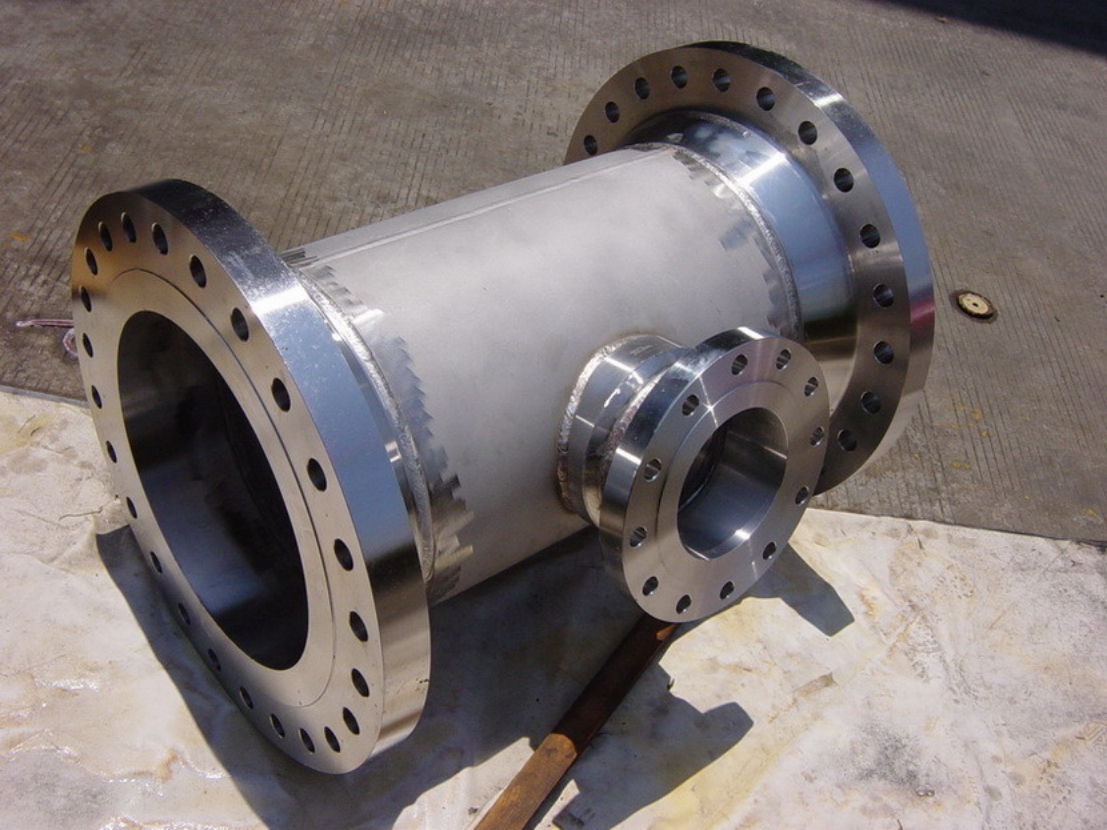






What is a Flange?

Flanges are devices used to connect pipes to each other, to [valves](#), to [pumps](#), to fittings, and to other equipment such as filters and [pressure vessels](#). It is usually [welded](#) or threaded, and the two flanges are joined together by bolting them with gaskets to provide a seal, providing easy access to the piping system.

Many different flange standards are found worldwide to allow easy functionality and interchangeability. Common standards include ASA/ASME (USA), PN/DIN (European), BS10 (British/Australian), and JIS/KS (Japanese/Korean).

The flange can withstand high pressure and temperature, so they have different pressure and temperature ratings for different materials. In a piping application, the type of flange to be used depends largely on the strength required.

Flanges come in many different shapes and sizes and are used in a wide range of industries around the world. With so many varieties and specifications, it may not be easy to identify which one is right for your need. Here is a simple guide to the most common and popular types of flanges and their uses.

Read Also: [16 Types of Measuring Tools and Their Application](#)

Types of Flanges

Following are the different types of flanges:

1. Weld neck flange
2. Long welding neck flange
3. Slip on flange
4. Threaded flange
5. Socket weld flange
6. Lap joint flange
7. Blind flange
8. Orifice flange
9. Nipoflange
10. Swivel flange
11. Expanding flange
12. Reducing flange
13. Elbow flange
14. Puddle flange
15. Split flange
16. Cast flange

- 17. Square flange
- 18. Anchor flange

#1 Weld Neck Flange



This type of flange consists of a long tapered hub. Usually machined from a [forging](#), these flanges are welded to a pipe. Flanges with weld necks are great for applications when there is a requirement for a continuous [flow of fluid](#) through the piping system.

These flanges are commonly used in high-pressure and high/low-temperature applications. There are two types of welding neck flanges: a regular type for use with pipes and an elongated type for use in process plants. By preventing pressure drops, turbulence and erosion/[corrosion of metals](#) near flanged joints are prevented.

#2 Long Welding Neck Flange



These flanges are similar to weld neck flanges, except that the neck is extended and acts like a boring extension. Long Weld Neck Flanges are designed to be used in place of weld neck flanges and pipe pieces for bolt-up connections to [ships](#), columns, or barrels.

This design reduces stress on the neck and transfers it to the base, which attaches to the vessel. These are generally used to connect large networks of pipes as they can withstand high pressures. Heavy barrel (HB) and equal barrel (E) are two common types of these flanges.

#3 Slip-on Flange



These types of flanges are connected to the pipe and welded inside and outside. Slip-on flanges have a larger bore size than the outside diameter of the pipe to be connected, as the pipe must slide inside the flange to be welded.

These flanges are also referred to as "hubbed flanges" because their slim and compact shape makes them easy to identify. It is mainly used for liquids with low pressure or low risk of leakage. Apart from their application, the slip-on flange is much cheaper and quite popular among other types.

Read Also: [Types of Metals: Their Properties and Uses \[Explained\]](#)

#4 Threaded Flange



Threaded flanges are similar in design to slip-on flanges, the only difference being that they have a [tapered thread](#). This design allows it to be attached to the pipe without welding. It has threads inside the flange bore that are fitted with matching male threads on the pipe or fitting.

The best application for them is in low-pressure, low-temperature environments, like slip-on flanges. These are available in sizes up to 4 inches and in several pressure ratings; however, they are used in smaller pipes such as water and air utility services.

Also, these flange requirements apply to explosive environments like gas stations and [plants](#), where welding connections would be harmful.

#5 Socket Weld Flange



Socket weld flanges are joined to the pipe using a single fillet weld held outside the flange. These flanges are typically used on small-size high-pressure pipes that do not transfer highly corrosive fluids.

It is because these flange types tend to corrode in the gap between the pipe end and the socket shoulder. It is not often used for critical services. In this flange, the static strength is comparable to that of slip-on flanges, but the fatigue strength is 50% higher than that of double-welded slip-on flanges.

#6 Lap Joint Flange



[Lap joint](#) flanges have a flat face and are always used with a stub end. These flanges resemble slip-on flanges in shape, except for the radius at the crossing of the flange face and the bore to adjust the flanged portion of the stub end.

A lap joint flange slips over the pipe and seats behind the stub end, and the two are held together by bolt pressure. These flanges have freedom of movement around the pipe, facilitating opposing flange bolt holes. For stainless steel or nickel alloy pipelines, lap joint flanges are a cost-effective solution since the lap joint flange material can be of a lower grade.

Read Also: [Mechanical Properties That Every Mechanical Engg Should Know](#)

#7 Blind Flange



A blind flange is a type of flange that has no bore center and is used to terminate or close the end of a piping system. These flanges are subjected to significant mechanical stress due to system pressure and the required bolting forces.

Because of this, they are suitable for high-pressure applications and testing the flow of a gas or liquid through pipes. A blind flange allows easy access to the pipeline since it can be easily unbolted by the operator to perform activities inside the terminal end. They can also seal a nozzle opening on a pressure vessel.

#8 Orifice Flange



Orifice flanges are used with orifice plates to measure or restrict the pressure or flow of gases and liquids in pipelines. They are found with an additional [set of bolts](#) called jack screws. They are often available with a plate and jack screw, allowing complete product.

An orifice flange's primary function is to measure fluid or gas flow rate through a piping system. In these flanges, a hole is drilled through the face perpendicular to the pipe, making them easy to identify.

