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Supplier of equipment and raw materials needed for oil, gas and petrochemical industries.
As an independent Iranian company, Omran Palayesh Parse refinery is proud.
has been successful for twenty years in the oil, gas, refinery, petrochemical and power plant industries in the field of industrial equipment in the field of piping and precision machine tools of global standards.

In order to provide better services to different national industries,this company is expanding its warehouse with a square footage of 30,000 meters in this private sector.

Omran Palayesh Parse company,with the help of God's grace and the use of technical and engineering groups, has positive activities in the field of implementing orders for large and medium industries and is currently focused on providing technical and engineering services in the field of procurement of mechanical goods, and electricity precision tools. It includes the development of power plant industries, power transmission stations, oil, gas, petrochemical industries and other services related to the needs in the mentioned industries.

It is prepared to use all its scientific, experimental, technical and engineering information in providing services to all industrial units
and hopes that companies will provide services in a positive and favorable manner.


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FLANGE | Slip On Flanges |

Slip on Flange Is fundamentally a ring placed over the end of the pipe, with a flange face extending from the end of the pipe by sufficient distance to apply a welded bead to the inner diameter. As the name suggests these flanges slip over a pipe and hence known as Slip On Flanges. A slip-on flange is also known as SO flange. It's a kind of flange that are slightly bigger than the pipe and slides over the pipe, with internal design. Since the inner dimension of the flange is slightly bigger than the external dimension of the pipe, the top and bottom of the flange can be connected directly to equipment or pipe by fillet welding the SO flange. It is used to insert the pipe into the flange's inner hole. Slip-on pipe flanges are used with a raised or flat face. Slip-On Flanges are a suitable choice for low-pressure applications. Slip on flange is excessively utilized in many fluid pipelines.

WELD NECK FLANGES

Weld Neck Flange also known as a tapered hub flange or high-hub flange. Weld neck flange (WN flange) has a neck that can move the pipe tension, thereby reducing the pressure gathered in the bottom of the flange. It is compatible with the pipelines which operate at high or low temperatures and withstand high pressure. Welding Neck Flanges are effortlessly identifiable at the long tapered end, which slowly passes through the wall thickness from a pipe or fitting. The long tapered hub provides significant shielding for use in multiple applications involving high pressure, sub-zero and/or high temperatures. A weld neck flange comprises of a circular fitting with a protruding edge around circumference. Weld Neck Flange has been used successfully at pressures up to 5,000 psi.

SOCKET WELD FLANGES

The Socket weld flanges are only connected on the outside by one fillet weld, and are often not advised for critical services.

These are mostly used for the small-bore lines. Their static strength is equivalent to Slip On flanges, but their fatigue strength is 50 percent higher than double-welded Slip On flanges. For this type of flanges, the thickness of the connecting pipe should be defined to ensure proper bore length. Before welding,a gap must be formed in the socket weld flange between the flange or fit and the pipe. The objective of a Socket Weld's bottom clearance is generally to minimize the residual pressure at the weld root that could occur during weld metal solidification. The socket weld flange's drawback is the right space, which must be made. The crack between the pipe and the flange can cause corrosion problems by corrosive products, and mostly in stainless steel pipe systems. This flange is not allowed in some processes. Also for this flange, that principle must always be welded first by a pipe and then simply by a fitting.

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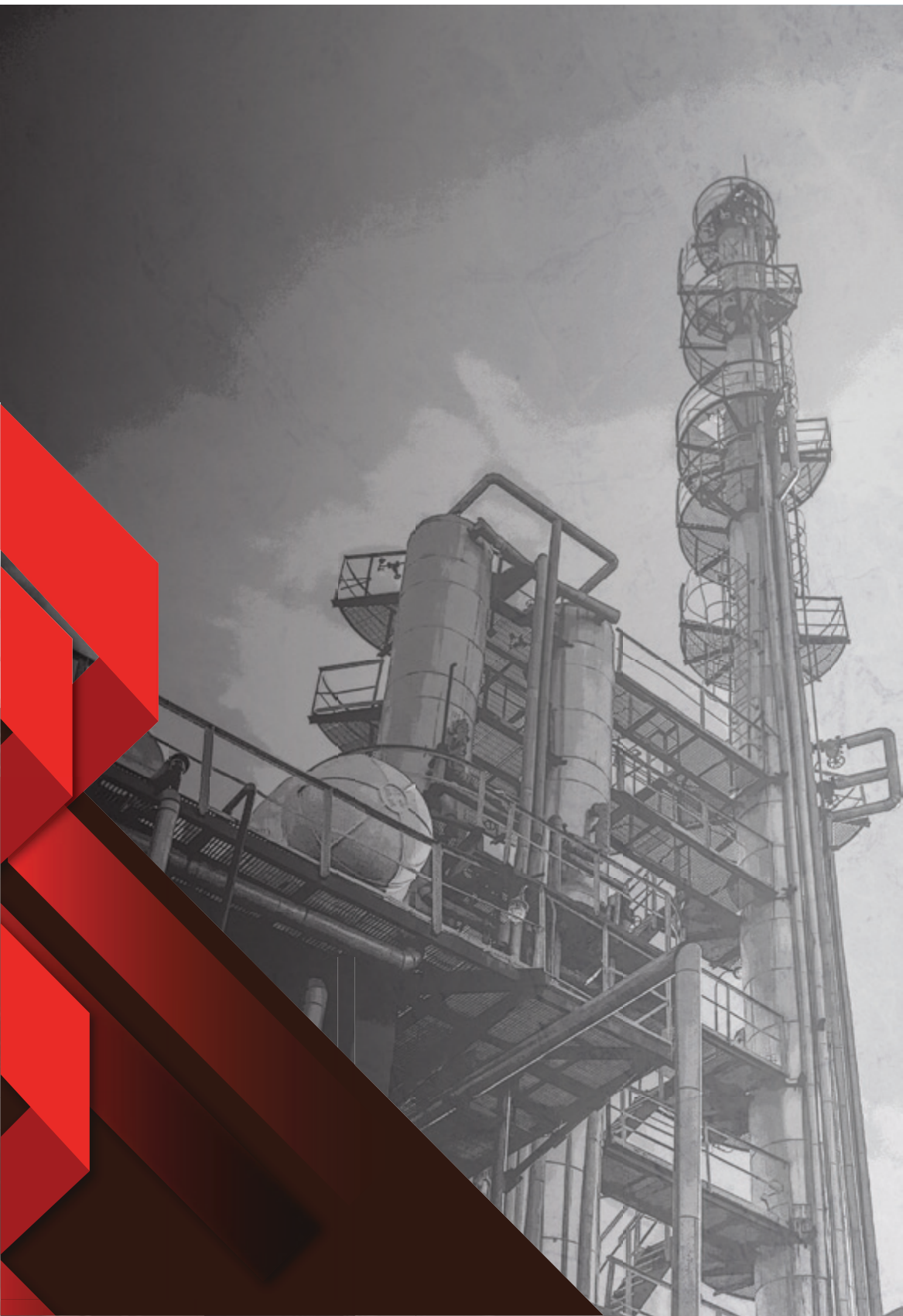


BLIND FLANGES

Blind Flanges are produced without a bore and are utilized to blank off the ends of pipes, valves and pressure vessel openings. From the point of view of internal pressure and bolt loading, the most overstressed flange types are blind flanges, especially in bigger sizes. Nevertheless, most of these pressures are bending types near the center and, as there is no standardized inner diameter, these flanges are ideal for higher pressure temperature systems. The function of these flanges is to obstruct a segment of the pipe or a nozzle on a vessel that is not in use. The nozzle will often be blanked off with a blind flange for pressure checks in a plant or simply because the consumer does not need all the nozzles that were provided on the tank.

SPECTACLE BLIND FLANGES

Spectacle Blinds are typically used for permanently splitting pipe networks,or simply for connecting to each other.A Spectacle Blind is a steel plate which has been cut into two discs of a certain thickness. The two discs are connected to each other by a part of steel similar to the piece of a pair of glasses on the nose. The name derives from the fact that the assembly looks like eyeglasses or “spectacles.” One of the discs is a solid plate, while the other is a ring who’s an inner diameter equivalent to that of a flange.Spectacle Blinds are used in structures that need to be segregated from other installations on a regular basis. The Spectacle Blind is usually installed in the “open” position so that the flow through the pipe is feasible. If the Spectacle Blind is rotated in the “close” position, the pipe is blanked off and no flow is feasible.

LAP JOINT FLANGES

Lap joint flanges are used with stub ends when the pipe is made of expensive material. For e.g., a carbon steel flange can be added to the stainless steel pipe system because the flange will not come into contact with the substance in the pipe. The stub ends will be butt-welded to the pipe and the flanges will remain loose.The inner radius of these flanges is beveled edge to clear the stub end radius. Lap joint flanges are almost similar to the Slip On flange,except for the radius at the intersection of the flange face and the bore to accommodate the flanged portion of the Stub End.Their ability to hold pressure is little,if any, stronger than that of Slip On flanges, and the fatigue life of the assembly is only one-tenth that of the Weld Neck flanges. Lap joint flange is therefore used in low-pressure and non-critical applications.

