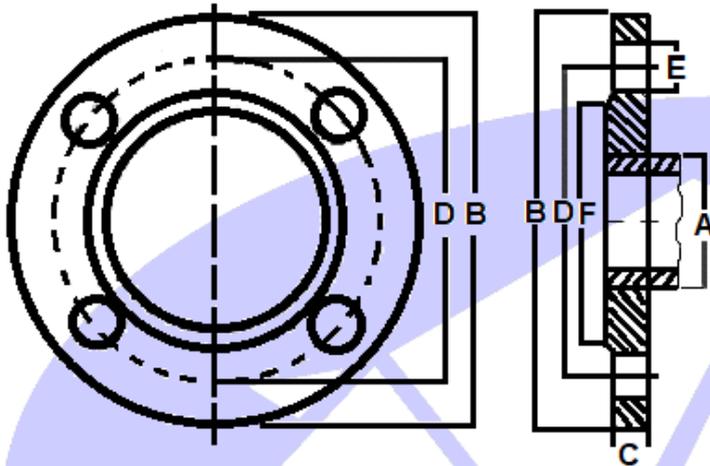




## IDENTIFYING FLANGES

### IMPORTANT INFORMATION NEEDED WHEN IDENTIFYING FLANGES



N.B. -----	NOMINAL BORE	-----	A
O.D. -----	OUTSIDE DIAMETER	-----	B
THICKNESS -----			C
P.C.D. ---	PITCH CIRCLE DIAMETER	-----	D
BOLT HOLE DIAMETER -----			E
RAISED FACE OR FLAT FACE -----			F
NUMBER OF BOLT HOLES			

Once you have the important information it is simply a matter of identifying what Table Flange you require from the Flange Tables on the following pages

### SOME INTERESTING FACTS

Every Flange is made to a Specification, whether it be to the old BS10 (Imperial British and still very popular), ASA (Imperial, American), BS4504 (Metric, British), SABS1123 (Metric, South African), DIN (Metric, German) or JIS (Metric, Japanese). They all are also available in various different Configurations, Slip-On (Weld-On), Threaded, Socket Weld, Weld-Neck, Bossed and Blank. The Specification also denotes whether the Flange should be Raised Face or Flat Face. (Raised Face for higher Pressures and Flat Face for lower Pressures). Contrary to the fact, a lot of Clients want Flat Face instead of Raised Face as called for by the Specification.

Flanges sound simple, but in actual fact can become quite complicated. As one can see by this to say "Looking for a Flange" will result in a whole lot of questions being asked.

The following Pages are designed to simplify the Matching Up Process, and the Imperial Measurements on the Old Tables have been converted to Metric to ensure they are user friendly.

# SELECTING A BOLT SIZE FOR YOUR FLANGE



There is nothing more frustrating than at the point of Bolting two Flanges together or Bolting a Flange to a Valve, that you find the Bolts you have are too Short or too Long. Here is a guide to make sure this does not happen.

Firstly, measure the Diameter of the Bolt Hole in the Flange or Valve to confirm what Diameter of Bolt is required.

Then measure the Thickness of the Flange and double it. Add on 3mm for a Gasket and  $1 \frac{1}{2}$  times the Diameter of the Bolt to allow for the Nut, Washer and  $\pm$  two to three Threads at the end of the Nut.

## EXAMPLE

If the Diameter of the Bolt Hole is 18mm then a 16mm Bolt is required, if the Thickness of the Flange is  $18\text{mm} \times 2 = 36 + 3\text{mm (Gasket)} = 39\text{mm} + 1 \frac{1}{2} \times 16 \text{ (Bolt Diameter)} = 63\text{mm}$

Standard Bolt Size is 16 X 65mm which is needed to Bolt two Flanges together. In the case of Bolting a Flange to a Valve, the Valve's Flange is usually thicker than a Plate Flange, so it is advisable to obtain the correct thickness of the Flange on the Valve.

The Length of Bolts given in the Flange Tables which follow are for Bolting two Plate Flanges together.

# TIPS AND HINTS

The high cost of generating Steam in these times, whether it be with coal, oil or electricity makes it essential that your Steam Traps are operating correctly and efficiently. The use of Drip Les seems not to be adhered to of late. It is a very important part of your condensate Recovery System, please feel free to ask us for advice.

