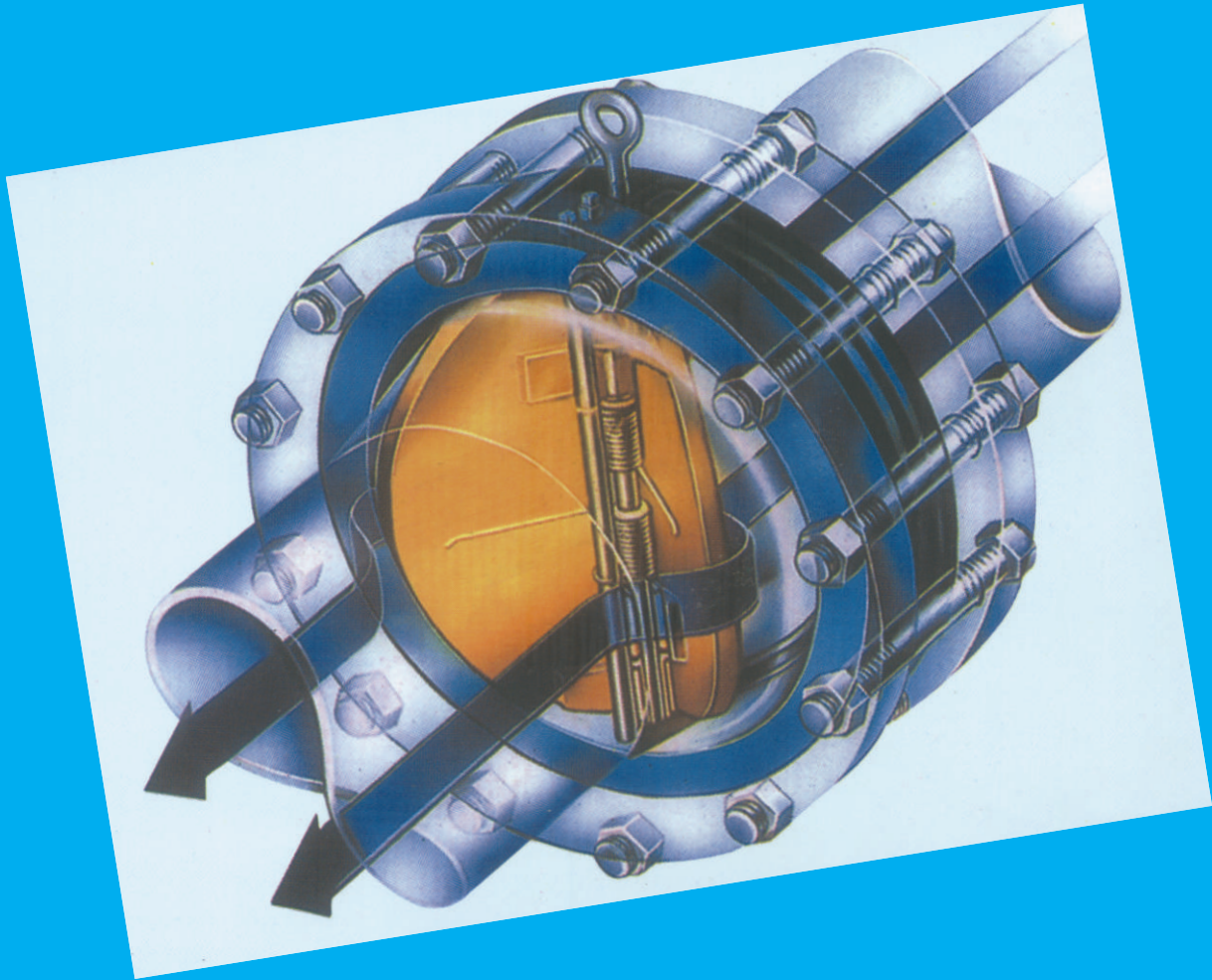




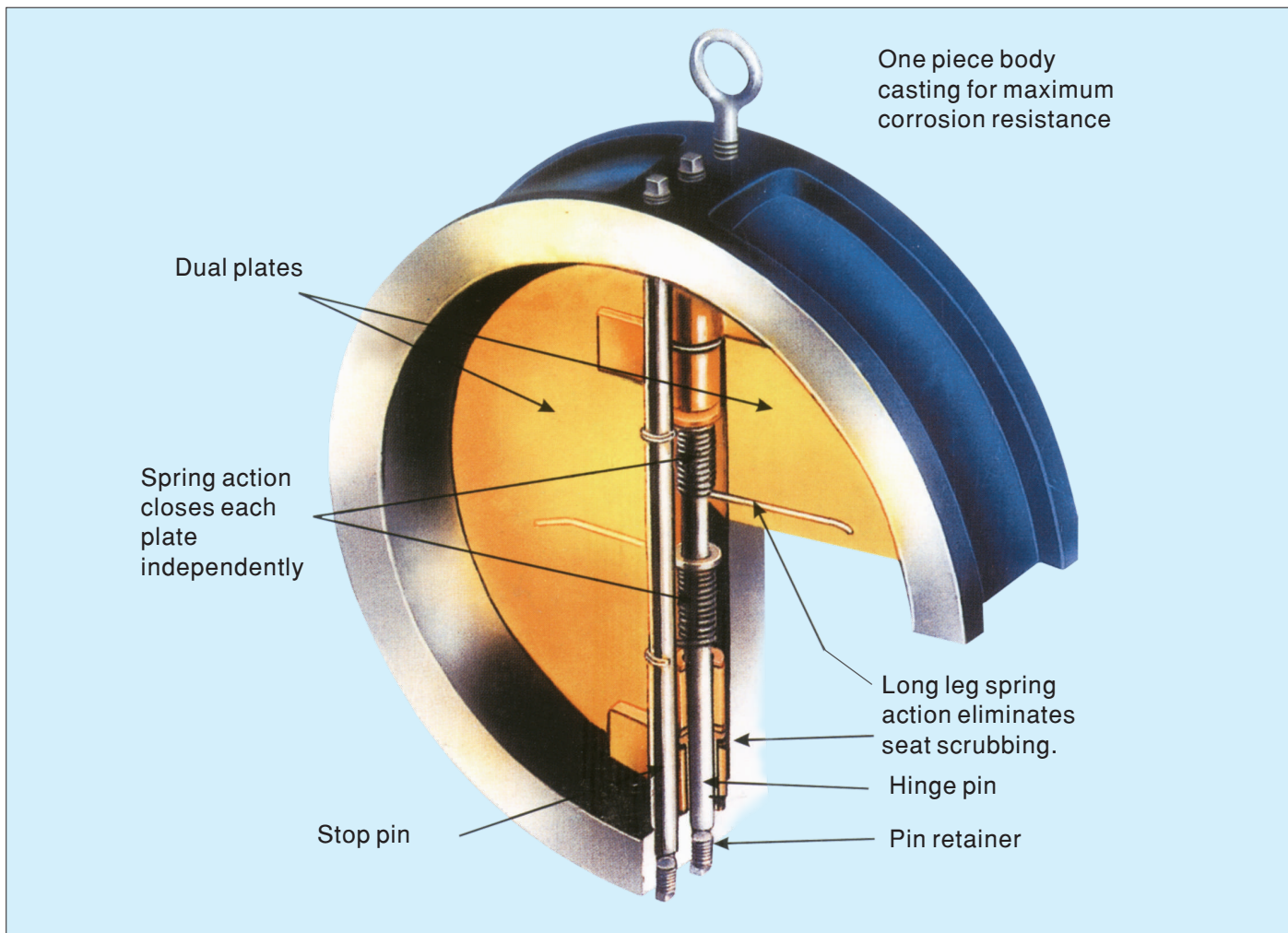
# ADVANCE VALVES



## "Dual Plate Check Valve"

**The High Performance Valves**

# '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 lift 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

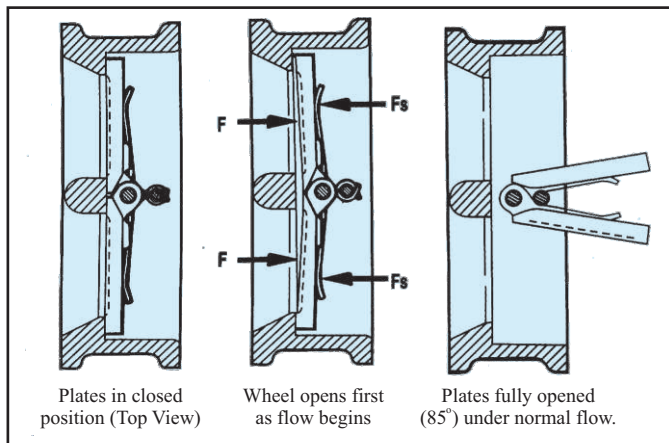
Hydraulically, the design is more versatile. In horizontal installation, the weight of the door (Plate) does not play any significant role in valve closure or opening, unlike in a conventional swing check valve where closure/opening is assisted/hampered by gravity. The opening and closing rates can be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

## DOUBLE SPRING ACTION

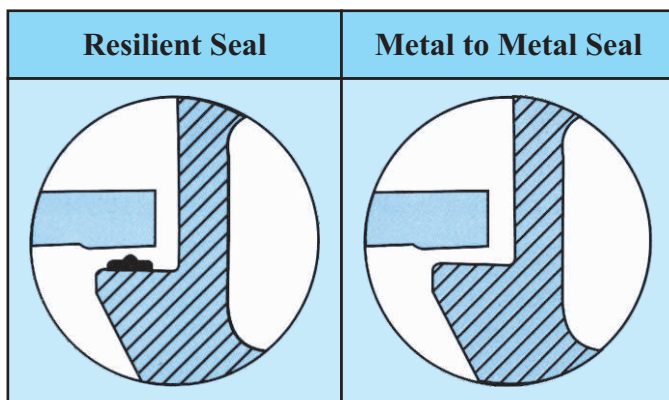
