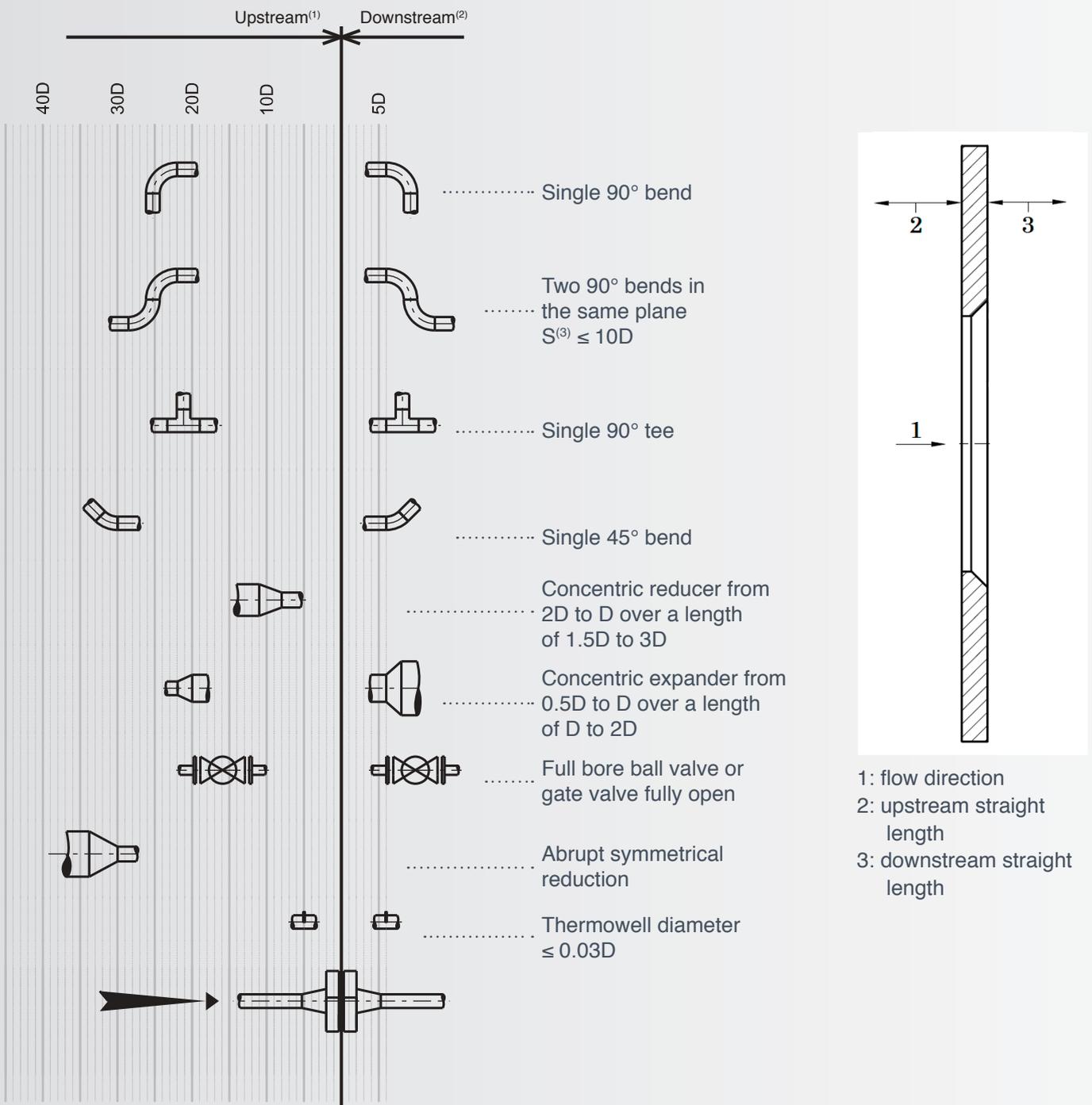


# 8. STRAIGHT LENGTHS REQUIREMENTS FOR FLOW MEASUREMENT BETWEEN PRESSURE DIFFERENTIAL DEVICES AND FITTINGS ACCORDING TO ISO 5167



## ORIFICE PLATE DIAPHRAGM ( $\beta=0.5$ )

Straight lengths values given below are valid for a  $\beta = d / D$  of 0.5. For other  $\beta$  values, refer to the ISO 5167-2 standard.