#9 Nipo Flange



Also known as a weldoflange, this flange is a combination of a welding neck flange and a weldolet or nipolet. However, it is a solid piece of forged steel flange, not two separate products welded together.

Nickel flanges are available in several different materials, including carbon steel ASTM A105 (high-temperature), stainless steel ASTM A182 and nickel alloys. These are used to branch pipelines at 90 degrees. They are also fabricated in a reinforced version, which holds additional mechanical strength compared to the standard flange.

Read Also:[Different Types of Gears: Their Working and Applications](#)

#10 Swivel Flange



A swivel ring flange enables bolt holes to be aligned between two mating flanges, a feature that is important for various applications, including the installation of large-diameter pipelines, subsea and offshore pipelines, and pipeworks in shallow water.

These types of flanges are suitable for oil, gas, hydrocarbon, water, chemical, and other fluids in petrochemical and water-handling applications. This flange is ideal for offshore or subsea pipeline operations, allowing divers to more quickly and easily adjust bolt holes.

A swivel flange is available in all standard shapes, e.g. weld-neck, slip-on, lap-joint, socket weld, etc., and in all material grades.

#11 Expanding Flange



The purpose of expanding flanges is to increase the bore of a pipeline from one point to another or to connect pipes with other mechanical devices such as pumps and [compressors](#). It is type of welding neck flange has a larger bore on the non-flange end.

It is not possible to increase pipe bores by more than two sizes with expanding flanges. The extended flange is compact and saves space compared to the reducer-welding neck flange. It only requires a butt-weld to install, which is very cost-effective and competitively priced.

#12 Reducing Flange



As the name suggests, the reducing flange is used to reduce the diameter of the pipe. These flanges are used where pipe installation space is limited. These are available in various sizes and material grades and are usually unavailable from stock.

An advantage of using a reducing flange is that the piping can be assembled without welding. Reducing flanges are easy to bolt on, provide a simple solution and are most cost-effective. This allows for the same considerations in terms of specifications, sizes, and material grades as the expansion flange.

Read Also: [Types of Furnaces: Their Working & Applications](#)

#13 Elbow Flange



An Elbow flange is widely used for piping connections that require compact pipe routing. The flanged elbow is used as a fitting. In contrast, flanged bends are made by welding a flange directly to a piping elbow (weld neck or any other type).

Compared to carbon steel elbow flange, stainless steel elbow flange will not erode, pitting or rust. A stainless steel elbow fitting has a smooth inner wall that prevents impurities from condensing.

#14 Puddle Flange



These flanges are used to seal pipes and cables made of plastic, steel, fiber cement, and vitrified clay against high-water columns. They prevent groundwater and pressurized water from entering concrete foundations and walls. ANSI B16. 5, ASTM A 182, ASTM A 105, and ASTM A 351 are the material standards for this type of flanges.

#15 Split Flange

A split flange comprises two interlocking pieces that securely fit together using nuts and bolts or welding in place. As split flanges are made of two parts, they can be used to strengthen piping, or to add attachments in areas where conventional flanges cannot.



Due to their suitability for high pressure, shock and vibration, these flanged fittings are used in challenging applications. In addition, they also allow easy connection between the hose and pipe, as well as between rigid lines. The advantage of using this flange is that it is easy to install over existing piping and hydraulic tubing.

Read Also: [Types of Heat Exchangers: Their Working & Application](#)

#16 Cast Flange



Cast pipe flanges are also types of flanges that are used in pipe systems to join pipes. Cast flanges typically have two types of bolts: one for sealing and one for tensioning. The main reason why [cast iron](#) is used for flanges is because it is cheap to produce, allows for more complex parts to be made at a lower cost, and has no real size limit.

#17 Square Flange



These types of flanges are square in shape and are used between pipe-to-pipe or pipe-to-component connections, such as valves, tees, and elbows. The square flange is made according to JIS B2291 / JIS F7806 standard.

These flanges are helpful in joining pipes of JIS standard nominal bore size together in hydraulic systems. The square flange is usually available in various pressure ratings to serve its purpose. Square flanges are widely used in a variety of high-pressure applications, such as pipe connections.

#18 Anchor Flange



An anchor flange is installed on a pipeline to counteract axial movement and prevent the pipeline from moving. Typically, after the flange has been welded to the pipe, it is anchored to a concrete foundation.

The purpose of these types of flanges is to restrain or limit main line thermal expansion and contraction, as well as to transfer built-up stress to external structures or a larger foundation. Using these flanges, equipment and valves protect against excessive stresses that can arise due to line temperature and pressure.

Read Also: [Types of Dies in Manufacturing: Their Components and Uses \(PDF\)](#)

Material Used to Manufacture Flange

Depending on the piping material and the application's requirements, flanges are manufactured from many different materials. Factors such as economy, flow pressure, operating temperature, and environmental corrosion are considered when selecting a flange for a particular application.

The following are common materials used to make flanges:

#1 Carbon Steel

It is a type of steel alloy that contains carbon. It offers high strength and hardness, increased carbon content, low melting point, and ductility.

#2 Alloy Steel

Metallurgy refers to alloying steel with elements that alter or enhance its properties. Common alloy steels are chromium, molybdenum, nickel, and manganese.

#3 Stainless Steel

Stainless steel contains chromium in excess of 10%. This chromium property enables stainless steel to have a higher corrosion resistance than carbon steel which rusts easily from exposure to air and moisture.

#4 Aluminum

Aluminum provides a low-density, ductile and malleable metal with moderate strength. It has better corrosion resistance properties than any other special alloy steel. This is important during flange manufacturing which requires low weight and strength.

#5 Cast Iron

Cast iron is made when the iron is alloyed with silicon, carbon, and many other alloys. Cast iron has many properties, such as machinability, castability, and fluidity.

#6 Brass

It is an alloy of zinc and copper, often containing tin or lead as well. It has good conductivity, cold ductility, high-temperature ductility, and good strength.

Read Also: [13 Different Types of Coupling and Their Applications \[PDF\]](#)

Common Performance Features of Flange

There are many factors that affect the performance of a flange, but they need to be taken into consideration in order to achieve the best performance. The following are the common performance properties of flange:

#1 Durability

Durability defines the toughness or strength of the pipe flange under pressure or tension. It depends on flange design and compatibility with pipe and material strength.

Read Also: [Cam and Follower: Definition, Types, Working & Uses](#)

#2 Ease of Assembly

In other words, it describes how effectively the disassembly and assembly processes work. Ease of setup and takedown is critical in applications where flanges are used as temporary attachments or fixes.

#3 Weight

The weight property defines the heaviness or mass of the flange. Weight depends on material density and size. In the case of high or large-density flanges, industrial buyers must pay attention to the strength of the pipe or pipe support.

Closing It Up

I hope I have covered everything about the “**Types of Flanges.**” If I missed something, or if you have any doubts, let me know in the comments. If you liked this article, please share it with your friends.

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You might like to read more in our blog:

1. [Different Types of Pattern and Their Use in Casting Process](#)
2. [Whats the primary function of a Knuckle Joint?](#)
3. [What are the different Types of Pulleys used?](#)



Welded neck flange



Slip on flange



Lap joint flange



Screwed flange

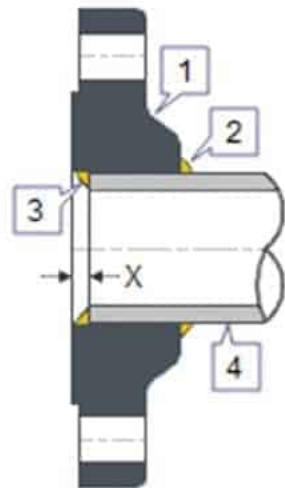


Blind flanges



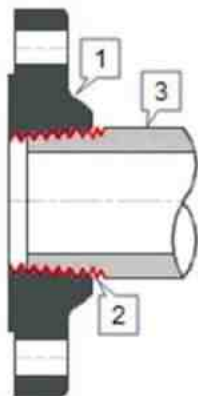
Spectacle blind flange

Slip-On Flanges



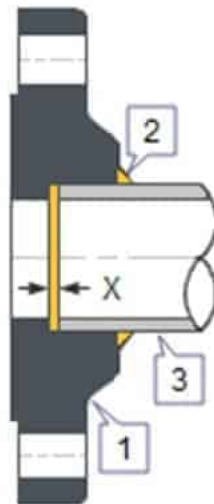
- 1.** Slip On Flange **2.** Fillet Weld (outside)
3. Fillet Weld (inside) **4.** Pipe

