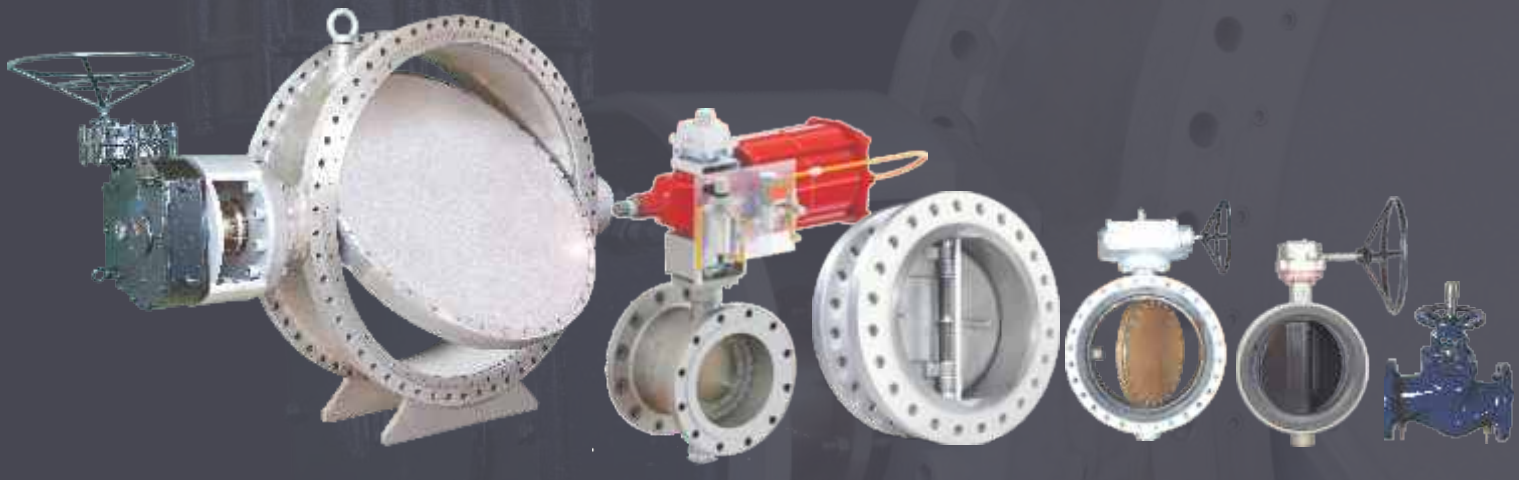
ADVANCE VALVES

advancevalves.com




Keeping Industries in Flow, Worldwide.



Changing the way you think about valves...

DUAL PLATE CHECK VALVES | BUTTERFLY TRIPLE ECCENTRIC VALVES | BUTTERFLY DOUBLE ECCENTRIC VALVES | BUTTERFLY CONCENTRIC VALVES | BALANCING VALVES

MOTOR OPERATED VALVES | VALVES WITH PNEUMATIC ACTUATOR | VALVES WITH ELECTRO-HYDRAULIC (E/H) ACTUATOR | CONTROL VALVES PRODUCT LINE

CRYOGENIC SERVICE | FIRE SAFE SERVICE | LOW FUGITIVE EMISSION SERVICE

008 0062 LISTED

Covered under API Monogram

More than 3 Decades

Products spanning across a wide size-range, capable of withstanding intense pressures, tested for suitability at extreme temperatures from cryogenic to fire-safe, in complete spectrum of metallurgy, for adverse process fluids to pure gases and water.

Core Value

" To concentrate in business areas with world class latest *technology which offer ultimate solutions,* by adopting *global practices for the benefit of end -users* through empowerment of *human resources* in safe working environment and appropriate *quality systems* to maintain market leadership and be distinct and significant."

ADVANCE VALVES
changing the way you think about valves

Value Added Project Partner

Advance Valves is a globally recognized leader in flow control solutions with a focus on specialized and technically advanced valve product range. Specializing in Dual Plate Check Valves, Butterfly Valves and Balancing Valves technology, Advance Valves meets a wide spectrum of complex and diverse customer needs. Over the years Advance Valves has built a reputation of being a pioneer in Valve Technology, with strong engineering foundation and proven expertise that provides innovative and cutting-edge technology solutions.

Supporting Efficiency and Enabling Sustainability

Industries that bring to us our way of life need to extract maximum value from available resources, in an efficient and cost-effective way. Advance Valves helps global customers manage their resources effectively with advanced design and high-performance flow control solutions. Our products reduce Capital, Operational and Energy Costs through specialized energy efficient, compact, light-weight full-featured valves.

We deliver superior value and innovative solutions to customers all over the world!

We provide a full complement of size ranges, pressure ratings, operating temperatures and fluid characteristics; including related services such as on-site commissioning for optimum performance. Advance Valves' products are offered in a broad range of materials from Carbon Steel and Stainless Steel to Aluminium Bronze, Duplex SS, Super Duplex SS, Hastelloy, Alloy 20, Inconel and Titanium, amongst other super alloys. Tapping into our completely owned Intellectual Property and in-house R&D expertise, we tailor solutions to specific requirements.

Products

Dual Plate Check Valves

From 50mm - 2000mm (2" to 80").
Upto ANSI #2500 & API 6A.
From -196° C (Cryogenic) to 750° C (Steam & other processes).
Fugitive emission free retainerless design.
End connections in Wafer, Lugged, Double Flanged, Butt weld, Jacketed, Monoflanged, Extended Body.
Soft seated and metal-to-metal seated.
Standards compliance with API 594, 598 & 6D, BS 6364, API 6FA amongst others.

Triple Offset Metal-Seated Butterfly Valves

80mm - 2500mm (3" to 100").
Higher pressure range of ANSI #150, # 300, #600 & #900.
From -196° C (Cryogenic) to 900° C (Steam & other processes).
End connections in Wafer, Lugged, Flanged, Butt weld.
Special designs include Jacketed, Zero leakage & Bidirectional performance.
Metal-to-metal seated, thus intrinsically fire safe.
Fugitive emission free as per ISO 15848
API 609, 598 & 607, BS 6364, ISO 10497 amongst others.

All Butterfly Valves are also available with extension for buried/infit installation

Double Offset Soft Seated Butterfly Valves

80mm - 3000mm (3" to 120").
Upto ANSI #150.
Ambient to 205° C.
End connections in Wafer, Lugged & Flanged.
API 609 & API 598.

Fit n Forget' Butterfly Valve - integrally molded liner

50mm - 600mm (2" to 24").
Upto ANSI #150, Ambient to 205° C.
End connections in Wafer, Lugged & Flanged.
Lining and metallurgy to suit a wide variety of applications, including for Sea Water & Water Desalination plants.
Seal types (EPDM, Buna N, Viton).
Certified API 609 & 598, UL 1091.

Balancing valves

Precise double regulation, Tamperproof setting, with handwheel or lockshield.
Low flow-noise emission, With or without.
Drain Cocks / Pressure Test Cocks.
Positive shut-off, Exceeds IS 778 - 1984.
Threaded in Gun metal Construction upto 3".
Flanged in Cast Iron Construction 3" upto 48".
PTFE Sealing upto 3" and EPDM for Cast Iron Construction.
Patented design covering 14" to 48".

ADVANCE VALVES
changing the way you think about valves

Triple Offset Butterfly, Vulcanized Lined Butterfly, Double Offset Butterfly Valves

50mm - 2500mm (2" to 100")
Higher Pressure Range of ANSI #150, #300, #600, #900
(Depending on type of valve)

Motor Operated Valves

On-Off with on without Inching facility.
3Ø/1Ø with 50Hz / 60 HZ Power Supply options.
MODBUS Serial / Foundation Fieldsbus / Profibus/ Discrete Control options.

Valves with Pneumatic Actuator

On-Off with on without Partial Stroke Testing facility.
Single acting / Double acting Actuators.
Designed Air Supply Pressure of 10kg.cm2.
Wide range of applications with control schemes using accessories like Solenoid Valves, Pilot valves, Lock-in Relay, Volume tank, Air Filter Regulator, Limit Switches, Positioners with PST.

Valves with Electro-Hydraulic (E/H) Actuator

Low to large size On-Off applications.
3Ø / 1Ø with 50 HZ / 60 HZ Power Supply options.
MODBUS Serial / Foundation Fieldbus / Profibus / Discrete Control options.

Control Valves Product Line with Pneumatic Actuator

Control applications with Single acting / Double acting Actuator.
Designed Air Supply Pressure of 10 kg/cm2.
Foundation Fieldbus /Profibus / HART/ Conventional 4-20 mA. Control Options.
Wide range of applications with Pneumatic / Electro - Pneumatic / HART compatible / Foundation Field Bus compatible positioner.

The world is our market place
Addressing customer needs at their doorstep across the globe, with local expertise at the plants, stocking locations, local branch offices, distributors and agents; servicing all clientele spanning the globe.

Global Footprint

Advance Valves caters to all industry sectors through an extensive network of offices and dealers. The group has been a pioneer in India & is recognised as a high-end vendor supplying across the globe.

International clients - The world is our market place

- ADNOC
- AGIP
- Air Liquide
- Air Products
- Aker Kvaerner
- AMEC
- BASF
- Bechtel
- BHP Billiton
- BOC
- BP
- British Gas
- Cairn Energy
- CB&I
- Chevron
- Chiyoda
- Conocophillips
- Consolidated Contractors (CCC)
- CTCI
- Daelim
- Dow Chemicals
- ENI
- ENPPI
- Entrepose
- Exxon Mobil
- Fluor
- Foster Wheeler
- GASCO
- Gaz De France
- GS Engineering
- Halder & Topsoe
- Hyundai
- J. Ray McDermott
- JGC
- Kellogg Brown & Root
- KNPC / KSC
- KOC
- KTI
- M.K. Kellogg
- Mitsubishi Chemicals
- Mustang
- NPCC
- Occidental
- Paragon
- Parsons
- PDO
- PDVSA
- PEMEX
- Petrobras
- Petrofac
- Petronas
- POSCO
- Qatar Gas
- Qatar Petroleum
- Ras Laffan
- SABIC
- Saipem
- Samsung
- SASOL
- Saudi Aramco
- SBM IMODW
- Shell
- SK Engineering
- SNC LAVALIN
- Sonatrach
- Stone & Webster
- Takreer
- Talisman
- Technip
- Technimont
- TOTAL
- UNOCAL
- Wood Group
- Worley Parsons

National Clients

- Alstom Power
- Bharat Petroleum
- BHEL
- Bhushan Steel
- Blue Star
- British Oxygen
- BWSSB
- DAELIM
- Delhi Metro
- DLF
- Engineers India Ltd.
- Essar – Group
- GAIL
- GSFC
- Haldia Petrochemical
- Hindalco
- Hindustan Petroleum
- HPCL - Mittal Energy
- IFFCO
- Indian Oil Corp. Ltd.
- IPCL / RIL
- Jacobs H&G
- Jindal Steel & Power
- Larsen & Toubro
- MCC PTA
- Mott McDonald
- MRPL
- NFL
- NTPC
- NPCIL
- ONGC
- Praxair
- Reliance Industries / Pipelines
- Reliance Energy
- Samsung Engineering
- SPIC
- Sterling & Wilson
- Tata Power
- Tata Steel
- TOYO India
- Udhe

Industry Sectors Served

- Refineries & Petrochemical Plants
- Fertilizer & Chemical Plants
- Steel & Metallurgical Plants & Mining
- Water Desalination & Management Systems
- Power Plants including Nuclear Plants
- Oxygen & other Gas Applications, including Gas to Liquids (GTL)
- Water and Wastewater
- Oil & Gas Pipelines - Onshore & Offshore
- Heating Ventilation & Air Conditioning
- Mining
- Steel
- Naval & Marine

USA, Canada, Brazil, France, Belgium, Germany, Norway, UAE, Saudi Arabia, Oman, Kazakhstan,

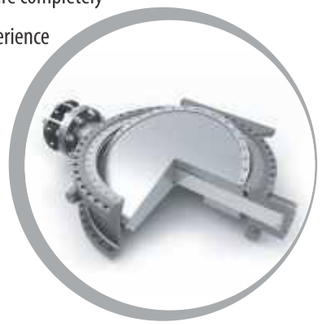
ADVANCE VALVES
changing the way you think about valves

- Engineered in-house
- Solid Modeling for Design Verification
- Finite Element & Flow Analysis
- Comprehensive Product Design & Performance Validation

- Multiple Fully Equipped Plants across North India
- Capable and Quality Certified Casting Suppliers from India
- Entire Complement of Testing Capabilities
- Global Coverage
- Capability Inside, Capacity Outside

Engineering

We take pride in the fact that a vast ocean of knowledge is available within the Advance Valves family. Our talented Engineers work in an open-minded environment, which we firmly believe, provides us with a competitive edge and makes us an organization with a strong customer focus. Advance Valves' products are completely developed in-house. Coupled with dedicated in-house engineering with extensive experience in critical applications, Advance Valves deploys the latest techniques for product development. Our designs are solid-modeled using Solid Works and fully validated before manufacturing using Finite Element Analysis, CFD and other custom tools. Our Design, Engineering, Manufacturing and Quality Control system, ensure high-performance from our products each and every time.