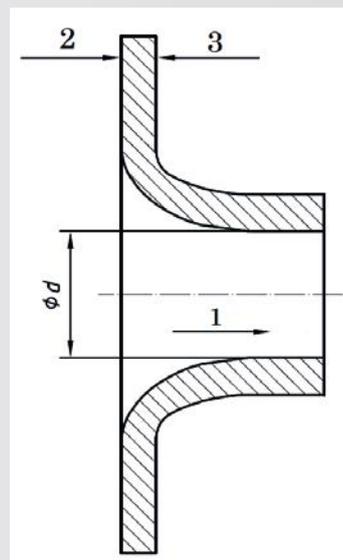
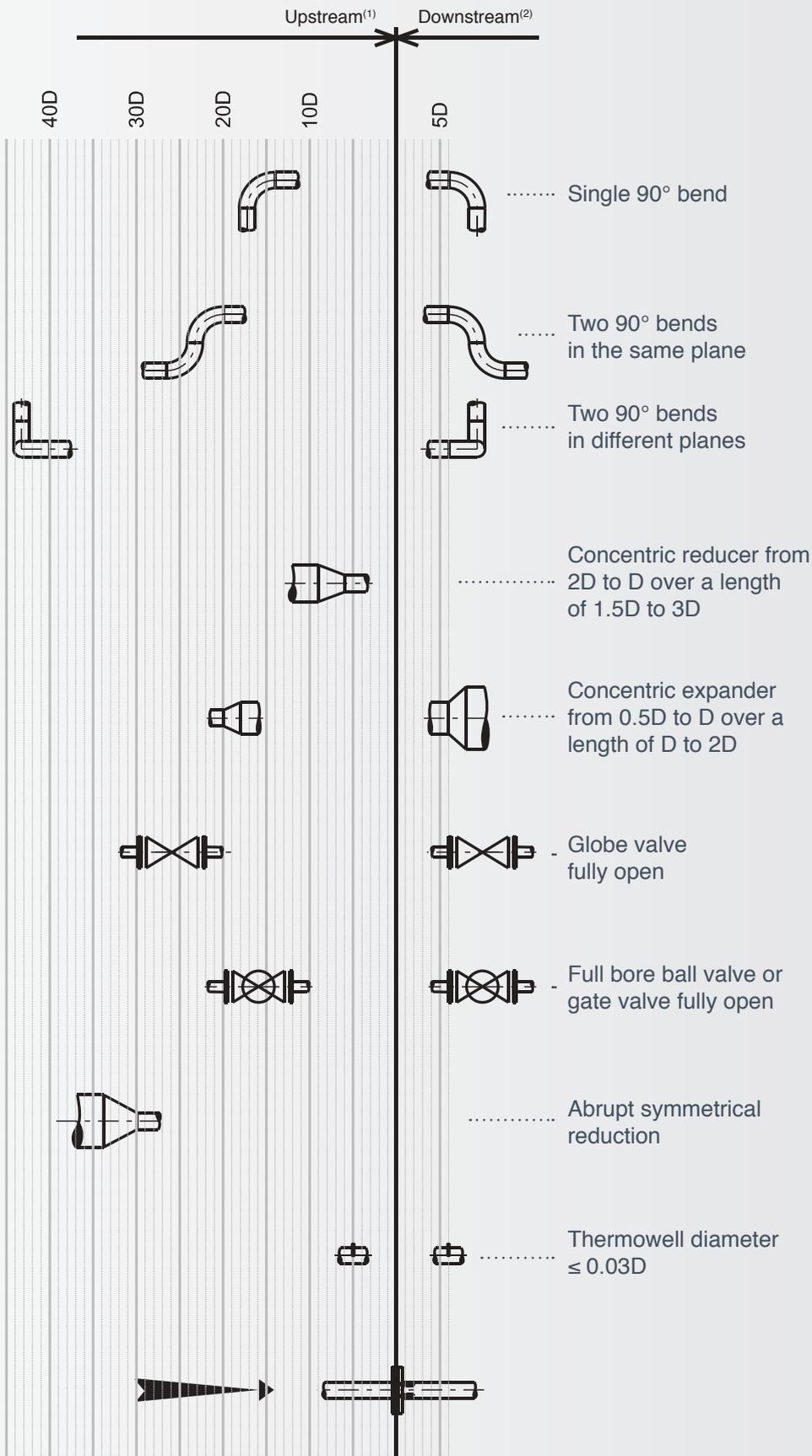