The Dual Plate Check valve above 150mm (6") NB are provided with two springs to avoid disparate forces acting on each plate as in the case of single spring design. This is to ensure even closing. This is achieved single legged or suitably designed double legged springs.

## VALVE OPERATION

The plates 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.



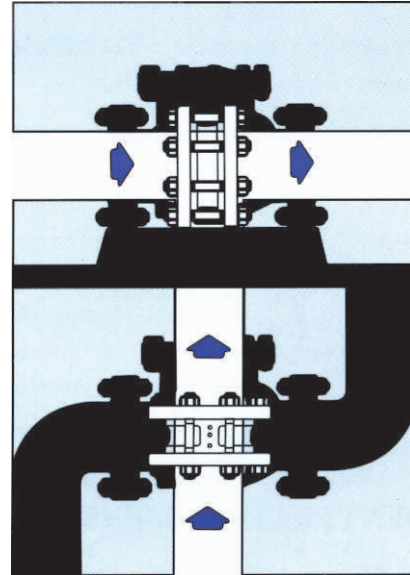
## SEAL DESIGN



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

## FLEXIBLE INSTALLATION (VERTICAL/HORIZONTAL)

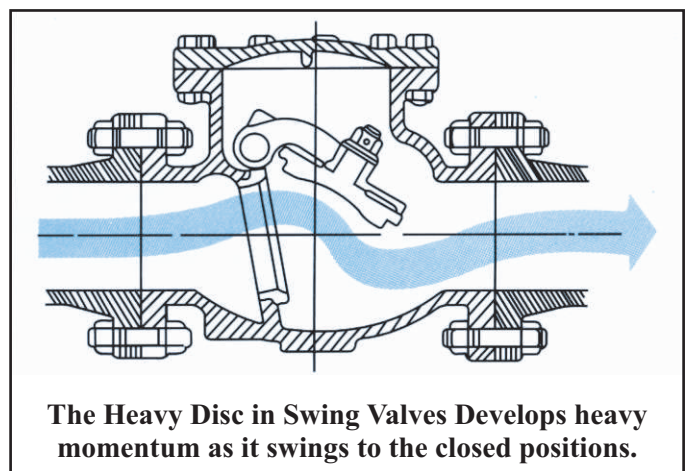
The installed valve is more rigid than an equivalent length of heavy section pipe eliminating the need for any special support etc. The spring action (in place of gravity) enables the valve to be installed in any position - vertical or horizontal.



