



Installation, Operation & Maintenance Manual

-JKTT impeller flow sensor





Important User Information

Thanks for choosing Beijing Kangjie Zhichen's product!

- Please read the installation operation and maintenance instruction prior to using the product.
- The sensor is a high precision measurement instrument. Only personnel familiar with these types of products and associated machinery should plan or implement the installation, start-up, configuration, and subsequent maintenance of the JKT impeller flow sensor. Failure to comply may result in personal injury and/or equipment damage.
- Please consult our service department for recommendations or instructions regarding this product.
- After unpacked, please check the shipping list and shipping products. If any loss or damage is actually found to the product. Please contact us immediately.

Declaration

1. You will receive a free of charge repair or replacement for this product within one year from the date of purchase.
2. Regardless of the channel from which you purchase this product, the manufacturer is committed to lifetime warranty providing technical maintenance services.
3. Damage to the product for the following reasons is not covered by the warranty:
 - A、 Mistakenly caused by high voltage power supply or damage caused by flooding;
 - B、 Unauthorized modification and misuse of the product;
 - C、 Improper type selection;;
 - D、 Damage caused by conditions beyond the use of the product;
 - E、 Improperly caused by all physical damage;
 - F、 Failure to do so in accordance with the specified storage or transport conditions (reference standard SJ / T10463-93);
 - G、 Consumable materials need to be purchased separately.

Safety warning Before Installation

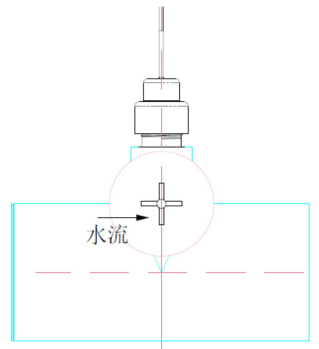
1. Make sure no pressure in the pipe, that is, pressure in the pipe is zeroed;
2. Check whether the sensor operate well in corrosive liquid;



3. Check whether the system is under the allowable pressure and temperature;
4. Check whether measured flow rate exceeds the limit range of the sensor;
5. Do not change the appearance of the sensor and measurement method;
6. The sensor cannot be connected to a power supply over 24V; otherwise it will burn or damage the sensor.

Technical Principles

The water flow in a pipe through the sensor causes the turbine to rotate. As the turbine rotates, each blade of the turbine passes a sensor. The speed at which the turbine rotates is directly proportional to the volumetric flow as well as the rate at which the blades of the turbine pass the sensor. The sensor measures the water flow by a correlation coefficient K corresponding to both the diameter of the pipe and material.



Technical Specifications

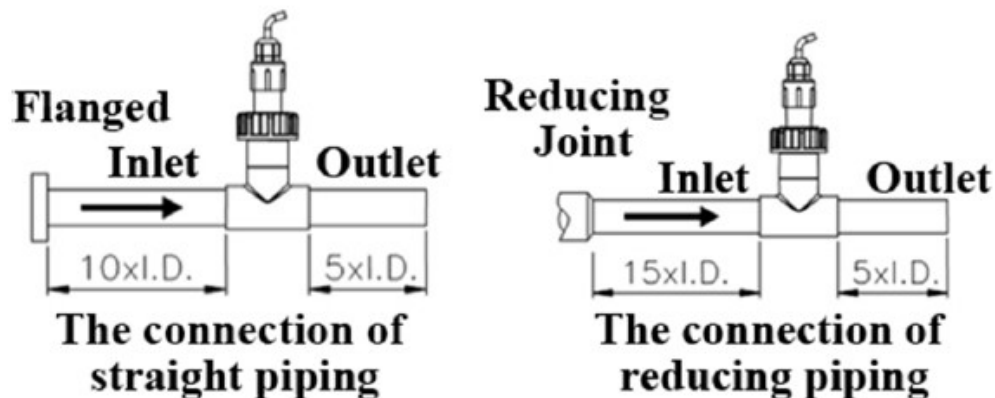
1. Measured fluid: Water (no big particle or suspended)
2. Flow velocity range: 0.3 ~ 5m / s;
3. Pipe size range: DN40 ~ DN100;
4. Linear accuracy: $\pm 4\%$;
5. Total accuracy: $\pm 4\%$;
6. Cable length: 5 meters;
7. Maximum transmission distance: 300 meters
8. Sensor body material: Nylon
9. Impeller Material: PVDF
10. Bearing material: 316LL

11. Response frequency:3~120Hz;
12. Probe supply voltage:5-24VDC;
13. Probe signal output form: pulse square wave
14. Probe signal output current: $\leq 12\text{mA}$;
15. Probe working pressure and temperature: $\leq 0.8\text{MPa}$; $1^{\circ}\text{C}\sim 60^{\circ}\text{C}$;