THREADED FLANGES

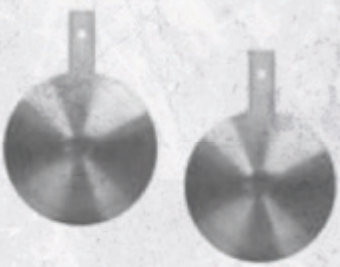
Threaded flanges look nearly identical to Slip-On flanges but the key difference is that the threaded flange has been bored out to match the inside diameter of a particular pipe.Threaded flange is a type of flange that has taper pipe threads in its bore conforming to ASME B1.20.1 and can be used in piping systems where welding flange onto the pipe is not possible, such as highly explosive areas where welding can develop potential risk.The threaded flange is fixed onto a pipe that has additional threads to the taper pipe Galvanized and cast-iron piping is commonly used with threaded flanges. In very high pressure systems and for small diameters, threaded flanges can be used and their main benefit is that they can be installed without welding.

LONG NECK WELD FLANGES

In high pressure and high (or fluctuating) temperature situations, primarily in the oil and gas industry the long welded neck flanges (often abbreviated to LWN) are used. The long neck guides the pipe into the flange itself and offers reinforcement that is not possible with a standard welded neck flange. This reinforcement is quite essential for the safety of industrial, commercial and even residential high pressure systems. Unlike many other types of flanges, Long Weld Necks have no schedule bores. Typically, long welded neck flanges are made with square cuts to replace the pipe, and not to be welded to the pipe. The long weld-neck flange is generally the anchors for water-mains or gas sources being pumped into a larger network of pipes, like those in a factory or an apartment building.

SPADE AND RING SPACER FLANGE

Spade and Ring Spacer Flange are essentially similar to Spectacle Blinds,with the exception that they are not both connected.Spades and spacers are used in systems where maintenance isn't often required or they are often used in large pipe size applications.Spades can weigh hundreds of pounds depending on the flange sizes and the Stress levels. In order to avoid additional weight, the flange connection is specifically chosen not for the Spectacle Blind, but for 2 separate parts. High maintenance of the pipe system can be a major reason to temporarily replace the Ring Spacer with a spade.



ORIFLCE FLANGES

Orifice Flanges are used with orifice meters for the purpose of measuring the flow rate of either liquids or gases in the respective pipeline.Pairs of pressure“Tappings”,mostly on 2 sides, directly opposite each other,are machined into the orifice flange.Orifice Flange Unions are designed & manufactured to American Gas Association (AGA), ASME, and International Society of Automation (ISA) recommendations.Orifice Flange are available in wide array of the following types:Raised Face weld neck orifice flanges,Raised Face slip-on orifice flange,Ring-Type joint weld neck orifice flanges, Corner tap orifice flanges.

SCREWED FLANGES

Screwed flange are also known as a Threaded Flange, and it is having a thread inside the flange bore which fits on the pipe with matching male thread on the pipe and these flanges are mostly used in utility services such as air and water. Screwed flange is often used for requirements on small diameter, high pressure. Screwed flanges with a hub have issued requirements ranging from 1/2″ to 24″.Pressure class:Class 150 to Class 2,500,PN 2.5 to PN 250 and Facing:RF / RTJ Screwed flanges are threaded in a bore that matches the pipe’s external thread. Screwed flanges are used with external threaded pipes. The advantage of these flanges is that they can be mounted without welding.

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FLAT FACE

In the same plane, the Flat Face flange has a gasket surface as the face of the bolting circle.Applications using flat facial flanges are often those in which casting is made of the mating flange or flanged fitting. A flat steel flange is quoted as a flange which is machined flat and does not have a ridge-like elevated face or ring type joint flange.The loose flat flange flat surface allows full contact between the gasket and the entire matting surface.
Flat face flanges should never be bolted onto an elevated face flange. ASME B31.1 states that the elevated face on the carbon steel flange must be removed when connecting flat face cast iron flanges to carbon steel flanges and that a full face gasket is required. The flange face form refers to all applications in which cast iron and other brittle materials are used to produce equipment and valves.For “Flat Face” flanges only Full Face Gaskets are to be used.This ensures that the two mating flanges are in full and equal contact.

RAISED FACE FLANGES

The Raised Face flange is the most common type used in process plant applications,and can be easily identified.It is called an uplifted face because the surfaces of the gasket are raised above the face of the bolting circle.For all forged steel flanges like machinery and valves,this form of flange mask is commonly used.A wide combination of gasket designs can be used in the Raised face flanges.These combinations can also include Flat ring sheets and spiral wound and double jacketed type’s metallic components.
The Raised Face Flanges are used to concentrate more pressure on a smaller area of the gasket and thus increase the joint’s pressure containment capability.The Bolt holes are found in the outer ring region for those flanges.The“Move”adjustment between the heights of the two rings helps greater force to be applied to the gasket region,thereby creating a stronger seal when a gasket is attached and the bolts are mounted and torqued.Based on the pressure class, the flange face is either 1/16″ or 1/4″ ANSI 300 and under have a 1/16″ face raised, and ANSI 400 and higher have a 1/4″ face raised.

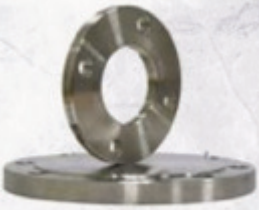
RING JOINT FLANGES(RTJ)

Ring joint flanges (RTJ) have grooves which cut the steel ring gaskets into their faces. When bent bolts push in the grooves the gasket between the flanges, the flanges close (or coin) the gasket and create intimate contact within the grooves,creating a metal to metal bond.Usually the Ring Style Joint flanges are used in systems over 427 °C with extreme pressure and high temperature.An RTJ flange with a ring groove machined into it may have an elevated face.The face raised does not act as any component of the means of sealing.The elevated faces of the attached and tightened flanges may touch one another for RTJ flanges which seal with ring gaskets. For this to occur,the ring joint gasket material must be weaker (more ductile) than the flange material.The strained gasket will not be able to withstand additional load in this case beyond the tension of the screw, vibration and motion cannot further crack the gasket and reduce the connection voltage.The R type with an octagonal portion is the most common RTJ gasket,as it guarantees an extremely strong seal.Nonetheless, a“simple groove”style recognizes that both RTJ gaskets have an octagonal or oval portion.

DIFFERENT TYPES OF INTERNATIONAL STANDARD FOR FLAGES|ASME B16.5 Flanges|

The ASME B16.5 standard covers NPS 1/2 through NPS 24 Metric / Inch steel pipe flanges and flanged fittings in pressure class 150 to class 2500.This includes levels of pressure-temperature,components, lengths, tolerances, naming,measuring and methods of designating openings for flanged fittings and pipe flanges.For piping structures two very critical flanges such as weld neck flange and blind flanges are widely used.Interchangeability is used for the word“B16.5” or “B16 5,” which corresponds to the same norm.The regular ASME B16 5 (ANSI B16 5), though, only includes measurements up to 24 inches. The current standard and the correct one is ASME B16.5. ANSI B16.5

is common in the lingo industry, and is still widely used by architects, engineers,manufacturers and suppliers.Even though the ANSI B16.5 standards does not exist technically,it was understood as a different way of saying ASME B16.5.



ANSI B16.47 FLANGES

ANSI B16.47 (Large Diameter Steel Flanges) is a standard for the flanges of steel pipes NPS 26 to NPS 60 in diameter. Nevertheless, the regular ANSI B16.47 is further split into Blind Flange and ANSI B16.47 Series A and ANSI B16.47 B flange Weldneck flange. The API 605 flange was formerly also known as the Series B flange. Terms B16.47 or B 16 47 or ANSI B 16 47 are interchangeable and conform to the same standard.

The latest version provides both metric and inch measurements and scores in units. MSSSP-44: Steel Pipeline Flanges and API 605: The ANSI B16.47 is fitted with large diameter Carbon Steel Flanges.Thus, the MSS SP-44 flanges are referred to as ANSI B16.47 Series A flanges, whereas within this standard the API 605 flanges are referred to as ANSI B16.47 Series B flanges.The ANSI B16.47 standard contains the requirements for pressure-temperature,parts,dimensions, tolerances,marking and examination of pipe flanges in sizes NPS 26 to NPS 60 and in classification grades 75, 150, 300, 400, 600 and 900 for larger sizes.

MATERIALS USED TO MANFACTURE FLANGES

These Steel flanges are manufactured from different materials such as Carbon steel, Low alloy steel, Stainless Steel Flanges, Duplex Steel Flanges,Super Duplex Steel Flanges,Monel Flanges,Inconel Flanges, Hastelloy Flanges,Nickel Flanges and Combination of Exotic materials (Stub) and other backing materials.

