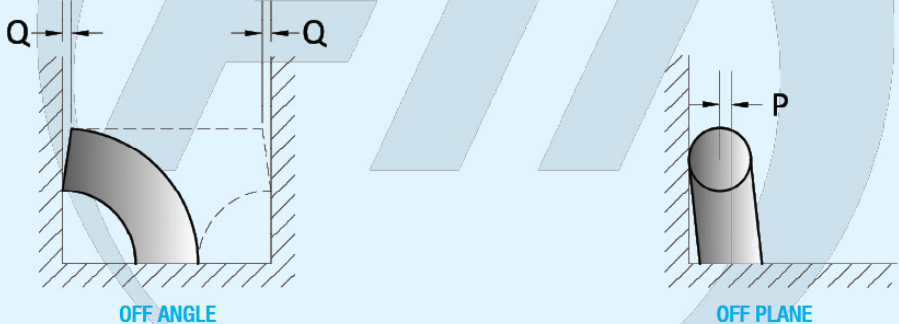


DIMENSIONAL TOLERANCES OF FLANGES (AS PER ANSI B 16.5) (mm)

Welding neck				Threaded, Slipon, Lap Joint, Socket Welding and Blind			
* Outside diameter	NPS ≤ 125	+ 2.0	- 1.0	* Outside diameter	NPS ≤ 125	+ 2.0	- 1.0
	NPS ≥ 150	+ 4.0	- 1.0		NPS ≥ 150	+ 4.0	- 1.0
Inside diameter (Bore)	NPS ≤ 250	± 1.0		Inside diameter (bore)	Threaded : to standard gauge limits		
	300 ≤ NPS ≤ 450	± 1.5			Slipon : Lap Joint :		
	NPS ≥ 500	+ 3.0	- 1.5		Socket-welding : Threaded		
Diameter of contact face	2mm raised face	± 1.0			NPS ≤ 250	+ 1.0	- 0.0
	7mm raised face : tongue & grooved male and female	± 0.5			NPS ≥ 300	+ 1.5	- 0.0
* Diameter of hub at base	NPS ≤ 600	± 1.6		Diameter of contact face	2mm raised face ± 1.0		
					7mm raised face tongue & grooved male & female ± 0.5		
Diameter of hub at point of welding	NPS ≤ 125	+ 0.7	- 0.7	* Outside diameter of hub	NPS ≤ 300	+ 2.3	- 1.6
	150 ≤ NPS ≤ 600	+ 4.0	- 0.0		NPS ≥ 350	+ 3.1	
Thickness	NPS ≤ 450	+ 3.0	- 0.0	Thickness	NPS ≤ 450	+ 3.0	- 0.0
	NPS ≥ 500	+ 5.0	- 0.0		NPS ≥ 500	+ 5.0	- 0.0
Length through hub	NPS ≤ 100	± 1.5		* Length through hub	NPS ≤ 100	± 1.5	
	125 ≤ NPS ≤ 250	+ 1.5	- 3.0		125 ≤ NPS ≤ 250	+ 1.5	- 3.0
	NPS ≥ 300	+ 3.0	- 5.0		NPS ≥ 300	+ 3.0	- 5.0
Drilling	Bolt circle (PCD)	± 1.5		Drilling	Bolt circle (PCD)	± 1.5	
	Bolt hole spacing	± 0.8			Bolt hole spacing	± 0.8	
	Concentricity with respect to bore	± 0.8			Concentricity with respect to bore	± 0.8	
	NPS ≤ 65	0.8mm max			NPS ≤ 65	0.8mm max	
	NPS ≥ 80	1.5mm max			NPS ≥ 80	1.5mm max	



DIMENSIONAL TOLERANCES OF FITTINGS (ANSI B 16.9, B 16.28) (in mm)

Nominal Pipe Size	All Fittings			90° & 45° Elbows	Tees	Reducers	Caps	180° Returns			Angularity Tolerance										
	Outside Diameter at Bevel OD	Inside Diameter at end ID	Wall Thickness T	Center To-End Dimension A, B, A1	Center To-End Dimension C, M	Overall Length H	Overall Length E	Center to Center Dimension P, P1	Back to-Face Dimension K, K1	Alignment of Ends U	Nominal Pipe size	Off Angle O	Off Plane P								
1/2-2/1/2	+ 1.5		Not less than 87.5% of Nominal Thickness	± 1.5	± 1.5	± 1.5	± 6.4	± 6.4	± 6.4	± 1.5											
	- 0.8	± 0.8																	1/2-4	0.8	1.5
03-04	± 1.5																		5-8	1.5	3.0
	+ 2.3	± 1.5																	10-12	2.2	4.8
05-08	- 1.5																		14-16		6.4
	+ 4.0	± 3.0																	18-24	3.0	
10-18	- 3.0																		26-30		9.7
20-24	+ 6.4																		32-42	4.8	12.7
26-30		± 4.8																	44-48		19.0
32-48	- 4.8																				