Quality

Quality is an integral component in Advance Valves' philosophy.

We view quality as a total process that involves every aspect of our business. Our mission is to achieve, through creativity and innovation, uncompromising excellence and quality in the products we manufacture, the services we provide, the work environment we create, and the level of responsiveness we maintain to meet the needs and expectation of our customers, vendors and employees.

Apart from being ISO 9001:2008 certified, we carry the API 6D & API 609 Monogram, UL 1091 certification for butterfly valves for fire water systems, SIL 3 certification for triple eccentric butterfly valves and CE-PED accreditation for the EU markets.

Our Quality Assurance activity is dedicated to the pursuit of improving our processes and producing valves compliant with the most stringent standards, and also in line with specific customer requirements.

We test 100% of the valves we produce to ensure complete compliance with performance parameters.

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Infrastructure

Manufacturing Facility

Advance Valves has multiple modern self-sufficient manufacturing plants capable of producing large volumes of high-quality valves. Our major manufacturing base pan India comprises of energy efficient units spanning over 25,000 sq. m. (250,000 sq ft). Modern machining centers and material handling equipment are deployed, enabling material processing for large sizes upto 3 metres, with specialized capabilities for precision manufacturing of high quality valves.

We also have a production base in the Noida Special Economic Zone, which is a Free Trade Zone. This is further complemented by a global servicing infrastructure, representatives and stocks for support to our global clients.

Supply Chain

The key links to our high performing valves, the supply chain members are our partners.

Carrying on the principle of "Capability Inside Capacity Outside", our network of qualified job workers and partners complement our manufacturing base as per our quality control and HSE norms. All our casting supply partners are based within India, and have over the years proven their expertise in handling complex metallurgy combination in varied sizes and extreme operating pressure requirements with high-end NDT equipment in-house.

ISO 9001-2008
API 6D, 609
UL, CE – PED Accreditation
SIL 3 Certification

Testing Capabilities

Testing facilities besides the standard hydro and pneumatic testing include:

- High Pressure Hydrostatic Testing (upto 900 bar)
- High Pressure Pneumatic Testing (upto 300 bar)
- High Pressure Helium Testing (upto 900 bar)
- Cryogenic Testing with Helium down to -196 °C (per BS 6364)
- Fire Safe Testing as per ISO 10497/API 607
- Helium Leak Detection with Hoods Method & Detector - Probe Method
- High Temperature Testing upto +750 °C
- Fugitive Emission Testing (per ISO 15848)
- Oxygen Cleaning

Team

Our highly skilled management team along with our technical expertise, quality workmanship, and equipment enable us to develop new solutions and deliver unparalleled value to our customers.

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A proud heritage, an innovative future ahead
As you sow, so shall you reap!

Corporate Citizen

Corporate Social Responsibility has become an integral part of Advance Valves' philosophy and is the cornerstone of our core values for being a good Corporate Citizen.

We define Corporate Social Responsibility as making socially responsible products, engaging in socially responsible employee relations and making a commitment to the community around us.

Our CSR objectives include maintaining top notch ethical and business practices; safety, health and well-being of our employees; efficient use of materials and energy and enabling a brighter future for our employees and their families. We provide on-site health care services for our employees and also sponsor their children's education.

Our ultimate aim is to do our bit towards making the world a better place.

Engineering the Future

In our own humble way, we began our journey by delivering products to customers who had no easy solutions in sight.

We truly believe that Engineering will provide the solutions to global problems of climate change, poverty and social issues. By providing better engineered solutions we are committed to

- Conserving natural resources;
- Focusing on the needs of those industries which benefit our society;
- Providing sustainable solutions.

We will strive to develop and manufacture valves with advanced features empowering our clients to optimally utilize the scarce resources around us. And that's a promise.

Oil and Gas

Refining & Petrochemicals

Power Generation

HVAC

LNG and Cryogenics

Desalination

Water and Wastewater

Mining

Steel

Chemical & Fertilizer

Nuclear

Naval & Marine

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ADVANCE VALVES

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ADVANCE VALVES

Changing the way you think about valves

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CONCENTRIC
Butterfly Valves

SERIES BF

An Integrally Moulded Liner Design

ENGINEERED FOR PERFORMANCE

EXTENDED STEM | ACTUATED VALVES | BURIED SERVICE

008 0062 LISTED

More than 3 Decades

Design Features

Advance Concentric Butterfly Valves are designed and manufactured to have optimal mix of structural stability, flow efficiency and effective seating coupled with advantage of light weight, compact design and ease of operation. Only a quarter turn is needed to fully open or close the valves.

The valves are provided with integrally moulded elastomer body liner to provide perfect seating and complete isolation of body material from media to prevent it from any corrosive and abrasive impact of fluid. The body liner material can be provided to suit specific fluid service for long maintenance free life.

The valves are easy to install in any position between horizontal to vertical piping. No gaskets are required as the body liner acts as a seal between the valves body and the mating pipe flanges.

Standard wafer valves are available from 2"-24" and require only one set of mating flanges, as otherwise required for flanged valves. They also required only one set of studs and nuts instead of two sets required for flanged valves. They thus save installation time and cost.

Lugged type valves are also available in all sizes upto 24" as per requirement.

Double Flanged Type Valves are also available in all sizes. These are with API 609 Cat B face to face and flanges as per ASME B 16.5 being fully ANSI #150 rated like the valve seats.

Advance Butterfly Valves are maintenance free 'FIT & FORGET' Valves.

Pressure & Temperature Ratings

Advance Butterfly Valves are available in following pressure ratings:

SL. No.	BS-5155	IS-13095	API-609
1.	PN-10	PN-1.0	-
2.	PN-16	PN-1.6	ANSI 125#
3.	PN-20	PN-2.0	ANSI 150#

Temperature Range: - 57° C (-70° F) to 204° C (400° F) depending on Body Lining (Seal) material.

Standard Compliance

Advance Butterfly valves conform to BS: 5155, IS: 13095 and also API 609. They also generally comply with AWWA C-504, ISO 10631 and EN 593.

High Performance Double Eccentric and Triple Eccentric Butterfly Valves are also available in size from 80mm (3") to 3mtr. (120") with model pressures rated from 10 bar (Pn10) to 160 bar (ANSI #900) and in wafer, lug-type and flanged configurations.

Elastomer seal valves operate on the double offset principle and are rated upto 25 bar. Pressurers of upto 160 bar (ANSI #900) can be achieved by metal seated valves operating on the triple offset design principal. For further information, refer our website or the other catalogue.

Valve Operators

1. **Manual (Hand Lever Operated):**

   As a standard practice valves of size 50mm (2") N.B. to 200mm (8") N.B., depending on pressure class are provided with self Locking lever operation from open to fully closed position with eight intermediate positions marked on the indicator plate mounted on the top flange.

2. **Manual (Gear Operated):**

   Larger size Valves are provided with a quater turn worm gear box of reputed make with adequately size handwheel for low torque and smooth operation.

   Valves of smaller sizes can also be provided with gear operator on specific enquiry.

   The Handwheel is elegantly designed for the safety, comfortable and smooth handling by operators in the field.

3. **Electrical Actuator:**

   Advance Butterfly Valves are also supplied with electrical Actuators as per customer's specifications and requirements.

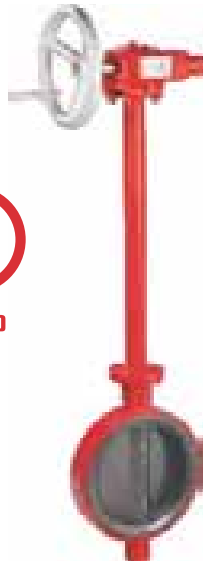
4. **Pneumatic Actuator:**

   Advance Butterfly Valves are also supplied with Pneumatic Actuators as per customer's specification and requirements.

Special accessories for electrical/pneumatic operation such as limit switches, manual overrides, positioners, solenoid valves out AFR are provided as specified.

5. Special Operators:

Valves are available with extended stem for buried operation and valves with chain drives for overhead operation are available. UL 1091 approved valves for fire water systems are also supplied internationally.



Face-to-Face Dimensions

Face-to-face dimensions conform to BS:5155 PN 10 / PN16 (PN 1.0/1.6), ISO 5752, MSS.SP 67 Type I Class 125 (Narrow) and API-609.

End Connections

Wafer type flangeless valves are designed to fit without gaskets between flanges as per BS 4504 PN 10 & 16, BS 1560 classes 125 & 150, ANSI B 16.5 Class 150, ANSI B 16.1 Class 125, BS 10 Table D, E & F and Indian Standard IS 6392 Table 10 to 20. Lug type Valves are supplied to suit customers specifications.

Technological Advantages

Rubber technology is fully developed in-house with facilities to mould, process all elastomers including mixing, vulcanizing and metal to elastomer bonding. The integral liner concept is fail safe design.

Testing Facilities

Extensive in house testing facilities are available to fully ensure quality at all stages. These include:

- Elastomer Testings for Tension, Compression set, Hardness, Specific Gravity & Abrasion Resistance.

- Dye Penetrant Test, Radiography Interpretation, Routine Tests of Actuators (both electric & pneumatic), Hydrostatic Pressure testing for shell & seat, Pneumatic testing for seat, Valve operating torque test.

Apart form above, other NDT processes including inhouse PMI, Radiography, MPI & Ultrasonic Test and tests for chemical & physical properties including special tests e.g. Low Temperature Impact Test, Inter-granular Corrosion Test etc. are also offered to meet customer requirements through independed Approved Inspection and Test Laboratories.

Valve Testing (Hydrostatic)

Each valve is hydrostatically tested for seat & shell tests as per applicable Standard(s).

Additional tests as required can be carried out as per customer's specification and requirement.

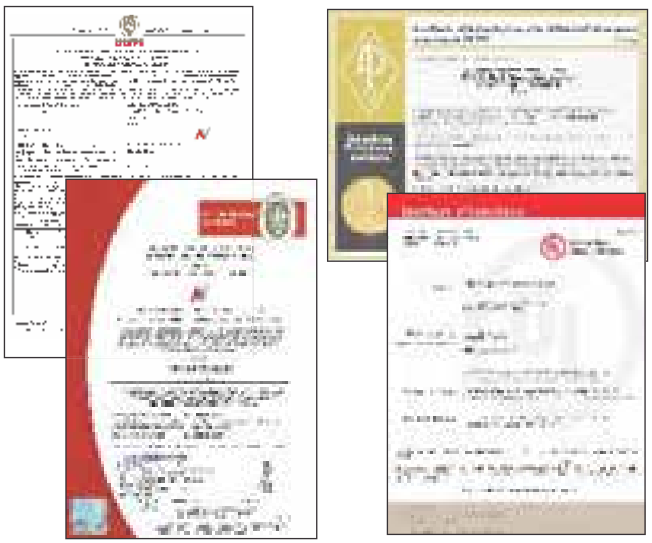
Shell (Body)		Seat
PN-16	24 bar (g)	17.6 bar (g)
PN-20	30 bar (g)	22 bar (g)

Through R & D efforts, improvement and optimisation of design is an on-going process. The design / specifications provided in this catalogue are subject to change accordingly.

Quality Assurance

All the valves are designed for compliance to applicable National/International Standards. Stringent Quality Control and Inspection at all stages of manufacture ensure that products are fully suitable for the specified use to give reliable performance throughout the service.

The Quality management System of the company has been accredited by Bureau Veritas in accordance with PED Module H CE Marked ISO 9001:2008 & Advance Valves Butterfly Valves are also API 609 Monogram accredited. The UL certificate covers the application of valves in the Fire - Water system. This testing was conducted by Underwriters Labouratories Inc.

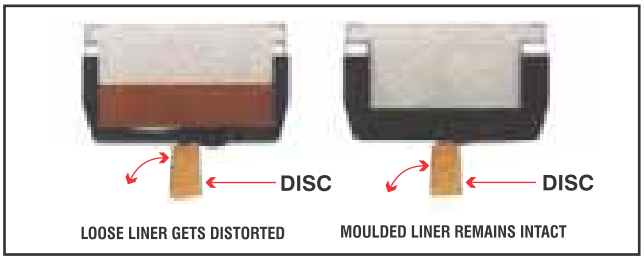


Advance Butterfly Valves has been designed and developed using latest techniques of finite Element Analysis & Computational fluid Dynamics.

Construction Features

Body is of one piece design. Top flange is designed to mount required Valve Operator.

Body Liner is integrally moulded and bonded to the body. It provides the seating to valve disc, primary seal to the stem and 'gasket' joint with mating pipe flanges. The integrally moulded liner resists any stretching or distortion. This is a common problem of loosely fitted liner, which results in a need for frequent replacement.



