

Guidelines for Preparing Valve CAD Model

International Valve Design Challenge - 2019

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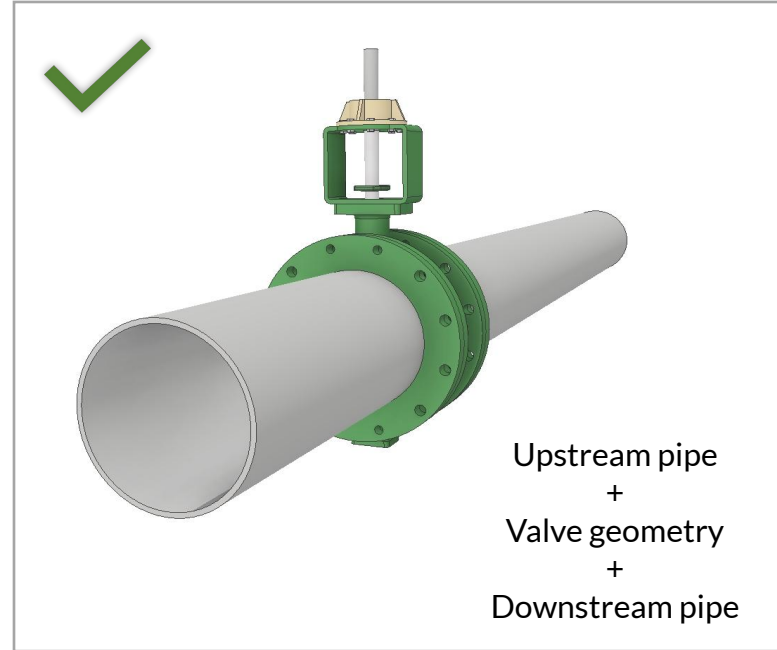
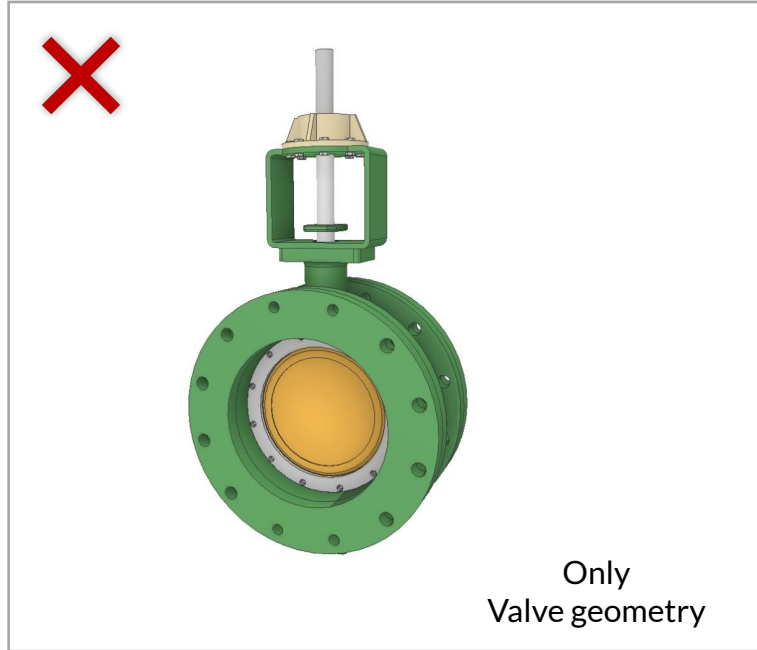
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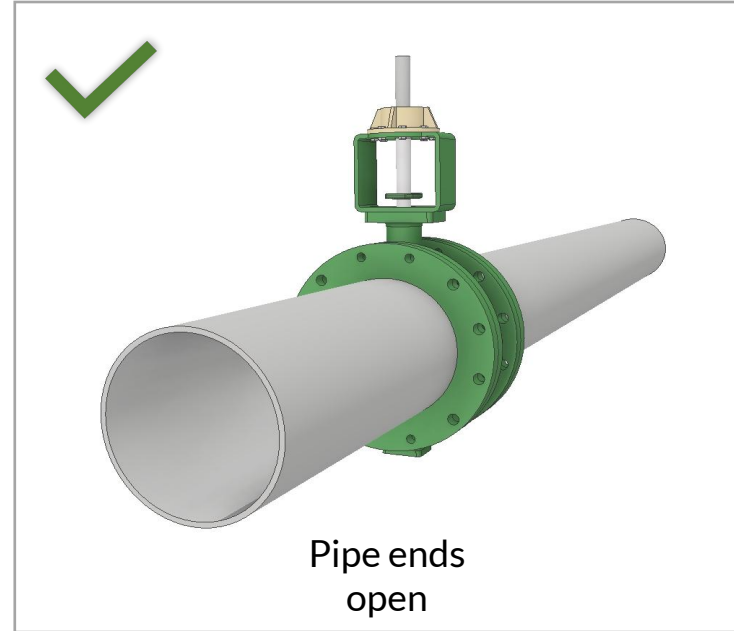
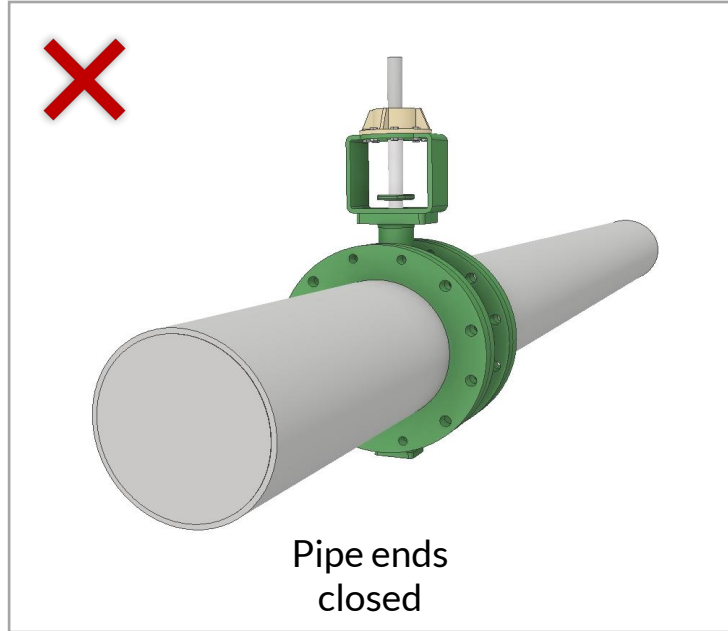
PIPE CONNECTIONS

