

*KDS011 Typical Valve and Fitting Friction Losses for use  
with the Darcy Formula*

Valve or Fitting Type	K
Angle Valve	5
Bend, close return	2.2
Check Valve, swing, fully open	2.3
Elbow, 90° standard	0.9
Elbow, 90° long radius	0.6
Elbow, 45°	0.4
Gate Valve, fully open	0.2
Gate Valve, ¼ closed	1.2
Gate Valve, ½ closed	5.6
Gate Valve, ¾ closed	24
Globe Valve	10
Tee, standard	1.8
Flow Meter, turbine wheel	7.0
Foot Valve	0.9

**Notes:**

- Adapted from various sources.
- The actual loss coefficient will usually depend on the size and configuration of the valve. Average values are given.
- Always consult the valve or fitting manufacturer if more accurate data (for critical applications) is required.