BTMF6100 Thermal Mass Flowmeter

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1. Before You Begin

This guide provides basic guidelines to assist you in quickly getting started.

⚠️ Installation of the transmitter in an explosive environment must be in accordance with the appropriate local, national, and international standards, codes, and practices. Review the approvals section of the BEFA BTMF6100 thermal reference manual for any restrictions associated with a safe installation.

⚠️ Do not remove the transmitter covers in explosive environments when the circuit is live.

⚠️ Ensure the transmitter is installed by qualified personnel and in accordance with the applicable code of practice
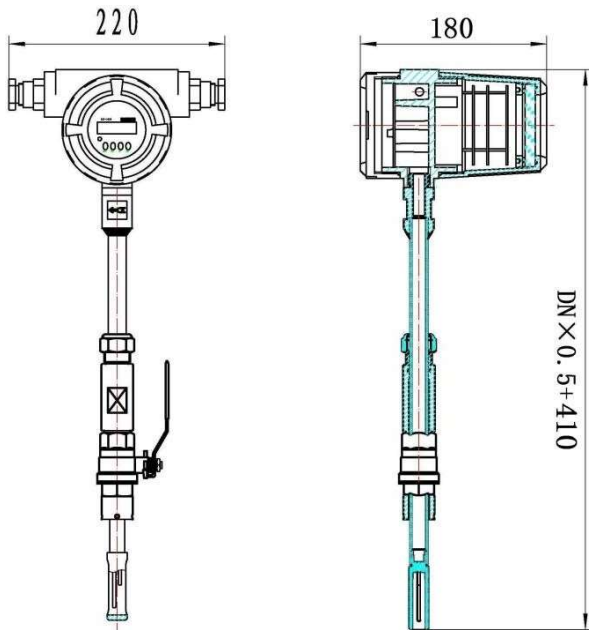
⚠️ It is prohibited to install or maintain online, When the process temperature/pressure is too high and the medium is a hazardous gas.
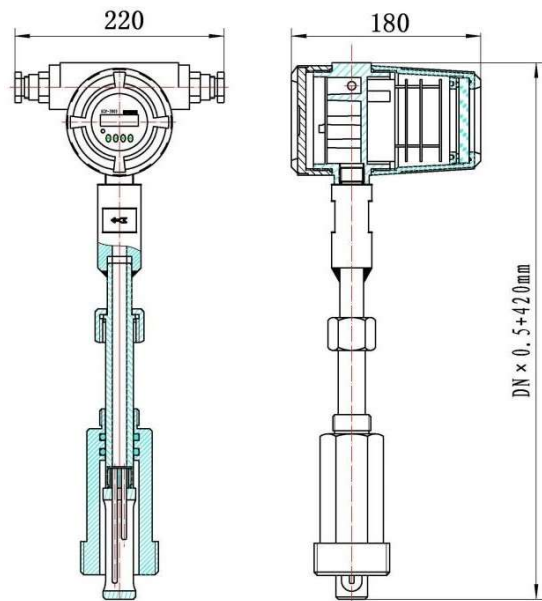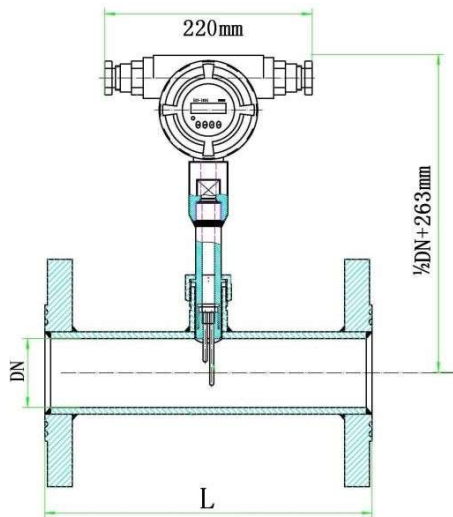
2. Unpack