## 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.



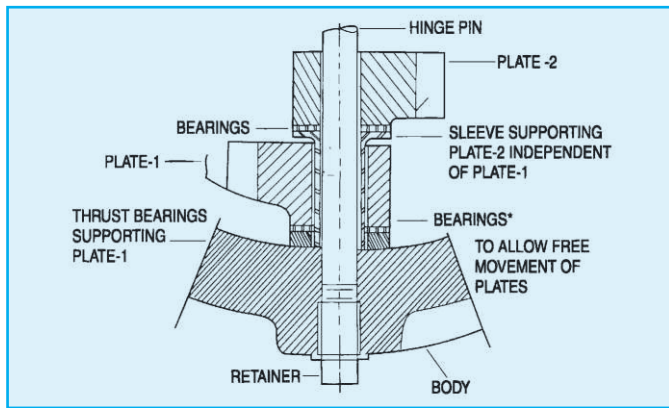
## NO SLAMMING

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  $\frac{1}{4}$ th the weight of swing disc and the tip velocity is less than 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 9001:2000 and according to European Pressure Equipment Directive 97/23/EC, Module H to use CE 0062 monogram accredited by Bureau Veritas as a recognition to its continuous 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.

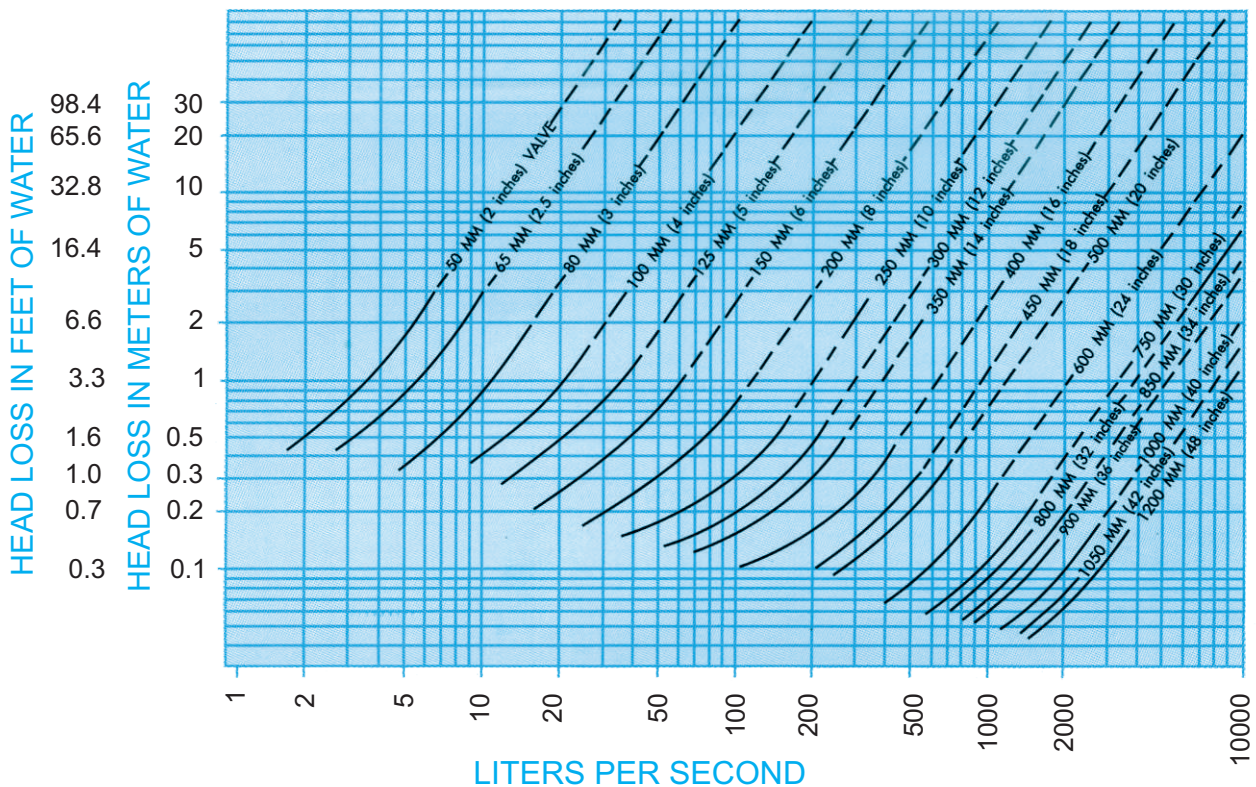
The company has the distinction of being in the select band of companies supplying valves meeting nuclear application requirements as per ASME section III.

“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.

$F_f$  (hinge friction) plus  $F_s$  (spring force) times 0.75B (force point) minus  $F$  (force) times B (width) equals zero for equilibrium.