<sup>(1)</sup> Distance from the downstream end of the curved portion of the nearest bend or of the curved or conical portion of the reducer or the expander to the upstream face of the orifice plate itself. <sup>(2)</sup> Distance from the upstream end of the curved portion of the nearest bend or of the curved or conical portion of the reducer or the expander to the upstream face of the orifice plate itself. <sup>(3)</sup> S, distance between the two bends measured from the downstream end of the curved portion of the upstream bend to the upstream end of the curved portion of the downstream bend.



# NOZZLE AND VENTURI-NOZZLE ( $\beta=0.5$ )

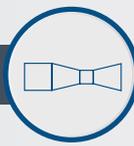
Straight lengths values given below are valid for a  $\beta = d / D$  of 0.5. For the other  $\beta$  values, refer to the ISO 5167-3 standard.



- 1: flow direction
- 2: upstream straight length
- 3: downstream straight length

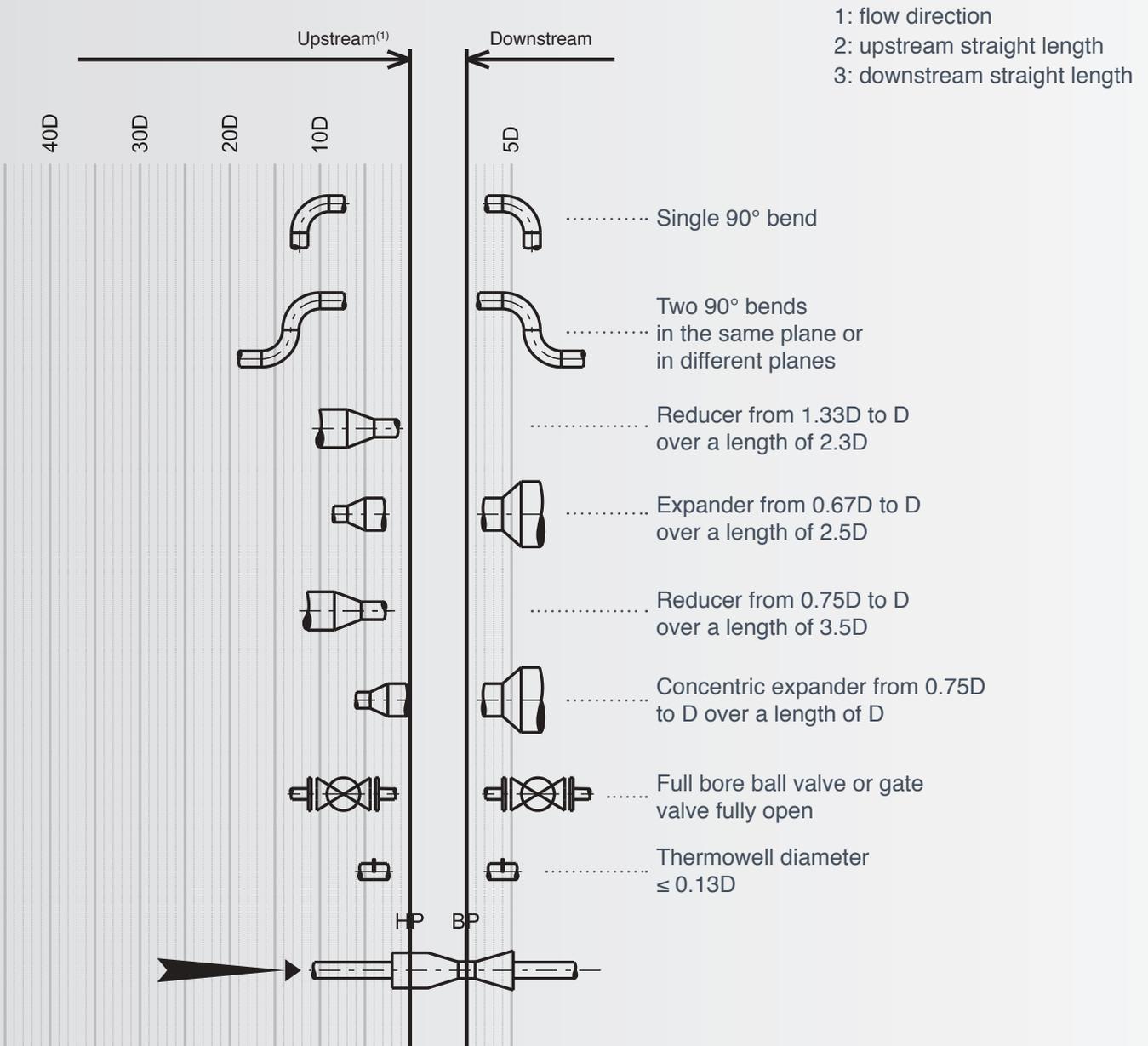
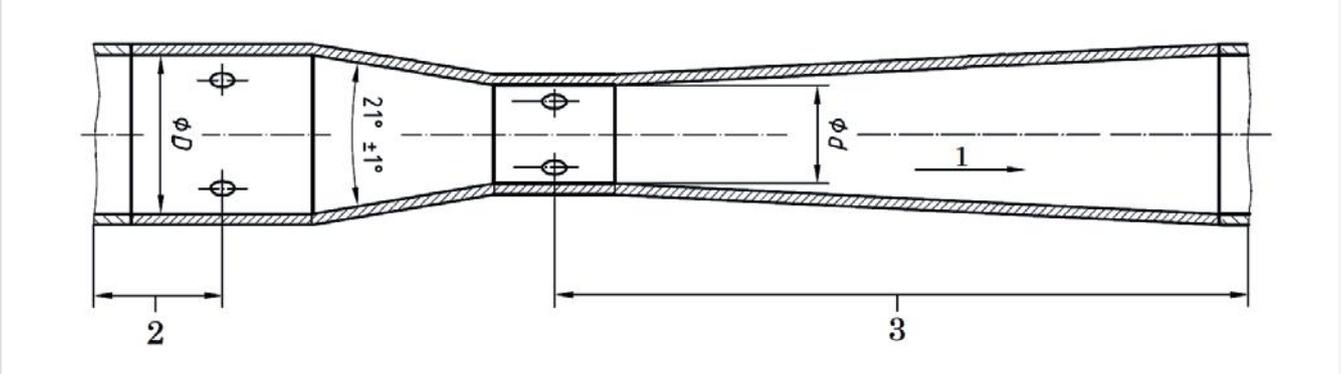
(1) Distance from the downstream end of the curved portion of the nearest bend or of the curved or conical portion of the reducer or the expander to the upstream face of the nozzle itself.