Threaded Flanges



- 1.** Threaded flange **2.** Thread
3. Pipe or Fitting

Socket-Welded Flanges

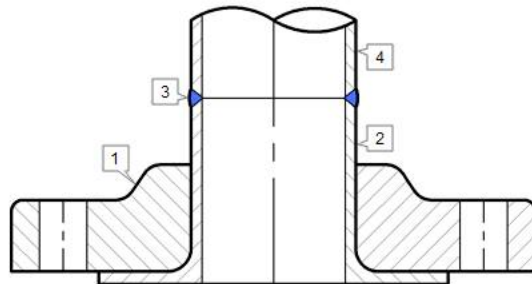


- 1.** Socket Weld Flange **2.** Fillet Weld
3. Pipe **X** = Expansion gap

LAP JOINT FLANGES



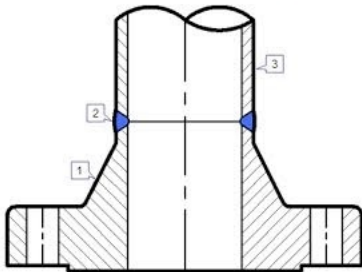
DETAILS OF LAP JOINT FLANGE



1. Lap Joint flange 2. Stub End
3. Butt weld 4. Pipe or Fitting

WELDING NECK FLANGES

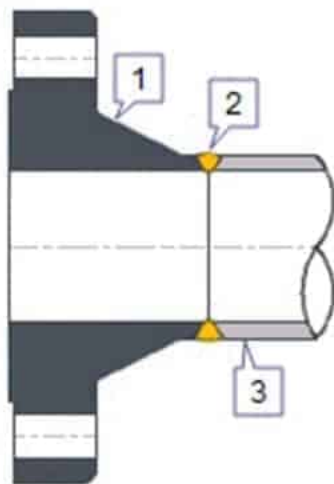
DETAILS OF WELDING NECK FLANGE



1. Weld Neck flange 2. Butt Weld
3. Pipe or Fitting

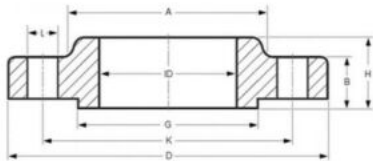
THERMAL POWER TECH

Weld Neck Flanges



- 1.** Welding Neck flange **2.** Buttweld
3. Pipe or Fitting

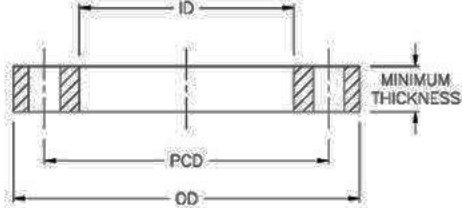
Slip On Flange - Stainless Steel



** Generic photo, not of actual item.*

DIMENSIONS OF CLASS 400 FLANGES

1	2	3	4	5	6	7	8	9	10	11	12	13	14
					Length Through Hub				Bore				
Nominal Pipe Size	Outside Diameter of Flange, O	Thickness of Flange Min., t _f	Diameter of Hub, X	Diameter Beginning of Chamfer Welding Neck, A	Threaded Slip-on, Y	Lapped, Y	Weldking Neck, Y	Thread Length Threaded Min., T	Slip-on Min., B	Lapped Min., B	Welding Neck, B	Corner Radius of Bore of Lapped Flange and Pipe, r	Counter- bore Threaded Flange Min., Q
1/2	3.75	0.56	1.50	0.84	0.88	0.88	2.06	0.62	0.88	0.90	To be specified by purchaser	0.12	0.93
3/4	4.62	0.62	1.88	1.05	1.00	1.00	2.25	0.62	1.09	1.11		0.12	1.14
1	4.88	0.69	2.12	1.32	1.06	1.06	2.44	0.69	1.36	1.38		0.12	1.41
1 1/4	5.25	0.81	2.50	1.66	1.12	1.12	2.62	0.81	1.70	1.72		0.19	1.75
1 1/2	6.12	0.88	2.75	1.90	1.25	1.25	2.75	0.88	1.95	1.97		0.25	1.99
2	6.50	1.00	3.31	2.38	1.44	1.44	2.88	1.12	2.44	2.46		0.31	2.50
2 1/2	7.50	1.12	3.94	2.88	1.62	1.62	3.12	1.25	2.94	2.97		0.31	3.00
3	8.25	1.25	4.62	3.50	1.81	1.81	3.25	1.38	3.57	3.60		0.38	3.63
3 1/2	9.00	1.38	5.25	4.00	1.94	1.94	3.38	1.56	4.07	4.10		0.38	4.13
4	10.00	1.38	5.75	4.50	2.00	2.00	3.50	1.40	4.57	4.60		0.44	4.63
5	11.00	1.50	7.00	5.56	2.12	2.12	4.00	1.69	5.66	5.69		0.44	5.69
6	12.50	1.62	8.12	6.63	2.25	2.25	4.06	1.81	6.72	6.75		0.50	6.75
8	15.00	1.88	10.25	8.63	2.69	2.69	4.62	2.00	8.72	8.75		0.50	8.75
10	17.50	2.12	12.62	10.75	2.88	4.00	4.88	2.19	10.88	10.92		0.50	10.88
12	20.50	2.25	14.75	12.75	3.12	4.25	5.38	2.38	12.88	12.92		0.50	12.94
14	23.00	2.38	16.75	14.00	3.31	4.62	5.88	2.50	14.14	14.18		0.50	14.19
16	25.50	2.50	19.00	16.00	3.69	5.00	6.00	2.69	16.16	16.19		0.50	16.19
18	28.00	2.62	21.00	18.00	3.88	5.38	6.50	2.75	18.18	18.20		0.50	18.19
20	30.50	2.75	23.12	20.00	4.00	5.75	6.62	2.88	20.20	20.25		0.50	20.19
24	36.00	3.00	27.62	24.00	4.50	6.25	6.88	3.25	24.25	24.25		0.50	24.19



Nominal Pipe OD	Flange Size	OD	ID	Minimum Thickness	PCD	Bolt Hole No. x Dia.	Bolt Size
63	50	150	78	11	114	4X18	M16
75	65	165	92	11	127	4X18	M16
90	80	185	108	11	146	4X18	M16
110	100	215	128	13	178	4X18	M16
160	150	280	178	13	235	8X18	M16
200	200	335	235	19	292	8X18	M16
225	225	370	238	19	324	8X18	M16
250	250	405	288	19	356	8X22	M20
315	300	455	338	23	406	12X22	M20
355	350	525	376	30	470	12X26	M24
n/a	375	550	n/a	30	495	12X26	M24
400	400	580	430	30	521	12X26	M24
450	450	640	470	30	584	12X26	M24
500	500	705	533	38	641	16X26	M24
630	600	825	645	48	756	16X30	M27
710	700	910	740	56	845	20X30	M27
n/a	750	995	n/a	56	927	20X33	M30
800	800	1060	843	56	984	20X36	M33
900	900	1175	947	66	1092	24X36	M33
1000	1000	1255	1050	66	1175	24X36	M33

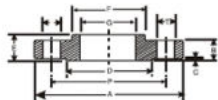
Note: This table has bolting compatibility with AS 2129 Table D flanges.

As per ISO 9624: "The inside diameter of the loose backing flange shall conform to the design of the flange adaptor. In some applications, values of the inside diameter of the loose backing flange differing from those given in the tables may be used."