$$F_f(\text{Friction of Hinge}) + F_s(0.75B) - FB = 0$$

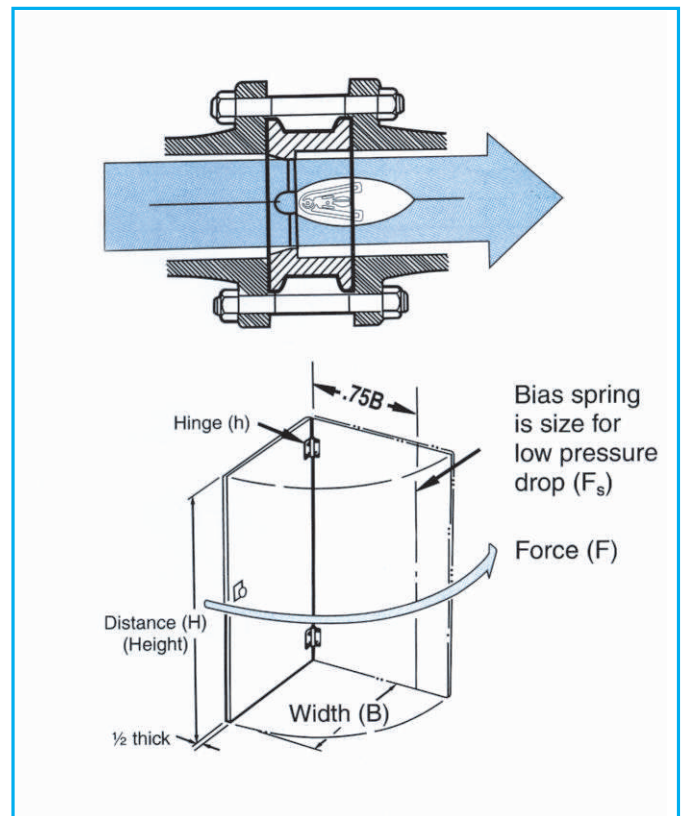
Therefore,

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

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.

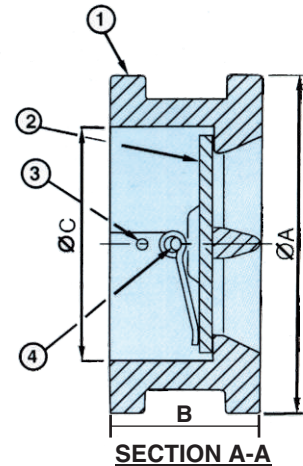
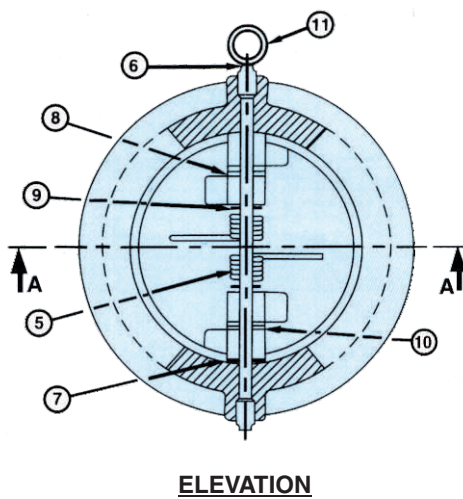


# ADVANCE DUAL PLATE CHECK VALVE WAFER TYPE (MODEL AV-WP-11)

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 **



Note :

\* Single Spring upto 125mm (5")

# Sleeve provided only for 450mm (18") and above (independent suspension).

\*\* Eyebolt provided only for 200mm (8") and above.

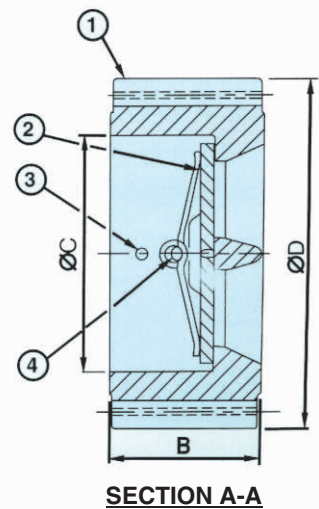
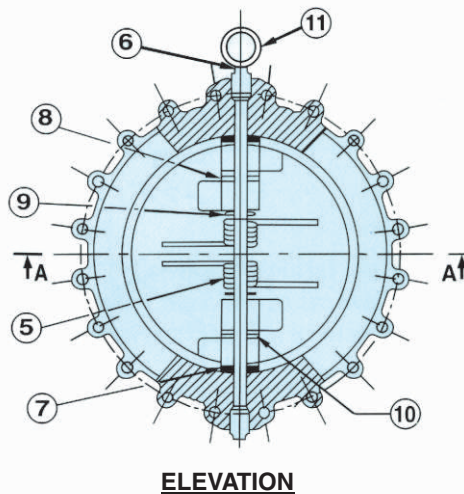
Fig. 1

# ADVANCE DUAL PLATE CHECK VALVE LUGGED TYPE (MODEL AV-WL-21)

PRESSURE RATING 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 **



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)		
			** (A)	(B)	(C)
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	

SIZE N.B.	ANSI RATING	FACE	DIMENSIONS (mm)		
			** (A)	(B)	(C)
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.

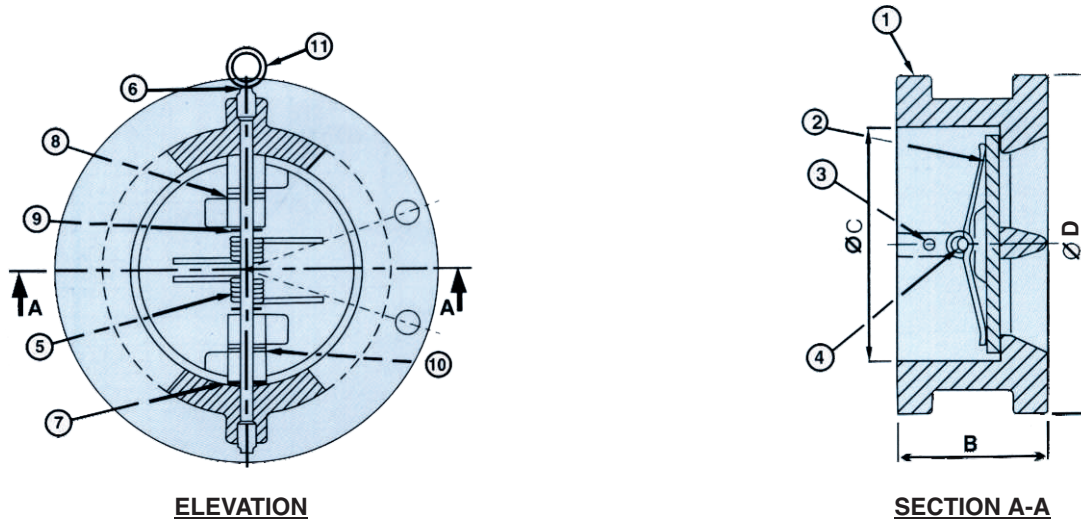
\*\* Hub diameter (A) above are to suit ANSI B16.5, MSS-SP-44 and ANSI B16.47 series A dimensions. This can also be supplied to suit flange dimensions as per BS 1560, JIS, IS or any other standard as per buyer's specifications.

