

TIPS FROM THE TECHS

Calculating Pipe Dimensions for Insertion Flow Meter Installations



OVERVIEW

Insertion flow meters are designed to be installed into a specific pipe size. One of the common installation challenges is an incorrect or unknown pipe size.

RECOMMENDED TOOLS

- Pipe OD tape measure
- Calculator
- Pipe dimension table



F-3500 Insertion Electromagnetic Flow Meter

MEASURING THE OUTER DIAMETER (OD) PIPE DIMENSIONS FOR NON-INSULATED PIPE

1. Use a pipe OD tape measure to determine the circumference of the pipe.
2. Use the equation below to determine the OD of the pipe.

$$OD = \frac{\text{Circumference}}{\pi}$$

Example - OD of Non-Insulated Pipe

Pipe Circumference Measured = 56.6 in
 $\pi = 3.14$

$$OD = \frac{56.6 \text{ in}}{3.14} = 18.025 \text{ in}$$

MEASURING THE OUTER DIAMETER (OD) PIPE DIMENSIONS FOR INSULATED PIPE

1. Use a pipe OD tape measure to determine the circumference of the insulated pipe.
2. Measure the depth of the pipe insulation. Do this by pushing the meter's depth gauge or sharp object through the pipe insulation until the pipe surface is reached.
3. Use the equation below to determine the OD of the insulated pipe.

$$OD = \frac{\text{Circumference}}{\pi} - (\text{Insulation Thickness} \times 2)$$

Example - OD of Insulated Pipe

Pipe Circumference Measured = 56.6 in
Insulation Thickness = 2 in
 $\pi = 3.14$

$$OD = \frac{56.6 \text{ in}}{3.14} - (2 \text{ in} \times 2) = 14.025 \text{ in}$$

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DETERMINE NOMINAL PIPE SIZE FROM A PIPE DIMENSION TABLE

Once the outer diameter is calculated, use the OD column in a pipe dimension table to determine the nominal pipe size. Pipe dimension tables are available online for all pipe materials, an example of a common pipe dimension table is shown below.

Compare the OD of Insulated Pipe from previous example (14.025 in) to the Pipe Dimension Table for Carbon Steel below. Since 14.025 is closer to 14.000, we can assume the nominal pipe size is 14 inches.

Pipe Dimension Table for Carbon Steel

| Pipe Size | Schedule 10 | | | Schedule 20 | | | Schedule 30 | | | Schedule 40 | | |
|-----------|-------------|--------|-------|-------------|--------|-------|-------------|--------|-------|-------------|--------|-------|
| | OD | ID | Wall | OD | ID | Wall | OD | ID | Wall | OD | ID | Wall |
| 12 | 12.750 | | | 12.750 | 12.250 | 0.250 | 12.750 | 12.090 | 0.330 | 12.750 | 11.938 | 0.406 |
| 14 | 14.000 | 13.500 | 0.250 | 14.000 | 13.357 | 0.312 | 14.000 | 13.250 | 0.375 | 14.000 | 13.124 | 0.438 |
| 16 | 16.000 | 15.500 | 0.250 | 16.000 | 15.375 | 0.312 | 16.000 | 15.250 | 0.375 | 16.000 | 15.000 | 0.500 |
| 18 | 18.000 | 17.500 | 0.250 | 18.000 | 17.376 | 0.312 | 18.000 | 17.124 | 0.438 | 18.000 | 16.876 | 0.562 |
| 20 | 20.000 | 19.500 | 0.250 | 20.000 | 19.250 | 0.375 | 20.000 | 19.000 | 0.500 | 20.000 | 18.184 | 0.593 |

If you should have any technical questions about your ONICON flow meter installation or finding pipe dimensions, please contact ONICON Technical Support at (727) 447-6140 or techsupport@onicon.com.