
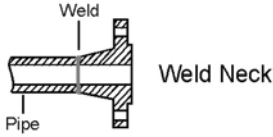

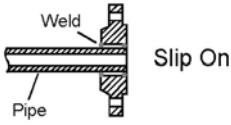

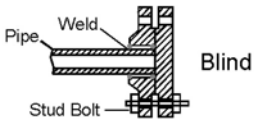


# Stainless Steel ANSI Pipe Flanges – A Guide

## 1. What type of flange is required?

These flange types apply to ANSI Pipe Flanges and the other types of flange listed under item 2 below.


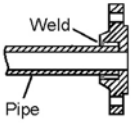

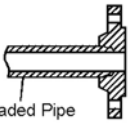

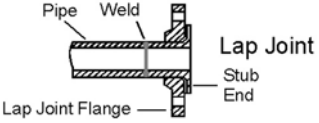
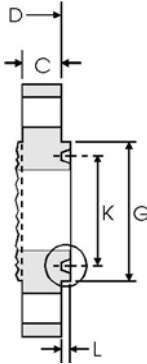
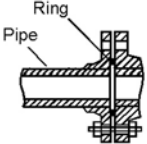
Type	Joining Method	General Description
<p><b>Weld Neck</b></p> 		<p>Used in critical applications, this is circumferentially welded into the system at its neck which means that the integrity of the butt-welded area can easily be examined by X-ray radiography. The bores of both pipe and flange match thus reducing turbulence and erosion.</p>
<p><b>Slip On</b></p> 		<p>This is slipped over the pipe and then fillet welded. Easy to use in fabricated applications</p>
<p><b>Blind</b></p> 		<p>Sometimes called a blanking flange, this is used for blanking off pipelines, valves and pumps and as an inspection cover.</p>



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Type	Joining Method	General Description
<p><b>Socket Weld</b></p> 	 <p>Weld Pipe Socket Weld</p>	<p>This is counter-bored to accept the pipe, which is then fillet welded. The bore of both the pipe and the flange are the same to ensure good flows.</p>
<p><b>Screwed / Threaded</b></p> 	 <p>Threaded Pipe Threaded</p>	<p>This requires no welding and is used to connect other threaded components in low pressure non-critical applications.</p>
<p><b>Lap Joint</b></p> 	 <p>Pipe Weld Lap Joint Stub End Lap Joint Flange</p>	<p>These are always used with either a stub end or a taft which is butt-welded to the pipe with the flange loose behind it. Thus the stub end or the taft always provides the sealing face. Easily assembled and aligned, it is favoured in low pressure applications. To reduce cost these 'backing' flanges can be supplied without a hub and/or made from coated carbon steel.</p>
<p><b>Ring Type Joint</b></p> 	 <p>Ring Pipe Ring Type Joint</p>	<p>This can be employed on Weld Neck, Slip On or Blind Flanges for leak-proof connection at high pressures. The seal is made by a metal ring being compressed into a hexagonal groove on the flange face.</p>

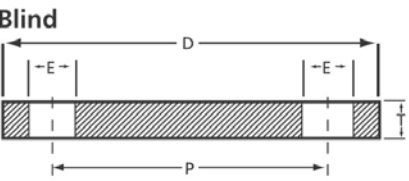
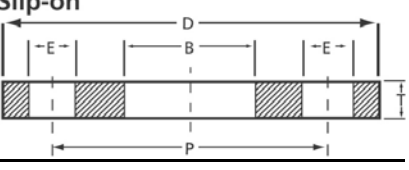