(2) Distance from the upstream end of the curved portion of the nearest bend or of the curved or conical portion of the reducer or the expander to the upstream face of the nozzle itself.



**VENTURI TUBE ( $\beta=0.5$ )**

The values of straight lengths given below are valid for a value of  $\beta = d / D$  of 0.5. For the other  $\beta$  values, refer to the ISO 5167-4 standard.

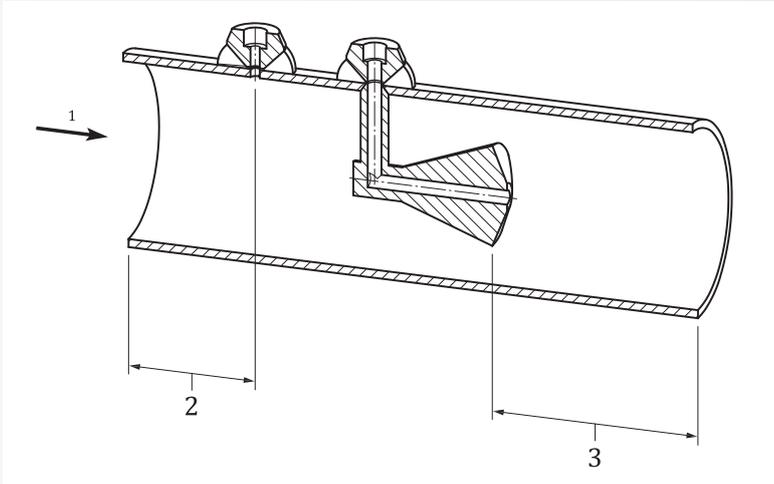


<sup>(1)</sup> Distance from the downstream end of the curved portion of the nearest bend or of the curved or conical portion of the reducer or the expander to the plane of the upstream pressure tap of the venturi itself.