- Carbon Steel: – ASTM A105, ASTM A350 LF1/2, ASTM A181
- Alloy Steel: – ASTM A182F1 /F2 /F5 /F7 /F9 /F11 /F12 /F22
- Stainless Steel: – ASTM A182F6 /F304 /F304L /F316 /F316L/ F321/F347/F348
- Duplex Steel S31803 / S32205
- Super Duplex Steel S32750 S32760
- Titanium Grade 1 /2 /3 /4 /5 /7
- High Nickel Alloy: – Monel ASTM / ASME SB 564 400 /K500
- Inconel 600 /601 /625 /800 /825 /718
- Hastelloy C4 /C22 /B2 /B3
- Nickel 200/201
- Cupro-Nickel 70/30, 90/10, 95/5
- Hastelloy C276 Flanges
- Inconel 625 Flanges

A SME B16.9 BUTT_WELDING PIOE FITTINGS

ASME 16.9 covers overall dimensions,tolerances,ratings,testing,and markings for factory-made wrought butt-welding fittings in sizes NPS ½ through NPS 48 (DN 15 through DN 1200).The term “wrought” denotes fittings made of seamless or welded pipes,tubing,plates,or forgings. Metals-Piping supplies ASME B16.9 butt-welding pipe fittings in a comprehensive range of materials covering carbon steel,alloy steel, stainless steel and non-ferrous metals.These fittings include long radius elbows,reducing elbows,long radius returns,short radius elbows,short radius180° returns,3D elbows,straight tees,straight crosses,reducing tees, reducing crosses,lap joint stub ends,caps,concentric reducers, and eccentric reducers. All fittings supplied shall be free of imperfections such as dents,scratches,sharp intersections(corners), pits, and creases, etc.

CODES & REGULATIONS

ASME B16.9 butt welding pipe fittings shall be selected and used under the jurisdiction of the ASME Boiler and Pressure Vessel Code,or ASME Code for Pressure Piping.

WALL THICKNESS & WELDING ENDS

The wall thickenss may be designated in conformance with ASME B36.10 or ASME B36.19.Three types of welding ends may be furnished in accordance with ASME B16.25: square cut, plain bevel and compound bevel.

MATERIAL & RELATED STSNDARDS

ASTM A403 STAINLESS STEEL BUT WELDING FITTINGS MADE TO ASME B16.9

Materials-Standards for ASME B16.9 Fittings	
ASTM Standards	Material Specification
A234	Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service
A403	Wrought Austenitic Stainless Steel Piping Fittings
A420	Wrought Carbon Steel and Alloy Steel for Low Temperature Service
A815	Wrought Ferritic, Ferritic/Austenitic, and Martensitic Stainless Steel Piping Fittings
A361	Wrought Aluminum and Aluminum Alloy Welding Fittings
A363	Seamless and Welded Unalloyed Titanium and Titanium Alloy Welding Fittings
A366	Wrought Nickel and Nickel Alloy Fittings

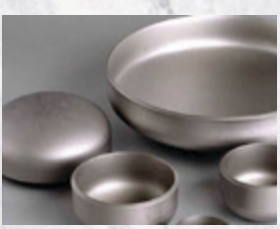
ASME B16.9 LONG RADIUS ELBOWS

ASME B16.9 LONG RADIUS RETURNS

ASME B16.9 SHORT RADIUS 180_DEG RETURNS

ASME B16.9 3D ELBOWN

ASME B16.9 CAPS



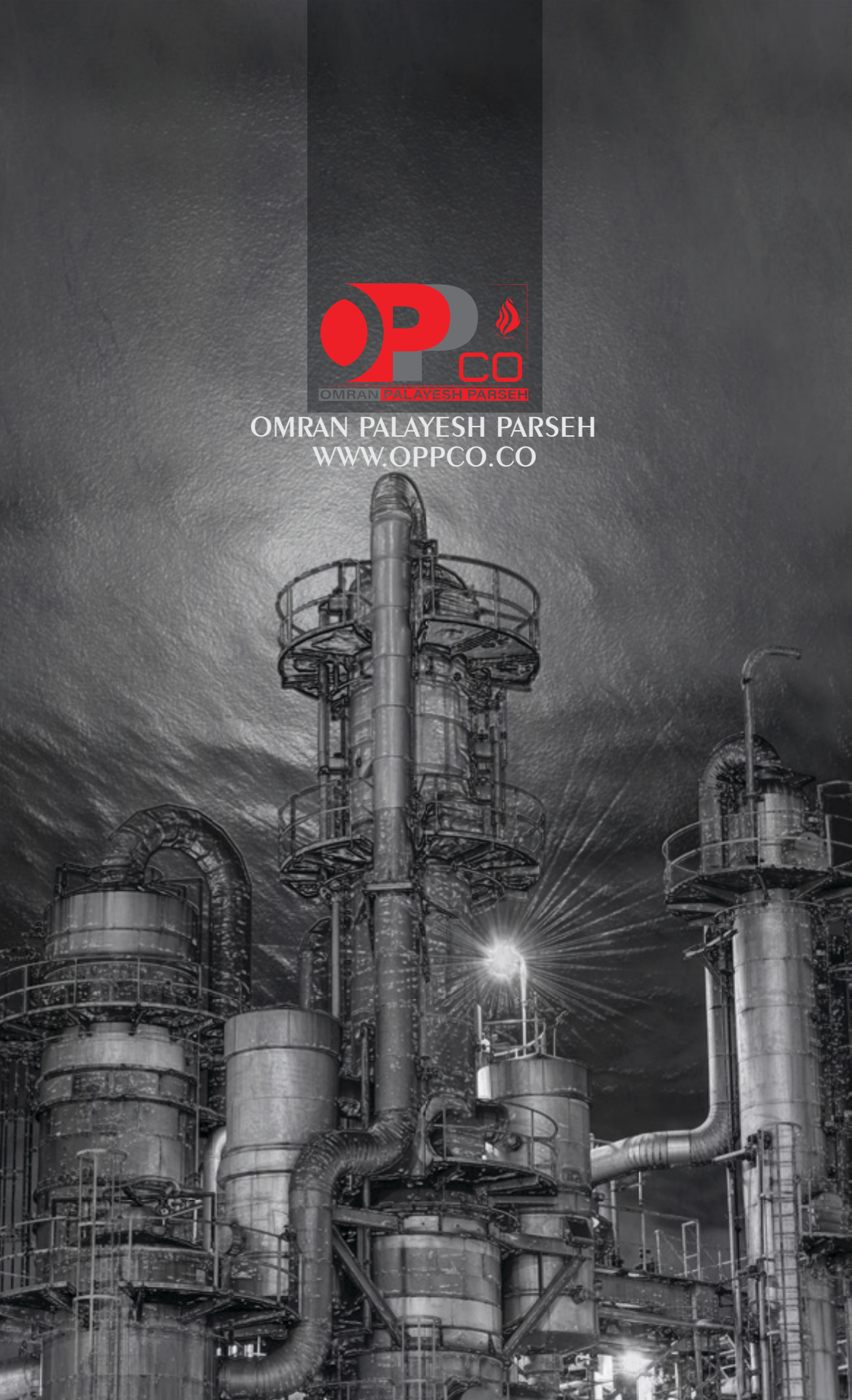
ASME B16.9 STRAIGHT TEES AND CROSSES

ASME B16.9 REDUCERS

ASME B16.9 SHORT RADIUS ELBOWS

ASME B16.9 REDCING TEES AND REDUCING CROSSES

ASME B16.9 CAPS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PIPES

Nominal Pipe Size

Nominal Pipe Size (NPS) is a North American set of standard sizes for pipes used for high or low pressures and temperatures.The name NPS is based on the earlier "Iron Pipe Size" (IPS) system.
That IPS system was established to designate the pipe size.The size represented the approximate inside diameter of the pipe in inches.An IPS 6" pipe is one whose inside diameter is approximately 6 inches. Users started to call the pipe as 2inch, 4inch, 6inch pipe and so on. To begin, each pipe size was produced to have one thickness, which later was termed as standard (STD) or standard weight (STD.WT.). The outside diameter of the pipe was standardized.

As the industrial requirements handling higher pressure fluids, pipes were manufactured with thicker walls,which has become known as an extra strong (XS) or extra heavy (XH). The higher pressure requirements increased further, with thicker wall pipes. Accordingly, pipes were made with double extra strong (XXS) or double extra heavy (XXH) walls, while the standardized outside diameters are unchanged.Note that on this website only terms XS and XXS are used.