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## 2. Other types of flange

Type	General Description
<p><b>Standard BS10 Flanges</b></p> <p><b>Blind</b></p>  <p><b>Slip-on</b></p> 	<p><b>Plate or Table (BS10 / EN?????)</b></p> <p>These are produced to suit Nominal Bore / NPS Pipe Sizes. They are produced from bar or plate rather than forgings and are not pressure rated.</p> <p>Blind and Slip-On, flat-faced, types are readily available in grades 304L and 316L in sizes from ½" to 6" as Table D and Table E, with larger sizes and other Tables (thicknesses) made to order.</p> <p>These economical flanges are used for light-duty applications where corrosion resistance is the primary consideration rather than high pressure or temperature.</p>
<p><b>BS4504 / EN1092???</b></p> <p>Also referred to as PN Flanges</p>	<p>These are not interchangeable with ANSI Flanges</p> <p>They are available readily available in types 304L and 316L with various pressure ratings of which 10 Bar &amp; 16 Bar are the most commonly used.</p>
<p><b>Metric Tru-Bore</b></p>	<p>Please visit the Down-Loads page of the Aalco web site <a href="http://www.aalco.co.uk/literature/literature.html#stainless">http://www.aalco.co.uk/literature/literature.html#stainless</a> and select the brochure on this product range.</p>
<p><b>Hygienic</b></p>	<p>Please refer to separate Datasheet</p>

## 3. What size is the flange?

This will be the same size as the pipe – Nominal Bore / Nominal Pipe Size, and for Weld Neck Flanges the Schedule Wall Thickness.

## 4. What grade of stainless steel is required?

This will normally be the same as the pipe with the most readily available grades from stock being 304L and 316L. Flanges can be made to order in most Austenitic and Duplex grades.


## 5. What sort of face should it have?

Of the four choices available the most common configurations are:

- ◆ For ANSI and BS4504 – Raised Face
- ◆ BS10 - Flat Face.

Note that this does not apply to Screwed or Lap Joint Flanges.

Face	Notes
Raised Face	To facilitate welding
Flat Face	
Ring Type Joint (RJT)	For leak-proof connection at high pressures
Tongue & Groove – Small or Large	

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## 6. What finish is required on the face?

The finish is given as a surface roughness measured as Arithmetic Average Roundness Height (AARH). The finish requirements are stipulated by the standards, such as ANSI B16.5 and are within the range 125AARH to 500AARH, which is equivalent to 3.2 to 12.5 R<sub>A</sub>.

**7. What is the required pressure rating?** (The pressure rating will also determine the dimensions of the flange – Full details can be found in the relevant specification. )

Flange Type	ANSI B16.5 lbs	BS3293 lbs**	ANSI B16.47 Series A MSS SP-44 lbs**	ASME B16.47 Series B API 605 lbs**	BS4504 BAR
Weld Neck	150-2500	150-600	150-900	150-300	2.5-40
Weld Neck Ring Type Joint	300-2500	300-600	300-900	150-300	N/A
Slip On	150-1500	150-600	-	-	2.5-40
Slip On Ring Type Joint	300-1500	300-600	-	-	N/A
Threaded	150-2500	-	-	-	6-40
Lap Joint	150-2500	-	-	-	6-40
Blind	150-2500	-	-	-	2.5-40
Socket Weld	150-1500	-	-	-	N/A

**Note:**


\*\*Flange sizes 26" and above

## 8. What semi-finished product should the flange be made from?

	Forging A182	Plate ASTM A240	Bar	Casting
ANSI B16.5	√	√	-	-
BS3293 / EN???	√	-	-	-
MSS SP-44	√	-	-	-
API 605	√	-	-	-
BS4504 / EN???	√	√	-	√
BS10 / EN????	√	√	√	√

**Notes:**

- ◆ ASTM A240 plate can be used to manufacture ANSI B16.5 blind flanges, but this is not generally accepted in the UK.
- ◆ Most small BS10 flanges are normally made from bar as this is the most economical manufacturing process.

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## 9. What markings will be on the flange?

All flanges should be permanently marked on the external diameter of the base with:

- ◆ Pipe Size (NPS / NB)
- ◆ Pipe Wall Thickness (Schedule) if appropriate
- ◆ Specification
- ◆ Grade
- ◆ Heat Number
- ◆ Manufacturer's Name or Symbol

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