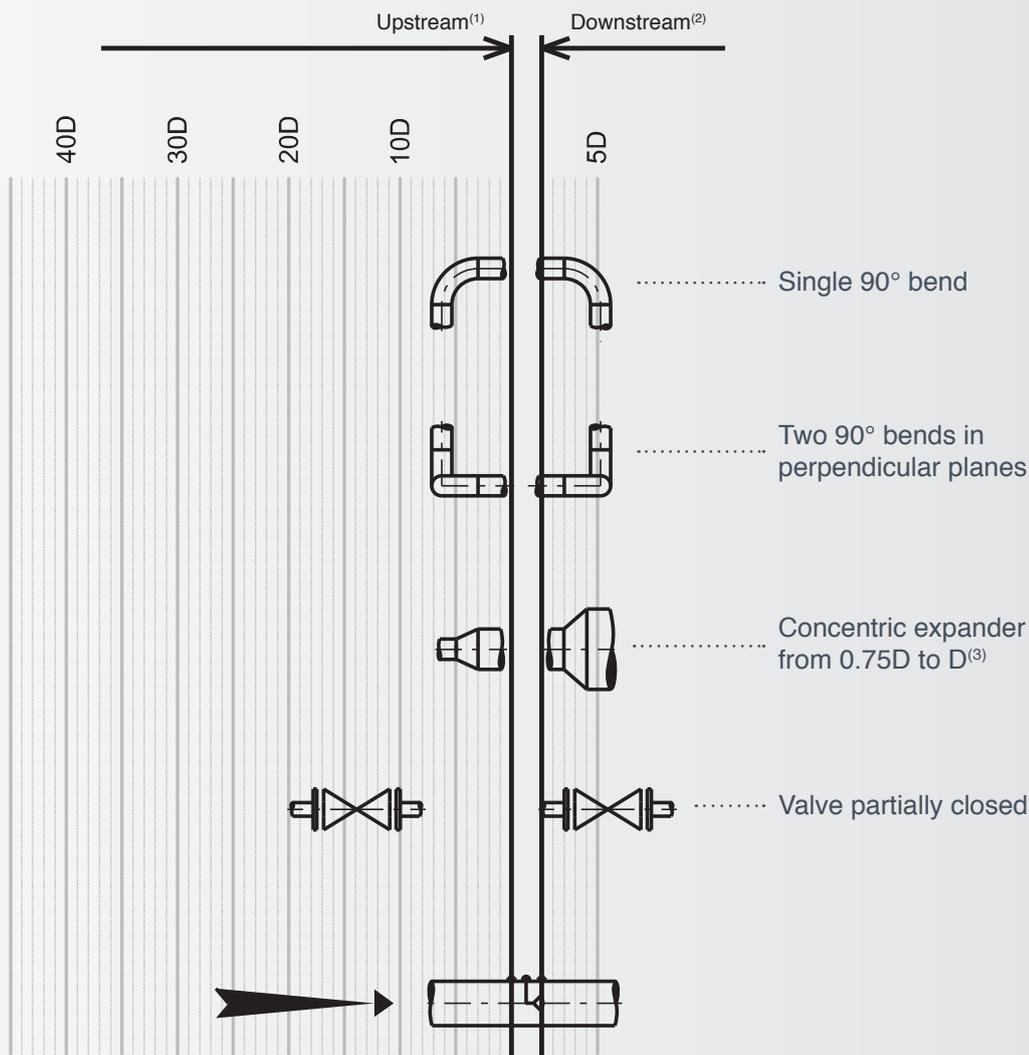


**CONE METER** ( $0.45 \leq \beta < 0.6$ )

Straight lengths values given below are valid for a  $\beta = d / D$  between 0.45 and 0.6. For other  $\beta$  values, refer to the standard ISO 5167-5.



- 1: flow direction
- 2: upstream straight length
- 3: downstream straight length



<sup>(1)</sup> Distance from the downstream end of the curved portion of the nearest bend or of the curved or conical portion of the reducer or the expander to the plane passing through the axis of the upstream pressure tap of the cone meter itself.

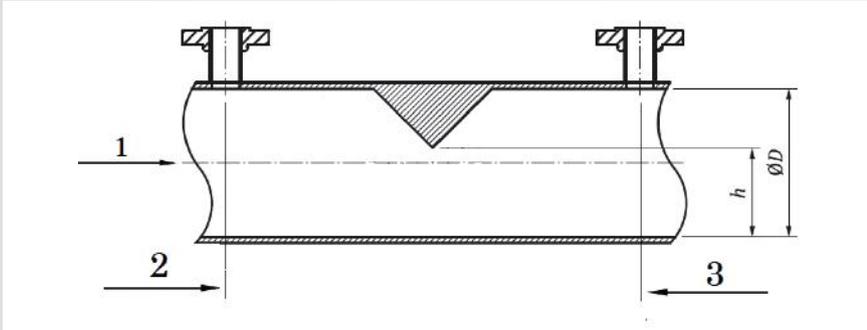
<sup>(2)</sup> Distance from the plane section of the beta edge of the cone meter to the upstream end of the curved part of the nearest bend or reducer / expander.

<sup>(3)</sup> Additional uncertainty up to 0.5 %.