Valve Disc material covers wide range of applications. It is optimally designed to have an ideal combination of strength and flow efficiency. Ductile iron discs are Nylon coated by design. Epoxy and other coatings available on request.

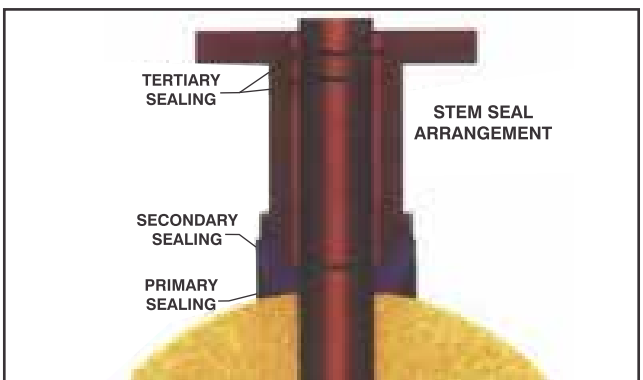
Stem: For optimal combination of flow efficiency and structural stability, Valves upto 200mm (8") have two piece stem. For sizes 250mm (10") to 600mm (24") N.B. stem is in single piece construction which ensures better distribution of weight of the disc. The stem drives the disc through taper pin(s) to eliminate any backlash between Stem & Disc. The material of construction for stem has been standardised as High Tensile Stainless steel (AISI 410).

Stem Seal Arrangement

Primary Sealing is provided by preloaded contact flat seat surface and rounded polished disc hub area.

Secondary Sealing is provided by the interference fit between stem and stem hole in seat at all positions.

Even a tertiary sealing has been provided by fitting moulded O-ring between stem and bush supported by atmospheric sealing with O-rings. Thus **Advance** Butterfly Valves provide perfect sealing needing no other gland packing.

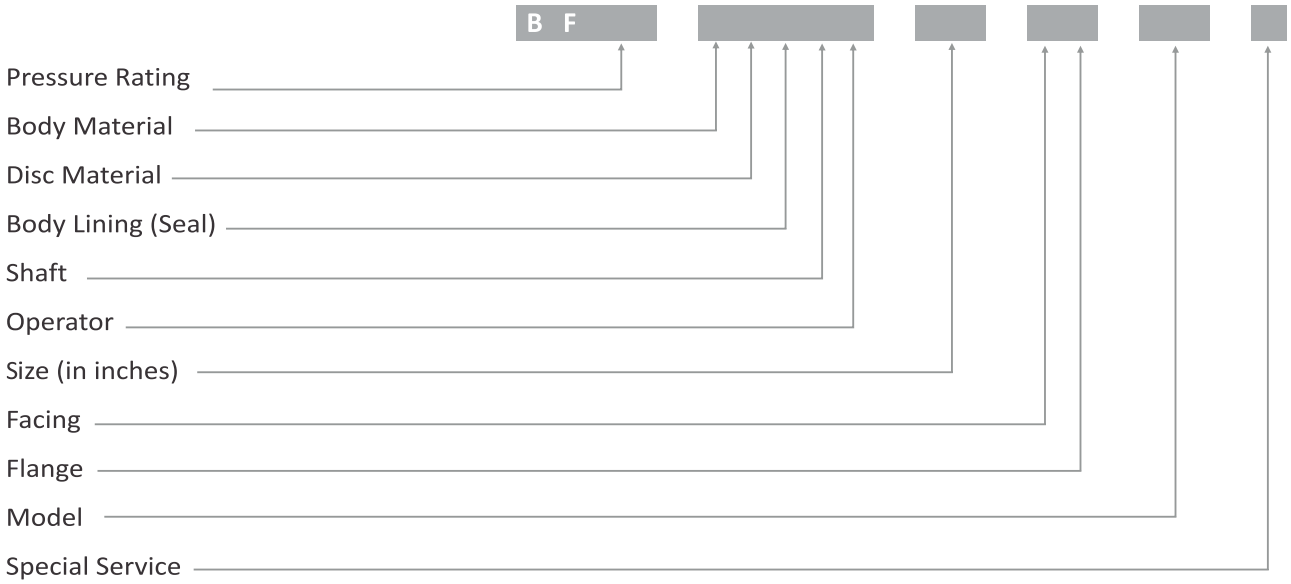


A TYPICAL SEATING ARRANGEMENT BEYOND 300mm

Applications

Advance Butterfly Valves are available in wide range of materials of construction as is evident from the **"Figure Numbering System"** to cover all categories of Industry requirements. Suitable Liner materials (e.g. BUNA-N(Nitrile)/EPDM/VITON-A) are available to meet wide varieties of duties within general industry, HVAC&R, building services and public utilities handling fluids such as water, air, gas, mineral oils, dilute acids and alkaline solutions. **Advance** Butterfly Valves offer an ideal as well as economic solution for sea water application through use of Ductile Ni-Resist (Austenitic Ductile Iron) grade D2 of ASTM A439.

How to Enquire and Order?



PRESSURE RATING	
Material	Code
PN 10	10
PN 16	16
#150/PN20	15

MODEL	
Material	Code
Wafer	11
Lugged	21
Flanged	31

BODY LINING (SEAL)	
Material	Code
EPDM	M
Viton	Y
Buna N	G

BODY / DISC MATERIAL			
Material	Code	Material	Code
Cast Iron	H	Duplex Gr 6A ASTM 890 - J93380	Z
SGI (SGI Discs are nylon coated)	J	LCB ASTM A352 - J03003	L
WCB ASTM A216	S	LCC ASTM A352 - J02505	M
CA-15 ASTM A217 - J91150	E	Monel 500 - M25-S	P
CF8M ASTM A351 - J92900	C	Monel 400 - N35-2	Q
CF8 ASTM A351 - J92600	A	C12 ASTM A217	1
CF8C ASTM A351 - J92710	8	C5 ASTM A217	2
CF3 ASTM A351	3	Alloy 20 CN7M / 904L	7
CF3M ASTM A351 - J92800	F	Hastealloy B ASTM A494 N7M	I
AB2 C 95800	B	Titanium C2	T
AB2 C 95500	R	Hastealloy C ASTM A494 CW12MW	V
Duplex Gr 4A ASTM 890 - J92205	4	LC3	X
Duplex Gr 5A ASTM 890 - J93404	5	WC6 ASTM A217	6
D2 ASTM A439	K	WC9 ASTM A217	9

SHAFT	
Material	Code
SS-431	K
17-4PH	H
SS-410	E
Duplex 4A	4
Duplex 5A	5
Duplex 6A	Z
Monel 400	Q
Monel 500	P

OPERATOR	
Material	Code
Bareshaft	B
Hand Lever	L
Gear Box	G
Electric Actuator	E
Hydraulic Actuator	H
Pneumatic Actuator	P
Electro Hydraulic Actuator	S

FACING	
Material	Code
Moulded Raised Face	C

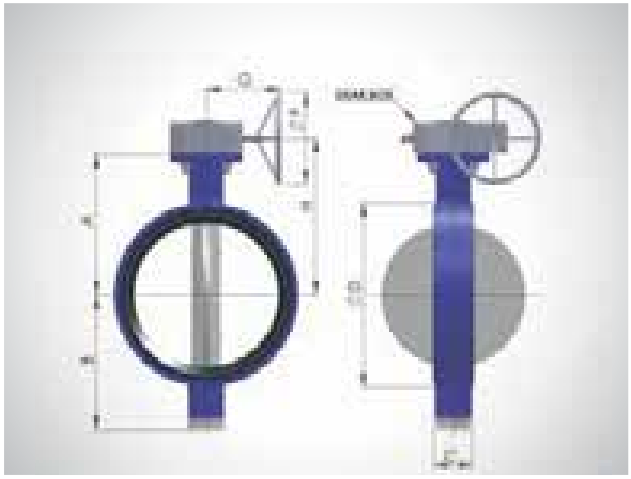
FLANGE STD	
Material	Code
ANSI B16.5	A
ANSI B16.1	K

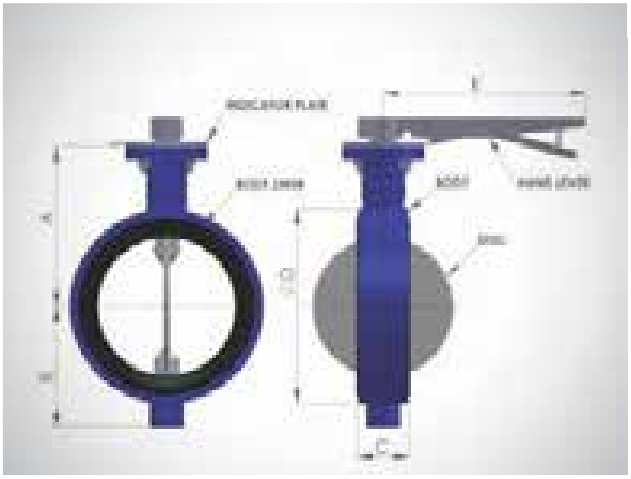
SPECIAL SERVICE	
Material	Code
CE	P
Extended Bonnet	B
Nace	N
EPDM Coated Disc	C
UL	U
Nylon Coated Disc	Y
Epoxy Coating Disc	X

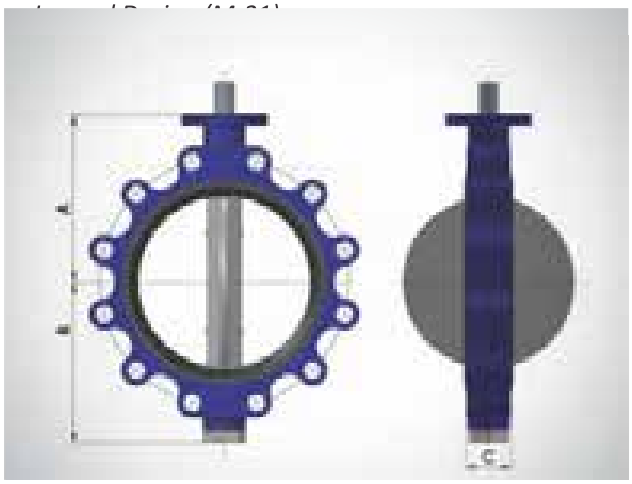
At enquiry stage, please specify all details as per above Figure Numbering System. For valve selection & guidance, please indicate the service temperature, pressure and fluid conditions. For options not listed above, please contact us.

*For example, BF10.HJMEG.12.CA.11 will represent 300mm (12") NB **Advance** Water type Butterfly Valve in PN 10 rating with Grey C.I. Body, Ductile Iron Disc, EPDM Body Liner and SS-410 Stem with Gear Operator with ANSI B16.5 flange compatibility.*

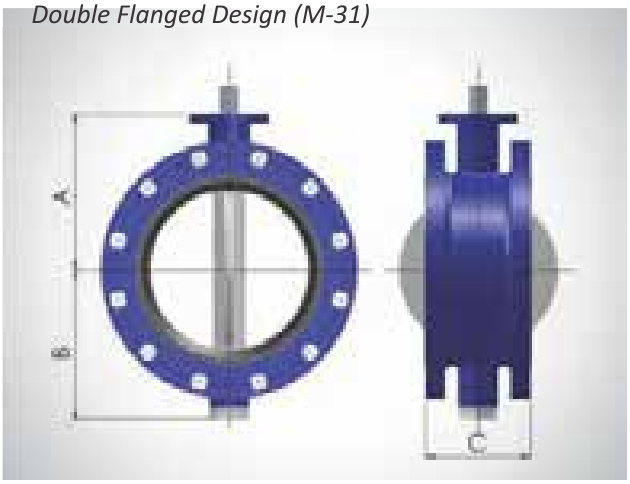
Installation Dimensions







Double Flanged Design (M-31)



VALVE SIZE (NB)		A (SHORT NECK)	A (LONG NECK)	B	C (FOR MODEL M-11 & M21)	C (FOR MODEL M31)	D (FOR MODEL M-11)	*DIA. F	*G	*H	K	APPROX WEIGHT IN kg (FOR M-11) (SHORT NECK)	APPROX WEIGHT IN kg (FOR M-11) (LONG NECK)	APPROX. WEIGHT IN Kg(FOR M-21)	APPROX. WEIGHT IN Kg(FOR M-31)
50	2″	113	143	68	43	-	96	250	212	143	260	3.5	4.2	5	-
65	2.5″	121	151	74	46	-	110	250	212	151	260	4	4.8	7	-
80	3″	128	158	81	46	114	128	250	212	158	260	4.5	5.4	9	12
100	4″	146	181	96	52	127	159	250	212	176	260	6.2	7.4	12	16
125	5″	158	193	114	56	-	188	250	212	158	260	7.7	9.2	14	-
150	6″	174	209	132	56	140	212	250	212	204	260	9	10.8	17	23
200	8″	198	238	181	60	152	269	350	227	228	-	14	16.8	24	37
250	10″	244	285	234	68	165	321	350	227	274	-	30	36	37	54
300	12″	275	315	259	78	178	371	425	250	309	-	44	52.8	58	80
350	14″	-	371	284	78	190	436	600	318	407	-	-	50	80	105
400	16″	-	390	317	102	216	487	450	315	437	-	-	72	127	146
450	18″	-	425	359	114	368	539	600	355	472	-	-	95	132	173
500	20″	-	451	384	127	229	592	600	353	517	-	-	120	217	206
550	22″	-	485	412	154	267	645	600	353	485	-	-	205	360	318
600	24″	-	510	462	154	267	694	600	353	576	-	-	210	370	323
750	30″	-	615	547	165	165	820	600	353	681	-	-	350	620	450
900	36″	-	712	647	200	200	972	600	353	778	-	-	-	-	815

As per IS 13095, As per API 609 (CAT-A), Note:- Larger sizes available on request.