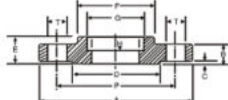


Weld Neck

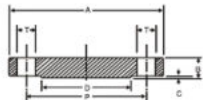
SLIP-ON



SOCKET WELD



BLIND



DIMENSIONS OF CLASS 150 FLANGES AS PER ANSI B 16.5

N.B.	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	T	No. of Holes
15	89	11.1	1.6	35	16	30	22.4	9.5	21.3	-	48	16	16	23.0	60.3	3.0	15.9	4
20	98	12.7	1.6	43	16	38	27.7	11.0	26.7	-	52	16	16	28.0	69.8	3.0	15.9	4
25	108	14.3	1.6	51	17	49	34.5	12.5	33.4	-	56	17	17	35.0	79.4	3.0	15.9	4
32	117	15.9	1.6	64	21	59	43.2	14.5	42.2	-	57	21	21	43.5	88.9	5.0	15.9	4
40	127	17.5	1.6	73	22	65	49.5	16.0	48.3	-	62	22	22	50.0	98.4	6.5	15.9	4
50	152	19.0	1.6	92	25	78	62.0	17.5	60.3	-	64	25	25	62.5	120.6	8.0	19.0	4
65	178	22.2	1.6	105	29	90	74.7	19.0	73.0	-	70	29	29	75.5	139.7	8.0	19.0	4
80	190	23.8	1.6	127	30	108	90.7	20.5	88.9	-	70	30	30	91.5	152.4	9.5	19.0	4
90	216	23.8	1.6	140	32	122	103.4	-	101.6	-	71	32	32	104.0	177.8	9.5	19.0	8
100	229	23.8	1.6	157	33	135	116.1	-	114.3	-	76	33	33	117.0	190.5	11.0	19.0	8
125	254	23.8	1.6	186	37	164	143.8	-	141.3	-	89	37	37	145.0	215.9	11.0	22.2	8
150	279	25.4	1.6	216	40	192	170.7	-	168.3	-	89	40	40	171.0	241.3	12.5	22.2	8
200	343	28.6	1.6	270	44	246	221.5	-	219.1	-	102	44	44	222.0	293.4	12.5	22.2	8
250	406	30.2	1.6	324	49	305	276.4	-	273.0	-	102	49	49	277.0	362.0	12.5	25.4	12
300	483	31.8	1.6	381	56	365	327.2	-	323.9	-	114	56	56	328.0	431.8	12.5	25.4	12
350	533	34.9	1.6	413	57	400	359.2	-	355.6	-	127	57	79	360.0	476.2	12.5	28.6	12
400	597	36.5	1.6	470	64	457	410.5	-	406.4	-	127	64	87	411.0	539.8	12.5	28.6	16
450	635	39.7	1.6	533	68	505	461.8	-	457.2	-	140	68	97	462.0	577.8	12.5	31.8	16
500	698	42.9	1.6	584	73	559	513.1	-	508.0	-	144	73	103	514.0	635.0	12.5	31.8	20
600	813	47.6	1.6	692	83	664	616.0	-	609.6	-	152	83	111	616.0	749.3	12.5	34.9	20

DIMENSIONS OF CLASS 300 FLANGES AS PER ANSI B 16.5

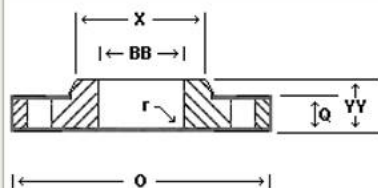
N.B.	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	T	No. of Holes
15	95	14.3	1.6	35	22	38	22.4	9.5	21.3	23.5	52	16	22	23.0	66.7	3.0	15.9	4
20	117	15.9	1.6	43	25	48	27.7	11.0	26.7	29.0	57	16	25	28.0	82.6	3.0	19.0	4
25	124	17.5	1.6	51	27	54	34.5	12.5	33.4	36.0	62	17	27	35.0	88.9	3.0	19.0	4
32	133	19.0	1.6	64	27	64	43.2	14.5	42.2	44.5	65	21	27	43.5	98.4	5.0	19.0	4
40	156	20.6	1.6	73	30	70	49.5	16.0	48.3	50.5	68	22	30	50.0	114.3	6.5	22.2	4
50	165	22.2	1.6	92	33	84	62.0	17.5	60.3	63.5	70	29	33	62.5	127.0	8.0	19.0	8
65	190	25.4	1.6	105	38	100	74.7	19.0	73.0	76.0	76	32	38	75.5	149.2	8.0	22.2	8
80	210	28.6	1.6	127	43	117	90.7	20.5	88.9	92.0	79	32	43	91.5	168.3	9.5	22.2	8
90	229	30.2	1.6	140	44	133	103.4	-	101.6	105.0	81	37	44	104.0	184.2	9.5	22.2	8
100	254	31.8	1.6	157	48	146	116.1	-	114.3	118.0	86	37	48	117.0	200.0	11.0	22.2	8
125	279	34.9	1.6	186	51	178	143.8	-	141.3	145.0	98	43	51	145.0	235.0	11.0	22.2	8
150	318	36.5	1.6	216	52	206	170.7	-	168.3	171.0	98	46	52	171.0	269.9	12.5	22.2	12
200	381	41.3	1.6	270	62	260	221.5	-	219.1	222.0	111	51	62	222.0	330.2	12.5	25.4	12
250	444	47.6	1.6	324	67	321	276.4	-	273.0	276.0	117	56	95	277.0	387.4	12.5	28.6	16
300	521	50.8	1.6	381	73	375	327.2	-	323.9	329.0	130	60	102	328.0	450.8	12.5	31.8	16
350	584	54.0	1.6	413	76	425	359.2	-	355.6	360.0	143	64	111	360.0	514.4	12.5	31.8	20
400	648	57.2	1.6	470	83	483	410.5	-	406.4	411.0	146	68	121	411.0	571.5	12.5	34.9	20
450	711	60.3	1.6	533	89	533	461.8	-	457.2	462.0	159	70	130	462.0	628.6	12.5	34.9	24
500	775	63.5	1.6	584	95	587	513.1	-	508.0	513.0	162	73	140	514.0	685.8	12.5	34.9	24
600	914	69.8	1.6	692	106	702	616.0	-	609.6	614.0	168	83	152	616.0	812.8	12.5	41.3	24

1) All dimensions are in Millimeters

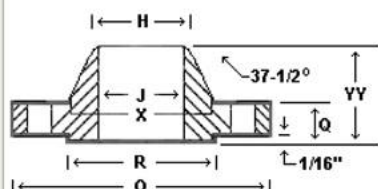
2) Flanges except Lap Joint will be furnished with (1,6) Raised Face, which is included in "Thickness(C)" and "Length through Hub(Y)".