PIPE SCHEDULE

So, at the IPS time only three wallticknesss were in use. In March 1927, the American Standards Association surveyed industry and created a system that designated wall thicknesses based on smaller steps between sizes.
The designation known as nominal pipe size replaced iron pipe size, and the term schedule (SCH) was invented to specify.
the nominal wall thickness of pipe. By adding schedule numbers to the IPS standards, today we know a range of wall thicknesses, namely.

SCHEDULE: 1,000(P/S)
P = internal service pressure of the pipe (psig)
S =ultimate tensile strength of the pipe material (psi).
SCH 5, 5S, 10, 10S, 20, 30, 40, 40S, 60, 80, 80S, 100, 120, 140, 160, STD, XS and XXS.
Nominal pipe size (NPS) is a dimensionless designator of pipe size.It indicates standard pipe size when followed by the specific

size designation number without an inch symbol.
For example,NPS 6 indicates a pipe whose outside diameter is 168.3 mm. The NPS is very loosely related to the inside diameter in inches,and NPS 12 and smaller pipe has outside diameter greater than the size designator. For NPS 14 and larger, the NPS is equal to 14inch.

For a given NPS,the outside diameter stays constant and the wall thickness increases with larger schedule number. The inside diameter will depend upon the pipe wall thickness specified by the schedule number.

SUMMARY

Pipe size is specified with two non-dimensional numbers,
- nominal pipe size (NPS)
- schedule number (SCH)

and the relationship between these numbers determine the inside diameter of a pipe.
Stainless Steel Pipe dimensions determined by ASME B36.19 covering the outside diameter and the Schedule wall thickness. Note that stainless wall thicknesses to ASME B36.19 all have
an "S" suffix.Sizes without an "S" suffix are to ASME B36.10 which is intended for carbon steel pipes.
The International Standards Organization(ISO)also employs a system with a dimensionless designator.
Diameter nominal (DN) is used in the metric unit system.It indicates standard pipe size when followed by the specific

size designation number without a millimeter symbol. For example, DN 80 is the equivalent designation of NPS 3. Below a table with equivalents for NPS and DN pipe sizes.

NPS	1/2	3/4	1	1.1/4	1.1/2	2	2.1/2	3	3.1/2	4
DN	15	20	25	32	40	50	65	80	90	100

NOTE

For NPS ≥ 4, the related DN = 25 multiplied by the NPS number Do you now what is "ein zweihunderter Rohr". Germans means with that a pipe NPS 8 or DN 200. In this case, the Dutch talking about a "8 duimer". I'm really curious how people in other countries indicates a pipe.
Examples of actual O.D. and I.D.
Actual outside diameters

- NPS 1 actual O.D. = 1.5/16" (33.4 mm)
- NPS 2 actual O.D. = 2.3/8" (60.3 mm)
- NPS 3 actual O.D. = 3.1/2" (88.9 mm)
- NPS 4 actual O.D. = 4.1/2" (114.3 mm)
- NPS 12 actual O.D. = 12.3/4" (323.9 mm)
- NPS 14 actual O.D. = 14"(355.6 mm)

Actual inside diameters of a 1 inch pipe.

- NPS 1-SCH 40 = O.D.33,4 mm - WT. 3,38 mm - I.D. 26,64 mm
- NPS 1-SCH 80 = O.D.33,4 mm - WT. 4,55 mm - I.D. 24,30 mm
- NPS 1-SCH 160 = O.D.33,4 mm - WT. 6,35 mm - I.D. 20,70 mm

Such as above defined, no inside diameter corresponds to the truth 1" (25,4 mm).
The inside diameter is determined by the wall thickness (WT).

ASTM	Carbon Steel	Alloy Steel	Seamless	Welded	Usage to be used
A53	√		√	ERW/FBW	General
A106	√		√		High temperature
A179	√		√		Exchanges
A200		√	√		Refinery
A209		√	√		Boiler
A213		√	√		Boiler
A333	√	√	√	EFW without filler metal	Low temperature
A335		√	√		High Temperature
A671	√	√		EFW with filler metal	Atmospheric Lower Temperature
A672	√	√		EFW with filler metal	Moderate Temperature
A691	√	√		EFW with filler metal	High Temperature

ASTM A53 (CARBON STEEL)

This specification covers seamless and welded black and hot –dipped galvanized Steel pipe in NPS 1/8 to 26 inclusive with nominal wall thickness.

ASTM A106 (CARBON STEEL)

This specification covers seamless carbon steel pipe for high temperature.

ASTM A179/A179 M (CARBON STEEL)

This specification coves seamless cold draw low carbon steel heat – exchanger and condenser tubes 1/8”(3.2mm) to 3”(76.2) included in outside diameter.

ASTM A200 (ALLOY STEELS)

This specification covers several grades of minimum wall Thick ness chromium-molybdenum and chromium molybdenum silicon - seamless hot finished and cold finished,intermediate alloy – steel tubes,for use in carrying fluids at elevated temperatures and pressure in various types of heaters, in which the tubes may be subjected to a furnace temperature higher Than that of that of the contained fluid size.

Size range outside diameter: (50.8 to 228.6mm)

ASTM A200 (ALLOY STEELS)

This specification covers several grades of minimum wall Thick ness, seamless, carbon – molybdenum alloy Steel, boiler and super heater tube.

Size range: outside diameter 12.7 mm to 127mm

ASTM 213/A213 (FERRITIC ALLOY STEEL)

This specification covers minimum- wall- thickness, seamless

ferritic and austenitic Steel ,boiler and super heater tubes Size range (3.2mm) in inside diameter to (127mm) in outside diameter.

ASTM A333/A333M (LOW TEMPERATURE STEELS)

This specification covers seamless and welded Steel pipe for low temperature service.

ASTM A335/A335 M (ALLOY STEEL)

This specification covers the seamless ferritic alloy Steel pipes for high Temperature service

ASTM A671/A94 672/ASTM A691

This specification cover electric- fusion welded Steel pipe with filler metal added, fabricated form pressure vessel quality plate and Suitable for high pressure service.

- A 671-94: at atmospheric and lower temperature.
- A 672-94: at moderate temperature
- A 691-93: at high temperature

Size range: outside diameter: 405 mm or larger
Wall Thickness:(604mm or greater)
ASME B 36.10
This standard covers the standardization of dimensions of welded and seamless wrought steel pipe for high or low temperatures and pressure.

CASING & DRIIL PIPES

This standard is for carbon steel and alloy steel
Wall thickness is o.312 to 2 in (105 to 126 mm)
Standard: ASTM A 106 – 2006 , API 5 CT , API 5 L,API 5 DP, ASME /ANSI B 36.10
PSL 1 A25 - A-B - X 42 - X46- X52 - X56- X60 - X65 - X70
PSL 2 B – X 42 – X 46 – X 52 – X 56 – X 60 – X65 – x 70 – X80

VALVE

API 594 check valve- Titlt , swing & Dual Flap Flanged , log , wafer & BUTT WELD Ends.
This standard covers the design, materials, face to face dimension, pressure – Temperature ratings
API 600: cast steel cate valves - Flanged & Butt welding ends API 600 is the main steel cate valve specification.

API 602: compact steel cate valve – flanged threaded welding and Extended-Body Ends.
API 602 is for too NB (4”) & smaller forged steel gates valve specification.

API 603: cast Gate valve corrosion-resistant, Flanged- End API 603 covers light walled gate valve in size NPS 15 mm to 600 mm (1/2 through 24”) in classes 150,300&600.

API 623: cast globe valve – flanged & Butt-weld Ends This standard covers the rudiments for globe valve used in the downstream re finery industry for oil and gas.

API608: Steel Ball valve – flanged and Butt welding Ends
Typically used for floating ball valves API 608 is the purchase specification for class150,300,600 and 800 class Steel batt valve.

API 609: Butter fly valve – Lug – type and wafer – Type and wafer – type. API 609 is a specification for butterfly valve with Lug – Type and wafer – type. Configurations designed for installation.
Between ANSI B16 Flanges, 15 To 1500 class.
API 598 valve inspection & Testing.
API 598 covers the testing and inspection requirements for check, gate, ball, plug & butterfly valve.

API 6 D:specification for pipeline valve Gate,plug,Bull and check valve s.
ASME / ANSI B 16.34: Steel valve – Flanged & Butt-welding Ends.
ASME B16.34. Is the standard in which – steel valve pressure / temperature ratings are specified.
ASME B 16.15 Face to face Dimensions of ferrous valve.
B16.15 specifications the face–to–face dimension of all flanged and butt-weld end valves.