* Note:- These dimensions are as per the standard gear operator and will change if alternate operators are used.

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ADVANCE VALVES

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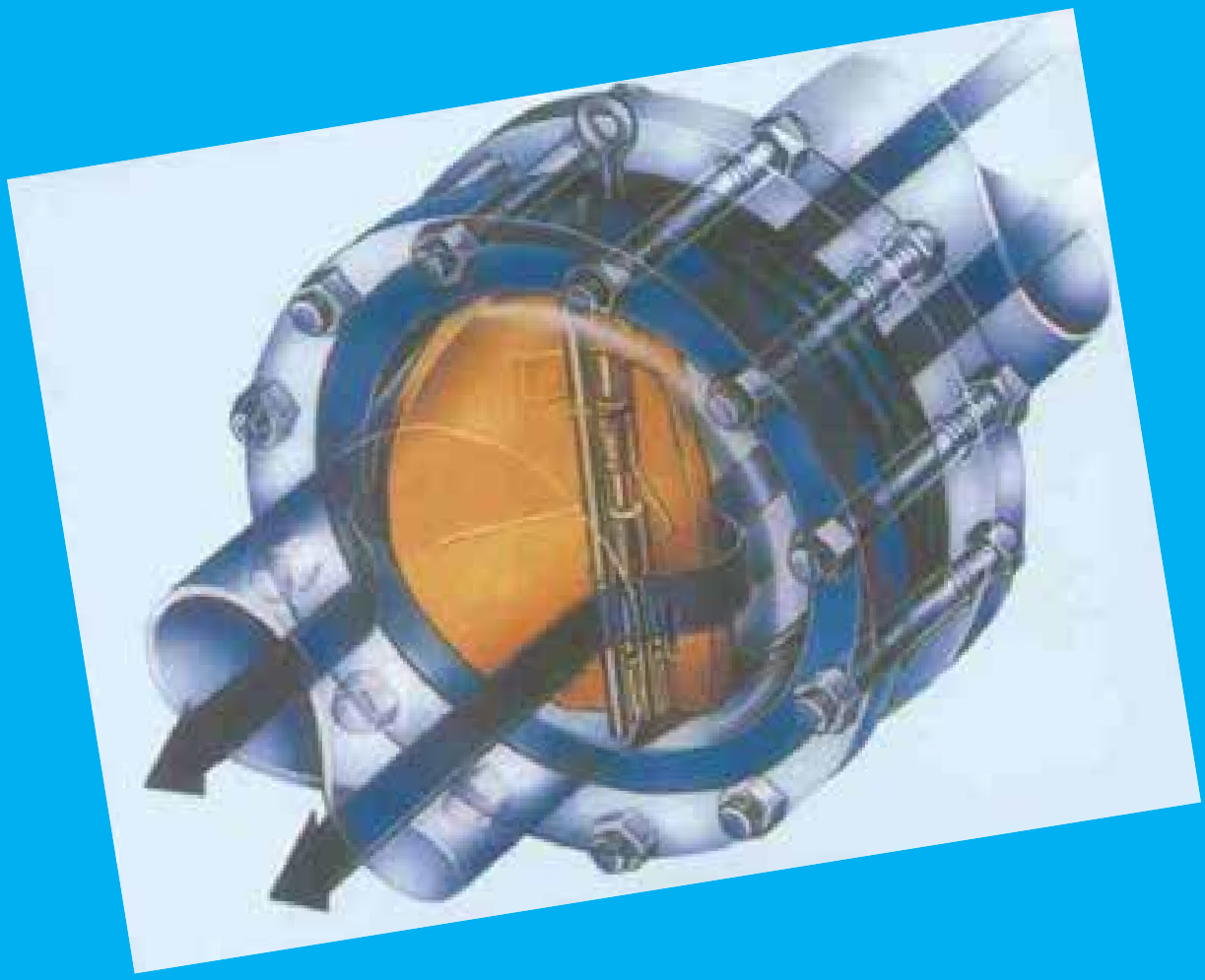
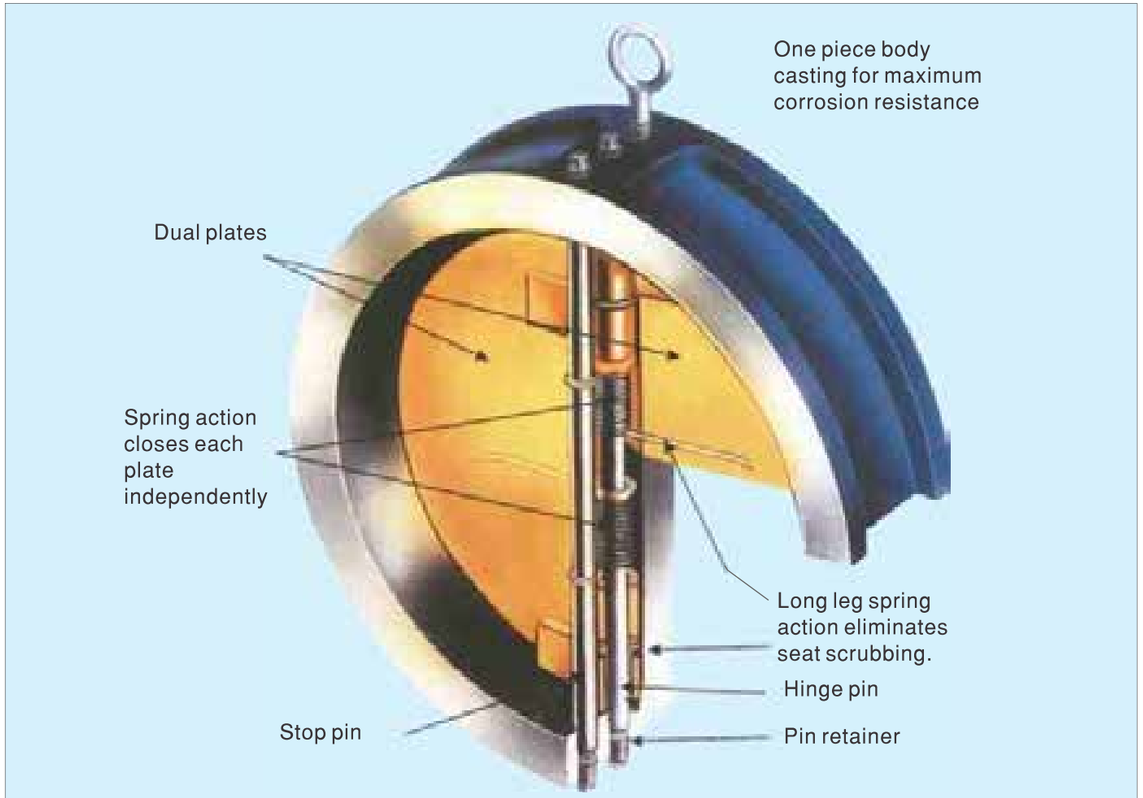


"Dual Plate Check Valve"

The High Performance Valve

More than 3 Decades

‘Advance’ Dual Plate Check Valve



{Available in sizes 50mm (2”) NB to 2000 mm (80”) NB in pressure rating ANSI 125 to 2500 for all services.}

Design Features

The dual Plate Check Valve is an all purpose non return valve that is much stronger, lighter in weight and smaller in size compared to a conventional swing check valve or life check valve.

The Dual Plate Check Valve design is the result of attempts to solve the problems associated with swing check valve and lift check valve. The Dual Plate Check Valve employs two spring-loaded plates hinged on a central hinge pin. When the flow decreases, the plates close by torsion spring action without requiring reverse flow. This design offers the twin advantages of No Water Hammer and Non Slam simultaneously. All features put together make the Dual Plate Check Valve one of the most efficient design. It is also referred as SILENT CHECK VALVE.

The valve design conforms to APS 594 as well as API 6D except face to face dimensions of ANSI 125 cast iron valves of sizes 65mm (2½”) to 300mm (12”). Valve inspection and testing conforms to API 598.

Dual Plat Check Valves are available in wafer design, flanged wafer design and extended design with flanged ends having face to face dimensions as that of a swing check valve.

STRUCTURALLY MORE SOUND DESIGN.

The valve has cylindrical body which makes the valve look like any other pipe fitting. A cylindrical body has much more uniform distribution of stress compared to a conventional swing check valve. A cylindrical body of the pressure containing part of the Dual Plate Check Valve can be designed to withstand extreme much to the weight (thickness) of valve. Thus for severe/rugged loading conditions, these valves have a distinct edge over the conventional valves both in terms of safety and economics besides general versatility.

“Advance” Dual Plate Check Valves have been designed and developed using computer based latest technique of ‘Finite Element Analysis’.

HYDRAULICALLY ENGINEERED DESIGN

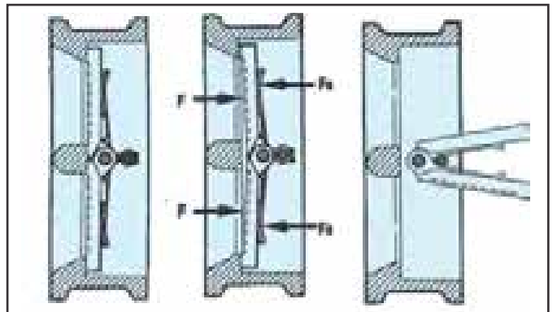
Hydraulically, the design is more versatile. In horizontal installation, the weight of the door (Plate) does not play any significant role in valve closure or opening, unlike in a conventional swing check valve where closure/opening is assisted/hampered by gravity. The opening and closing rates can be designed to suit a particular application which may be hydraulically more sensitive.

DOUBLE SPRING ACTION

The Dual Plate Check valve above 150mm (6”) NB are provided with two springs to avoid disparate forces acting on each plate as in the case of single spring design. This is to ensure even closing. This is achieved single legged or suitably designed double legged springs.

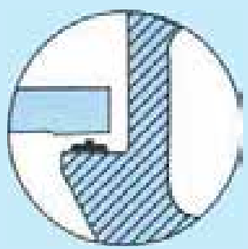
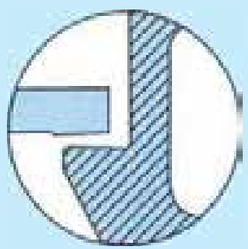
VALVE OPERATION

The plate are smaller in area and lighter in weight being two in number compared to one in a conventional swing check valve. The unique feature of plate opening (i.e., it first lifts up at heel and then swings) ensures no rubbing actions against seat. This results in lower rate of wear and tear of seals This feature is not feasible in other designs which results in a higher rate of seal wear. This is achieved by the special spring action and hinge design.



Plates in closed position (Top View) | Wheel opens first as flow begins | Plates fully opened (85°) under normal flow.

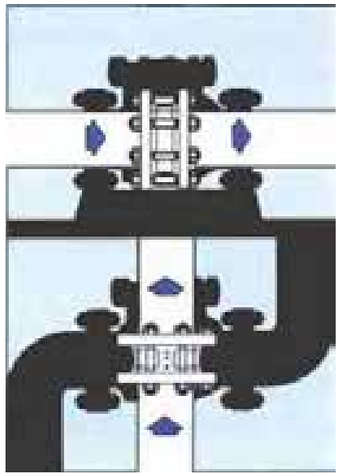
SEAL DESIGN

Resilient Seal	Metal to Metal Seal
	

The valve are available with resilient seal as well as metal -to-metal seating as depicted above.

FLEXIBLE INSTALLATION (VERTICAL/HORIZONTAL)

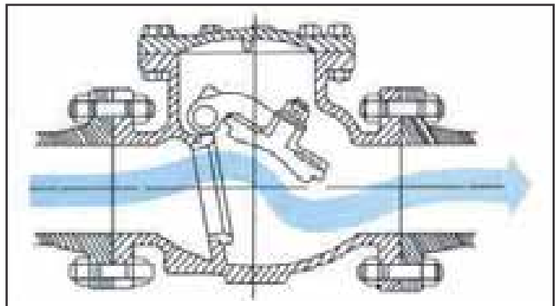
The installed valve is more rigid than an equivalent length of heavy section pipe eliminating the need for any special support etc. The spring action (in place of gravity) enables the valve to be installed in any position - vertical or horizontal.



NO WATER HAMMER

To eliminate water hammer, a Check Valve should close without any reverse flow.