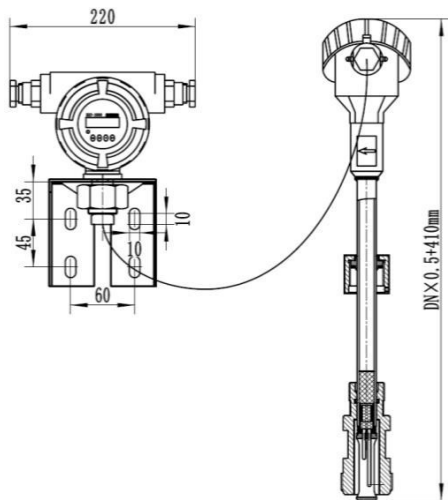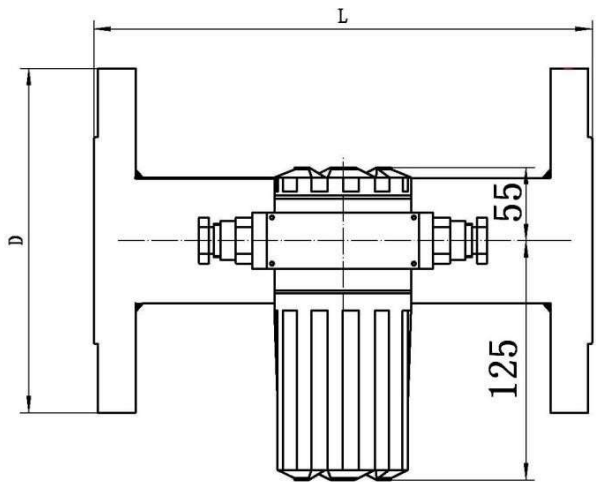BEFA-BTMF6100 Thermal Mass Flowmeter x 1
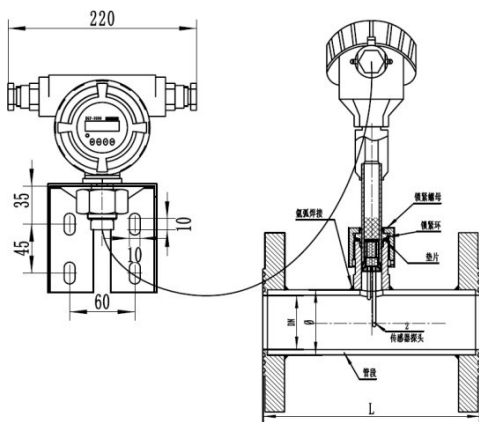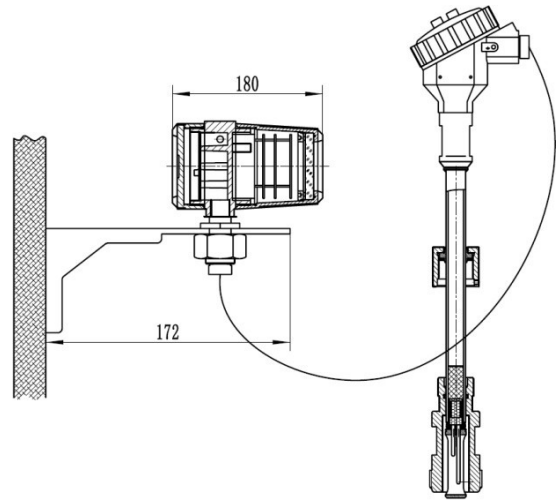
3. Dimensional View
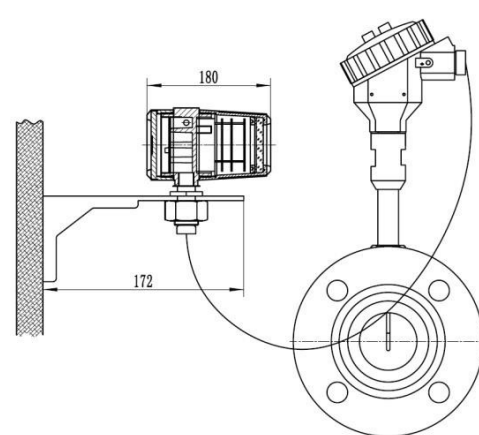