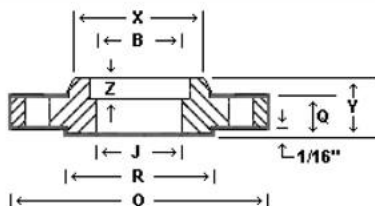
Dimensions for Class 600 Flanges



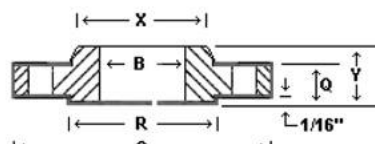
LAP JOINT



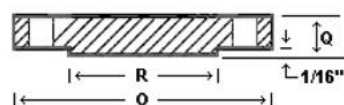
WELDING NECK



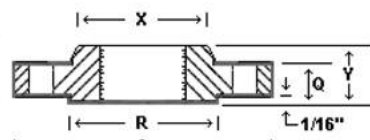
SOCKET



SLIP ON



BLIND



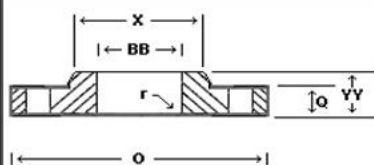
THREADED

Nom. Pipe Size (inches)	O	Q*	R	X	No. and** Dia of Bolt Holes	Bolt Circle Dia.	YY*	H	J	Y*	B	r	YV	BB	Z	C	T
1/2	3.75	0.56	1.38	1.5	4-0.62	2.62	2.06	0.84	****	0.88	0.88	0.12	0.88	0.90	0.38	0.93	0.62
3/4	4.62	.62	1.69	1.88	4-0.75	3.25	2.25	1.05		1.00	1.09	0.12	1.00	1.11	.44	1.14	0.62
1	4.88	.69	2.00	2.12	4-0.75	3.50	2.44	1.32		1.06	1.36	0.12	1.06	1.38	0.5	1.41	0.69
1 1/4	5.25	0.81	2.50	2.5	4-0.75	3.88	2.62	1.66		1.12	1.70	0.19	1.12	1.72	0.56	1.75	0.81
1 1/2	6.12	0.88	2.88	2.75	4-0.88	4.50	2.75	1.90		1.25	1.95	0.25	1.25	1.97	0.62	1.99	0.88
2	6.50	1.00	3.62	3.31	8-0.75	5.00	2.88	2.38		1.44	2.44	0.31	1.44	2.46	0.69	2.50	1.12
2 1/2	7.50	1.12	4.12	3.94	8-0.88	5.88	3.12	2.88		1.62	2.94	0.31	1.62	2.97	0.75	3.00	1.25
3	8.25	1.25	5.00	4.62	8-0.88	6.62	3.25	3.50		1.81	3.57	0.38	1.81	3.60	0.81	3.63	1.38
3 1/2	9.00	1.38	5.5	5.25	8-1.00	7.25	3.38	4.00		1.94	4.07	0.38	1.94	4.10		4.13	1.56
4	10.75	1.50	6.19	6.00	8-1.00	8.50	4.00	4.50		2.12	4.57	0.44	2.12	4.60		4.63	1.62
5	13.00	1.75	7.31	7.44	8-1.12	10.50	4.50	5.56		2.38	5.66	0.44	2.38	5.69		5.69	1.88
6	14.00	1.88	8.50	8.75	12-1.12	11.50	4.62	6.63		2.62	6.72	0.50	2.62	6.75		6.75	2.00
8	16.50	2.19	10.62	10.75	12-1.25	13.75	5.25	8.63		3.00	8.72	0.50	3.00	8.75		8.75	2.25
10	20.00	2.50	12.75	13.5	16-1.38	17.00	6.00	10.75		3.38	10.88	0.50	4.38	10.92		10.88	2.56
12	22.00	2.62	15.00	15.75	20-1.38	19.25	6.12	12.75		3.62	12.88	0.50	4.62	12.92		12.94	2.75
14	23.75	2.75	16.25	17.00	20-1.50	20.75	6.50	14.00		3.69	14.14	0.50	5.00	14.18		14.19	2.88
16	27.00	3.00	18.50	19.50	20-1.62	23.75	7.00	16.00		4.19	16.16	0.50	5.5	16.19		18.19	3.06
18	29.25	3.25	21.00	21.50	20-1.75	25.75	7.25	18.00		4.62	18.18	0.50	6.00	18.20		18.10	3.12
20	32.00	3.50	23.00	24.00	24-1.75	28.50	7.50	20.00		5.00	20.2	0.50	6.5	20.25		20.19	3.25
24	37.00	4.00	27.25	28.25	24-2.00	33.00	8.00	24.00		5.50	24.25	0.50	7.25	24.25		24.19	3.62

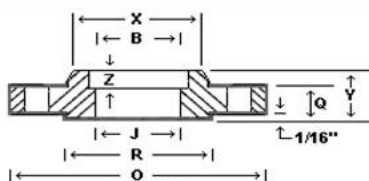
The following charts are for reference use only. They are based upon older piping systems. Refer to current specifications when designing new systems



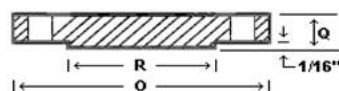
Dimensions for Class 900 Flanges



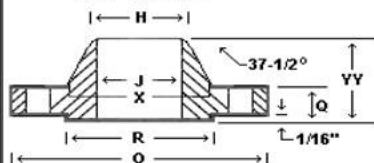
LAP JOINT



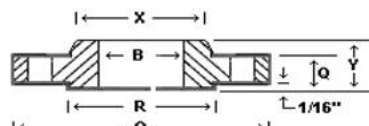
SOCKET



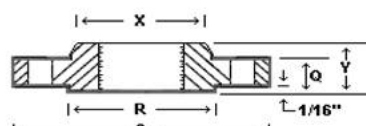
BLIND



WELDING NECK



SLIP ON



THREADED

Nom. Pipe Size (inches)	O	Q*	R	X	No. and** Dia of Bolt Holes	Bolt Circle Dia.	YY*	H	J	Y*	B	r	YY	BB	Z	C	T
1/2	4.75	0.88	1.38	1.50	4-0.88	3.25	2.38	0.84	To Be Specified by Purchaser	1.25	0.88	0.12	1.25	0.90	0.93	0.88	
3/4	5.12	1.00	1.69	1.75	4-0.88	3.50	2.75	1.05		1.38	1.09	0.12	1.38	1.11	1.14	1.00	
1	5.88	1.12	2.00	2.06	4-1.00	4.00	2.88	1.32		1.62	1.36	0.12	1.62	1.38	1.41	1.12	
1 1/4	6.25	1.12	2.50	2.50	4-1.00	4.38	2.88	1.66		1.62	1.70	0.19	1.62	1.72	1.75	1.19	
1 1/2	7.00	1.25	2.88	2.75	4-1.12	4.88	3.25	1.90		1.75	1.95	0.25	1.75	1.97	1.99	1.25	
2	8.50	1.50	3.62	4.12	8-1.00	6.50	4.00	2.38		2.25	2.44	0.31	2.25	2.46	2.50	1.50	
2 1/2	9.62	1.62	4.12	4.88	8-1.12	7.50	4.12	2.88		2.50	2.94	0.31	2.50	2.97	3.00	1.88	
3	9.50	1.50	5.00	5.00	8-1.00	7.50	4.00	3.50		2.12	3.57	0.38	2.12	3.60	3.63	1.62	
4	11.50	1.75	6.19	6.25	8-1.25	9.25	4.50	4.50		2.75	4.57	0.44	2.75	4.60	4.63	1.88	
5	13.75	2.00	7.31	7.50	8-1.38	11.00	5.00	5.56		3.12	5.66	0.44	3.12	5.69	5.69	2.12	
6	15.00	2.19	8.50	9.25	12-1.25	12.50	5.50	6.63		3.38	6.72	0.50	3.38	6.75	6.75	2.25	
8	18.5	2.50	10.62	11.75	12-1.50	15.5	6.38	8.63		4.00	8.72	0.50	4.5	8.75	8.75	2.50	
10	21.50	2.75	12.75	14.50	16-1.50	18.50	7.25	10.75		4.25	10.88	0.50	5.00	10.92	10.88	2.81	
12	24.00	3.12	15.00	16.50	20-1.50	21.00	7.88	12.75		4.62	12.88	0.50	5.62	12.92	12.94	3.00	
14	25.25	3.38	16.25	17.75	20-1.62	22.00	8.38	14.00		5.12	14.14	0.50	6.12	14.18	14.19	3.25	
16	27.75	3.50	18.50	20.00	20-1.75	24.25	8.5	16.00		5.25	16.16	0.50	6.50	16.19	16.19	3.38	
18	31.00	4.00	21.00	22.25	20-2.00	27.00	9.00	18.00		6.00	18.18	0.50	7.50	18.20	18.19	3.50	
20	33.75	4.25	23.00	24.50	20-2.12	29.50	9.75	20.00		6.25	20.20	0.50	8.25	20.25	20.19	3.62	
24	41.00	5.50	27.25	29.50	20-2.62	35.50	11.50	24.00		8.00	24.25	0.50	10.50	24.25	24.19	4.00	

The following charts are for reference use only. They are based upon older piping systems. Refer to current specifications when designing new systems

Weight (L.B.S.)***

Pressure Class	Nom. Size Pipe	Weld Neck	Slip-On	Thd.	Lap Joint	Blind	Socket
150	1/2	2	1	1	1	2	2
	3/4	2	1.5	1.5	1.5	2	2
	1	2.5	2	2	2	2	2
	1 1/4	2.5	2.5	2.5	2.5	3	3
	1 1/2	4	3	3	3	3	3
	2	6	5	5	5	4	5
	2 1/2	10	8	8	8	7	7
	3	11.5	9	10	9	9	8
	3 1/2	12	11	12	11	13	
	4	16.5	13	13	12	17	
	5	21	15	15	13	20	
	6	26	17	19.5	18	27	
	8	42	28	30	28	47	
	10	54	40	41	36	67	
	12	88	61	65	60	123	
	14	114	83	85	77	139	
	16	142	106	93	104	187	
	18	165	109	120	146	217	
	20	197	148	155	159	283	
	24	268	204	210	195	415	

All dimensions given in inches.

Dimensions & tolerances in accordance with ANSI B16.5. Carbon steel flanges mechanical properties and chemistry conform to ASTM A105.

