

How to calculate water flowrate through pipes

Recommended velocity is 3 - 5 mtrs / sec to avoid deposition of sludges

Choice of nominal bores

The bore of the primary should be chosen to give a velocity of 2- 3 m/s at the maximum of the measuring range. (The lowest maximum value of the measuring range possible is 0.5 m/s).

The velocity of liquids containing solid constituents must lie between 3 - 5 m/s to avoid the deposition of sludges.

Accurate determination of the flow velocity

The exact flow velocity can be determined with the adjacent table for each pipe bore for the maximum of the measuring range:

Example:

Pipe - DN 150

Final value of measuring range 200 m³/h
For a flow velocity of 1 m/s the table gives for a DN 150 a flow of 63.617 m³/h. for 200 m³/h the flow velocity "v" amounts to

$$v = \frac{200}{63.617} = 3.144\text{m/s}$$

To work out the flow capacity of a pipe multiply the figure in the columns which show it at 1 mtr / sec velocity x 3 for 3 mtrs velocity or 4 for 4 mtrs/sec velocity etc.

Flow Table for v = 1 m/s

| DN | m ³ /h | l/min | l/s |
|----|-------------------|--------|--------|
| 2 | 0.0113 | 0.1883 | 0.0031 |
| 4 | 0.0452 | 0.7533 | 0.0125 |
| 6 | 0.1018 | 1.6965 | 0.0283 |
| 8 | 0.1810 | 3.0166 | 0.0503 |

| | | | |
|----|--------|---------|--------|
| 10 | 0.2827 | 4.7116 | 0.0785 |
| 15 | 0.6362 | 10.6033 | 0.1767 |
| 20 | 1.131 | 18.85 | 0.3142 |
| 25 | 1.767 | 29.45 | 0.4908 |
| 32 | 2.895 | 48.25 | 0.8042 |

| | | | |
|------------|---------------|---------|--------|
| 40 | 4.524 | 75.40 | 1.257 |
| 50 | 7.069 | 117.82 | 1.964 |
| 65 | 11.946 | 199.10 | 3.318 |
| 80 | 18.096 | 301.60 | 5.027 |
| 100 | 28.274 | 471.23 | 7.854 |
| 125 | 44.179 | 736.32 | 12.272 |
| 150 | 63.617 | 1060.28 | 17.671 |
| 200 | 113.098 | 1884.97 | 31.416 |
| 250 | 176.72 | 2945.33 | 49.088 |
| 300 | 254.4 | 4240.83 | 70.681 |

| | | | |
|------|----------|----------|---------|
| 350 | 346.36 | 5772.67 | 96.211 |
| 400 | 452.16 | 7536.00 | 126.60 |
| 500 | 706.86 | 11781.0 | 196.35 |
| 600 | 1017.86 | 16964.3 | 282.74 |
| 700 | 1385.45 | 23090.8 | 384.85 |
| 800 | 1809.56 | 30159.3 | 502.66 |
| 900 | 2290.23 | 38170.5 | 636.18 |
| 1000 | 2827.44 | 47124.0 | 785.40 |
| 1100 | 3421.20 | 57020.0 | 950.33 |
| 1200 | 4071.51 | 67858.5 | 1130.98 |
| 1300 | 4778.37 | 79639.6 | 1327.33 |
| 1400 | 5541.77 | 92362.8 | 1539.88 |
| 1500 | 6361.74 | 106029.0 | 1767.15 |
| 1600 | 7238.25 | 120637.5 | 2010.63 |
| 1800 | 9160.91 | 152681.8 | 2544.69 |
| 2000 | 11309.76 | 188496.0 | 3141.60 |

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