3/4" ball valve insertion type

1 1/2" ball valve insertion type

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Inline integral type dimension

Insertion remote type dimension
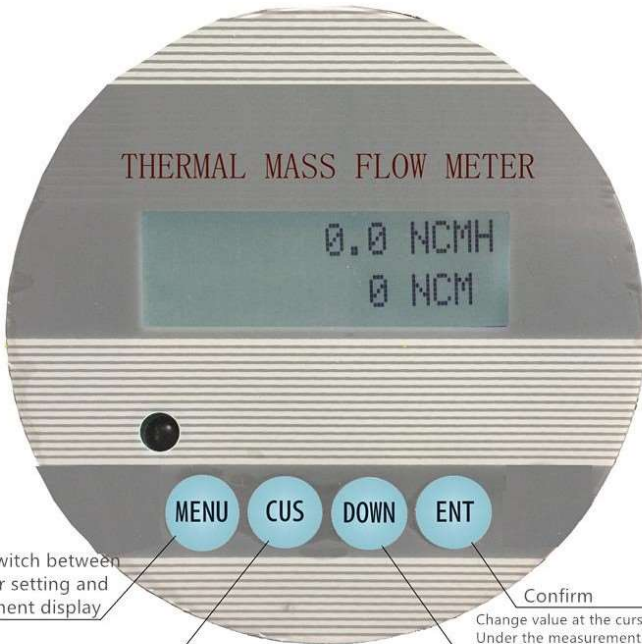

Inline remote type dimension

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4. Display

The BTMF6100 Thermal Mass Flowmeter provides local display and settings to display several variables on the local multifunctional LCD display. It has 4 buttons.

The BTMF6100 Thermal Mass Flowmeter has a display to indicate "Temperature", "Flow Rate", "Total-flow", and other parameters.

In the state of measurement, the following measurement pictures will be displayed cyclically if you press "DOWN".

| 0.0 | NCMH |
| 0 | NCM |

| -40.0 | ℃ |
| 780 | min |

| Date 27-01-05 | |
| Time 08:29:09 | |

| FAD | 0.0 |
| SAD | 451.3 |

THERMAL MASS FLOW METER
0.0 NCMH
0 NCM

MENU CUS DOWN ENT

used to switch between parameter setting and measurement display

Shift key or Page up/down

Confirm
Change value at the cursor
Under the measurement state, display the measurement menu cyclically

5. Power Supply

RS-485
4-20mA
DC24V
1.5A Fus

24VDC wiring terminal

RS-485
4-20mA
AC220V
0.5A Fus

220VAC wiring terminal

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6. Communication

• The communication interface should be RS485, the range of Baud rate should be 1200 to 9600.
• The communication should comply with the MODBUS-RTU statute.
Note: For more information on communication, refer to the detailed manual.

7. Operation Menu

Main Menu 00 Flow Parameter	Pipe dia (00) 100.0 mm	5 digits can be set at most (including the decimal point).
	Flow unit (01) 0 <NCMH>	0-NCMH, 1-KGH, 2-NLPM, 3-KGM Notes: The setting will take effect after the instrument is restarted.
	Gas density (02) 1.205 kg/m³	5 digits can be set at most (including the decimal point).
	Damping time (03) 05s (00-32s)	This parameter can be increased to stabilize the reading. Enter a number between "0-32". 0-no damping, 32-maximum damping of 32 seconds.
	Low cut-off (04) 0.00000000 NCMH	10 digits can be set at most (including the decimal point). When the flow rate is lower than this value, the measurement will be zero.
	Zero cut-off (05) 0.00000000 NCMH	10 digits can be set at most (including the decimal point). This value will serve as zero cut-off in calculation.
	Flow format (06) 3 <X.XXX>	Set the format of instantaneous flow. Select "0-3" 0-accurate to integer, 1-accurate to the first decimal place, 2-accurate to the second decimal place, 3- accurate to the third decimal place.
	Total format (07) 3 <X.XXX>	Set the format of total flow. Select "0-3" 0-accurate to integer, 1-accurate to the first decimal place, 2-accurate to the second decimal place, 3- accurate to the third decimal place.