Correct Water Treatment of your Boilers' water is essential. It will prolong the life of your Boiler Tubes, Pipes, Fittings and Valves in your Steam Installations. The end result is cost savings, and that concerns us all.

Pressure Gauges are a very important commodity in any plant. It is essential that you install the correct Gauges for your application. Glycerine filled for vibration, not high temperatures, they would need to be Silicone filled. Steam Gauges for high temperatures and fit Snubbers or Gauge Savers for Pulsation. A point to remember your working pressure should be read at the half way point of the Dial and not at maximum. If unsure just give us a call.

Water Hammer in Steam Lines and Air Lines is very dangerous and destructive to Plant and Equipment. Please ensure that when opening a Main Line Valve, the operator knows what is meant by "cracking" the Valve, instead of just opening the Valve fully straight away. If in doubt please ask us for Technical Assistance.

Eccentric Reducers are a very important commodity in Horizontal Steam and Air Lines. They enable the condensate to run freely towards the Steam Traps or Water Traps, thus eliminating a build-up of condensate in your Lines. In Steam Lines a build-up of condensate will result in temperature being affected. Please feel free to ask us for Technical Assistance when planning a new Line.

Periodical maintenance on all Strainers and Filters in your Lines is a must, as this reduces the chances of scale or dirt being trapped under Valve Seats and in the workings of Reducing Valves, Steam Traps, etc. it should be No 1 in our preventative maintenance schedule.

After repairs or maintenance on your Lines or Plant Equipment, PLEASE remember to flush the Lines or Equipment. This practice can save you hours or frustration after recommissioning only to find out that scale, etc. has landed up under all Valve Seats, and now you are faced with leaks everywhere.

Safety Valves and Relief Valves should be inspected at least once a year to ensure proper operation, therefore lessening the chance of unnecessary accidents which could in some cases be fatal. There is no price to put on safety.

Pneumatic Actuators are Air Operated as the name says, and Air carries Moisture. The moisture must be removed before it enters the Actuator as moisture entering the Actuator will shorten the working life of the Actuator. Make sure to install Air Filters before the Actuator.

The use of Vented Gauge Cocks on your Pressure Gauges will definitely prolong the life of your Gauges. The reason being that the Gauge is not permanently under pressure or in some cases pulsation. If unsure give us a call or drop us a mail.

Did you know that by fitting a Valve on your Strainers they become self-cleaning Strainers. Self Cleaning Strainers can save you a lot of downtime in your plant because the screens can be cleaned in line while the line is under pressure.

Don't spare the oil can. Wear on Valve Stem Packing is due mainly to the rising and turning motion of the Valve Stem, combined with deteriorating effects of service conditions.

A few drops of oil on the Stem, now and then, helps to reduce friction, and wear. Don't forget to lubricate exposed Stem Threads at the same time.

Condensate or slugs of water in Steam Lines can be dangerous. It can rupture Joints, Valves or Fittings, it can loosen Anchors or Supports. Eliminate this hazard by providing adequate drainage, using Steam Traps where applicable.

Stuffing box leaks usually can be stopped by merely tightening up the Packing Nut. On Bolted Glands care must be taken to tighten Bolts evenly as severely cocking the Gland will bind the Stem. If the Stuffing Box must be repacked, it usually can be done while the Valve is in service if it has a backseat.

Sudden stoppage of flow in Liquid Lines can cause Water Hammer. It can do serious damage. Adequate Air Chambers or other cushioning devices should be installed at Quick Opening or Closing Valves.

Pipe Hangers and Pipe Supports pay for themselves in maintenance savings. Piping won't stand up and work efficiently without adequate support or suspension. It's own weight plus the weight of the product inside the Pipe can cause a break in the Line, strain Joints to the point of leakage, or even distort or ruin Valves.

Good Piping practice requires the proper identification of all Lines. Operators should know the functions of every Line so that Valves can be operated quickly and properly in case of emergencies. Lines are normally identified as to their purpose by Tags, or painted colour identification.

