



February 2, 2016

JF-1A INSERTION DEPTH HIGH FLOW Technical Application Note 16-002

The JF-1A Safe Use Manual dictates the safe use of the JF-1A sensor and should be followed at all times to ensure safe use of the JF-1A Sensor. This application note is related to only the correct depth of installation of the JF-1A sensor and how to ensure the sensor is installed correctly, this is especially required in product lines where the flow rate is expected to exceed 1.0 M/sec.

Note: The Safe Use manual takes precedence over conflicting requirements.

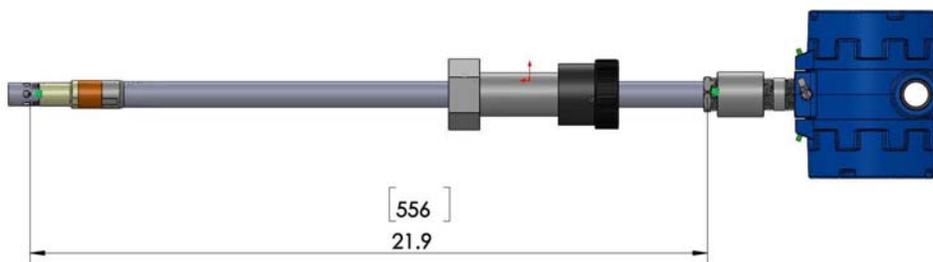
There are three principal reasons to reduce the insertion length of the JF-1A sensor in high flow rate product lines

- 1) To reduce the stress on components as a result of any 'strumming' that may occur due to the larger tangential drag presented by the flow on the sensor
- 2) To reduce the probability of foreign objects that are traveling in the pipe line to come into contact with the sensor
- 3) In some high rate lines we have experienced lower conductivity readings due to 'cavitation' within the sensor volume.

The location of the sensor near the sidewall will not reduce the accuracy of the sensor, we find that high flow rate lines are well mixed and we do not see variation across the section of the pipe. If there is reason for concern the user can profile the cross section (during periods of constant conductivity fuel) by pushing the sensor in and out across the pipeline section to ensure that conductivity readings remain constant.

Procedure:

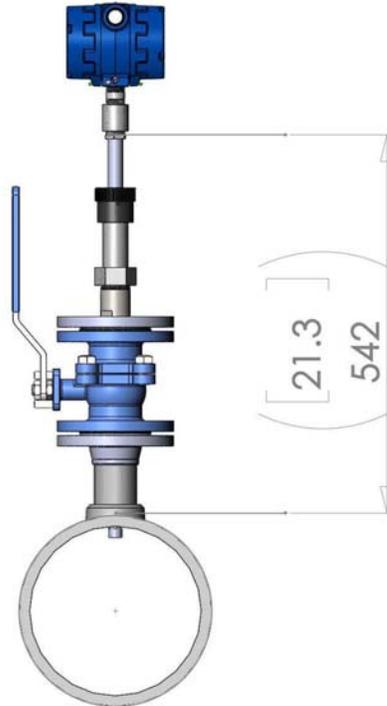
- 1) Measure the length of your specific sensor from the top of the sensor ventilation holes to the nut at the top of the stem, this is dimension A. (In our example A = 21.9")



- 2) Establish the wall thickness of your pipeline, as example if you have a 10" SCH 80 pipeline the ID is 9.58" and the OD is 10.75" hence the wall thickness can be found $(10.75 - 9.58)/2 = .6"$, this will be dimension B.

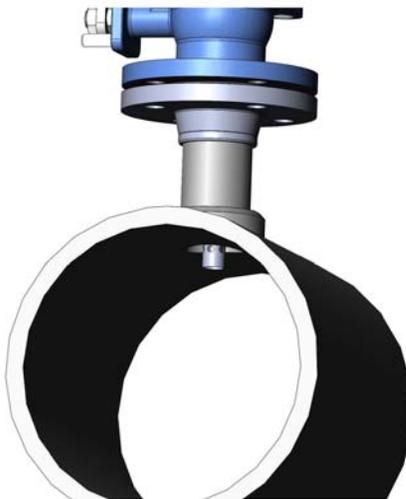


- 3) Calculate the insertion distance C. $C = A - B$ (Our Case $C = (21.9'' - .6'') = 21.3''$)
- 4) Install the JF-1A sensor through your valve and using a tape measure move the sensor such that dimension C is achieved, see figure below.



Dimension "C"

- 5) In the below figure you can see the ideal position with the sensor tip just protruding into the pipeline with the sensor vent hole near the sidewall. The natural flow in the pipeline will ensure the volume of fuel in the sensor is rapidly exchange. There is a natural pressure gradient from high to low as you move from the center of the pipe to the wall.



For More information please contact D-2 Incorporated.