	mA function (00) 0 <Flow>	0-flow (the analog signal is corresponding to flow) 1-temperature(the analog signal is corresponding to temperature).
	Flow at 4mA (01) 0.00000000 NCMH	Set the flow and temperature corresponding to 4mA. 10 digits can be set at most (including the decimal point).
	Flow at 20mA (02) 0.00000000 NCMH	Set the flow and temperature corresponding to 20mA. 10 digits can be set at most (including the decimal point).
	Protocol (03) 0 <MProtocol>	Enter either "0" or "1". 0-MProtocol (custom protocol) 1-MODBUS- RTU
Main Menu 01 I/O Parameter	Byte (04) 0 <1,8，N，1>	Set a number between "0-5" 0- no parity bit, 1 stop bit 1- odd parity, 1 stop bit 2- even parity, 1 stop bit 3- no parity bit, 2 stop bits 4- odd parity, 2 stop bits 5- even parity, 2 stop bits In all settings, there is 1 start bit and 8 data bits.
	Baud rate (05) 0 <1200 bps>	Set a number between "0-3" 0-1200 bit/s, 1-2400 bit/s, 2 -4800 bit/s, 3 -9600 bit/s.
	Net ID (06) 010 (1-247)	Set the network ID of this instrument. You can choose "001-247".
	OD state (07) 0 <Normal Open>	0 <Normal Open> 1 <Normal Close> Pulse output
	P_Width (08) 100.0 ms	Set range "1~5000ms"
	P_Interval (09) 100.0 ms	Set range "1~5000ms"
	Date (00) 16-12-26	Enter 6 digits, year (2 digits), month (2 digits) and day (2 digits), which are separated by "-".
Main Menu 02 System Parameter	Time (01) 15:13:13	Enter 6 digits, hour (2 digits), minute (2 digits) and second (2 digits), which are separated by ":". It will be displayed with multiple pictures.
	Contrast (02) 3 (0-9)	Enter 1 digit. The contrast can be adjusted between "0-9".