Water hammer is almost non-existent since closing of the valve does not depend on back pressure and back flow. Each plate being half the size of a swing check disc, it can pass through the process flow more easily and quickly. Due to spring assisted closing, valve closure starts as soon as flow velocity reduces below the designed minimum velocity and thereafter the closing rate follows the flow velocity pattern. Therefore, the valve closes as the flow velocity reduces to zero, before the flow reverses, thus eliminating the water hammer.



The Heavy Disc in Swing Valves Develops heavy momentum as it swings to the closed positions.

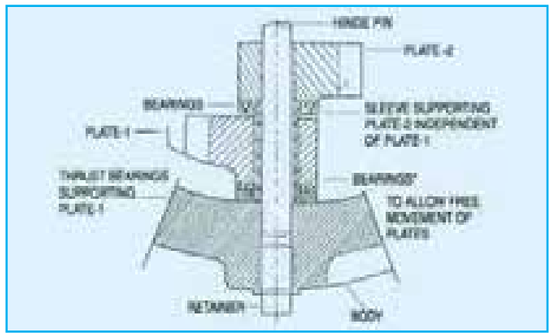
NO SLAMMING

The Dual Plate check Valve design can be classified as “Non-Slam Design” The swing disc in swing check valve is hinged at the top. The force of gravity includes high inertia as it swings to the closed position. The momentum can cause severe damage when the disc slams to the valve seat. To reduce this, one has to go for a balancing weight/ dash pot etc. This makes the valve more expensive and bulky. Furthermore, any counter weight/dash pot arrangement works counter productive in prevention of water hammer.

The two plates in Dual Plate Check Valve are hinged in the centre vertically for horizontal installations eliminating the effect of the gravity altogether. Also the momentum developed as they moved to the closed position is a fraction of what is developed in a swing check valve as the weight of each plate is ¼th the weight of swing disc and the tip velocity is less then half. Further due to spring assisted closing the valve closes at zero flow before back (negative) flow begins. As it starts closing, the flow as such cushions the plates and seat hence the chances of slamming are negligible.

INDEPENDENT PLATE SUSPENSION

For valve sizes 450mm (18”) NB and above each plate is supported independent of each other. In any position (Horizontal or Vertical) each plate’s weight is directly transferred to the body.



SPECIAL SERVICE VALVES:

RUBBER-LINED VALVES : To meet special service requirements “Advance” Dual Plate Check Valves are available in fully rubber lined bodies, whereas internals can be of suitable alloys to meet the fluid environment.

FIRE SAFE SERVICES : To take care of differential expansion between body and long studs in fire hazardous areas, double flanged valves are available where standard set of studs can be used at each end. This design automatically eliminates the need for separate Lug type Design.

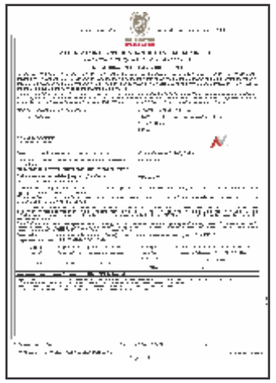
RETAINERLESS DESIGN : For hazardous, highly corrosive/toxic chemicals and hazardous gases, “Retainerless” designs are available.

SPECIAL APPLICATION VALVES : Company is equipped to offer special application valves including jacketed, IBR application, Low velocity fluid applications, or other specialized applications.

INSPECTION & APPROVAL

The Company is fully equipped with all necessary inspection and testing facilities including vacuum test.

“Advance” Valves are inherently “Quality Assured”. The Quality Management System of the company has been accredited by Bureau Veritas in accordance with IS/ISO 9001:2008 and according to European Pressure Equipment Directive 97/23/CE, Module H to use CE 0062 monogram accredited by Bureau Veritas as a recognition to its continuos commitment towards total quality.



API-6D MONOGRAM : The valves are designed and manufactured meeting all the requirement of API-6D standard and the company has acquired API-6D licence.

“Advance” Dual Plate Check Valves are widely accepted by all leading Indian and Overseas Engineering Consultants and users in all types of services viz. Water, Oil, & Gas, Fertilizers, Chemicals, Petrochemicals, Refinery, Metallurgy, Steel and Power sectors including nuclear and other areas.

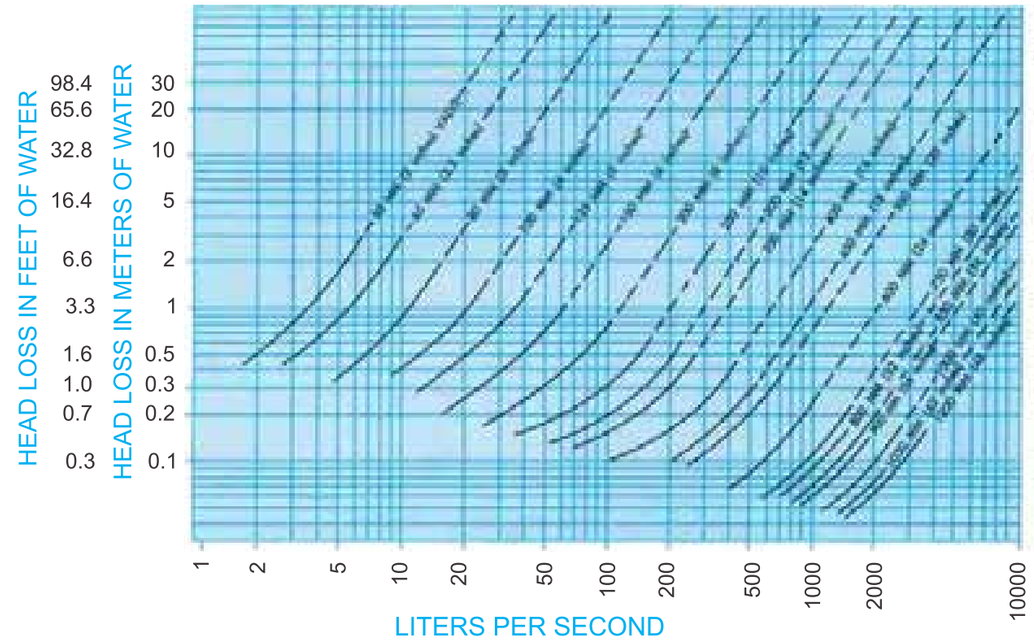
The company has the distinction of being in the select band of companies supplying valves meeting nuclear application requirements as per ASME section III.

“Advance” Valves are being exported to various countries e.g. Indonesia, Thailand, U.K., U.S.A, Gulf countries etc. Under Third party Inspection by International Inspection Agencies

Dual Plate Check Valve can be safely classified as Zero Velocity Valve. The design has everything which the other conventional valves miss. It is a valve most efficient in operation irrespective of fluid and service conditions and the easiest to handle and install in any piping system with no constraints. It truly meets the protective device criteria of a check valve (NRV).

Head Loss v/s Flow Rate

Advance Dual Plate Check Valve



The above curves show pressure drops available with standard torque springs in horizontal flow conditions as calculated. System with abnormal flow conditions or non-return function can be supplied with different torque springs to meet other hydraulic parameters.

LOWER PRESSURE DROP

The design of Dual Plate Check Valves divides the total force in half, since each plate covers only one half the area of a swing check disc. One-half the force on each plate requires one-half thickness, hence one-fourth the mass of a swing check disc.

Ff (hinge friction) plus Fs (spring force) times 0.75B (force point) minus F (force) times B (width) equals zero for equilibrium.

Ff(Friction of Hinge)+Fs(0.75B)-FB=0

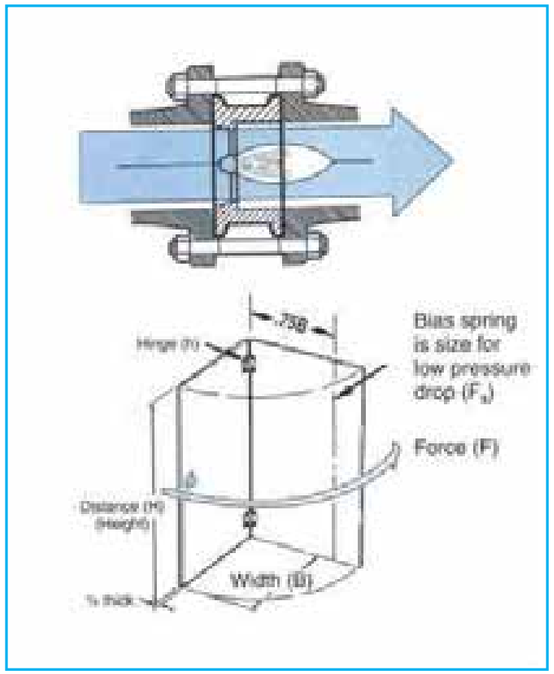
Therefore,

$$F = 0.75FS + \frac{Ff(\text{friction of Hinge})}{B}$$

The weight of the plates does not increase the force required.

Dual Plate Check valve has much lower pressure drop due to lower force.

The best analogy between a swing check valve and Dual Plate check valve would be a door hinged from the top and a door hinged on its side with a appropriate door closure. The force required for operating the two doors can be just visualised and compared.



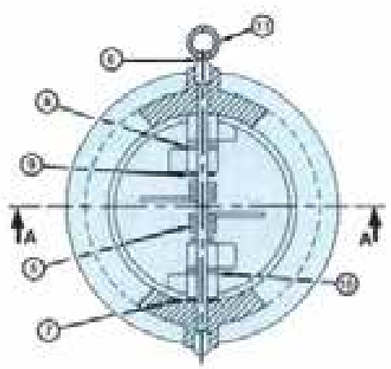
ADVANCE DUAL PLATE CHECK VALVE

WAFER TYPE (MODEL AV-WP-11)

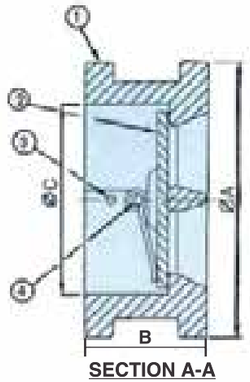
SIZE UPTO 2000 mm (80”), PRESSURE RATING UPTO 2500 CLASS

PART LIST

Item No.	PART NAME
1	Body
2	Plate
3	Stop Pin
4	Hinge Pin
5	Spring *
6	Retailer
7	Body Bearing
8	Plate Bearing
9	Spring Bearing
10	Sleeve #
11	Eyebolt **



ELEVATION



SECTION A-A

Note :
* Single Spring upto 125mm (5”)
# Sleeve provided only for 450mm (18”) and above (independent suspension).
** Eyebolt provided only for 200mm (8”) and above.

Fig. 1

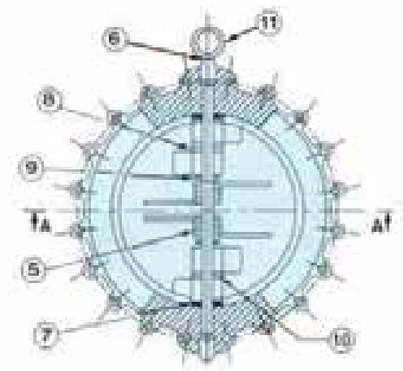
ADVANCE DUAL PLATE CHECK VALVE

LUGGED TYPE (MODEL AV-WL-21)

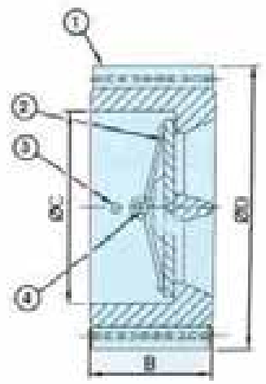
PRESSURE RATING UTPO 2500 CLASS

PART LIST

Item No.	PART NAME
1	Body
2	Plate
3	Stop Pin
4	Hinge Pin
5	Spring *
6	Retailer
7	Body Bearing
8	Plate Bearing
9	Spring Bearing
10	Sleeve #
11	Eyebolt **



ELEVATION



SECTION A-A

Note :
1. Dimension “D” to suit customer flange specification.
2. Other dimensions and part description, refer model AV-WP-11 (Fig.1) and table 1.
3. For sizes 300 mm (12”) and above model AV-WP-31 is recommended.
4. Solid Lugs are available on request.

