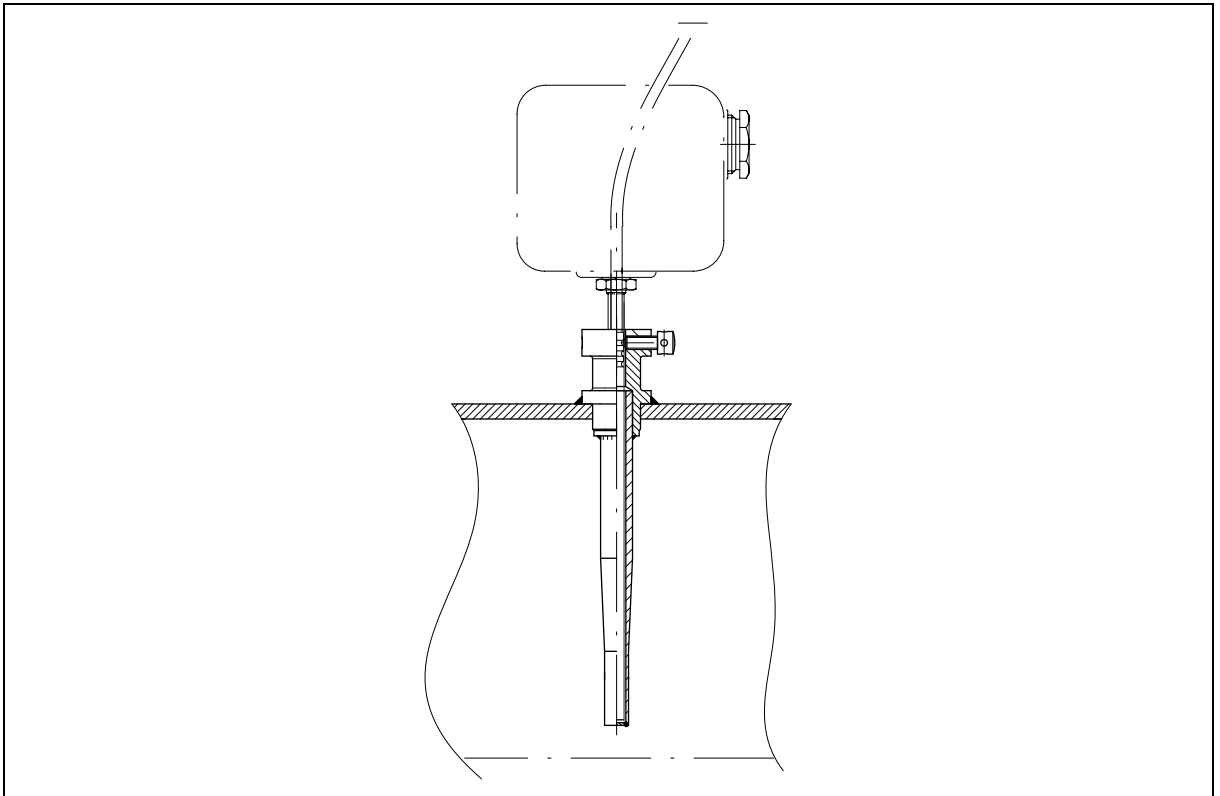
We recommend consulting DIN EN 1434-2 for an installation location. Make sure that the seal and sealing surface in the installation location are undamaged, clean, and dry.

