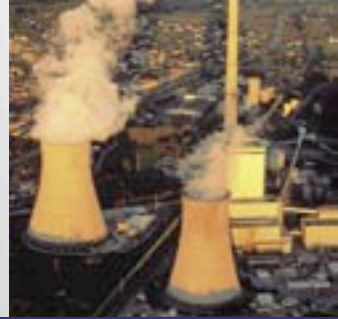




**Global Leaders in
Corrosion Resistant Valves**





In solving the problems of long lead-times, high weight and inte solutions that reduce risk & cost, and improve performance, for exceptional performance, value for money, long service life and



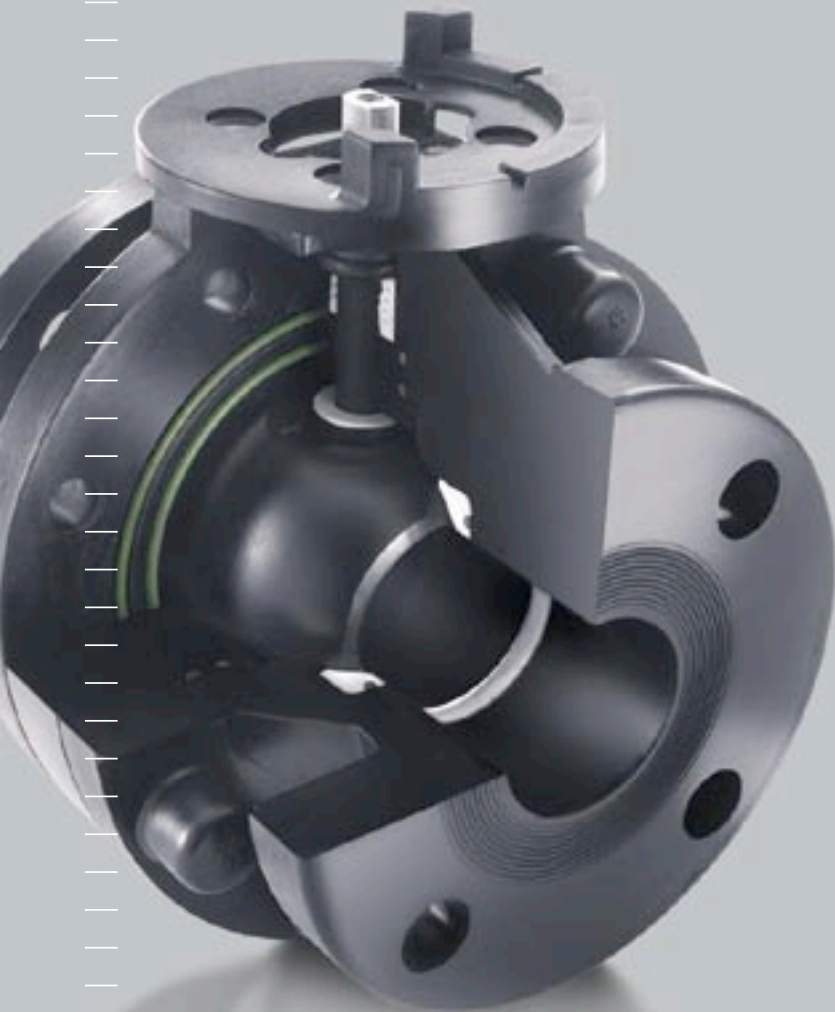
As a result of its development work and with the active support and cooperation of some of the world's leading suppliers of resin systems, polymetric engineering materials having excellent intrinsic strength over a broad range of temperatures have been formulated. Various types of fibre reinforcement, UV inhibitors and fire retardant additives have been incorporated to meet demanding environmental and service requirements.

Significant work has been carried out resulting in the successful modification of established moulding methods to provide a reliable and consistent production process utilising low pressure feeds.

All this has been made possible through the continuous commitment of a multi-disciplinary team representing composite material scientists, design engineers, computer simulation specialists, metallurgists, production engineers, toolmakers, moulding experts, machinery designers, and valve designers - each making their contributions from Industrial and Academic Centres of Excellence.

An intensive, 7 year programme has brought Advanced Valve Technologies to the stage where an outstanding range of high performance butterfly and ball valves and other fluid handling valves and fittings are being manufactured.

Additionally our ongoing R&D Programme ensures that the most Effective designs and materials are available, whatever the service conditions.





Internal & external corrosion resistance AVT continually develops products for our customers all over the world. Wherever valve selection is based on light weight, AVT reinforced composite valves are the natural choice.



Reinforced Composite Technology applied to fluid handling and control

Key benefits of reinforced composites

Outstanding internal and external corrosion resistance

– eliminating the need for external coatings and protective linings.

Up to 60% weight saving – leading to very significant reduction of installation and delivery costs.

Excellent tensile strength – maintained throughout the service temperature range from -40° to 140°C proven in operation at full rated pressure.

Good impact resistance – permitting use in rugged environments.

Very low thermal conductivity – eliminating the need for lagging leading to further cost savings.

Reduced Torque – leading to lower costs of actuation.

Total Lifecycle – cost savings against metal valves can be up to 90%.

Reliable, short leadtimes – eliminating project over-runs



Butterfly Valves - Corrosion resistant, high performance, firesafe API 607 (optional)

Double offset seat design and 360° bubble tight sealing and low operating torque with extended seat life and up to 60% weight saving versus metal valves!