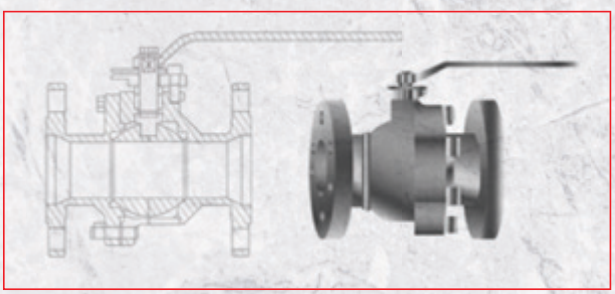
COMMON VALVE TYPES & RELATED TEST STANDARDS

Valve type	common test standard
Steel ball, gate, globe and check valve	API 598
cast Iron. gate valve	API 598, MSSP SP 70
Bronze gate, globe and check	MSSP SP 80
Pipe line valves	API 6 D,ISO 5208
Cast Iron check valve	API 598, MSSP SP 71
Cast Iron globe valve	API 598, MSSP SP 85
Cast Iron plug valve	API 598, MSSP SP 78
Steel ball valve	API 598 , API 6D
Steel butterfly valve	API 598
Cryogenic valve	API 598,BS 6364
Pressure relief valves	API 521

BALL VALVE

Predominantly equipped with quick-acting 90-degree turn handles, these valves use a ball to control flow to provide easy on-off control. Generally accepted by operators to be faster and easier to operate than gate valves.
Ball valves are mainly designed to conform API 6D (Specification for pipeline valves) and ANSI B16.34 (Valves Flanged,Threaded and Welding End) or API 6A (Specification for Wellhead and Christmas Tree Equipment) in case of upstream applications.

Other related standards such as ANSI B16

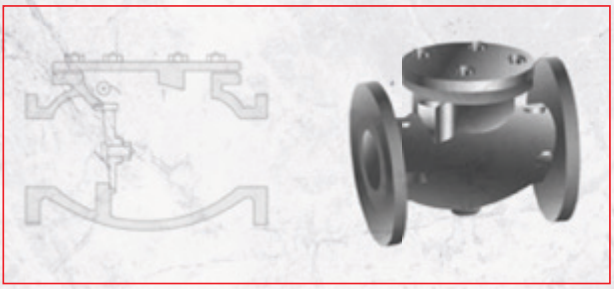


BUTTERFLY VALVE

Using a compact design, the butterfly valve is a quick-acting rotary motion valve ideal for tight spaces thanks to its wafer type design. Butterfly valve bodies are offered in many different configurations. The API 609, ASME B16. 34(pressure and temperature rating), API 598 (testing), ASME B16.5 and ASME B16. 47 (flanged ends) and ASME B16.25 specifications cover the dimensions and the tolerances of butterfly valves for the petrochemical industry and piping applications.

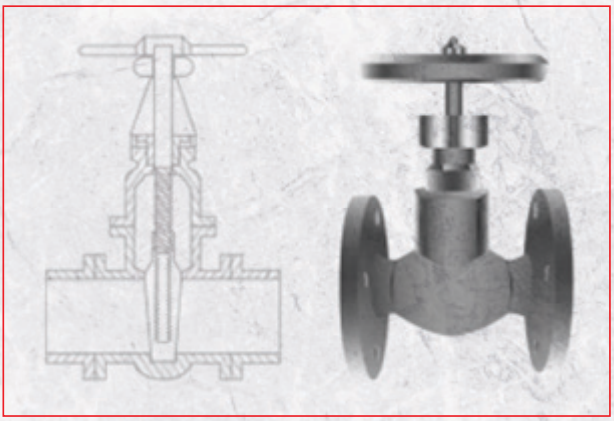
CHECK VALVE

Used to prevent backflow, these valves are typically self-activated allowing the valve automatically opens when media passes through the valve in the intended direction and close should flow reverse.
API Spec 6D-Specification for Pipeline Valves,End Closures,Connectors and Swivels
API Std 594 - Check Valves: Flanged, Lug, Wafer and Butt-welding



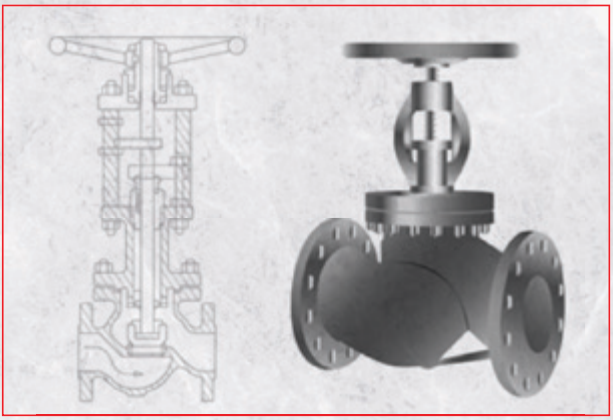
GATE VALVE

As one of the most common valve types, gate valves use linear motion to start and stop the flow. These are typically not used for flow regulation. Instead, they used in the fully open or closed positions.



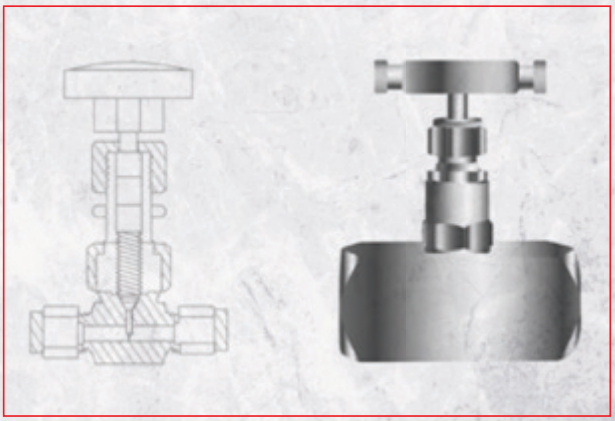
GLOBE VALVE

Globe valves are typically applied in modulating control operations. Y-Pattern, and Angle body.



NEEDLE VALVE

Typically used in small diameter piping systems when fine, accurate flow control is needed, Needle valves get their name from the point on a conical disc used within.

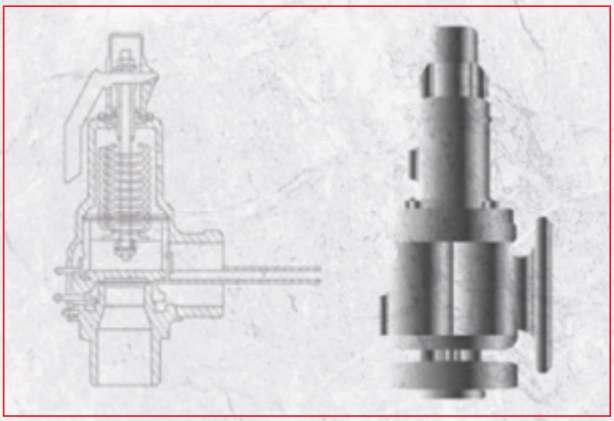


PLUGE VALVE

Using a quick-acting quarter-turn valve handle, these valves control flow using tapered or cylindrical plugs. They provide some of the best ratings when tight shutoff is essential and are reliable in or high-pressurehigh-temperature environments.