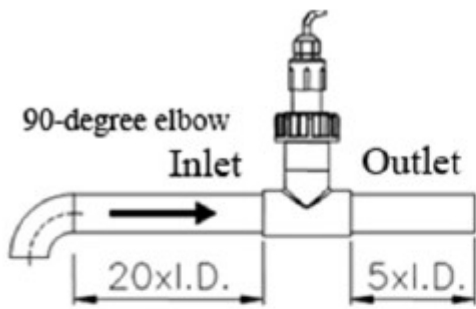
Probe Mounting Position

1. After the flange line segments that correspond to the measurements from the upper diameter 10 of the pipe after 5 times;
2. The distance between the straight line (only allowed to be a little less and allowed to become small) after the first 15 straight meet after 5 times the diameter of the measurement pipe diameter;
3. Immediately after first bend 20 a straight upper found after 5 times the diameter of the measuring tube diameter;
4. At the same level after two straight continuous bending to meet the first 25 after 5 times the diameter of the measuring tube diameter;
5. After two successive extraordinary lengths diameter elbow plane that meet the measurement of the first 25 after 5 times the diameter of the measuring tube diameter;
6. In the straight line after the valve to meet the front 50 after 5 times the diameter of the pipe diameter measurement;
7. The probe is recommended to be installed perpendicular to the pipe and not to the bottom of the pipe;
8. The probe can be mounted on a vertical pipe with liquid upwards, but also to meet the requirements of the above straight line;
9. The probe is not allowed to be mounted on a vertical pipe with liquid downward flow;
10. The liquid in the pipe to be measured must be full pipe flow, no gas and liquid flow at the same time.

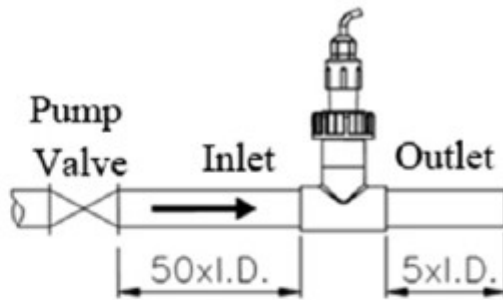
Figure: (D is the nominal diameter of



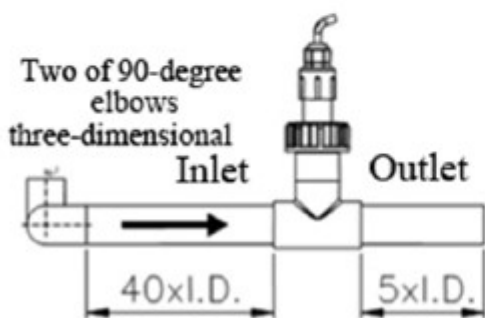
the pipe)



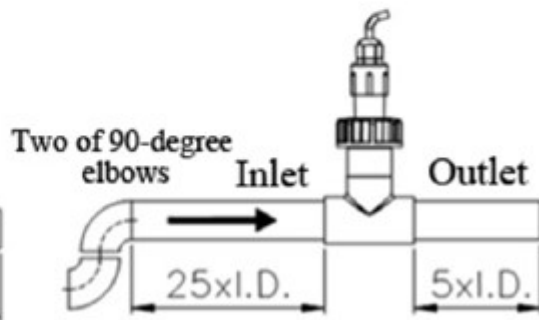
the connection of the bottom elbow



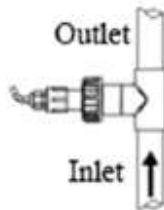
The selected of the downstream valve



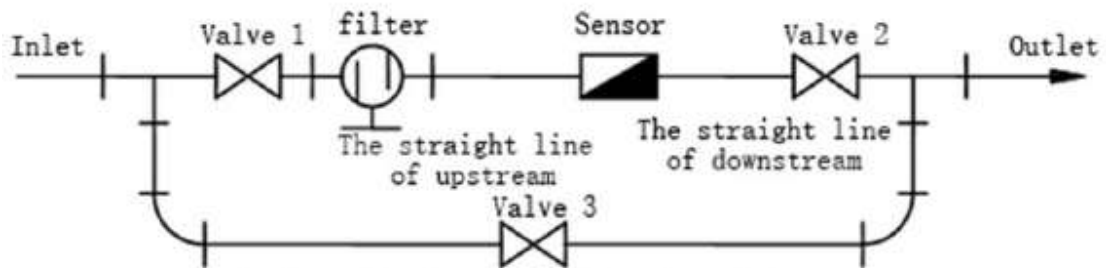
The connection of the bottom double-elbow