One the most common causes of sluggish flow and trouble with water and oil piping systems is entrapped air. This condition can be remedied by equipping the Piping Systems with Automatic Air Vents. Like all well designed and sturdily built devices, these Valves require only routine maintenance.

Dirt means trouble – stop it with Strainers. Scale and dirt in Piping Systems cause endless trouble and frequently serious damage it gets on to Valve Seats and starts leakage. A generous use of Strainers is a small but sound investment for any piping system, regardless of how clean the piping materials are when installed.

If a Valve won't close and seal easily, don't try to overcome it by brute force. Avoid putting a Wrench or Pipe on the Handwheel or Lever for extra leverage. You may damage the Valve in any number of ways. To close a Valve properly bring the Disc to its Seat gently, back it off a turn, and repeat two or three times. This action will probably flush away whatever foreign matter had lodged on the Seat. If it doesn't, take the Valve apart, inspect and clean it.

Why take a chance on damaged threads. If the end is badly damaged, cut it off and rethread. Usually the damage can be repaired by running a die over the threads to clean up and straighten them. Damaged female threads can usually be repaired by screwing a Tap into them.

Good handling of piping materials begins with knowing the proper tools to use. Avoid bearing down on the Joint with an oversize Wrench or a Wrench with an Extension Handle. It often gives you more leverage than you need, and may result in pulling up a Joint so tight that the fitting will be cracked, the Valve twisted out of shape, or the Pipe run clear into the Seat.

When installing Safety Valves or Relief Valves on Air or Gas Lines the Valves should be installed upside down to allow moisture to collect and assist the Seal on the Sealing surfaces. When installing these Valves, Lines must be clean and free of all Scale and dirt otherwise the Valves will leak.

Flange Gaskets should be coated with a little Graphite and Oil or other recommended Lubricant before they are inserted. They are then easier to remove if the Joint is opened for maintenance, etc at a later date.

Strainers reduce maintenance costs and lengthen the life of Valves, Regulators, Traps, Gauges and all automatic devices in your pipe lines. Dirt means trouble, stop it with Strainers. Accumulated sediment should be blown out at regular intervals.

Our Actuators are lubricated for life at the factory as long as they are operated with clean, dry, air. It is extremely important to fit airline filters on your lines just before it enters the Actuator. Your cost savings on servicing versus replacement speak for themselves.

Safety and Relief Valves have to be sized for an application. For example, if you have a 25mm line it does not mean that you need a 25mm Relief or Safety Valve. They should be sized according to the capacity of the Valve at a set pressure. If the Valve is too small it will not be able to handle the discharge capacity required, and if the Valve is too big it will overwork and wear out long before its time.

Steam Trapping is a very important part of your Steam Installations. Steam Trapping Stations can only operate effectively if they are installed on a Drip Leg. Please enquire for further information.

All Shut Off Valves, whether it be a Gate, Globe or Ball Valve should be operated at least twice a year if they are usually left in a Fully Open or Fully Closed Position. This will prevent the Valve from seizing up or sticking when it is needed in an emergency. It should be part of your routine maintenance plan.

Any Valve that is direction sensitive, MUST be installed correctly, that is why it has a Flow Direction Arrow cast in the body. It is amazing how many times we are called out that the Valve is not working or has even destroyed itself and the problem is that it has been installed the wrong way around. Flow Direction is extremely important in the case of Reducing Valves, Solenoid Valves, Steam Traps and Control Valves.

When installing Pressure Reducing Valves or Regulating Valves it is of utmost importance to install Strainers before the Valves. Any debris from the Lines which enters the Valves will result in poor or no performance. This is probably a daily occurrence we come across in our Workshop.

Use the correct Wrench, and a Stilson Wrench is not the correct Wrench to use on Brass and Bronze Valves, we are constantly asked to repair Valves which has basically been destroyed upon installation or removal by the teeth a Stilson Wrench. Brass and Bronze are both soft materials and cannot withstand abuse from using the incorrect Wrench.

A major problem with routine plant maintenance is Bolts and Nuts on Flanged Joints that have seized due to heat or age, and Gaskets that have stuck to Flange Faces. To prevent both these problems use a Copper Compound on the Bolt Threads on reassembly, and a Graphite Powder on the Gasket Faces.