## 4 Installation

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### 4.3 Welding thermowells

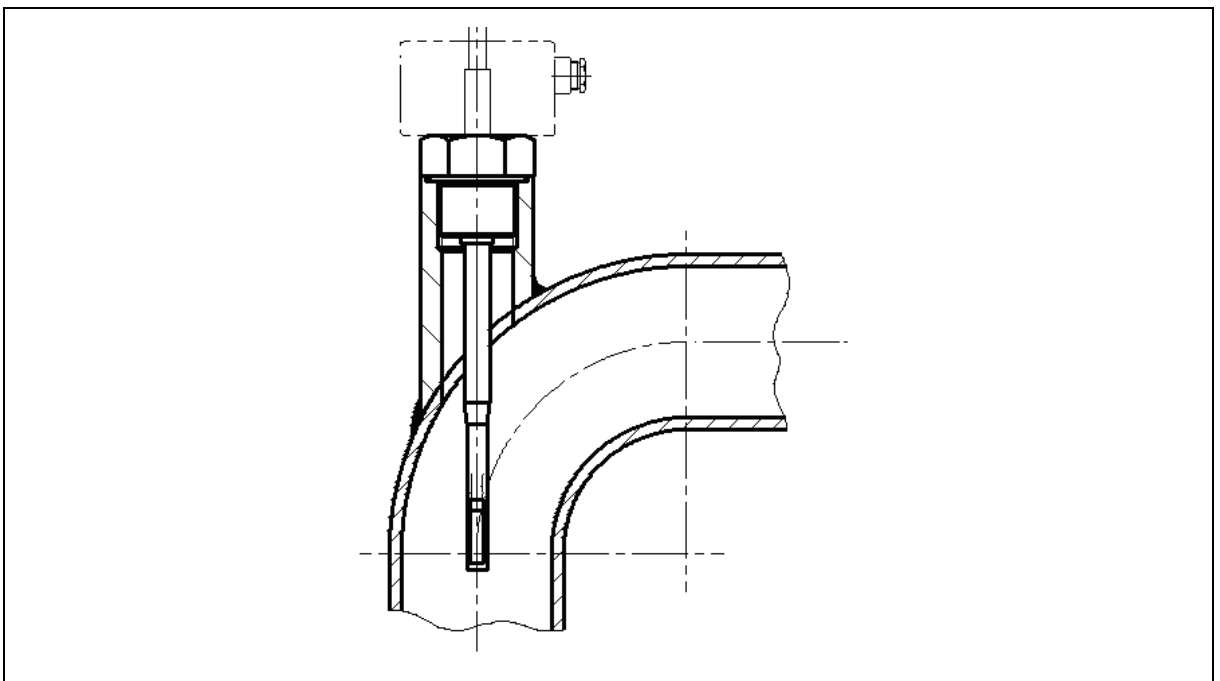
Installation example for nominal tube widths from DN 65 for installation in thermowells for welding



### 4.4 Installation examples

Installation example for elbows with small nominal widths

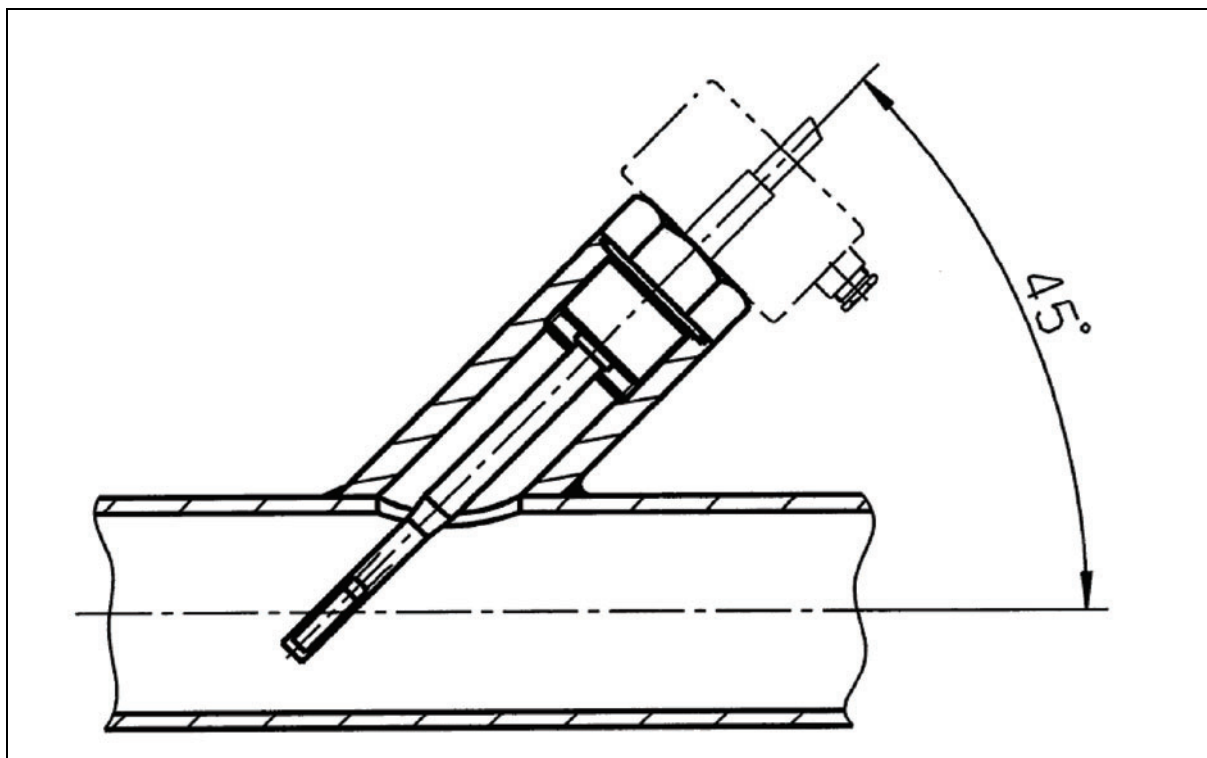
Excerpt from the work sheet AGFW FW 202 (2017)