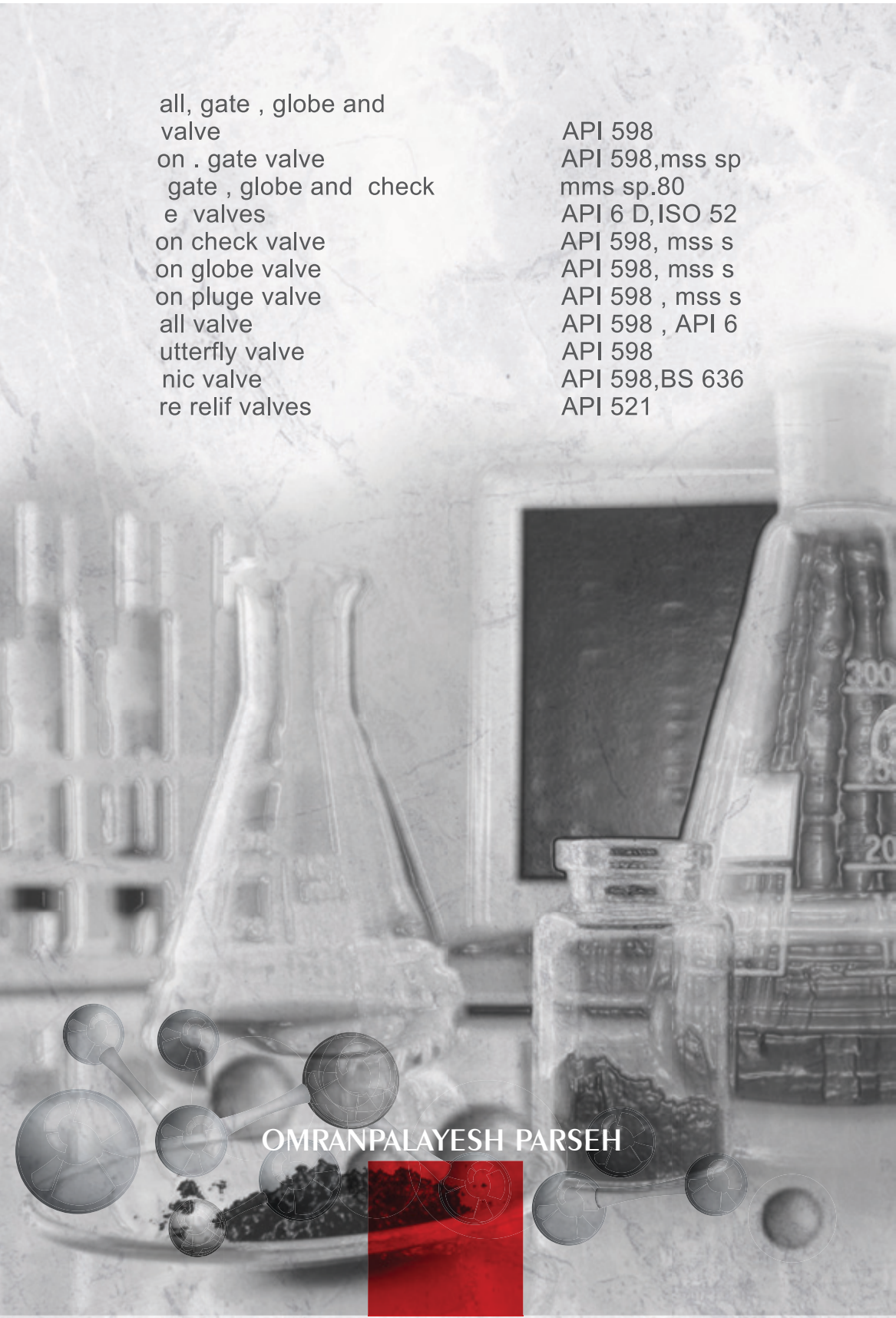
PRESSURE RELIEF VALVE

Used to help improve safety, these valves are spring-automated and will help to return a system to the desired pressure during over-pressure events.



API 597 check valve- Titlt , swing & Dual Flap Flanged , log , wafer & BUTT WELD Ends
This standard covers the design , materials , face to face dimension ,pressure – Temperature ratings
API 600 : cast steel cate valves- Flanged & Butt welding ends
API 601 : is the main steel cate valve specification
API 602 : compact steel cate valve – flanged threaded welding and Extended-Body Ends
API 602 is for too NB (4”) & smaller foged steel gates valve speci fication
API 603 : Gast Gate valve corrosion-resistant ,Flanged- End
API 603 covers light walled gate valve in size NPS 15 mm to 600 mm(1/2 through 24”), in classes 150,300&600
API 623 cast clobe valve – flanged & Buttweld Ends This standard covers the requiments for globe valve used in the downstream re finery industry for oil and gas
API608 Steel Ball vavle – flanged and Butt welding Ends
Typically used for floating ball valves API 608 is the purchase specification for class 150,300,600 and 800 class Steel batt valve
API 609 Buter fly valve – Lug – type and wafer – Type
API 609 is a specification for butterfly valve with Lug – Type and wafer – type
Configurations designed for installation
Bet ween ANSI B16 Floges , 15 To 1500 class
API 598 valve inspection & Testing
API 598 covers the testing and inspection requirements for check , gate , ball , play & butterfly valve
API 6 d : specification for pipeline valve Gate, plug , Bull and check valve s
ASME / ANSI B 16.34 : Steel valve – Flanged & Buttwelding Ends
ASME B16034. Is the standard in which – steel valve pressure / temperature ratings are specified
ASME B 16.15 Face to face Dimensions of ferrous valve
B16.15 specification the face – to –face dimen sion of all flanged and buttweld end valves
Common valve types & related test standards
Valve type common test standard

all, gate , globe and	
valve	API 598
on . gate valve	API 598,mss sp
gate , globe and check	mms sp.80
e valves	API 6 D,ISO 52
on check valve	API 598, mss s
on globe valve	API 598, mss s
on pluge valve	API 598 , mss s
all valve	API 598 , API 6
utterfly valve	API 598
nic valve	API 598,BS 636
re relif valves	API 521



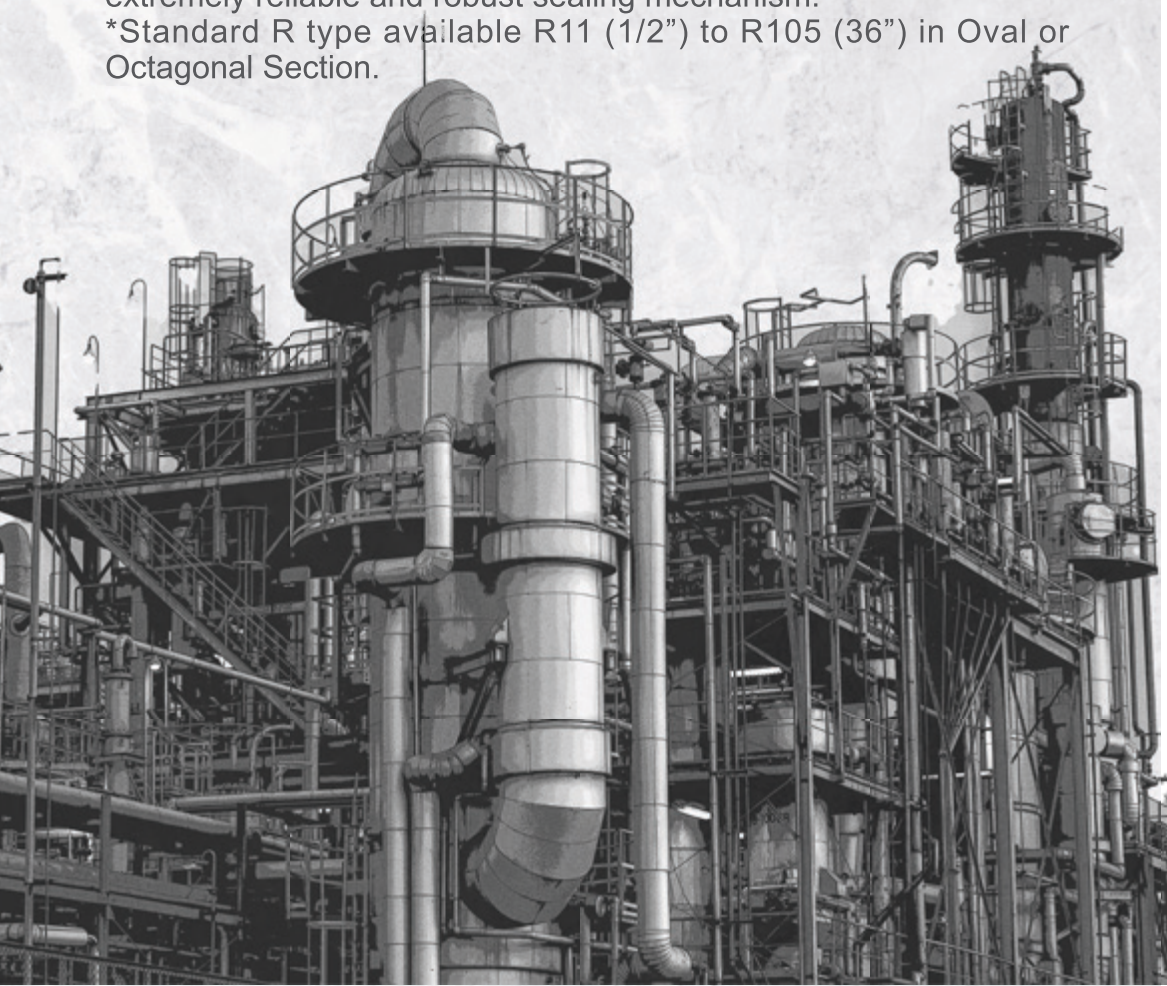
OMRANPALAYESH PARSEH

RING TYPE JOINT (RTJ) GASKETS

Ring Type Joint gaskets are precision machined metallic gaskets generally used in high pressure applications.
such as the Oil, Gas, Petrochemical and Offshore industries.
This type of gasket is designed to be used in RTJ groove flanges and are produced under license to dimensions as per API-6A and ASME B16.20.

Details:

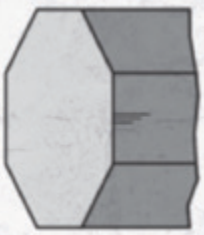
*Ring Type Joints concentrate the bolt load over a small area producing high sealing stresses.
*As the Ring Type Joint Material should always be softer than the mating flanges, the high seating.
stress causes ”plasticflow” of the ring joint in the flange faces creating the seal.
*RTJ Gaskets can be produced from a variety of material’s to suit the process application and flange grade.
*Used on high pressure lines up to 20,000 PSI, RTJ’s are an extremely reliable and robust sealing mechanism.
*Standard R type available R11 (1/2”) to R105 (36”) in Oval or Octagonal Section.