\*\*\* For other sizes and pressure class ANSI 2500, details available on request.

# ADVANCE DUAL PLATE CHECK VALVE

## WAFFER FLANGED TYPE (MODEL AV-WF-31)

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



Note :

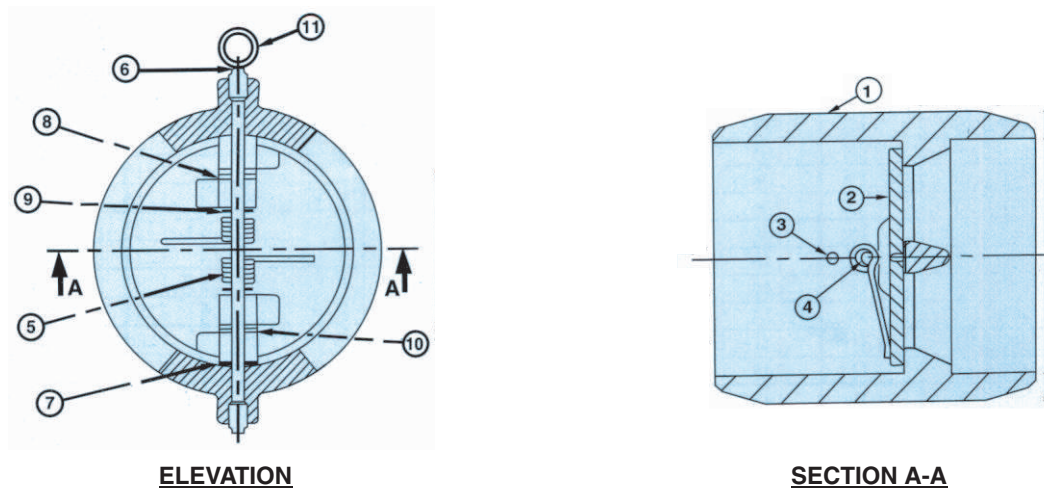
1. Dimension "D" to suit customer flange specification.
2. Other dimensions and part description, refer model AV-WP-11 (Fig.1) and Table 1.

Fig. 3

# ADVANCE DUAL PLATE CHECK VALVE

## WELDING ENDS TYPE (MODEL AV-BW-41)

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



Note :