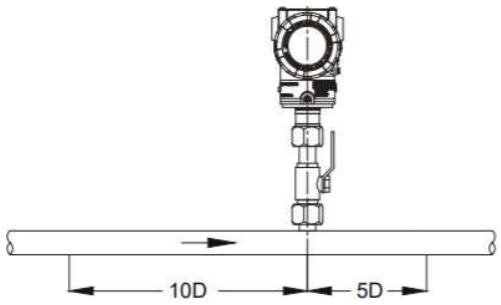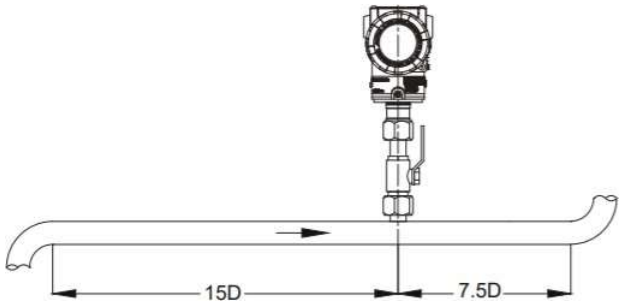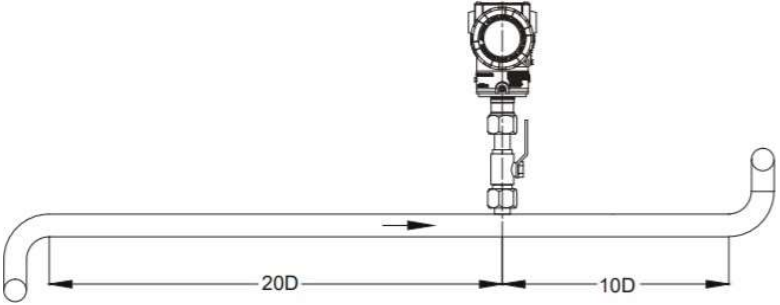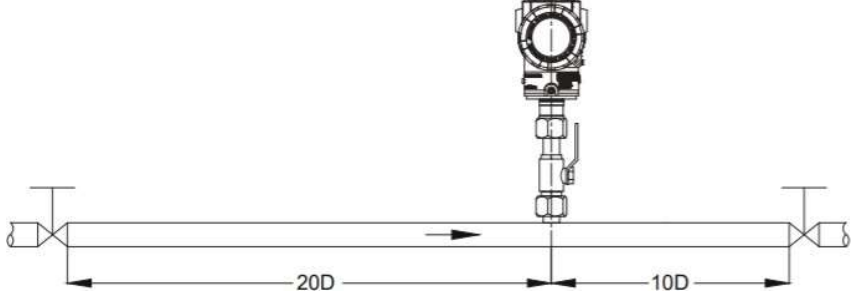|		
	Backlight (03) 10s (0-98,99)	Enter a number between "0-99".
	System info (04) VER : 04—0.41, T8 →	Display the version number of the system and size of receive/send buffer in the communication part of the instrument.
	Total clear (05) 0 \<Not action>	Enter 1 digit, "0 or 1" 0-No action (no clearing), 1-Clr Total (clearing).
Main Menu 02 **System Parameter**	**Menu lock** (06) 0 \<Un lock>	Enter 1 digit, "0 or 1". 0-unlock. 1-lock. The initial password is 00000. After the keyboard input is locked, to change parameters, you should to enter a password.
	Password set (07) *****	Enter 5 digits. The initial password is 00000. 1st, enter the initial password. 2nd/3rd,enter the same new password.
	Test mode (08) 0000	Factory parameters (the users can ignore this parameter)
	Coefficient (00) 100.0 %	5 digits can be set at most (including the decimal point). It is related to the calibration results and generally set by the manufacturer.
Main Menu 03 **CAL Parameter**	**OA 4mA CAL** (01) 0819	4 digits can be entered at most. Calibrate the flow corresponding to 4mA. It has been calibrated before leaving the factory.
	OA 20mA CAL (02) 4000	4 digits can be entered at most. It calibrates the flow corresponding to 20mA. It has been calibrated before leaving the factory.
	Temp record (00) 0.00°C —17 . 04 . 2 →	The complete picture in the illustration is "0.00°C—17.04.26-09:21:06"
Main Menu 04 **Log View**	**Power Log** (01) 00 PU—17.04.26 →	The complete picture in the illustration is "00 PU-17.04.26-09:12:01 PD-17.04.26-09:12:21". It records the power up/down date and time of the instrument.
	Menu-set Log (02) 00 17.04.26—09 →	The complete picture in the illustration is "00 17.04.26-09:13:01-0003". It records the setting date, time and item of instrument parameters.

Note: When "→" appears on the screen, it means the value will be displayed with multiple pictures. After pressing ENT to enter the menu, you can scroll by pressing CUS.
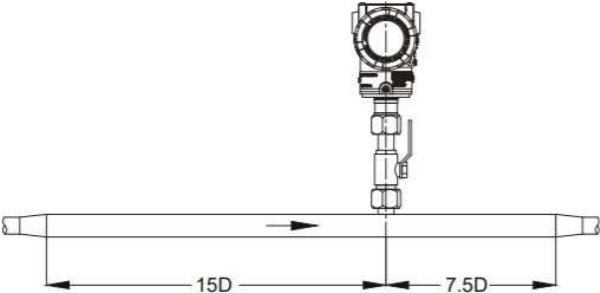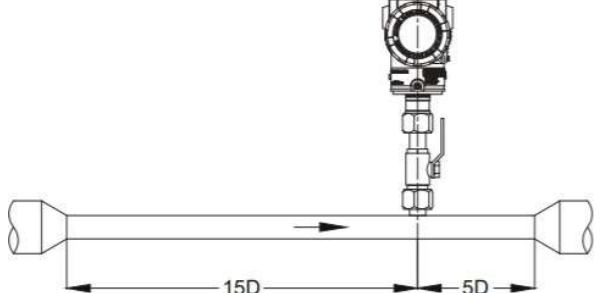
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8. Installation