Flanges are furnished faced, drilled and spot faced or back faced.

*1/16 in. raised face included in dimensions Q, Y and YY.

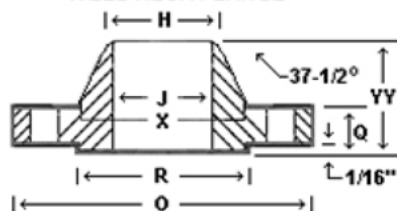
**Bolt hole diameter 1/8 in. larger than bolt diameter.

***Weights listed are approximate values.

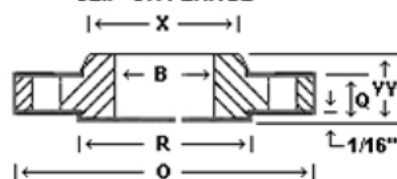
**** To be specified by the customer

Flange Types

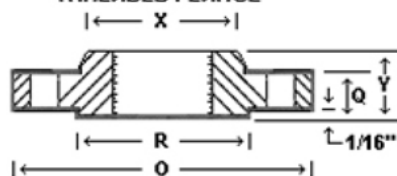
Thermometricscorp.com WELD NECK FLANGE



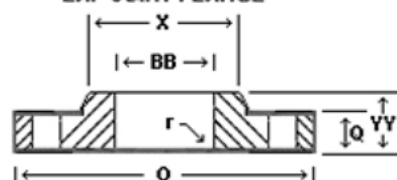
SLIP-ON FLANGE



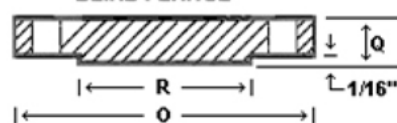
THREADED FLANGE



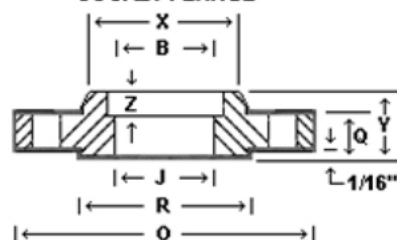
LAP JOINT FLANGE



BLIND FLANGE

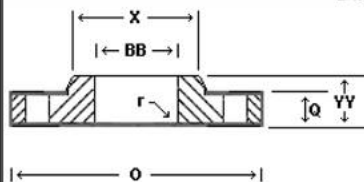


SOCKET FLANGE

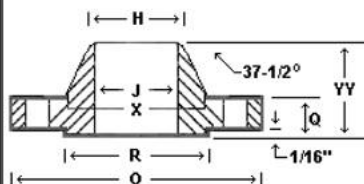




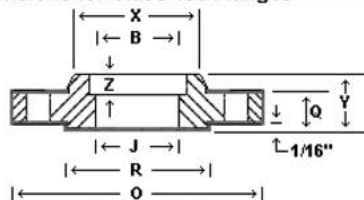
Dimensions for Class 150 Flanges



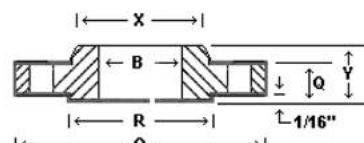
LAP JOINT



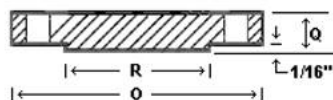
WELDING NECK



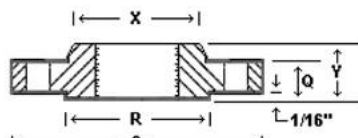
SOCKET



SLIP ON



BLIND



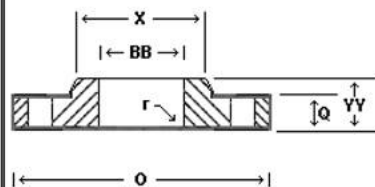
THREADED

Nom. Pipe Size (inches)	O	Q	R	X	No. and** Dia. of Bolt Holes	Bolt Circle Dia	YY	H	J	Y	B	R	YY	BB	Z
1/2	3.50	.44	1.38	1.19	4-0.62	2.38	1.88	.84	.62	.62	.88	.12	.62	.90	.38
3/4	3.88	.50	1.69	1.50	4-0.62	2.75	2.06	1.05	.82	.62	1.09	.12	.62	1.11	.44
1	4.25	.56	2.00	1.94	4-0.62	3.12	2.19	1.32	1.05	.69	1.36	.12	.69	1.38	.50
1 1/4	4.62	.62	2.50	2.31	4-0.62	3.50	2.25	1.66	1.38	.81	1.70	.19	.81	1.72	.56
1 1/2	5.00	.68	2.88	2.56	4-0.62	3.88	2.44	1.90	1.61	.88	1.95	.25	.88	1.97	.62
2	6.00	.75	3.62	3.06	4-0.75	4.75	2.50	2.38	2.07	1.00	2.44	.31	1.00	2.46	.69
2 1/2	7.00	.88	4.12	3.56	4-0.75	5.50	2.75	2.88	2.47	1.12	2.94	.31	1.12	2.97	.75
3	7.50	.94	5.00	4.25	4-0.75	6.00	2.75	3.50	3.07	1.19	3.57	.38	1.19	3.60	.81
3 1/2	8.50	.94	5.50	4.81	8-0.75	7.00	2.81	4.00	3.55	1.25	40.70	.38	1.25	4.10	
4	9.00	.94	6.19	5.31	8-0.75	7.50	3.00	4.50	4.03	1.31	4.57	.44	1.31	4.60	
5	10.00	.94	7.31	6.44	8-0.88	8.50	3.50	5.56	5.05	1.44	5.66	.44	1.44	5.69	
6	11.00	1.00	8.50	7.56	8-0.88	9.50	3.50	6.63	6.07	1.56	6.72	.50	1.56	6.75	
8	13.50	1.12	10.62	9.69	8-0.88	11.75	4.00	8.63	7.98	1.75	8.72	.50	1.75	8.75	
10	16.00	1.19	12.75	12.00	12-1.00	14.25	4.00	10.75	10.02	1.94	10.88	.50	1.94	10.92	
12	19.00	1.25	15.00	14.38	12-1.00	17.00	4.50	12.75	12.00	2.19	12.88	.50	2.19	12.92	
14	21.00	1.38	16.25	15.75	12-1.12	18.75	5.00	14.00	To Be Specified by Purchaser	2.25	14.14	.50	3.12	14.18	
16	23.50	1.44	18.50	18.00	16-1.12	21.25	5.00	16.00		2.50	16.16	.50	3.44	16.19	
18	25.00	1.56	21.00	19.88	16-1.25	22.75	5.50	18.00		2.69	18.18	.50	3.81	18.20	
20	27.50	1.69	23.00	22.00	20-1.25	25.00	5.69	20.00		2.88	20.2	.50	4.06	20.25	
24	32.00	1.88	27.25	26.12	20-1.38	29.50	6.00	24.00		3.25	24.25	.50	4.38	24.25	

The following charts are for reference use only. They are based upon older piping systems. Refer to current specifications when designing new systems