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

Fig. 4

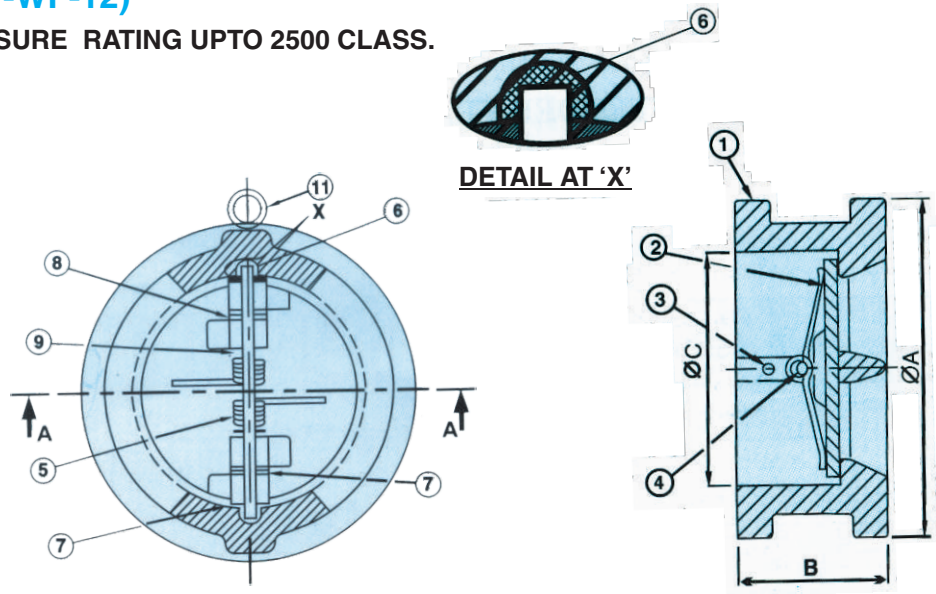


# ADVANCE DUAL PLATE CHECK VALVE RETAINERLESS TYPE (AV-WF-12)

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 **



**SECTION A-A  
WAFFER 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.

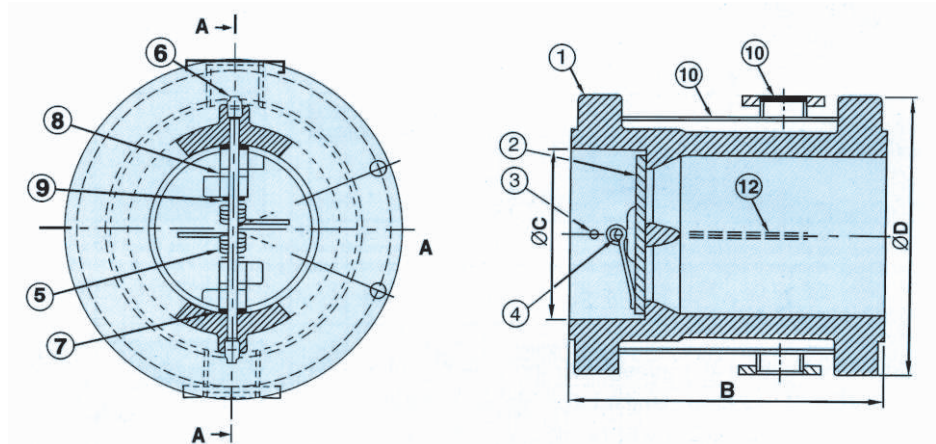
Fig. 5

# 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 Dimensions

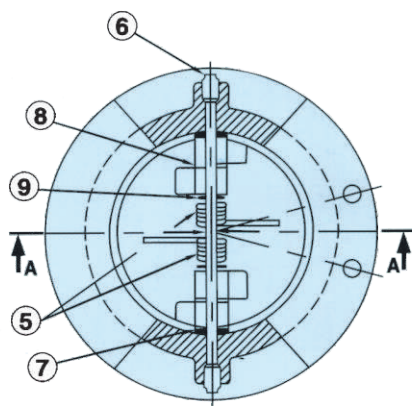
## Advance Dual Plate Check Valve

### MODEL AV-EF-51 (EXTENDED FLANGED TYPE)

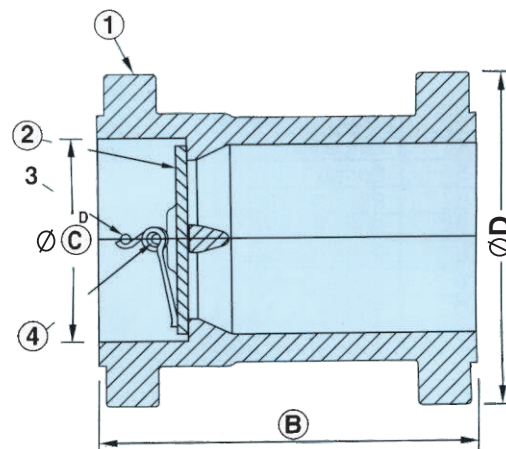
(Face-to-face dimensions as per BS 1868 / ANSI B16.10)

#### 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



**ELEVATION**



**ELEVATION**  
Direction of Flow

• SINGLE SPRING UPTO 100 mm (4") NB

#### TABLE 2

SIZE N.B.	ANSI RATING	FACE	DIMENSIONS (mm)		
			** ØD	ⓑ	ⓒ <sup>D</sup>
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

SIZE N.B.	ANSI RATING	FACE	DIMENSIONS (mm)		
			** ØD	ⓑ	ⓒ <sup>D</sup>
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 Inconel X-750 will be offered as required by the process conditions.

For operating temperature above 120° C only Inconel 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

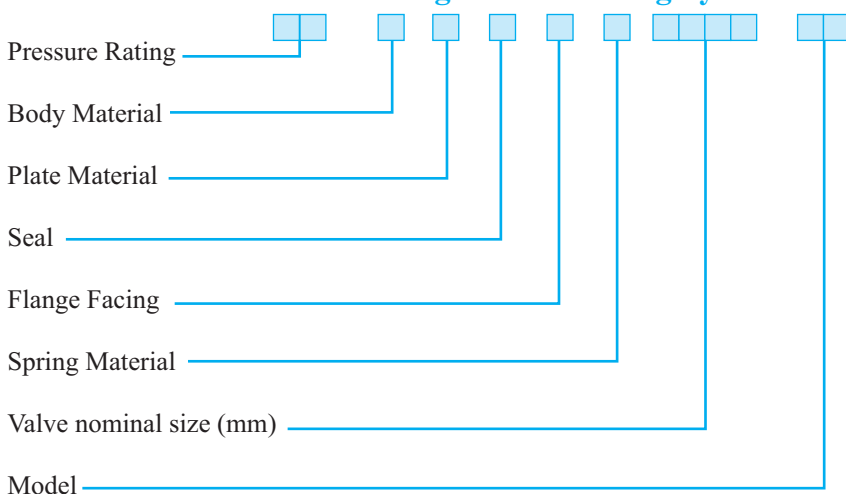
**TABLE 3**

Temperature		Maximum Non Shock Service Pressure (ANSI B 16.34, 1981)																			
		Series 150				Series 300				Series 600				Series 900				Series 1500			
		°C	°F	Steel		SS 316		Steel		SS 316		Steel		SS 316		Steel		SS 316		Steel	
Kg/cm <sup>3</sup>	psi			Kg/cm <sup>3</sup>	psi	Kg/cm <sup>3</sup>	psi	Kg/cm <sup>3</sup>	psi	Kg/cm <sup>3</sup>	psi	Kg/cm <sup>3</sup>	psi	Kg/cm <sup>3</sup>	psi	Kg/cm <sup>3</sup>	psi	Kg/cm <sup>3</sup>	psi	Kg/cm <sup>3</sup>	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

## Advance Dual Plate Check Valve

### Figure Numbering System



For example 15 SCVFC 150.11 will represent 150 mm NB 'Advance' Dual Plate Check Valve in ANSI 150 series with Carbon Steel Body (WCB), SS 316 Plates, Viton-Seal, Raised Face End with SS-316 Spring(s) and in Model II (Wafer Type)

CODE	SEAL
B	SOFT : BUNA-N
M	SOFT : EPDM
V	SOFT : VITON
E	METAL : 13% Cr St. Steel (Gr.-SS410)
A	METAL : 18-8 St. Steel (Gr.-SS304)
C	METAL : 18-8-2 St. Steel (Gr.-SS-316)
D	METAL : Stellite-6
X	ANY OTHER MATERIAL

MODELS		PRESSURE RATING		FLANGE FACING		SPRING MATERIAL	
Code	Model Details	Code	ANSI/PN Rating	Code	Facing	Code	Material
11	Wafer	06	PN 6	F	Raised Face	A	SS 304
12	Wafer-Retainerless	10	PN 10	P	Plain Face	C	SS 316
13	Wafer-Lined	12	125 PN/16	R	Ring Joint	I	INCONEL X 750
		15	150	B	Butt Welding		
21	Wafer-Lugged	30	300				
22	Wafer-Lugged-Retainerless	60	600				
23	Wafer-Lugged-Lined	90	900				
		A5	1500				
31	Wafer-Flanged	B5	2500				
32	Wafer-Flanged-Retainerless						
33	Wafer-Flanged-Lined						
<b>We also offer IBR Approved Valves &amp; Valves for Low Flow Velocity</b>							
<u>Information to be submitted along with enquiry</u>							
41	Butt Welding	- Media	- Mol. Wt. if Air / Gas	- Size			
51	Extended-Flanged	- Temperature	- Flow Velocity / Qty.	- Quantity			
52	Extended-Flanged-Retainerless	- Pressure	- M.O.C. of Body, Plate & Trim	- Nature of Media			
55	Jacketed	- Metal / Soft Seated	- Elastomer	- Pressure Rating			