*BX, SBX & RX type available for Sub Sea application.
*IX Seal Rings used in Norsok Compact flange assemblies.

RTJ Gasket Profiles:

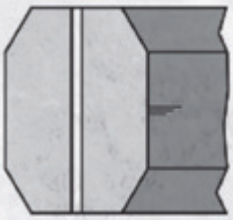
Oval and Octagonal section Ring type Joints are designed for flanges with standard ring type grooves. These
standard shapes are used to seal pressures up to 5,000 psi in accordance with API 6A.
The Octagonal cross section has a higher sealing efficiency than the Oval cross section and is therefore preferred.



The oval section ring joints were originally designed for the now obsolete round bottom groove.
Both the Oval and the Octagonal cross section are interchangeable on the flat bottom groove design.

BX RTJ:

BX Ring Type Joints are designed for pressures up to 20,000 psi, suitable only for use with API type BX flanges and grooves.
The gasket has a square cross section with bevelled corners.
The average diameter of the ring.
joint is slightly greater than that of the flange groove. This way, when the ring joint is seated,it stays precompressed by the outside diameter, creating high seating stress.



RX RTJ:

RX Ring Type Joints are designed for pressures up to 5,000 psi,they are pressure activated ring joints.
designed to use the fluid pressure to increase sealability.The outside sealing surface of the ring joint makes.
the initial contact with the flange. As the internal pressure rises the contact pressure between ring joint and.
flange also increases. This is sometimes referred to as a pressure activated ring joint due to the shape of the gasket.
High seating pressures are created increasing the sealability.This design characteristic makes the RX more resistant to vibrations, pressure surges and shocks that occur during oil well drilling.

GASKET(SWG)

General information and description.
The sealing element of the spiral wound gasket consists of a v-shaped metal
strip spirally wound in combination with a soft sealing material filler. The metal strip.
provides outstanding resilience, while the flexible sealing filler guarantees excellent sealing.Due to this combination of materials the spiral wound gasket is suitable for sealing under severely fluctuating temperature and pressure conditions. Depending on the application the spiral wound gasket can be specified with outer and/or inner rings.

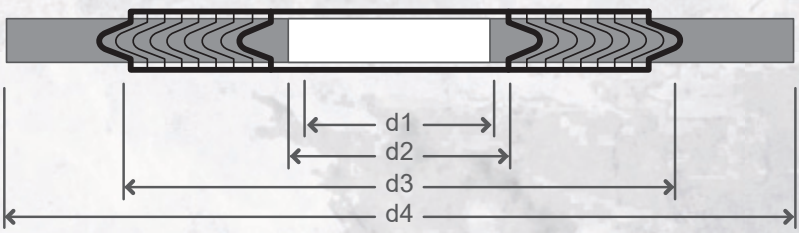
MATERIA	RING	ASTM	WERKSTOFF	AISI/SAE	OTHER	MAX
Soft Iron	D	-	1.1003 / 1.0335	-	-	9
LCS	S	-	1.1003 / 1.0335	-	-	12
4140	41	UNS	1.7225	4140	-	21
SS316	S3	S31600	1.4401	316	-	160/135
SS316L	S31	S31603	1.4404	316L	-	160/135
SS316Ti	S31	S31635	1.4571	316Ti	-	16
SS304	S3	S30400	1.4301	304	-	16
SS304L	S30	S30403	1.4306	304L	-	16
SS321	S3	S32100	1.4541	321	-	16
SS347	S3	S34700	1.455	347	-	16
SS410	S4	S41000	1.4006	410	-	17
SS309	S3	S30900	1.4828	309	-	17
SS310	S3	S31088	1.4841	310	-	17
F5	F	UNS	1.7362	-	5Cr 1/2Mo	13
INCONEL	INC	NO6625	2.4856	-	-	20
INCONEL	INC	NO6600	2.4816	-	-	20
INCONEL	INC	NO7718	-	-	-	34-39
INCOLOY	INC	NO8825	2.4858	-	-	16
INCOLOY	INC	NO8800	1.4958	-	-	18
MONEL	MONEL	NO4400	2.436	-	-	15
F51	F5	S31803	1.4462	-	2205/DUPLEX	23
F53	F5	S32750	1.441	-	SUPER DUPLEX	23
F55	F5	S32760	1.4501	-	ZERON	23
F60	F6	S32205	-	-	DUPLEX	23
Titanium	T	R 50400	3.7035	-	-	21
S254	S2	S31254	1.4547	-	F44/6 Mo	18
C276	C2	N10276	2.4819	-	Hastelloy	21
Alloy 28	Alloy 28	NO8028	1.4563	-	Sanicro 28	19

faces and prevent blow-out.
• By combining different winding materials and metals the gasket can be tailoredto a wide variety of operating conditions.
• Due to its non-adhesive character the gasket is easy to remove after service.
• The gasket does not cause damage to the flange faces

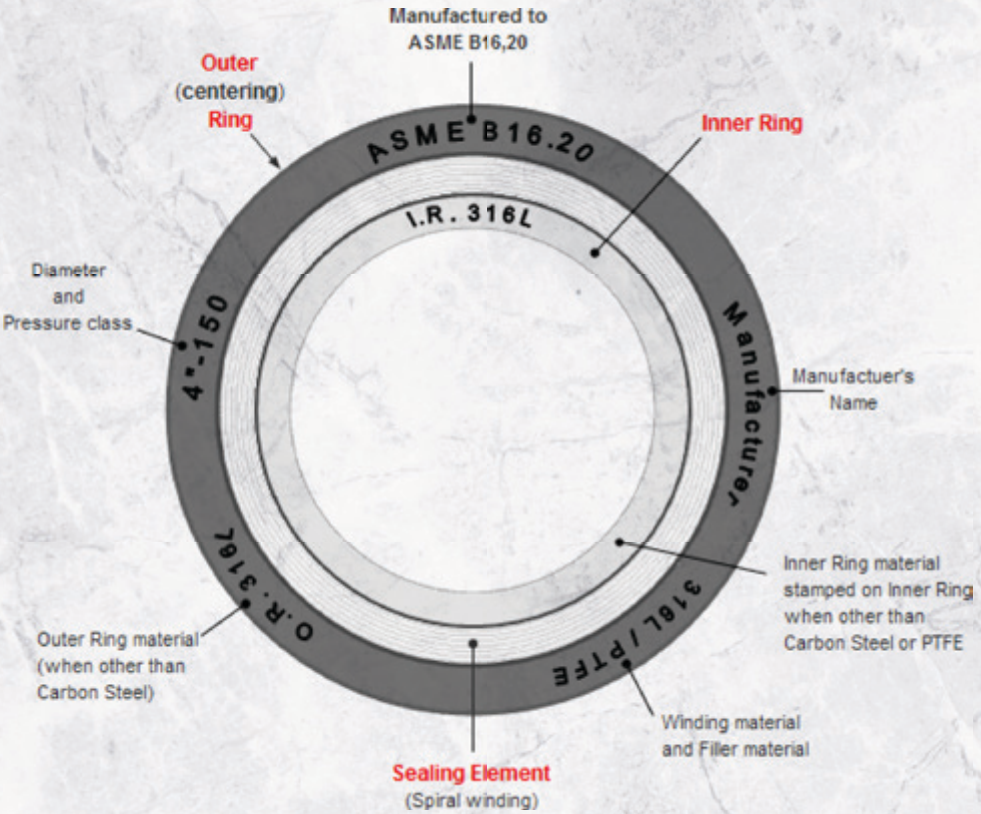
TSG SM01 SWG without guide or inner ring
This style of gasket is mainly used for male and female flanges or projection and
recess flanges and used in load-bearing flange configurations,such as tongue and groove flanges. Standard dimensions acc ording to EN/ASME.

