

**ASME B16.5 Forged Flange, Class 150 Flange ASME B16.5, ASME Flanges, Flange Standard ASME B16.5, ASTM A105 Forged Carbon Steel Flange, ASTM A182 Stainless Steel Flange, ASTM B564 Nickel Alloy Flange.**

ASME B16.5 is a key standard in the piping industry, and **Flange Standard ASME B16.5** provides detailed guidelines on the design and specifications for flanges and flanged fittings. Here's a more in-depth look at its requirements and recommendations:

### **Scope and Purpose**

ASME B16.5 covers:

**ASME B16.5 Forged Flange:** Includes various types such as weld neck, slip-on, blind, threaded, and socket weld.

**ASME B16.5 Flanged Fittings:** Includes elbows, tees, reducers, and caps.

**ASME Flanges Pressure-Temperature Ratings:** Specifies the conditions under which the flanges and fittings can be used safely.

### **Key Requirements**

**ASME B16.5 Flange Dimensions and Tolerances:**

Specifies the dimensions and tolerances for various flange types.

Provides detailed drawings and tables for flange sizes, bolt hole patterns, and face types.

### **Materials:**

Lists the materials used for **b16.5 flanges** and fittings, such as carbon steel, stainless steel, and various alloys. Includes requirements for material testing and certification.

Material required for **asme b16.5 forged flanges** and flanged fittings commonly are:

ASTM A105 for forged carbon steel flange

ASTM A350 for forged carbon steel, low alloy steel flange

ASTM A694 for high yield carbon steel flange

ASTM A182 for alloy steel flange, duplex steel and stainless steel flange

ASTM B564 for nickel alloy flange

### **Pressure-Temperature Ratings:**

**ASME B16 5 Standard** defines the maximum pressure and temperature ratings for different flange classes (e.g., Class 150, 300, 600, 900, 1500, and 2500).

Ratings are based on material strength and design.

### **Unit**

**ASME Standard Flanges** with rating class of 150#, 300#, 400#, 600#, 900# and 1500# in sizes NPS 1/2 to 24. For 2500# in sizes from NPS 1/2 to NPS 12, with requirements in both metric and U.S. Customary units with diameter of bolts and flange bolt holes expressed in inch units.

Flanged fittings with 150#, 300# in sizes of NPS 1/2 to NPS 24, expressed in inch Units.

Flanged fittings with 400#, 600#, 900#, and 1500# from NPS 1/2 to NPS24, and 2500# from NPS 1/2 to NPS 12, which only US. Customary units are provided. More details visit Nonmandatory Appendix E in ASME B16.5.

### **B 16.5 Flange Standard Size**

In NPS, is designation for nominal flange or flange fittings size. NPS related to nominal diameter, DN in international standards, relations as below:

<b>NPS</b>	<b>DN</b>
1/2	15
3/4	20
1	25
1 1/4	32
1 1/2	40
2	50
2 1/2	65
3	80
4	100

Note: For NPS  $\geq 4$ , the related DN = 25 multiplied by the NPS number. For example NPS 10 is DN250.

### **16.5 ASME Flange Face Types:**

Includes different types of flange faces such as flat face (FF), raised face (RF), and ring-type joint (RTJ).

Each face type has specific dimensions and applications.

### **16.5 ASME Flange Flanged Joints**

A flanged joint is composed of separate and independent, although interrelated components: the flanges, gasket, and bolting, which are assembled by another influence, the assembler. Proper controls must be exercised in the selection and application for all these elements to attain a joint that has acceptable leak tightness.

### **Bolt Holes and Gaskets:**

Provides dimensions for bolt holes and their spacing.

Recommends suitable gasket materials and dimensions to ensure a proper seal and prevent leaks.

### **Flange ASME B16.5 Types:**

Weld Neck Flanges: Designed for high-stress applications, **ASME B16.5 Weld Neck Flanges** are welded directly to the pipe.

Slip-On Flanges: Slip over the pipe and are welded in place.

Blind Flanges: Used to close the end of a piping system.

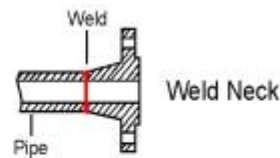
Threaded Flanges: Have internal threads and are screwed onto the pipe.

Socket Weld Flanges: Designed for use with small-diameter pipes and are welded into a socket.

## Flange Types

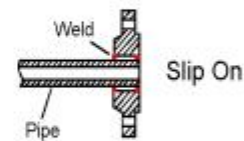
### Weld Neck

This flange is circumferentially welded into the system at its neck which means that the integrity of the butt welded area can be easily examined by radiography. The bores of both pipe and flange match, which reduces turbulence and erosion inside the pipeline. The weld neck is therefore favoured in critical applications.



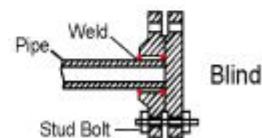
### Slip-on

This flange is slipped over the pipe and then fillet welded. Slip-on flanges are easy to use in fabricated applications.



### Blind

This flange is used to blank off pipelines, valves and pumps, it can also be used as an inspection cover. It is sometimes referred to as a blanking flange.



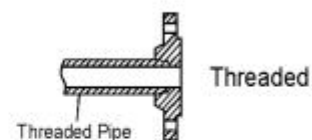
### Socket Weld

This flange is counter bored to accept the pipe before being fillet welded. The bore of the pipe and flange are both the same therefore giving good flow characteristics.



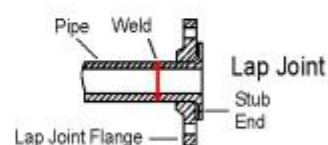
### Threaded

This flange is referred to as either threaded or screwed. It is used to connect other threaded components in low pressure, non-critical applications. No welding is required.



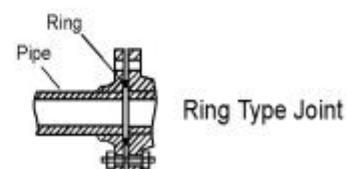
### Lap Joint

These flanges are always used with either a stub end or taft which is butt welded to the pipe with the flange loose behind it. This means the stub end or taft always makes the face. The lap joint is favoured in low pressure applications because it is easily assembled and aligned. To reduce cost these flanges can be supplied without a hub and/or in treated, coated carbon steel.



### Ring Type Joint

This is a method of ensuring leak proof flange connection at high pressures. A metal ring is compressed into a hexagonal groove on the face of the flange to make the seal. This jointing method can be employed on Weld Neck, Slip-on and Blind Flanges.



## Recommendations

Installation and Maintenance:

Ensure proper alignment of **ASTM A105 Forged Carbon Steel Flanges** during installation to

avoid stress and leakage.

Regularly inspect flanged joints for signs of wear, corrosion, or leakage.

**Gasket Selection:**

Choose gaskets based on the **ASTM A182 Stainless Steel Flange** face type, pressure rating, and the media being transported.

Proper gasket installation is crucial for a leak-proof joint.

**Bolt Torque:**

Follow recommended torque values for bolts to ensure proper sealing and to avoid flange damage. Use calibrated torque tools and follow the correct sequence for tightening bolts.