The flow meter can be installed on horizontal, vertical or inclined pipes, and can be installed at any angle in the circumferential direction of the pipe.
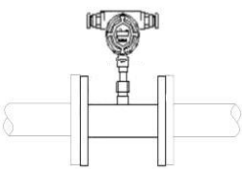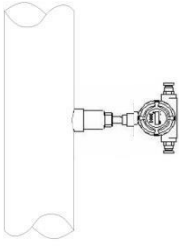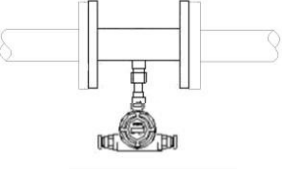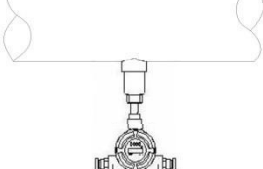
There is a flow arrow which indicates the flow direction in front of the sensor, so please install the TMF300 accordingly. Otherwise, the transmitter may not display the flow rate correctly.

Straight Run Requirement

Standard Installation	
Installation for the Bend Pipeline that is Upstream or Downstream	
Installation for the Bend Pipeline that May Cause Turbulence in the Upstream or Downstream	
Installation when Valves, Pressure Controller, or Other Device May Cause Turbulence in the Upstream or Downstream of the Flow meter.	

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Installation for Pipe Expander	15D — 7.5D
Installation for Pipe Reducer	15D — 5D

Installation Direction Requirement

Inline Type		Insertion Type	
Horizontal Pipeline (above)		Horizontal Pipeline (above)	
	√ Recommended		√ Recommended
Vertical Pipeline		Vertical Pipeline	
	√ Recommended		√ Recommended
Horizontal Pipeline (Under)		Horizontal Pipeline (Under)	
	× Non-recommended		× Non-recommended

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Installation Drawing

Installation steps for insertion thermal mass flow meter:

1) Select installation site
2) Welding the base: make sure that the base is at the apex of the pipe section and the axis of the base through hole is perpendicular to the pipe axis.
3) Install the ball valve and sealed well.
4) Drilling: carefully confirm the site environment before drilling. After that, close the valve in time to avoid air leakage.
5) Insert the sensor rod.