## 4 Installation

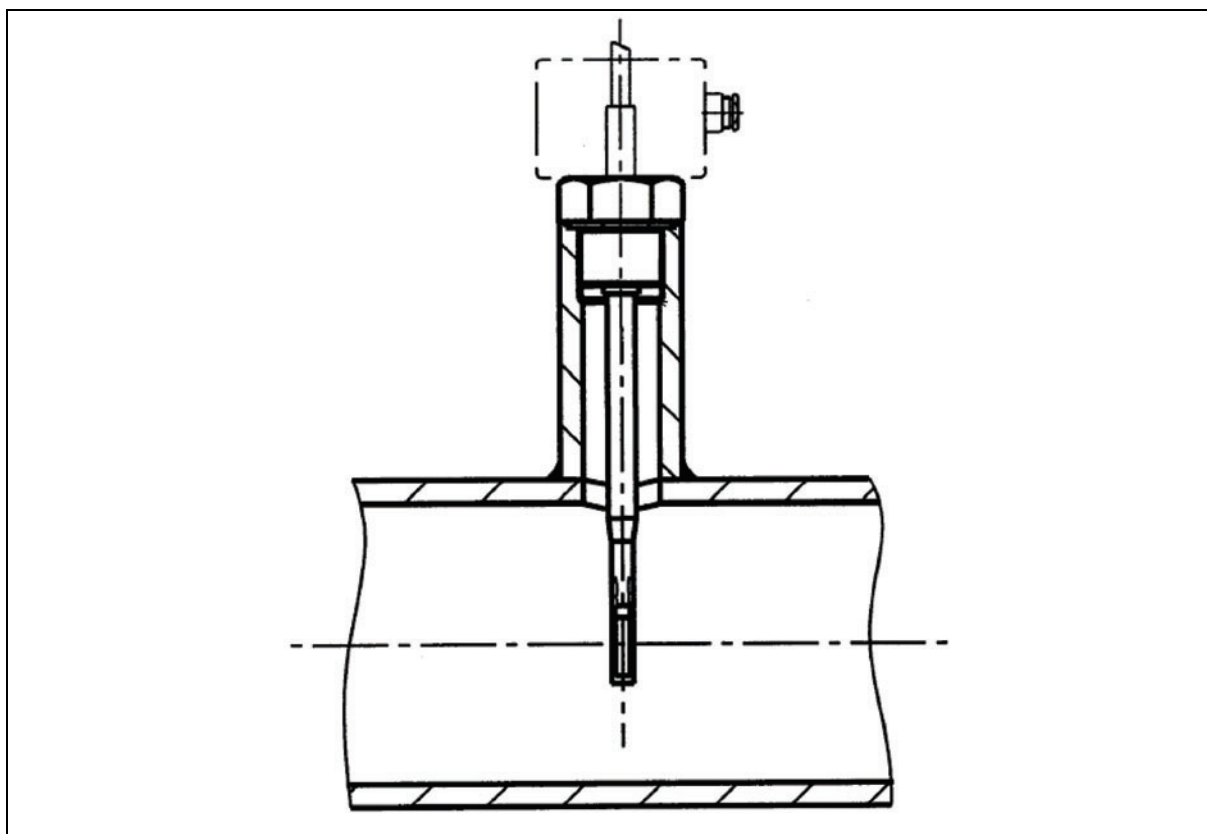
### Installation example for nominal tube widths up to DN 50

Excerpt from the work sheet AGFW FW 202 (2017)



### Installation example for nominal tube widths from DN 65

Excerpt from the work sheet AGFW FW 202 (2017)



## 5 China RoHS

						
产品组别 Product group: 902440	<b>产品中有害物质的名称及含量</b> <b>China EEP Hazardous Substances Information</b>					
部件名称 Component Name						
	铅 ( Pb )	汞 ( Hg )	镉 ( Cd )	六价铬 ( Cr(VI) )	多溴联苯 ( PBB )	多溴二苯醚 ( PBDE )
外壳 Housing (Gehäuse)	X	○	○	○	○	○
过程连接 Process connection (Prozessanschluss)	X	○	○	○	○	○
螺母 Nuts (Mutter)	○	○	○	○	○	○
螺栓 Screw (Schraube)	X	○	○	○	○	○
<p>本表格依据SJ/T 11364的规定编制。          This table is prepared in accordance with the provisions SJ/T 11364.          ○：表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。          Indicate the hazardous substances in all homogeneous materials' for the part is below the limit of the GB/T 26572.</p> <p>×：表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572规定的限量要求。          Indicate the hazardous substances in at least one homogeneous materials' of the part is exceeded the limit of the GB/T 26572.</p>						





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