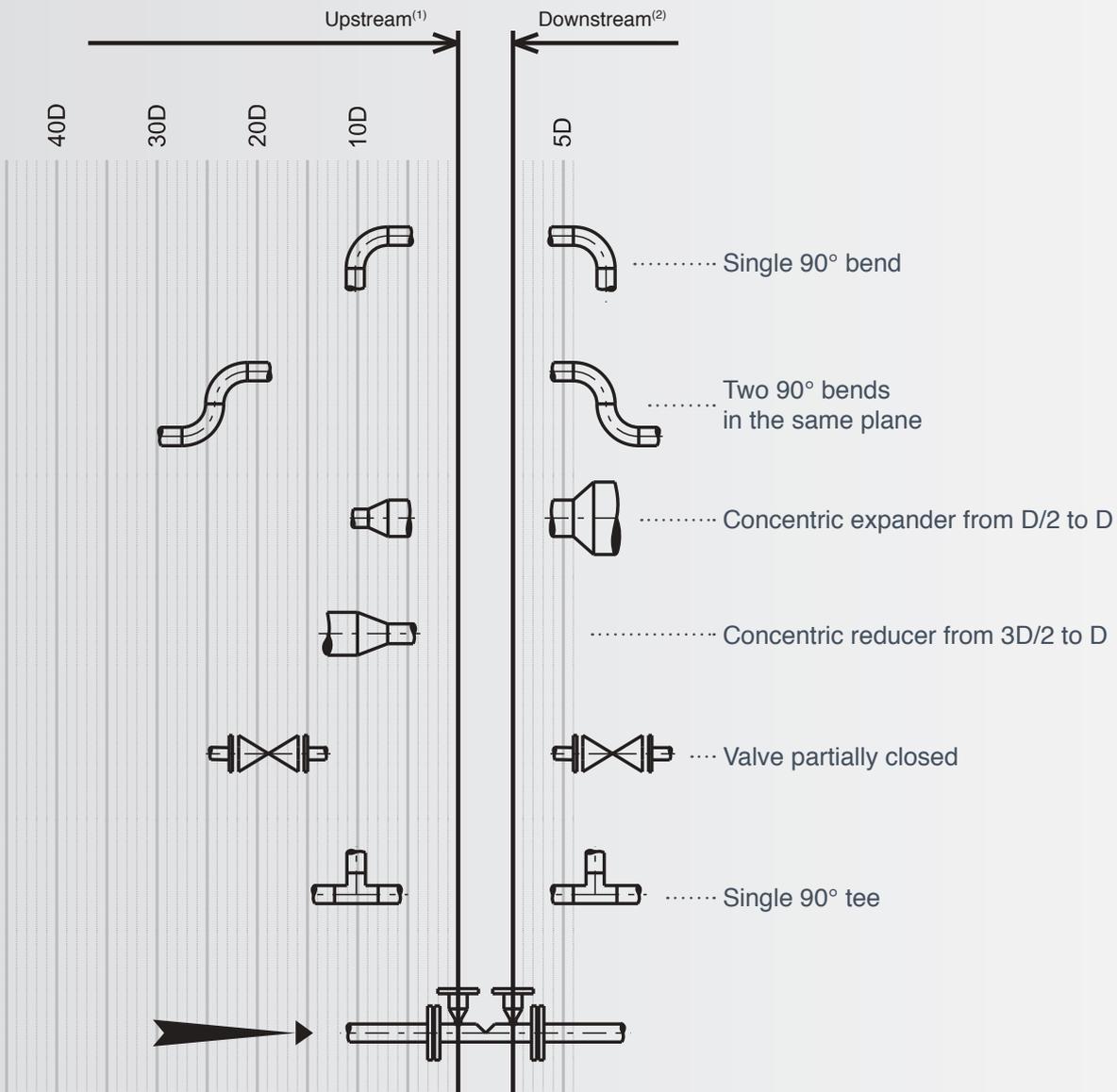


**WEDGE METER (h/D=0.5)**

The straight length values given below were carried out with a flowmeter whose h / D value is equal to 0.5. In the absence of other tests, it is considered that these data are also valid for values of h / D between 0.2 and 0.6 (refer to ISO 5167-6).



- 1: flow direction
- 2: upstream straight length
- 3: downstream straight length



<sup>(1)</sup> D Distance from the downstream end of the curved portion of the nearest bend or of the curved or conical portion of the reducer or the expander to the plane of the upstream pressure tap of the wedge meter itself.

<sup>(2)</sup> Distance from the upstream pressure tap of the wedge meter to the upstream end of the curved part of the nearest bend or reducer / expander.