Uploading only the valve geometry is incorrect. The CAD model should have pipes attached on both sides of the valve body.



WATERTIGHT GEOMETRY : PIPE ENDS

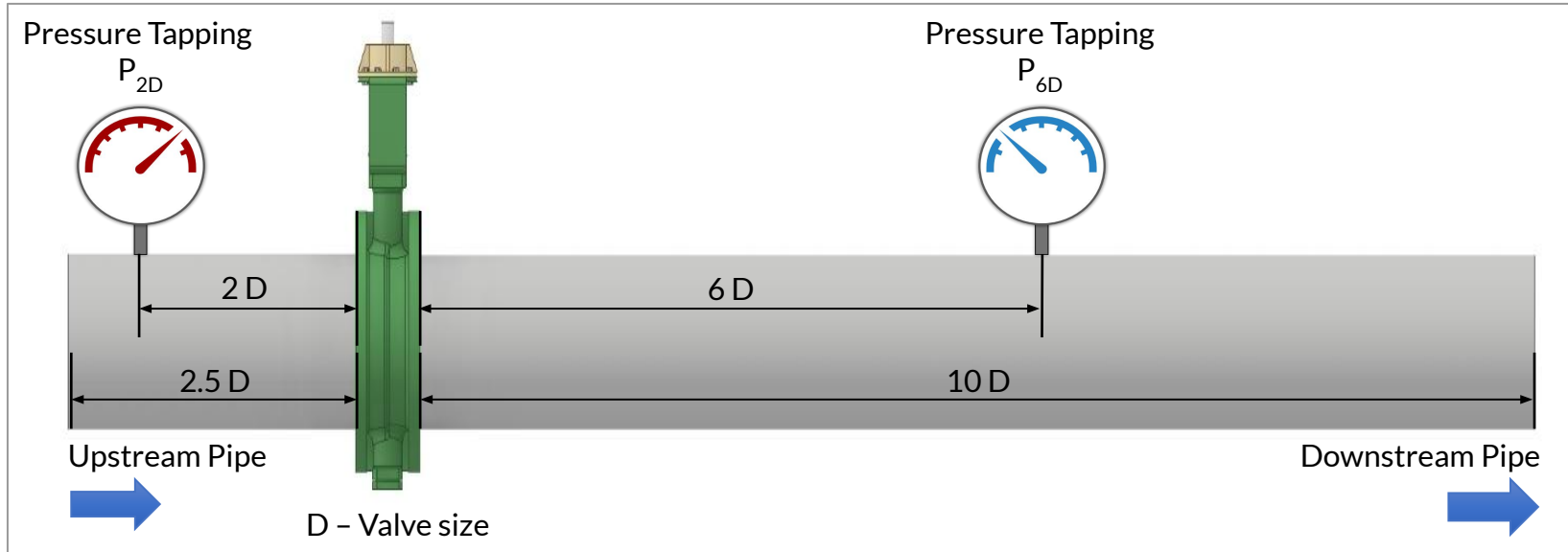
CFD simulation needs a water-tight geometry. As this is taken care by the app algorithm internally, it is suggested that the pipe ends in the input CAD model be kept open.