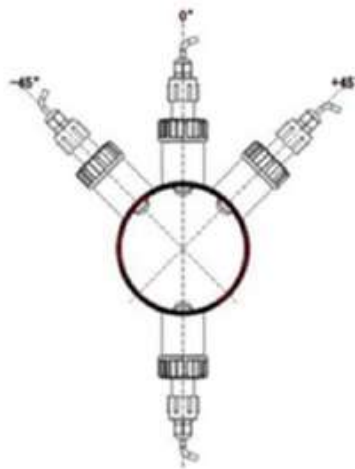
The connection of consequently downstream valve



The connection of vertical piping
(The fluid flows from down to up)



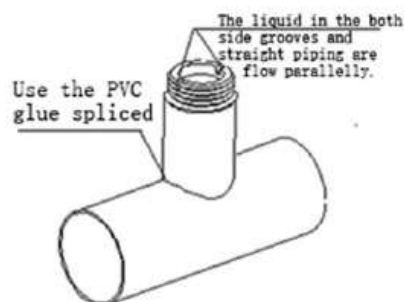
The installation of the impurity piping
(the addition of the filter net at upstream)



The connection of the horizontal flow piping which has bubble

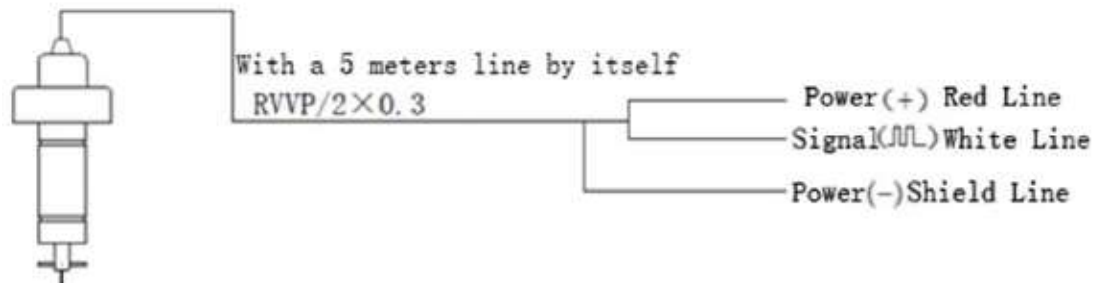
Installation And Wiring

1. Choose a specific mounting base according to the pipe material and specifications. Inadequate installation may affect the measurement accuracy of the sensor;
2. Installation of sensor vertically towards measured pipes. The sensor can be used directly since the sensor and tee is installed together before delivery;
3. The flanges are needed to connect metal pipes. The requirement of straight pipe length must be applied.
4. The nominal diameter of mounting parts must be consistent with that of the pipe;
5. The probe should be placed vertically on top of pipe, and keep the probe as straight as possible.;
6. Probe installation and dismantling: Firstly unscrew the nuts at back of probe protection cover ,then alternatively unscrew nuts and bolts, after that, tightly fix probe inside , finally tighten the nubs at back of probe protection cover again.





The figure shows a flow meter base provided by company, that can be directly bonded to the pipeline. Inserting flow meter, the thread is projected, which makes it fit to the groove of base thread and ease installation.



Maintenance

1. Before installing the probe, make sure that the impeller rotates freely and there are no defects;
2. When the flow sensor stops measuring, and to determine the measured liquid is still in the flow, you can first pull the top of the probe back, observe the status of the probe back light-emitting diodes, if the diode is off, check that the probe is wired correctly, whether the wire is damaged, and can use a multi meter in the shielding and white signal line between the measurement of voltage is normal, whether there is a pulse voltage output.
3. If the diode is always bright, it is necessary to stop the pipeline work, the pipeline pressure all the discharge, and then remove the probe, check the impeller around whether there is a foreign body affect the impeller rotation. After cleaning, if the manual rotation is working properly, confirm that the installation is correct and can continue to use.
4. If the probe appears impeller rupture, the probe top bracket is damaged, the bearing is bent, the repair impeller is still free to rotate, and the contact with the liquid part of the phenomenon of corrosion, the installation site damage is serious, need to replace the new probe.
5. As the liquid stains may cause the impeller rotation is not smooth, may affect the accuracy of liquid measurement. So the need for periodic inspection of the impeller parts of the probe and cleaning.

Reference sheet of K value

K value: the number of pulses per probe when the water flows through the probe. The value of K will vary depending on the diameter of the pipe being measured, the user needs to adjust the setting of the secondary table K value, to accommodate the actual pipe diameter. Each JKTT sensor is shipped with the K value table calibrated by the laboratory under DN40, DN50, DN65,



DN80 and DN100 specifications PVC pipe base conditions. (See the "Flow Sensor Probe Laboratory Calibration Reference Sheet")

Figure (JKTT flow sensor explosion diagram)