BODY AND PLATES		
CODE	MATERIAL	SPECIFICATION
A	Stainless Steel 304	ASTM A 351 Gr CF8
B	Aluminium Bronze	BS 1400 Alloy AB2/ ASTM B 148 Gr. 958
C	Stainless Steel 316	ASTM A 351 Gr. CF8M
D	Stellited	STELLITE-6
E	Stainless Steel 410	ASTM A 217 Gr. CA-15
H	Cast Iron	BS 1452 Gr. 220/ASTM A 126 Gr. B/IS 210 Gr. FG 220/260
J	SG Iron	ASTM A 536 Gr. 60-42-10/IS 1865 Gr. 450/10
K	Austentic Ductile Iron	ASTM A 439 Gr. D2
S	Carbon Steel	ASTM216 Gr. WCB
L	Low Tem. Carbon Steel	ASTM A 352 LCB
M	Low Tem. Carbon Steel	ASTM A 352 LCC
G	Gun Metal	ASTM B 62/IS 318 Gr. LTB-2
X	Any other Material	

This is only an indicative list of materials. Other materials can be offered based on specific enquiry. Special alloys like Hestallo, Monel Etc. can be provided.

Consult for use in abrasive, slurry & fibrous media and where cyclic pressure or velocity fluctuations are anticipated. For Air & Gas applications provide detail operating parameters.

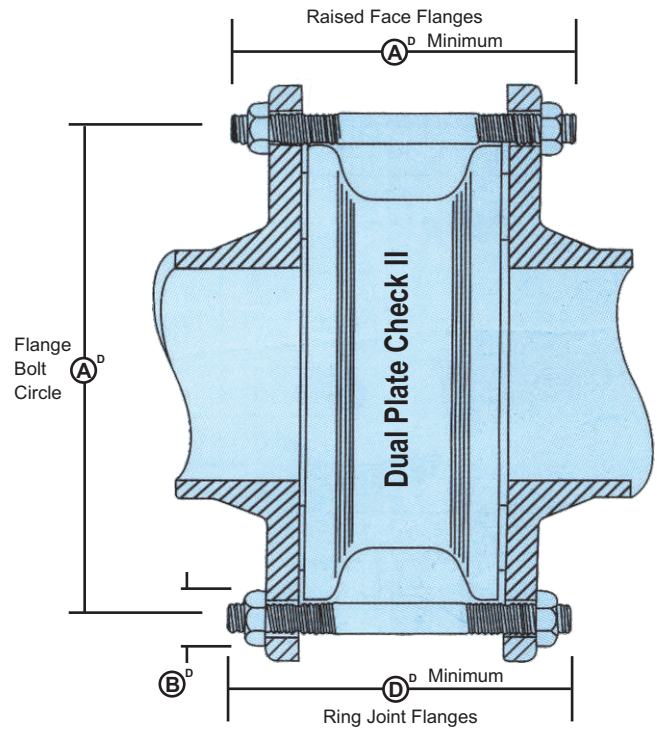
# ANSI Stud Selection Chart

## Advance Dual Plate Check Valve

(MODEL AV-WP-II WAFER TYPE)

TABLE 4

Valve Size	Valve Size	Ⓐ <sup>D</sup> Flange Bolt Circle	Number of Studs	Ⓑ <sup>D</sup> Bolt Diameter	Stud Length	
					Ⓒ <sup>D</sup> Raised Face	Ⓓ <sup>D</sup> Ring Joint
NB	ANSI	mm	Nos.	mm	mm	mm
50mm (2")	125	121	4	16	133	-
	150	121	4	16	146	159
	300	127	8	16	152	171
	600	127	8	16	171	178
	900	165	8	22	222	222
65mm (2.5")	125	140	4	16	140	-
	150	140	4	16	159	178
	300	149	8	19	171	191
	600	149	8	19	191	197
	900	191	8	25	248	248
80mm (3")	125	152	4	16	146	-
	150	152	4	16	171	184
	300	168	8	19	178	203
	600	168	8	19	203	210
	900	191	8	22	235	235
100mm (4")	125	191	8	16	159	-
	150	191	8	16	171	184
	300	200	8	19	191	210
	600	216	8	22	235	235
	900	235	8	29	279	279
125mm (5")	125	216	8	19	171	-
	150	216	8	19	191	203
	300	235	8	19	210	229
	600	267	8	25	273	279
	900	241	8	32	305	305
150mm (6")	125	241	8	19	178	-
	150	241	8	19	203	216
	300	270	12	19	229	248
	600	292	12	25	311	318
	900	318	12	29	356	362
200mm (8")	125	298	8	19	203	-
	150	298	8	19	241	254
	300	330	12	22	267	286
	600	349	12	29	362	368
	900	394	12	35	432	438
250mm (10")	125	362	12	22	229	-
	150	362	12	22	267	279
	300	387	16	25	311	330
	600	432	16	32	432	438
	900	470	16	35	483	483
300mm (12")	125	432	12	22	267	-
	150	432	12	22	305	318
	300	451	16	29	356	375
	600	489	20	32	457	457
	900	533	20	35	552	552
350mm (14")	125	476	12	25	324	-
	150	476	12	25	324	337
	300	514	20	29	406	425
	600	492	20	35	514	521
	900	559	20	38	635	648
400mm (16")	125	540	16	25	337	-
	150	540	16	25	337	349
	300	572	20	32	432	451
	600	603	20	38	565	572
	900	616	20	41	679	686
1500	705	16	64	838	864	