Fig. 2

ANSI Installation Dimensions

Advance Dual Plate Check Valve

(WAFER TYPE MODEL AV-WP-11)

TABLE 1

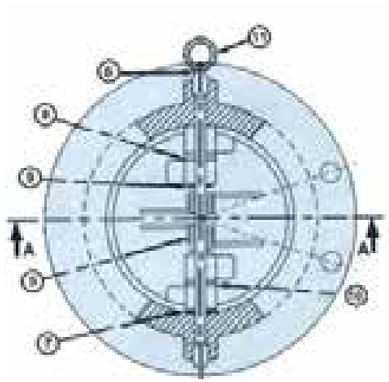
SIZE N.B.	ANSI RATING	FACE	DIMENSIONS (mm)		
			**Ⓐ	Ⓑ	Ⓒ
50mm (2”)	125	FF	101	54	60
	150	RF/RJ-22	101	60	60
	300	RF/RJ-23	107	60	60
	600	RF/RJ-23	107	60	60
	900	RF/RJ-24	140	70	47
	1500	RF/RJ-24	140	70	47
65mm (2.5”)	125	FF	120	54*	73
	150	RF/RJ-25	120	67	73
	300	RF/RJ-26	127	67	73
	600	RF/RJ-26	127	67	73
	900	RF/RJ-27	162	83	57
	1500	RF/RJ-27	162	83	57
80mm (3”)	125	FF	133	57*	89
	150	RF/RJ-29	133	73	89
	300	RF/RJ-31	145	73	89
	600	RF/RJ-31	145	73	89
	900	RF/RJ-31	165	83	73
	1500	RF/RJ-35	171	83	73
100mm (4”)	125	FF	171	64*	144
	150	RF/RJ-36	171	73	114
	300	RF/RJ-37	177	73	114
	600	RF/RJ-37	190	79	114
	900	RF/RJ-37	203	102	98
	1500	RF/RJ-39	206	102	98
125mm (5”)	125	FF	193	70*	141
	150	RF/RJ-40	193	86	141
	300	RF/RJ-41	212	86	141
	600	RF/RJ-41	238	105	141
	900	RF/RJ-41	244	159	120
	1500	RF/RJ-44	251	159	120
150mm (6”)	125	FF	218	76*	168
	150	RF/RJ-43	218	98	168
	300	RF/RJ-45	247	98	168
	600	RF/RJ-45	263	137	168
	900	RF/RJ-45	285	159	146
	1500	RF/RJ-46	279	159	146
200mm (8”)	125	FF	276	95*	219
	150	RF/RJ-48	276	127	219
	300	RF/RJ-49	304	127	219
	600	RF/RJ-49	317	165	219
	900	RF/RJ-49	355	206	190
	1500	RF/RJ-50	350	206	190
250mm (10”)	125	FF	336	108*	273
	150	RF/RJ-52	336	146	273
	300	RF/RJ-53	358	146	273
	600	RF/RJ-53	396	213	273
	900	RF/RJ-53	431	241	238
	1500	RF/RJ-54	431	248	222
300mm (12”)	125	FF	406	143*	324
	150	RF/RJ-56	406	181	324
	300	RF/RJ-57	419	181	324
	600	RF/RJ-68	453	229	324
	900	RF/RJ-57	495	292	282
	1500	RF/RJ-58	518	305	263
350mm (14”)	125	FF	447	184	356
	150	RF/RJ-59	447	184	356
	300	RF/RJ-61	482	222	356
	600	RF/RJ-61	488	273	356
	900	RF/RJ-62	517	256	325
400mm (16”)	125	FF	511	191	406
	150	RF/RJ-64	511	191	406
	300	RF/RJ-65	536	232	406
	600	RF/RJ-65	562	305	406
	900	RF/RJ-66	584	384	363
450mm (18”)	125	FF	546	203	457
	150	RF/RJ-68	546	203	457
	300	RF/RJ-69	593	264	457
	600	RF/RJ-69	609	362	457
500mm (20”)	125	FF	603	213	508
	150	RF/RJ-72	603	219	508
	300	RF/RJ-73	650	292	508
	600	RF/RJ-73	679	368	508
550mm (22”)	125	FF	659	222*	559
	150	RF/RJ-80	659	222*	559
	300	RF/RJ-81	703	304	559
600mm (24”)	125	FF	714	222	610
	150	RF/RJ-76	714	222	610
	300	RF/RJ-77	771	318	610
650mm (26”)	125	FF	771	248*	660
	150	RF	771	248*	660
700mm (28”)	125	FF	828	305*	702
	150	RF	828	305*	702
750mm (30”)	125	FF	879	305	748
	150	RF	879	305	748
800mm (32”)	125	FF	936	356*	813
	150	RF	936	356*	813
850mm (34”)	125	FF	987	356*	864
	150	RF	987	356*	864
900mm (36”)	125	FF	1044	368	914
	150	RF	1044	368	914
1000mm (40”)	125	FF	1159	406*	987
	150	RF	1159	406*	987
1050mm (42”)	125	FF	1216	432	987
	150	RF	1216	432	987
1100mm (44”)	125	FF	1273	432*	987
	150	RF	1273	432*	987
1200mm (48”)	125	FF	1381	524	1140
	150	RF	1381	524	1140
1300mm (52”)	125	FF	1480	524*	1140
	150	RF	1480	524*	1140
1350mm (54”)	125	FF	1545	540*	1308
	150	RF	1545	540*	1308
1400mm (56”)	125	FF	1600	540*	1308
	150	RF	1600	540*	1308
1500mm (60”)	125	FF	1625	660*	1422
	150	RF	1625	660*	1422

* Face-to-face dimensions are to manufacturer’s standard. For other size & ratings API 594 is referred.
** Hub diameter Ⓐ above are to suit ANSI B16.5, MSS-SP-44 and ANSI B16.47 series A dimensions. This can also be supplied to suit flange dimensions as per BS 1560, JIS, IS or any other standard as per buyer’s specifications.
*** For other sizes and pressure class ANSI 2500, details available on request.

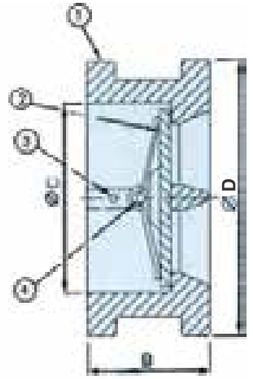
ADVANCE DUAL PLATE CHECK VALVE

WAFER FLANGED TYPE (MODEL AV-WF-31)

SIZE 250 mm (10”), TO 2000MM (80”) PRESSURE UPTO RATING 2500 CLASS



ELEVATION



SECTION A-A

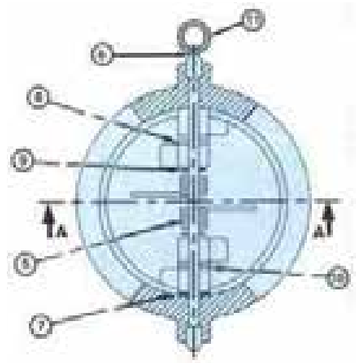
Note :
1. Dimension “D” to suit customer flange specification.
2. Other dimensions and part description, refer model AV-WP-11 (Fig.1) and Table 1.

Fig. 3

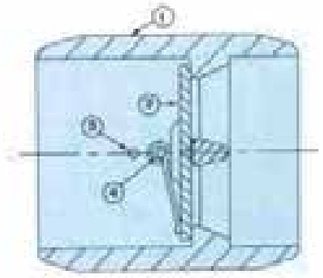
ADVANCE DUAL PLATE CHECK VALVE

WELDING ENDS TYPE (MODEL AV-BW-41)

SIZE UPTO 600 mm (24”), PRESSURE RATING UPTO 2500 CLASS



ELEVATION



SECTION A-A

Note :
1. The Dimension details will be furnished on request.
2. For part details refer model AV-WP-11 (Fig.1)

Fig. 4

ADVANCE DUAL PLATE CHECK VALVE

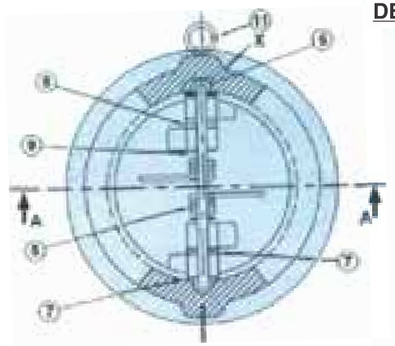
RETAINERLESS TYPE (AV-WF-12)

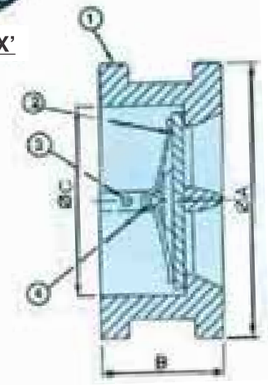
SIZE UPTO 2000 mm (80”), PRESSURE RATING UPTO 2500 CLASS.

PART LIST

Item No.	PART NAME
1	Body
2	Plate
3	Stop Pin
4	Hinge Pin
5	Spring *
6	Pin Carrier
7	Body Bearing
8	Plate Bearing
9	Spring Bearing
10	Sleeve #
11	Eyebolt **

DETAIL AT ‘X’





SECTION A-A
WAFER DESIGN
Model AV-WF-12

Note :
* Single Spring upto 125mm (5”)
# Sleeve provided only for 450mm (18”) and above (independent suspension).
** Eyebolt provided only for 200mm (8”) and above.
1. For dimensions see table 1.
2. Retainerless design are available in Wafer Lugged (AV-WL-22), Wafer Flanged (AV-WF-32) and extended Flanged (AV-EF-52) configuration with flanges as per customer specifications.

Fig. 5

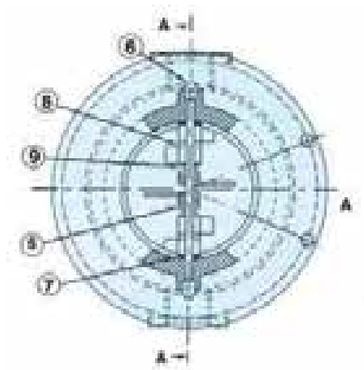
ADVANCE DUAL PLATE CHECK VALVE

JACKETED TYPE (MODEL AV-EF-55)

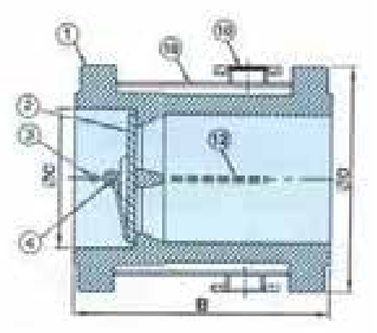
SIZE UPTO 250 mm (10”), PRESSURE RATING 150, 300 & 600 CLASS.

PART LIST

Item No.	PART NAME
1	Body
2	Plate
3	Stop Pin
4	Hinge Pin
5	Spring
6	Retainer
7	Body Bearing
8	Plate Bearing
9	Spring Bearing
10	Jacket (fab.)
11	Steam in/out Flg.
12	Baffle Plate



ELEVATION



SECTION A-A
(PLATE, RIB & SPRING SHOWN ROTATED)

Note :
1. Single spring upto 125mm (5”).
2. Dimension “D” is provided on request. (Flange size will be higher than normal)
3. For other dimensions see table 2.

Fig. 6

Installation Dimesions

Advance Dual Plate Check Valve

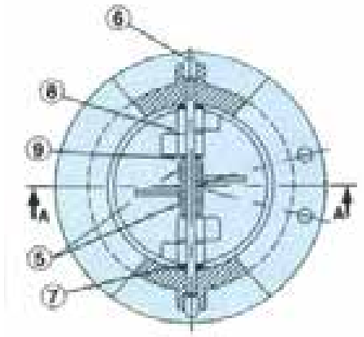
MODEL AV-EF-51 (EXTENDED FLANGED TYPE)

(Face-to-face dimensions as per BS 1868 / ANSI B16.10)

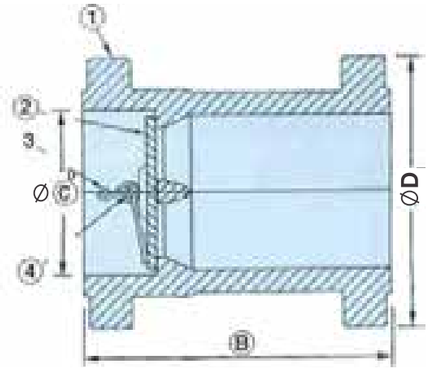
PART LIST

Item No.	PART NAME
1	Body
2	Plate
3	Stop Pin
4	Hinge Pin
5	Spring •
6	Retailer
7	Body Bearing
8	Plate Bearing
9	Spring Bearing

• SINGLE SPRING UPTO 100 mm (4") NB



ELEVATION



ELEVATION
Direction of Flow

TABLE 2

SIZE N.B.	ANSI RATING	FACE	DIMENSIONS (mm)		
			** ØD	Ⓑ	ⓒ[D]
50mm (2")	150	RF/RJ-22	152	203	60
	300	RF/RJ-23	165	267	60
	600	RF/RJ-23	165	292	60
65mm (2.5")	150	RF/RJ-25	178	216	73
	300	RF/RJ-26	191	292	73
	600	RF/RJ-26	191	330	73
80mm (3")	150	RF/RJ-29	191	241	89
	300	RF/RJ-31	210	318	89
	600	RF/RJ-31	210	318	89
100mm (4")	150	RF/RJ-36	229	292	114
	300	RF/RJ-37	254	356	114
	600	RF/RJ-37	273	432	114
150mm (6")	150	RF/RJ-43	279	356	168
	300	RF/RJ-45	318	445	168
	600	RF/RJ-45	356	559	168
200mm (8")	150	RF/RJ-48	343	495	219
	300	RF/RJ-49	381	533	219
	600	RF/RJ-49	419	660	219
250mm (10")	150	RF/RJ-52	406	622	273
	300	RF/RJ-53	445	622	273
	600	RF/RJ-53	508	787	273
300mm (12")	150	RF/RJ-56	483	699	324
	300	RF/RJ-57	521	711	324
	600	RF/RJ-57	559	838	324

Similar design can also be provided for larger sizes. Alternatively face-to-face dimensions can be matched to swing Check Valve by a separate spool piece.
**Hub (Flange) diameter is as per ANSI B163.5 dimensions. This can also be supplied to suit flange dimensions as per BS 1560, BS 10, JIS, IS or any other standard as per buyer's specifications.