Raised Faces on Flanges are there for a very important reason, which is to obtain and maintain a Seal at high pressure. Raised Faces on Flanges and Valves should be mated with each other. It is unadvisable and not normal industry practice to mate a Raised Face to a Flat Face. Normally any 150 P.S.I. or 1600KPa rated Flange shall have a Raised Face as per the specification.

It still amazes us on our travels to factories and plants, how many of them pipe their condensate lines straight down the drain. They are literally throwing money down the drain. The Condensate is treated and heated and should be returned to the Boiler Feed Tank. Speak to us about condensate recovery and start saving.

Put the Pipe in the vice not the Valve then turn the Valve or Fitting. Always put your Wrench on the end of the Valve or fitting being screwed onto the pipe. This gives better leverage and prevents the possibility of twisting unsupported Valve Body, or damaging its working parts.

Blow out all pipe before installing, it may prevent breakdowns later. It's easy for sand, dirt and scale to accumulate in pipe stored in a yard or a shed. Use compressed air to blow out pipe thoroughly. Never fail to take this precaution, not only for new materials but when using old materials as well. You would be amazed to know what we have found in pipes, old and new.

More and more we are receiving Valves for repair which only have to be cleaned to be put back into service, especially Solenoid Valves which have a Breather Hole in the Diaphragm which becomes blocked with dirt. In the meantime the Plant is down. This once again emphasizes the importance and the need for Strainers and Filters. Most times they are looked upon as an unnecessary expense, but, are they?

Did you know that a P.N Rating on a Valve is a Cold Rating. For example PN16 is rated at 16 Bar Cold Service. If it is required for Hot Service the Rating must be halved. On the other hand if the Valve has a P.S.I. Rating it is a Hot Rating. In other words if the Valve is rated at 150 P.S.I Hot Service Rating and can be doubled for a Cold Rating, example 300 P.S.I Cold Service.

It is common knowledge that dirt or scale cause major problems in your cars fuel system, blocking carburetor seats or injectors, your car will leave you stranded. Just like your car, your plant can leave you stranded for the same reason. Every Valve in your Plant has a Seat of some kind and therefore it is of utmost importance to use Strainers and / or Filters in your Plants Lines. They WILL save you costly repairs.

When actuating a Valve, whether it be Pneumatic or Electric Actuators, the operating Torque of the Valve to be actuated is extremely important. If the actuator is undersized, the Valve will not operate correctly, if the actuator is oversized, you are wasting money. There is no "Standard Torque". Be "Actuator Wise" and remember wet or dry media passing through the Valve, affects the Torque needed to operate the Valve correctly.

It is imperative to fit Air Filters on Pneumatic Actuators. Over time condensate builds up inside the Actuator, and the performance of the Actuator will progressively worsen, until, it eventually stops functioning. Believe it or not this ACTUALLY happens and the first thing to carry the blame is the Actuator.

Many problems occur with Water Meters because of stones or sand hitting the impellers which is the heart of the Water Meter. The majority of Water Meters are designed for CLEAN water, unless otherwise stated. It's amazing what some people's understanding of "Clean Water" is. Strainers are the answer, fit them as a precaution it will save you time and money

Electric Actuators and vibration do not go together well. Any electronic equipment subject to vibration will eventually fail, because of its fragile nature. Although the Actuators are, and look, of robust design they cannot withstand constant vibration. Please ensure some kind of anti-vibration mechanism is installed

Firesafe versus fireproof design. Two totally different Valves, only a certified fireproof Valve can be used in fireproof applications. Fireproof design means absolutely nothing, it is NOT certified. When a fire is experienced in a refinery or depot, it is bad time to find out that your Valves are not "Fire Safe".

Heavy Duty Hose Clamps have a very limited adjustment, so we strongly suggest when ordering Heavy Duty Hose Clamps to supply us with Outside Diameter of the Hose. This will ensure that the correct size Clamp is supplied first time. This will save a lot of frustration when you find the Clamp is either too small or too big.

Syphon Tubes are a very necessary item to use with Steam Gauges on Steam Lines. The build-up of condensate in the Syphon Tube prevents live steam from entering the Gauge thus prolonging the life of the Gauge. Although they are Steam Gauges, it is essential to fit a Syphon Tube.