Valve Size	Valve Size	Ⓐ <sup>D</sup> Flange Bolt Circle	Number of Studs	Ⓑ <sup>D</sup> Bolt Diameter	Stud Length	
					Ⓒ <sup>D</sup> Raised Face	Ⓓ <sup>D</sup> Ring Joint
NB	ANSI	mm	Nos.	mm	mm	mm
450mm (18")	125	578	16	29	362	-
	150	540	16	25	337	349
	300	572	20	32	432	451
	600	654	20	41	641	648
500mm (20")	125	635	20	29	381	-
	150	635	20	29	381	394
	300	686	24	32	502	521
	600	724	24	41	660	667
550mm (22")	125	692	20	32	394	-
	150	692	20	32	394	410
	300	743	24	38	547	575
600mm (24")	125	749	20	32	394	-
	150	749	20	32	394	413
	300	813	24	38	547	578
650mm (26")	125/150	806	24	32	461	-
700mm (28")	125/150	864	24	32	540	-
750mm (30")	125/150	914	28	32	540	-
800mm (32")	125/150	978	28	32	610	-
850mm (34")	125/150	1029	28	38	610	-
900mm (36")	125/150	1086	32	38	640	-
1000mm (40")	125/150	1200	32	38	700	-
1050mm (42")	125/150	1257	36	38	724	-
1200mm (48")	125/150	1422	36	38	838	-
1300mm (52")	125/150	1530	44	44	914	-
1350mm (54")	125/150	1593	44	44	950	-
1400mm (56")	125/150	1651	48	44	950	-
1500mm (60")	125/150	1758	52	44	1135	-

\* For other model and sizes dimensions can be provided on request.

# 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.

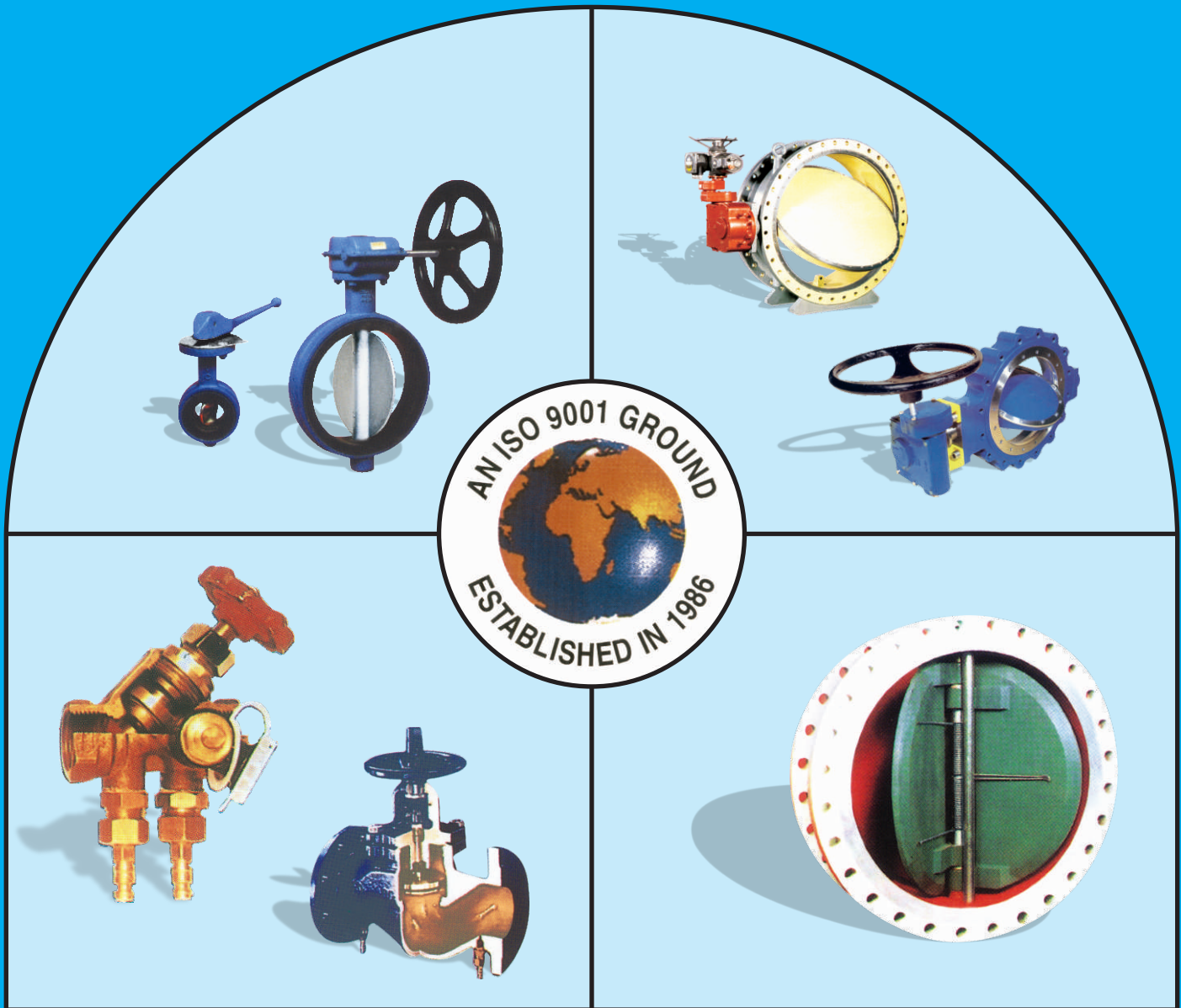
## Typical Applications

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<sub>2</sub>), 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.**



### **QUALITY POLICY**

The policy of Advance Valves Group is to ensure that the customer requirements are totally met in terms of Quality, Quantity, Delivery and After Sales Service, by ensuring.

- That the product conforms to National & International Quality Standards.
- Continuous effort to offer State-of the Art products to our customers.
- That this policy is understood, implemented and maintained at all levels within the organisation.

**(UMA SHANKER)**  
Chairman & Managing Director

*Manufactured & Marketed by :*

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