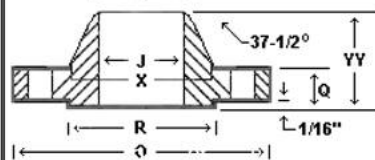


Dimensions for Class 1500 Flanges

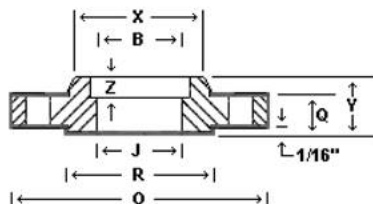


LAP JOINT

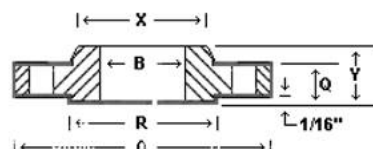
H



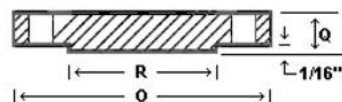
WELDING NECK



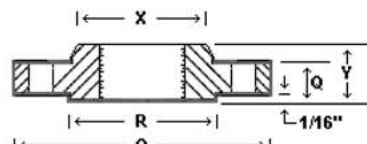
SOCKET



SLIP ON



BLIND



THREADED

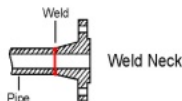
	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
	4.75	5.85	6.75	8.25	9.75	12.00	14.00	16.00	20.00	24.00	28.00	32.00	36.00	40.00	44.00	48.00	52.00	56.00	60.00
	5.12	6.00	6.88	8.38	9.88	12.12	14.12	16.12	20.12	24.12	28.12	32.12	36.12	40.12	44.12	48.12	52.12	56.12	60.12
	5.88	6.75	7.63	9.13	10.63	12.87	14.87	16.87	20.87	24.87	28.87	32.87	36.87	40.87	44.87	48.87	52.87	56.87	60.87
	6.25	7.13	8.00	9.50	11.00	13.24	15.24	17.24	21.24	25.24	29.24	33.24	37.24	41.24	45.24	49.24	53.24	57.24	61.24
	7.00	8.13	9.00	10.50	12.00	14.24	16.24	18.24	22.24	26.24	30.24	34.24	38.24	42.24	46.24	50.24	54.24	58.24	62.24
	8.50	9.63	10.50	12.00	13.50	15.74	17.74	19.74	23.74	27.74	31.74	35.74	39.74	43.74	47.74	51.74	55.74	59.74	63.74
	9.62	10.75	11.63	13.13	14.63	16.87	18.87	20.87	24.87	28.87	32.87	36.87	40.87	44.87	48.87	52.87	56.87	60.87	64.87
	10.50	11.63	12.50	14.00	15.50	17.74	19.74	21.74	25.74	29.74	33.74	37.74	41.74	45.74	49.74	53.74	57.74	61.74	65.74
	12.25	13.38	14.25	15.75	17.25	19.49	21.49	23.49	27.49	31.49	35.49	39.49	43.49	47.49	51.49	55.49	59.49	63.49	67.49
	14.75	15.88	16.75	18.25	19.75	21.99	23.99	25.99	29.99	33.99	37.99	41.99	45.99	49.99	53.99	57.99	61.99	65.99	69.99
	15.50	16.63	17.50	19.00	20.50	22.74	24.74	26.74	30.74	34.74	38.74	42.74	46.74	50.74	54.74	58.74	62.74	66.74	70.74
	19.00	20.13	21.00	22.50	24.00	26.24	28.24	30.24	34.24	38.24	42.24	46.24	50.24	54.24	58.24	62.24	66.24	70.24	74.24
	23.00	24.13	25.00	26.50	28.00	30.24	32.24	34.24	38.24	42.24	46.24	50.24	54.24	58.24	62.24	66.24	70.24	74.24	78.24
	26.50	27.63	28.50	30.00	31.50	33.74	35.74	37.74	41.74	45.74	49.74	53.74	57.74	61.74	65.74	69.74	73.74	77.74	81.74
	29.50	30.63	31.50	33.00	34.50	36.74	38.74	40.74	44.74	48.74	52.74	56.74	60.74	64.74	68.74	72.74	76.74	80.74	84.74
	32.50	33.63	34.50	36.00	37.50	39.74	41.74	43.74	47.74	51.74	55.74	59.74	63.74	67.74	71.74	75.74	79.74	83.74	87.74
	36.00	37.13	38.00	39.50	41.00	43.24	45.24	47.24	51.24	55.24	59.24	63.24	67.24	71.24	75.24	79.24	83.24	87.24	91.24
	38.75	39.88	40.75	42.25	43.75	45.99	47.99	49.99	53.99	57.99	61.99	65.99	69.99	73.99	77.99	81.99	85.99	89.99	93.99
	46.00	47.13	48.00	49.50	51.00	53.24	55.24	57.24	61.24	65.24	69.24	73.24	77.24	81.24	85.24	89.24	93.24	97.24	101.24

The following charts are for reference use only. They are based upon older piping systems. Refer to current specifications when designing new systems

A Flange is a method of connecting pipes, valves, pumps and other equipment to form a pipework system. It also provides easy access for cleaning, inspection or modification. Flanges are usually welded or screwed into such systems and then joined with bolts.

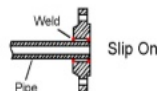
Weld Neck

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



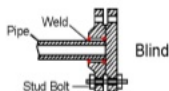
Slip-on

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.



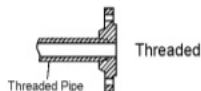
Socket Weld

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.



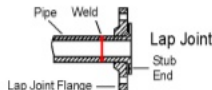
Threaded

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.



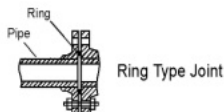
Lap Joint

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.



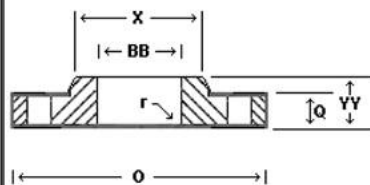
Ring Type Joint

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.

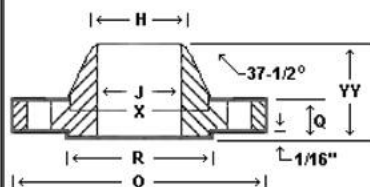




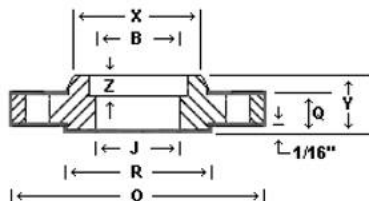
Dimensions for Class 2500 Flanges



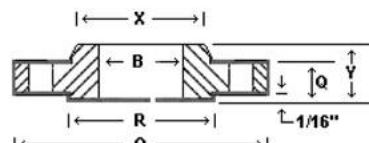
LAP JOINT



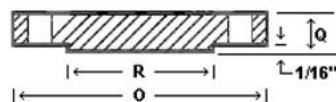
WELDING NECK



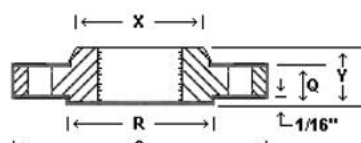
SOCKET



SLIP ON



BLIND



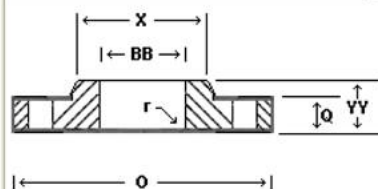
THREADED

Nom. Pipe Size (inches)	O	Q*	R	X	No. and** Dia of Bolt Holes	Bolt Circle Dia.	YY*	H	J	Y*	B	R	YV	BB	C	T
1/2	5.25	1.19	1.38	1.69	4-0.88	3.50	2.88	0.84	To Be Specified by purchaser	1.56	.12	1.56	0.90	0.93	1.12	1.12
3/4	5.50	1.25	1.69	2.00	4-0.88	3.75	3.12	1.05		1.69	.12	1.69	1.11	1.14	1.25	
1	6.25	1.38	2.00	2.25	4-1.00	4.25	3.50	1.32		1.88	.12	1.88	1.38	1.41	1.38	
1 1/4	7.25	1.50	2.50	2.88	4-1.12	5.12	3.75	1.66		2.06	.19	2.06	1.72	1.75	1.50	
1 1/2	8.00	1.75	2.88	3.12	4-1.25	5.75	4.38	1.90		2.38	.25	2.38	1.97	1.99	1.75	
2	9.25	2.00	3.62	3.75	8-1.12	6.75	5.00	2.38		2.75	.31	2.75	2.46	2.50	2.00	
2 1/2	10.50	2.25	4.12	4.50	8-1.25	7.75	5.62	2.88		3.12	.31	3.12	2.97	3.00	2.25	
3	12.00	2.62	5.00	5.25	8-1.38	9.00	6.62	3.50		3.62	.38	3.62	3.60	3.63	2.50	
4	14.00	3.00	6.19	6.50	8-1.62	10.75	7.50	4.50		4.25	.44	4.25	4.60	4.63	2.75	
5	16.50	3.62	7.31	8.00	8-1.88	12.75	9.00	5.56		5.12	.44	5.12	5.69	5.69	3.00	
6	19.00	4.25	8.50	9.25	8-2.12	14.5	10.75	6.63		6.00	.50	6.00	6.75	6.75	3.25	
8	21.75	5.00	10.62	12.00	12-2.12	17.25	12.50	8.63		7.00	.50	7.00	8.75	8.75	3.75	
10	26.50	6.50	12.75	14.75	12-2.62	21.25	16.50	10.75		9.00	.50	9.00	10.92	10.88	4.25	
12	30.00	7.25	15.00	17.38	12-2.88	24.38	18.25	12.75		10.00	.50	10.00	12.92	12.94	4.75	