SPRING SELECTION

For standard Valve, with resilient seal, spring will be of SS 304 (or SS 316 if required) as standard. For Metal-to-Metal seating SS 316 or Inconnel X-750 will be offered as required by the process conditions.

For operating temperature above 120° C only Inconnel X-750 spring is recommended and used.

For proper spring selection, the service temperature, pressure and fluid conditions should be specified at enquiry stage.

SEAL

Material	Operating Temperature*	
	°C	°F
Buna-N/EPDM**	-57 to 120	-70 to 250
Viton-A**	-40 to 204	-40 to 400
Metal-to-Metal	-267 to 537	-450 to 1000

*** This range of operating temperatures is for general guidance. These may vary with service conditions, body and plate material.**

**** Silicon Rubber can also be offered as per customer requirement.**

ANSI Maximum Working Pressure

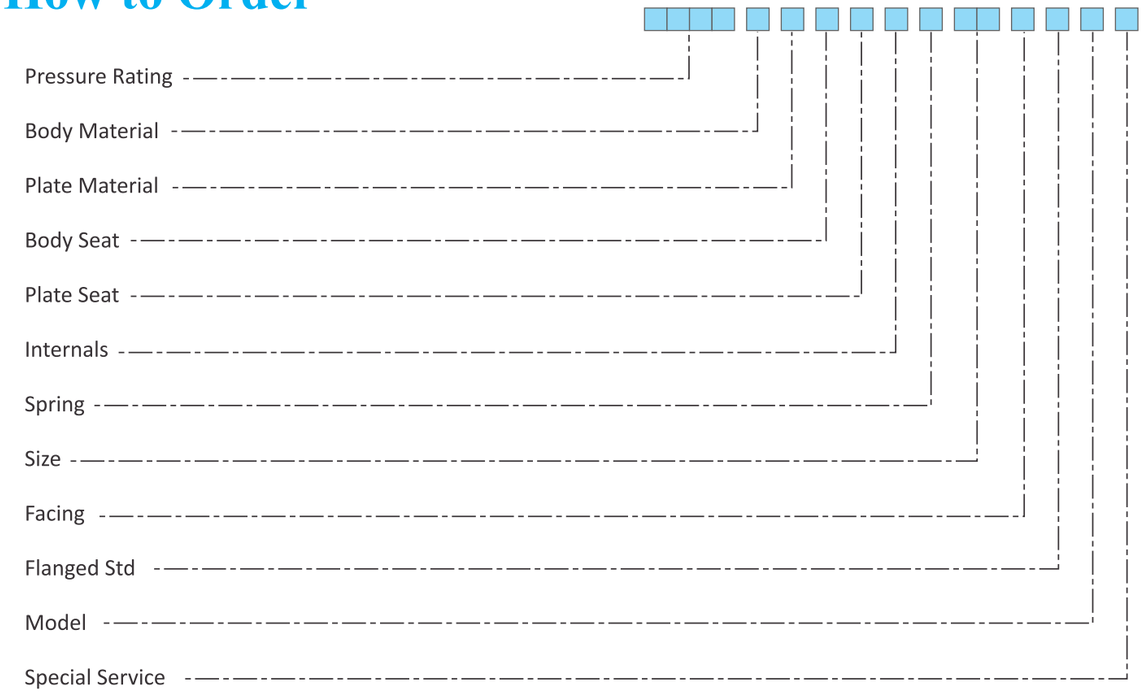
Advance Dual Plate Check Valve

TABLE 3

Temperature		Maximum Non Shock Service Pressure (ANSI B 16.34, 1981)																	
		Series 150				Series 300				Series 600				Series 900				Series 1500			
		Steel		SS 316		Steel		SS 316		Steel		SS 316		Steel		SS 316		Steel		SS 316	
°C	°F	Kg/cm³	psi	Kg/cm³	psi	Kg/cm³	psi	Kg/cm³	psi	Kg/cm³	psi	Kg/cm³	psi	Kg/cm³	psi	Kg/cm³	psi	Kg/cm³	psi	Kg/cm³	psi
-29 to 38	-20 to 100	20.0	285	9.3	275	52.0	740	50.6	720	104.0	1480	101.2	1440	156.3	2220	152.1	2160	260.9	3705	253.5	3600
66	150	19.0	270	17.9	255	49.6	705	47.1	670	99.1	1410	94.2	1340	149.2	2120	100.5	2010	249.2	3540	235.5	3345
93	200	18.3	260	16.9	240	47.5	675	43.6	620	94.9	1350	87.2	1240	142.6	2025	130.9	1860	237.6	3375	217.9	3095
121	250	17.2	245	15.8	225	46.7	665	41.5	590	93.5	1330	83.0	1180	140.4	1995	124.6	1770	234.1	3325	207.3	2945
149	300	16.2	230	15.1	215	46.0	655	39.4	560	92.4	1315	78.7	1120	138.7	1970	118.3	1680	230.9	3280	196.8	2795
177	350	15.1	215	14.4	205	45.3	655	37.6	535	90.7	1290	75.6	1075	136.2	1935	113.3	1610	227.1	3225	188.7	2680
204	400	14.1	200	13.7	195	44.6	645	36.2	515	89.3	1270	72.4	1030	133.8	1900	108.4	1540	223.2	3170	180.9	2570
232	450	13.0	185	12.7	180	43.2	635	34.8	495	86.8	1235	69.6	990	129.9	1845	104.5	1485	216.9	3080	174.6	2480
260	500	12.0	170	12.0	170	42.2	615	33.7	480	84.4	1200	67.1	955	126.4	1795	101.0	1435	210.9	2995	168.3	2390
288	550	10.9	155	10.9	155	40.4	600	32.7	465	80.5	1145	65.4	930	120.7	1715	98.2	1395	201.9	2865	163.3	2320
316	600	9.8	140	9.8	140	38.7	575	31.6	450	77.0	1095	63.6	905	115.4	1640	95.4	1355	192.6	2735	158.8	2255
343	650	8.8	125	8.8	125	37.6	550	31.3	445	75.6	1075	62.6	890	113.3	1610	93.6	1330	189.0	2685	156.3	2220
371	700	7.7	110	7.7	110	37.6	535	30.2	430	74.9	1065	60.8	865	112.6	1600	91.1	1295	187.6	2665	152.1	2160
399	750	6.7	95	6.7	95	35.5	505	29.9	425	71.0	1010	59.4	845	106.3	1510	89.4	1270	177.4	2520	148.5	2110
427	800	5.6	80	5.6	80	28.8	410	29.2	415	58.0	825	58.3	830	86.9	1235	87.6	1245	145.0	2060	146.4	2075
454	850	4.4	65	4.6	65	19.0	270	28.5	405	37.6	535	56.9	810	56.6	805	85.5	1215	94.3	1340	142.9	2030
468	875	3.9	55	3.9	55	15.5	220	28.1	400	30.9	440	56.2	800	46.4	660	84.1	1195	77.4	1100	140.8	2000
482	900	3.5	50	3.5	50	12.0	170	27.8	395	24.3	345	55.5	790	36.2	515	83.0	1180	60.5	860	138.7	1970
496	925	2.8	40	2.8	40	9.5	135	27.4	390	19.3	275	54.8	780	28.8	410	82.3	1170	48.2	685	137.3	1950
510	950	2.5	35	2.5	35	7.4	105	27.1	385	14.4	205	54.5	775	21.8	310	81.6	1160	36.2	515	135.9	1930
524	975	1.8	25	1.8	25	5.3	75	26.4	375	10.9	155	52.7	750	16.1	230	79.2	1125	27.1	385	132.0	1875
538	1000	1.4	20	1.4	20	3.5	50	25.7	365	7.4	105	51.0	725	10.9	155	76.7	1090	18.3	260	128.1	1820
Hydrostatic ambient		31.6	450	29.9	425	79.1	1125	77.3	1100	152	2160	150	2170	238	3380	228	3240	396	5625	380	5400

How to Order

Figure Numbering System



RATING	
Pn10	10
Pn16	16
# 125	12
# 150	15
# 300	30
# 600	60
# 900	90
# 1500	A5
# 2500	B5

BODY & PLATE MATERIAL	
WCB ASTM A216	S
LCB ASTM A352	L
LCC ASTM A352	M
WC6 ASTN A217	6
CA-15 ASTM A217	E
C5 ASTM A217	2
C12 ASTM A217	1
CA6NM ASTM A352	Y
CF8M ASTM A351	C
CF3M ASTM A351	F
CF8C ASTM A351	8
Duplex Gr 4A ASTM 890/995	4
Duplex Gr 5A ASTM 890/995	5
Duplex Gr 6A ASTM 890/995	Z
Inc 625 ASTM A494 CW_6MC	N
Inc 825 ASTM A494CU5MCuC	U
CK3MCuN ASTM A351 - S31254	O

St-6	D
ASTM B367 GRC2 (Titanium)	T
Hastealloy B ASTM A494 N7M	I
Hastealloy C ASTM A494 CW12MW	V
ASTM A494 GR M35-1 N24020	Q
ASTM A494 GR M25-S N24025	P
ASTM B148 AB2 C 95800	B
ASTM A148 AB2 C 95500	R
Wc9 ASTM A217	9
ASTM A 352 LC3	X
CF8 ASTM A351	A
CF3 ASTM A351	3
ASTM A351 GR CN7M N08007	7
D2 ASTM A439	K
CF3MN ASTM A351	0
Gun Metal	G
ASTM A126 / IS 210 Cast Iron	H
ASTM A536 / ASTM 385 SGI	J
AB2 ASTM B148 UNS C95400	X
ASTM A126 GR B	X
ASTM A216 WCC	W
ASTM A395 GR 60-40-18	X
ASTM A395 GR 60-45-15	X
ASTM A494 GRADE CW2M	X
ASTM A494 GRADE CY-40-1	X
CA6NM ASTM A352 UNS J91540	Y
ASTM A 351 GR CG8M	X

BODY SEAT	
Integral	I
13% Cr. / SS-410	E
SS-304 Gr.18.8	A
SS-304L	3
SS-316 Gr.18.8.2	C
SS-316L	F
Inc. 625	N
Inc. 825	U
Monel 400 - N35-2	Q
Monel 500 - M25-S	P
AB2 C 95800	B
Stellite-6	D
Viton	Y
Buna N	G
EDPM	M

PLATE SEAT	
Integral	I
13% Cr. / SS-410	E
SS-304 Gr.18.8	A
SS-316 Gr.18.8.2	C
SS-316L	F
Inc. 625	N
Inc. 825	U
Monel 400 - N35-2	Q
Monel 500 - M25-S	P
AB2 C 95800	B
Stellite 6	D
EDPM	M

SIZE (MM)	
40	1H
50	02
65	2H
80	03
100	04
125	05
150	06
200	08
250	10
300	12
350	14
400	16
450	18
500	20
550	22
600	24
650	26
700	28
750	30
800	32
850	34
900	36
950	38
1000	40
1050	42
1100	44
1150	46
1200	48
1250	50
1300	52
1350	54
1400	56
1450	58
1500	60
1550	62
1600	64
1650	66
1700	68
1750	70
1800	72
1850	74
1900	76
1950	78
2000	80

SPRING	
SS-304	A
SS-316	C
Inconel X 750	I
Inconel X 625	N
Monel 500	P
Inconel X 718	J
Inconel X 600	L
Titanium C2	T
Alloy 20	7
DPCV Hastelloy	V

INTERNALS	
SS-304L	3
SS-321	8
SS-304	A
SS-316	C
SS-410	E
SS-316L	F
Duplex 4A	4
Duplex 5A	5
17-4PH	H
SS-431	K
Inc. 625	N
Inc. 825	U
Monel 500	P
Monel 400	Q
AB2	B
254SMO	O
Titanium	T
Hastealloy C	V
Ferrallium	0
Duplex 6A	Z
Alloy 20 CN7M / 904L	7
SS 321H	9
DPCV ASTM A479/A351 GR. CK3MCuN	S
DPCV SS-347	1
MS	O
Phosphors Bronze	B

FACING	
Flat Face Smooth	A
Flat Face Serrated	B
Raised Face Smooth	C
Raised Face Serrated	D
Ring Joint	E
Hub End	X
Butt Weld	Z
Moulded Raised Face Smooth	F