PIPE LENGTH

A pipe length of **$2.5D$** is required at the upstream and **$10D$** is required at the downstream side of the valve body.

- ' D ' is the valve size (to be specified in the 'Valve Specifications' section).



Please note that the pressure measurements would be taken at $2D$ - $6D$ locations as per the **ANSI/ISA-75.02.01** standards.

PIPE DIAMETER

The inner and outer pipe diameter used for the DN250 pipe size are selected considering a STD/SCH 40S ([Schedule 40](#)) pipe.

For the DN250 pipe size,

- Outer diameter = 273.05 mm
- Inner diameter = 254.508 mm

NPS	DN	OD [in (mm)]	Wall Thickness [in (mm)]				
			Sch. 5s	Sch. 10	Sch. 20	Sch. 30	Sch. STD/40S
10	250	10.75 (273.05)	0.134 (3.404)	0.165 (4.191)	0.250 (6.350)	0.307 (7.798)	0.365 (9.271)
12	300	12.75 (323.85)	0.156 (3.962)	0.180 (4.572)	0.250 (6.350)	0.330 (8.382)	0.375 (9.525)
14	350	14.00 (355.60)	0.156 (3.962)	0.250 (6.350)	0.312 (7.925)	0.375 (9.525)	0.375 (9.525)
16	400	16.00 (406.40)	0.165 (4.191)	0.250 (6.350)	0.312 (7.925)	0.375 (9.525)	0.375 (9.525)

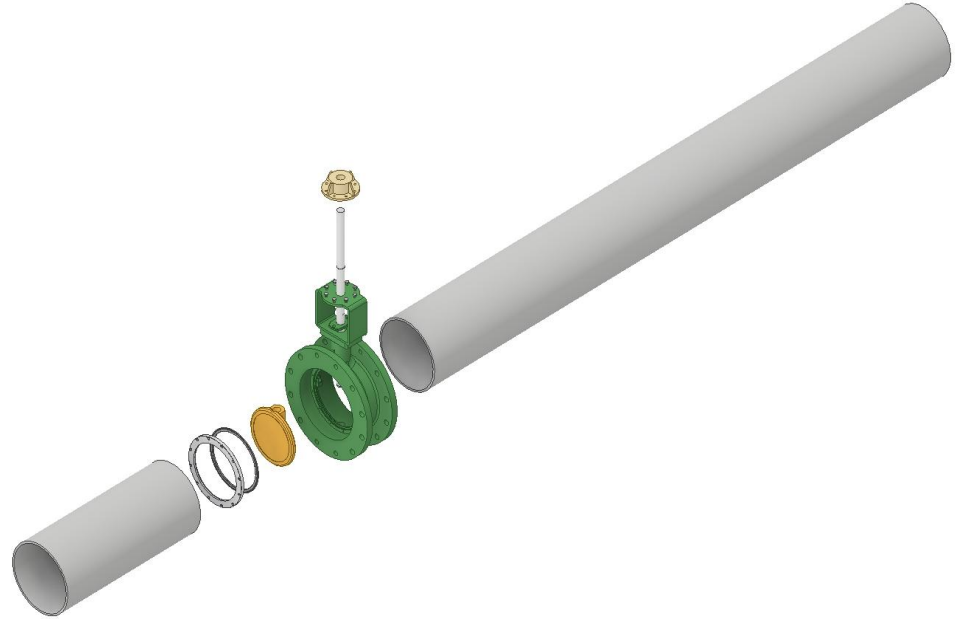
Make sure that while attaching the pipes to the valve assembly, the pipe diameter is correct. The default pipe attached with the base model follows these dimensions.

CAD ASSEMBLY AND FILE FORMAT

Upload the input CAD model as an assembly file or a multi-body part file

Each component in the CAD file should be a separate individual body/part i.e., disk, stem, body, upstream pipe, downstream pipe, seat should be maintained as a separate body rather than combined/merged.

Current version of simulationHub support following CAD file formats: **STEP, IPT**



Thank You