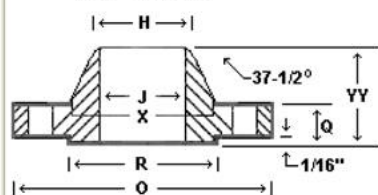
The following charts are for reference use only. They are based upon older piping systems. Refer to current specifications when designing new systems



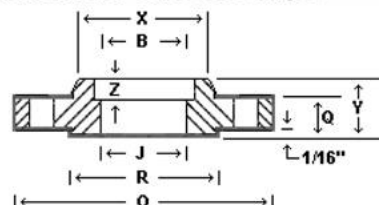
Dimensions for Class 300 Flanges



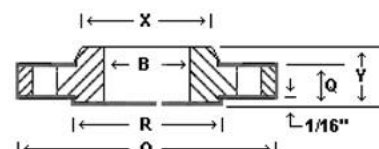
LAP JOINT



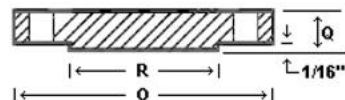
WELDING NECK



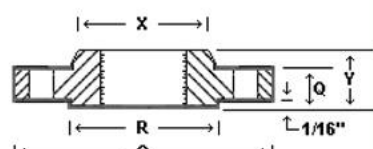
SOCKET



SLIP ON



BLIND



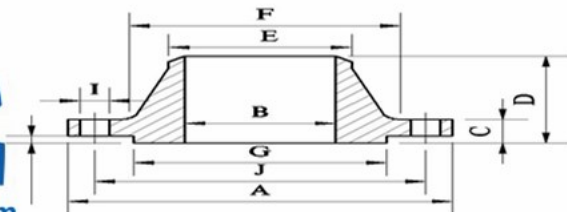
THREADED

Nom. Pipe Size (inches)	O	Q*	R	X	No. and** Dia of Bolt Holes	Bolt Circle Dia.	YY*	H	J	Y*	B	R	YV	BB	Z	C	T
1/2	3.75	0.56	1.38	1.50	4-0.62	2.62	2.06	0.84	0.62	0.88	0.88	0.12	0.88	0.90	0.38	0.93	0.62
3/4	4.62	0.62	1.69	1.88	4-0.75	3.25	2.25	1.05	0.82	1.00	1.09	0.12	1.00	1.11	0.44	1.14	0.62
1	4.88	0.69	2.00	2.12	4-0.75	3.50	2.44	1.32	1.05	1.06	1.36	0.12	1.06	1.38	0.50	1.41	0.69
1 1/4	5.25	0.75	2.50	2.50	4-0.75	3.88	2.56	1.66	1.38	1.06	1.70	0.19	1.06	1.72	0.56	1.75	0.81
1 1/2	6.12	0.81	2.88	2.75	4-0.88	4.50	2.69	1.90	1.61	1.19	1.95	0.25	1.19	1.97	0.62	1.99	0.88
2	6.50	0.88	3.62	3.31	8-0.75	5.00	2.75	2.38	2.07	1.31	2.44	0.31	1.31	2.46	0.69	2.50	1.12
2 1/2	7.50	1.00	4.12	3.94	8-0.88	5.88	3.00	2.88	2.47	1.50	2.94	0.31	1.50	2.97	0.75	3.00	1.25
3	8.25	1.12	5.00	4.62	8-0.88	6.62	3.12	3.50	3.07	1.69	3.57	0.38	1.69	3.60	0.81	3.63	1.25
3 1/2	9.00	1.19	5.50	5.25	8-0.88	7.25	3.19	4.00	3.55	1.75	4.07	0.38	1.75	4.10		4.13	1.44
4	10.00	1.25	6.19	5.75	8-0.88	7.88	3.38	4.50	4.03	1.88	4.57	0.44	1.88	4.60		4.63	1.44
5	11.00	1.38	7.31	7.00	8-0.88	9.25	3.88	5.56	5.05	2.00	5.66	0.44	2.00	5.69		5.69	1.69
6	12.50	1.44	8.50	8.12	12-0.88	10.62	3.88	6.63	6.07	2.06	6.72	0.50	2.06	6.75		6.75	1.81
8	15.00	1.62	10.62	10.25	12-1.00	13.00	4.38	8.63	7.98	2.44	8.72	0.50	2.44	8.75		8.75	2.00
10	17.50	1.88	12.75	12.62	16-1.12	15.25	4.62	10.75	10.02	2.62	10.88	0.50	3.75	10.92		10.88	2.19
12	20.50	2.00	15.00	14.75	16-1.25	17.75	5.12	12.75	12.00	2.88	12.88	0.50	4.00	12.92		12.94	2.38
14	23.00	2.12	16.25	16.75	20-1.25	20.25	5.62	14.00	To Be Specified by Purchaser	3.00	14.14	0.50	4.38	14.18		14.19	2.50
16	25.50	2.25	18.50	19.00	20-1.38	22.50	5.75	16.00		3.25	16.16	0.50	4.75	16.19		16.19	2.69
18	28.00	2.38	21.00	21.00	24-1.38	24.75	6.25	18.00		3.50	18.18	0.50	5.12	18.20		18.19	2.75
20	30.50	2.50	23.00	23.12	24-1.38	27.00	6.38	20.00		3.75	20.20	0.50	5.50	20.25		20.19	2.88
24	36.00	2.75	27.25	27.62	24-1.62	32.00	6.62	24.00		4.19	24.25	0.50	6.00	24.25		24.19	3.25

The following charts are for reference use only. They are based upon older piping systems. Refer to current specifications when designing new systems



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ANSI B16.5 Class 600 Welding Neck Flanges

Nominal Pipe Size	Outside Diameter (A)	Thickness (C)	Raised Face Diameter (G)	Length Thru Hub (D)	Point of Weld (E)	Hub Diameter (F)	Bore (B)	Approximate Weight (lbs)	Bolt Circle (F)
1/2	3.75	0.56	1.38	2.06	0.84	1.5	Purchaser by purchaser	2	2.63
3/4	4.63	0.63	1.69	2.25	1.05	1.88	Purchaser by purchaser	4	3.25
1	4.88	0.69	2	2.44	1.32	2.13	Purchaser by purchaser	4	3.5
1 1/4	5.25	0.81	2.5	2.63	1.66	2.5	Purchaser by purchaser	6	3.88
1 1/2	6.13	0.88	2.88	2.75	1.9	2.75	Purchaser by purchaser	8	4.5
2	6.5	1	3.63	2.88	2.38	3.31	Purchaser by purchaser	12	5
2 1/2	7.5	1.13	4.13	3.13	2.88	3.94	Purchaser by purchaser	18	5.88
3	8.25	1.25	5	3.25	3.5	4.63	Purchaser by purchaser	23	6.63
3 1/2	9	1.38	5.5	3.38	4	5.25	Purchaser by purchaser	26	7.25
4	10.75	1.5	6.19	4	4.5	6	Purchaser by purchaser	42	8.5
5	13	1.75	7.31	4.5	5.56	7.44	Purchaser by purchaser	68	10.5
6	14	1.88	8.5	4.63	6.63	8.75	Purchaser by purchaser	81	11.5
8	16.5	2.19	10.63	5.25	8.63	10.75	Purchaser by purchaser	120	13.75
10	20	2.5	12.75	6	10.75	13.5	Purchaser by purchaser	190	17
12	22	2.63	15	6.13	12.75	15.75	Purchaser by purchaser	225	19.25
14	23.75	2.75	16.25	6.5	14	17	Purchaser by purchaser	280	20.75
16	27	3	18.5	7	16	19.5	Purchaser by purchaser	390	23.75
18	29.25	3.25	21	7.25	18	21.5	Purchaser by purchaser	475	25.75
20	32	3.5	23	7.5	20	24	Purchaser by purchaser	590	28.5
22	34.25	3.75	25.25	7.75	22	26.25	Purchaser by purchaser	720	30.63
24	37	4	27.25	8	24	28.25	Purchaser by purchaser	830	33