FLANGE STD	
ANSI B16.5/ANSI B16.47 A / MSS-SP-44	A
ANSI B 16.47 B	B
AWWA C 207	C
IS 6392	F
IS 1538	G
BS 4504	H
ANSI B16.1	K
BS 10 E	S
BS 10 D	T
B16.25	Z
HUB END	Y
Others	X

MODEL	
Wafer	11
Wafer Retainerless	12
Wafer Lined	13
Wafer Cladded	14
Lugged	21
Lugged Retainerless	22
Lugged Lined	23
Lugged Cladded	24
Double Flanged	31
Double Flanged Retainerless	32
Double Flanged Lined	33
Double Flanged Cladded	34
Weld Neck (Butt Weld)	41
Weld Neck (Butt Weld R/Less)	42
Long Flanged	51
Long Flanged Retainerless	52
Long Flanged Lined	53
Solid Lugged	61
Solid Lugged Retainerless	62
Solid Lugged Lined	63
Hub End	71
Hub End Retainerless	72
Hub-end cladded	74
Mono Flanged	81
Mono Flanged Retainerless	82
Mono Flanged Lined	83

SPECIAL SERVICE	
Cryogenic	C
Drilled Hole	D
Firesafe	F
GOST Certified	G
Hydrogen	H
IBR	I
Low Temp	L
Nuclear	J
Oxygen	O
CE	P
Special Spring	S
Vacuum	T
Nace	V
Drain Plug	N
Jacketed	U
6D	J

Approximate Weights

Advance Dual Plate Check Valve

(MODEL AV-WP-II WAFER TYPE)

TABLE 5

SIZE NB (mm)	Weight in Kgs.			
	ANSI 125	ANSI 150	ANSI 300	ANSI 600
50	1.8	2.7	3.2	3.2
65	2.7	3.5	5.0	5.0
80	3.2	4.5	6.8	6.8
100	5.4	6.7	8.2	11.8
125	6.8	10.2	15.9	22.7
150	9.0	16.0	20.0	36.0
200	18.0	26.0	37.0	61.0
250	29.0	40.0	57.0	108.0
300	50.0	78.0	91.0	151.0
350	90.0	100.0	147.0	206.0
400	116.0	125.0	188.00	290.0
450	135.0	143.0	260.0	404.0

SIZE NB (mm)	Weight in Kgs.			
	ANSI 125	ANSI 150	ANSI 300	ANSI 600
500	172	197	329	508
550	240	260	450	-
600	261	281	499	-
650	396	396	-	-
700	400	527	-	-
750	550	580	-	-
800	650	700	-	-
850	700	750	-	-
900	840	890	-	-
1000	1143	1143	-	-
1050	1270	1270	-	-
1200	1778	1778	-	-

For other models and sizes weights can be provided on request.

Installation Instructions

(1) CLEANING

The ends of Dual Plate Check Valves are protected by rust proofing oil. Before installation, clean the same. Valve plates should be checked to ensure they are free of rust/oil.

(2) DIRECTION OF FLOW

The directions of flow in the line should coincide with the flow direction indicated by the 'arrow' cast on the body of the valve as well as marked on the name plate.

(3) HORIZONTAL PIPING

Insert the valve into the pipeline so that the Pin Retainers (Plugs) are placed in an up and down position.

(4) DISTANCE BETWEEN DUAL PLATE CHECK VALVE & BUTTERFLY

When you attach a Butterfly valve to the outlet side of the Dual Plate Check Valve, ensure that there is enough distance between the two valves so that the plates of the Dual Plate Check Valve in the open position. Also, the disc of the Butterfly Valve should not enter the Dual Plate Check Valve. Besides this maintain sufficient distance to avoid any peripheral or abnormal flow conditions.

(5) ORIENTATION OF THE VALVE TO PUMP DISCHARGE

When connecting the Dual Plate Check Valve to the pump, connect so that the flow of the pump meets evenly with the two plates of the valve for best results.

(6) As a standard, the valves are designed to operate optimally in fully open condition at pipe line flow velocity of 2 to 2.7 m/sec of water for horizontal applications. The flow velocity for vertical applications may be slightly higher than the horizontal applications. For other fluids with lesser specific gravity, please furnish details at the time of enquiry.

(7) Refer to the company for cyclic flow applications like outlet of reciprocating machines.

(8) Dual Plate Check Valves are recommended to be installed where the flow velocities across the cross - section are uniform.

Colour Code

Unless otherwise specified, the exterior surfaces of valve bodies shall be painted as per API 594 as per follows :

Carbon & Low Alloys Steel	:	Aluminium
Cast Iron	:	Black
Ductile Iron	:	Green
Austenitic Steel (SS)	:	Unpainted

Dual Plate Check Valve v/s Swing Check Valve

Advantages Summarised at a Glance

DUAL PLATE CHECK VALVE	SWING CHECK VALVE
☞ Light Weight thus easier handling and self supporting.	☞ Bulky & Voluminous thus cumbersome handling & heavier supporting system.
☞ More compact & Structurally sound design.	☞ Large & difficult to analyze from stress concentration points in critical applications due to intricate body shape.
☞ Same valve can be installed horizontally or vertically.	☞ Suitable primarily for horizontal applications.
☞ Only Check Valve which can be installed for flow upside down due to spring assisted closure.	☞ Not Possible.
☞ Low Pressure Drop and reduced Energy Loss irrespective of Pressure Ratings.	☞ Significant Pressure Loss and Energy Loss, which is still higher for higher pressure ratings.
☞ Streamlined flow - way.	☞ Swing restricted flow-way.
☞ Efficient and Positive sealing under most flow and pressure conditions. Valve close before flow reversal, at zero velocity.	☞ Always require reverse flow for closure and back pressure for effective sealing.
☞ Inherently Non-Slamming. No external devices / attachments required.	☞ External attachment required to counteract slamming.
☞ Water Hammer almost non-existent.	☞ Water hammer tendency persists.
☞ Long life and trouble-free operation.	☞ Seat & Hinge Pin require regular maintenance due to impact loads and wear by rubbing.

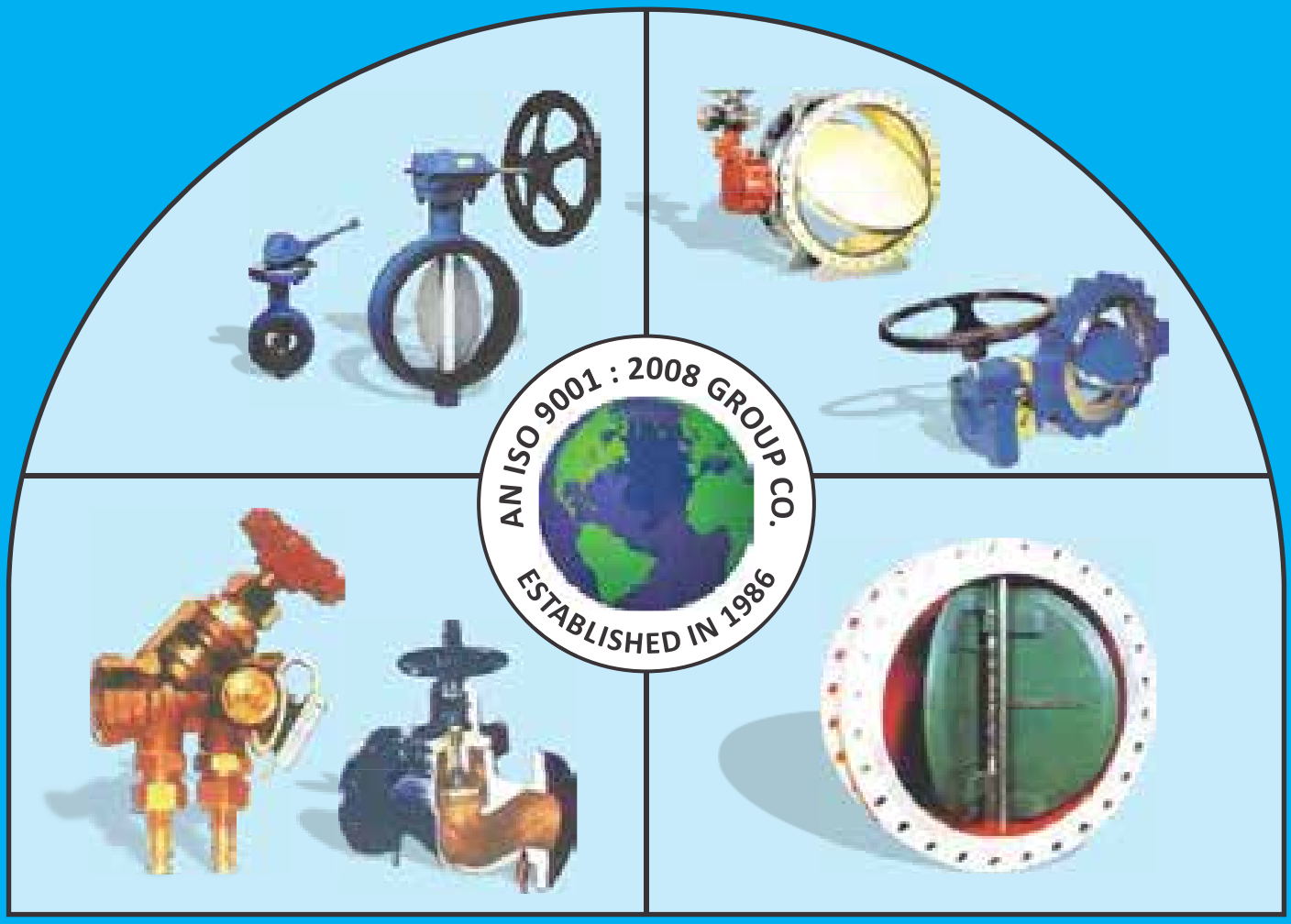
Typical Applications

The Dual Plate Check Valve is a most versatile design available in specific materials constructions to suit particular Pressure, Temperature and Fluid / Flow Characteristics. Some of the Typical Applications are as follows:

Water	:	Water Supply Systems, Fire Water Systems, Cooling Water, Chilled / Hot Water Systems, Boiler Feed Water, Sea Water, Potable Water, Raw Water etc.
Hydrocarbons	:	All Applications.
Oil & Gas	:	Onshore/Offshore, Petroleum, Lubricating Oil, Edible Oils, LPG, LNG, Sour Gas Low Temperature, Cryogenic Applications etc.
Air & Gases	:	All gases like Chlorine, Hydrogen, Nitrogen, Carbon Dioxide (Co_2), Oxygen etc.
Metallurgical & Chemical processes	:	Sugar, Pharmaceutical, Paper, Cement, Steel, Aluminium, Copper, Zinc, Power and other industries.

There is a solution to almost all NON-Return (Check Valve) problems, varying from Fire Safe Services to Cryogenic conditions, with a suitably designed Dual Plate Check Valve.

Through R & D efforts, improvements and optimisation of design is an on-going process. The design / specification provided in this catalogue are subject to change accordingly.



PRODUCT RANGE & APPLICATIONS

Type	Size Range	Rating	Design & Qualification	Application
Dual Plate Check Valve	50 - 2000 mm (2" - 80")	ANSI # 125-2500	API 594, API 6D, API 6FA, BS 6364 / ISO 28921, ISO 10497	All Services Cryogenic & Fire Safe, Retainerless, (-196°C / -321°F to 750°C / 1382°F)
Butterfly Valve - Triple Eccentric (Offset) Metal Seated High Performance	80 - 2500 mm (3" - 100")	ANSI # 150, 300, 600 & 900	API 609 Category B, API 607, ISO 15848, BS 6364 / ISO 28921, ISO 10497	All Services Cryogenic & Fire Safe, Low Emission, (-196°C / -321°F to 550°C / 1020°F)
Butterfly Valve - Concentric Integrally Moulded Liner Design	50 - 600 mm (2" - 24")	PN 10, PN 16, PN 20 & ANSI # 150	API 609 Category A, BS 5155, IS 13095, UL 1091	All kinds of Water/Chemicals/ Air/Oil/ Gases (up-to 204°C / 400°F including Vaccum services)
Butterfly Valve - Double Eccentric (Offset) High Performance	80 - 3000 mm (3" - 120")	PN 10, PN 16, PN 20, PN 25 & ANSI # 150	API 609 B Elastomer seated design	All Services up-to 200◦C / 392◦F
Actuated Butterfly including MOVs, On-off Remote Shut-off Valves	50 – 3000mm (2" – 120")	PN10, PN16 ANSI # 150, 300, 600, 900	API 609, SIL 3	With Electric, Pneumatic, Electro Hydraulic, Complete Hydraulic, Actuators & Instrumentation
Balancing Valve	25 – 1200 mm (1" – 48")	PN 16 & PN 20	DIN 3202 / BS 7350/ BS EN 593 Face to face as per ISO 5752 Table 8	Water, Glycol, Brine solution

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