Non-explosion Insertion type

Explosion Insertion type
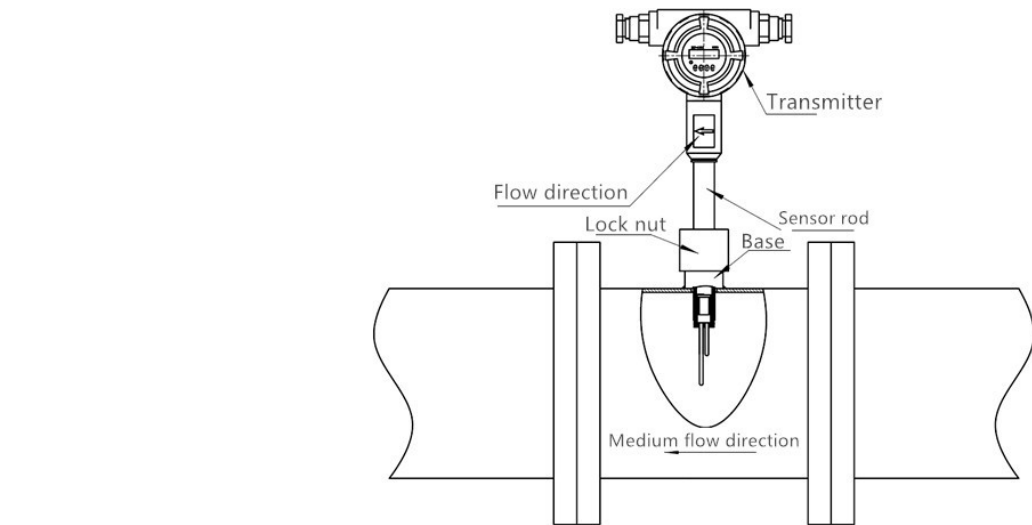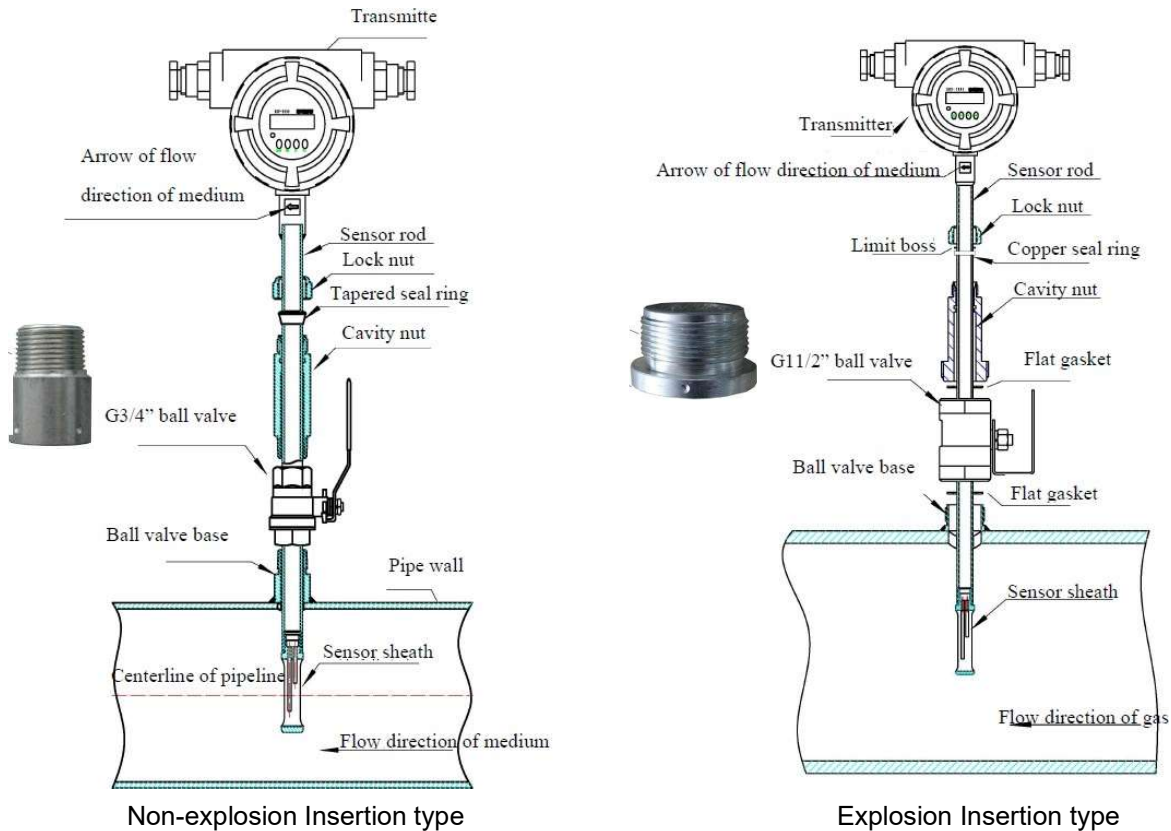
Inline type thermal mass flow meter has been assembled well before leaving factor

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