Material	DIN specification	DIN	AISI / ASTM UNS	B.S.	Temp. [°C] min	max
Carbon steel	RSt. 37.2 CS	1.0038	238-C	40B	-40	500
SS 304	X5CrNi 18	1.4301	304	304S15/16/31	-250	550
SSl 304L	X2CrNi 189	1.4306	304L	304S11	-250	550
SS 309	X15CrNiSi 2012	1.4828	309	309S24	-100	1000
SSl 316	X5CrNiMo 1810	1.4401	316	316S31/33	-100	550
SS 316L	X2CrNiMo 1810	1.4404	316L	316S11/13	-100	550
SS 316Ti	X10CrNiMoTi 1810	1.4571	316Ti	320S31	-100	550
SS 321	X10CrNiTi 189	1.454	321	321S12/49/87	-250	550
SS 347	X6CrNiNb 1810	1.455	347	347S31	-250	550
Monel 400	NiCu 30 Fe	2.436	NO4400	3072-76NA13	-125	600
Inconel 600	NiCr 15 Fe	2.4816	NO6600	3072-76NA14	-100	950
Incoloy 800	X10NiCrAlTi 3220	1.4876	NO8800	3072-76NA15	-100	850
Incoloy 825	NiCr 21 Mo	2.485	NO8825	3072-76NA16	-100	450
Hastelloy B2	NiMo 28	2.461	N10665	---	-200	450
Hastelloy C276	NiMo16Cr15W	2.481	N10267	---	-200	450
Titanium (gr.1)	Ti 99,8	3.702	---	---	-250	350

- Dimensions are in millimeters unless otherwise indicated.
- Image shows a Spiral Wound gasket with Inner - and Outer ring.
- d1 = Inside diameter when Inner ring is used.
- d2 = Inside diameter sealing element when no Inner ring is used.
- d3 = Outside diameter of sealing element.
- d4 = Outside diameter of Outer ring.
- Thickness of inner and outer ring.. 2.97 mm - 3.33 mm.
- Thickness sealing element.. 4.45 mm.
- Tolerance Outside diameter for NPS 1/2 through NPS 8 is ± 0.8 mm; for NPS 10 trough NPS 24 tolerance is + 1.5 mm - 0.8 mm.
- ASME B16.20 does not covers class 400 flanges up to NPS 3 and class 900 flanges up to NPS 2.1/2.
- There are no class 400 flanges NPS 1/2 thru NPS 3 (use Class 600), class 900 flanges NPS 1/2 thru NPS 2.1/2 (use Class 1500), or class 2500 flanges NPS 14 or larger.
- The inner ring inside diameters shown for NPS 1.1/4 thru 2.1/2 in class 1500 and 2500 will produce inner ring widths of 0.12 inches, a practical minimum for production purposes.
- ASME B16.20 which covers spiral wound gaskets requires the use of solid metal inner rings in.. Pressure Class 900, nominal pipe sizes 24 and larger, Pressure Class 1500 from nominal pipe sizes 12 and larger, Pressure Class 2500 from nominal pipe sizes 4 and larger and all PTFE filled gaskets.



MARKING OF SPIRAL WOUND GASKETS



INSTRUMENTATION

An instrument is a device that measures or manipulates process physical variables such as flow, temperature, level, or pressure etc. Instruments include many varied contrivances which can be as simple as valves and transmitters, and as complex as analyzers. Instruments often comprise control systems of varied processes. The control of processes is one of the main branches of applied instrumentation.

Control instrumentation includes devices such as solenoids, valves, circuit breakers, and relays. These devices are able to change a field parameter, and provide remote or automated control capabilities. Transmitters are devices which produce an analog signal, usually in

the form of a 4–20 ma electrical current signal, although many other options using voltage, frequency, or pressure are possible.
This signal can be used to control other instruments directly,or it can be sent to a PLC,DCS,SCADA system,or other type of computerized controller, where it can be interpreted into readable values and used to control other devices and processes in the system.
Instrumentation plays a significant role in both gathering information from the field and changing the field parameters, and as such are a key part of control loops.

MEASUREMENT

Instrumentation can be used to measure certain field parameters (physical values):
These measured values may include:
pressure, either differential or static, flow, temperature, level, density, viscosity, radiation, process instrumentation etc… list goes on.

CONTROL

In addition to measuring field parameters, instrumentation is also responsible for providing the ability to modify some field parameters.

INSTRUMENTATION ENGINEERING

Instrumentation engineering is the engineering specialization focused on the principle and operation of measuring instruments which are used in design and configuration of automated systems in electrical, pneumatic domains etc.
They typically work for industries with automated processes, such as chemical or manufacturing plants, with the goal of improving system productivity, reliability, safety, optimization and stability.
To control the parameters in a process or in a particular system, devices such as microprocessors, microcontrollers or PLCs are used, but their ultimate aim is to control the parameters of a system.

English letter U, but in such a way that their bottom section is flat and not arched. Usually, two types of corners are produced in the industry, one with completely parallel walls and the other with sloping walls. From the application of studs, we can mention the place of movement of rollers, elevators, emergency stairs, metal framework of sheds, different parts of steel structures, etc.

Steel sheet:

In general, a steel sheet is a product that has a fixed width and a variable length, which usually does not have a high thickness and is available in the market in both rolled and cut (sheet) forms.
Cold rolling and hot rolling technologies are used in the production of steel sheets. The output product of the hot rolling process is called black sheet and the output product of cold rolling is called oil sheet.

Black sheet has a dull and dark appearance due to being placed in the hot rolling process, therefore it is often used in industrial applications where the color of the surface is not important. Among the applications of black sheet, we can mention the construction of water heaters, tankers, profiles, car parts, agricultural equipment, etc.

The metal square section:

One of the most widely used products in the world of hardware are metal square section. these items are products whose cross-section is square or hollow and are usually produced and supplied with different materials, and their use is also different according to their materials.
In general, large size cans are used as columns in steel structures, but small size cans have many uses, for example, they can be used to make all kinds of metal beds, dining tables, metal shelves, the inner body of cars, doors and steel windows, sports equipment components and many other things mentioned.

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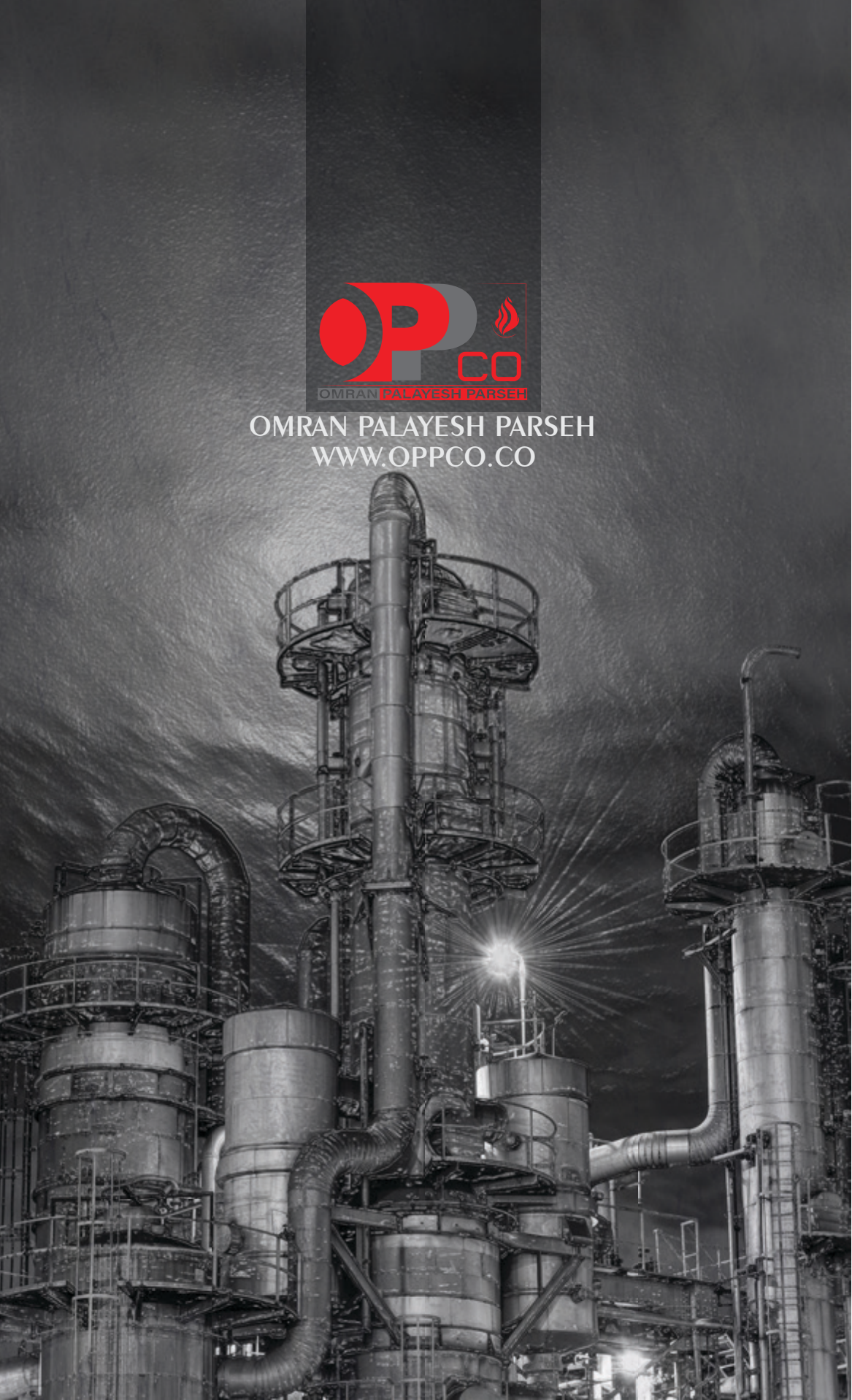
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