Actuation

Operator Design

Corrosion resistant lightweight, lockable levers with 7 intermediate stops are standard. Mounting accommodates ISO Standard gear operators and actuators.

Corrosion resistant stem extensions for buried service made to customer requirements.

Full Flange Face Body

for reduced flange cost. AVT Valves do not require the use of heavy duty flanges when used with GRE pipe systems. They can be fitted as direct replacements for all metal valves of the same specification.

Also available in tapped lugged

Disc / Seat Design

This disc design takes advantage of the inherent strength of the resin systems to limit the overall thickness of the disc, thereby reducing the restriction of flow to a practical minimum when the valve is fully opened.

The seat is secured to the disc by a moulded retaining plate. Leakage behind the seat is prevented by a secondary seal moulded on the inside diameter of the seat.

One Piece Shaft Assembly

and unique shaft/disc connection eliminates flutter for improved flow and noise reduction. Shaft designed as non-wetted, blow out proof. Every valve body tested to 450 psi (30 bar)

First Degree Off Set

The off set between the seat face and the shaft axis makes the 360° seat possible ensuring bubble tight sealing even in high cycling applications.

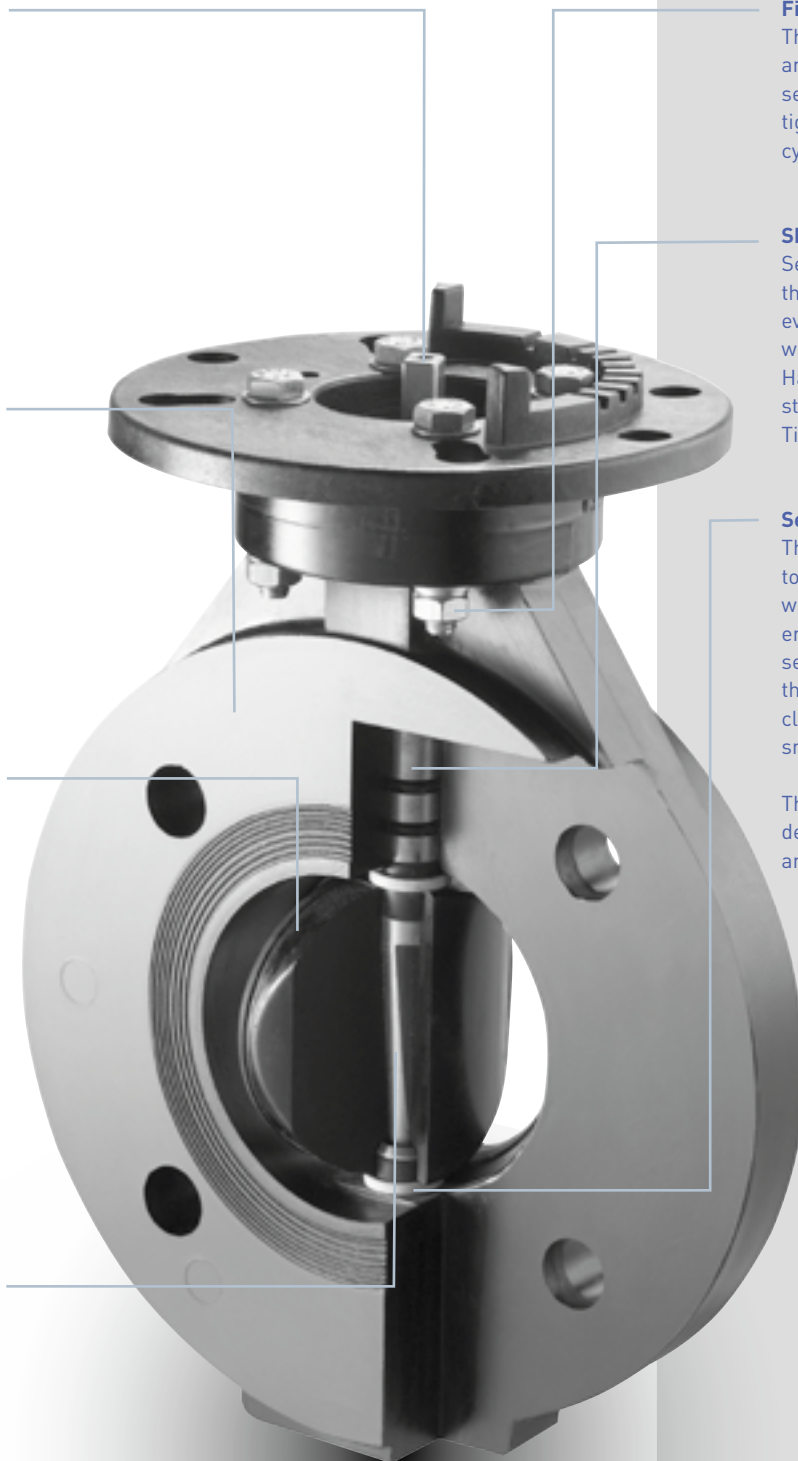
Shafts

Sealed with a multi "O" ring system that ensures long life bubble tight even in high cycling applications without the need for maintenance. Hastelloy non wetted shaft as standard, with 316 and Titanium optional.

Second Degree Off Set

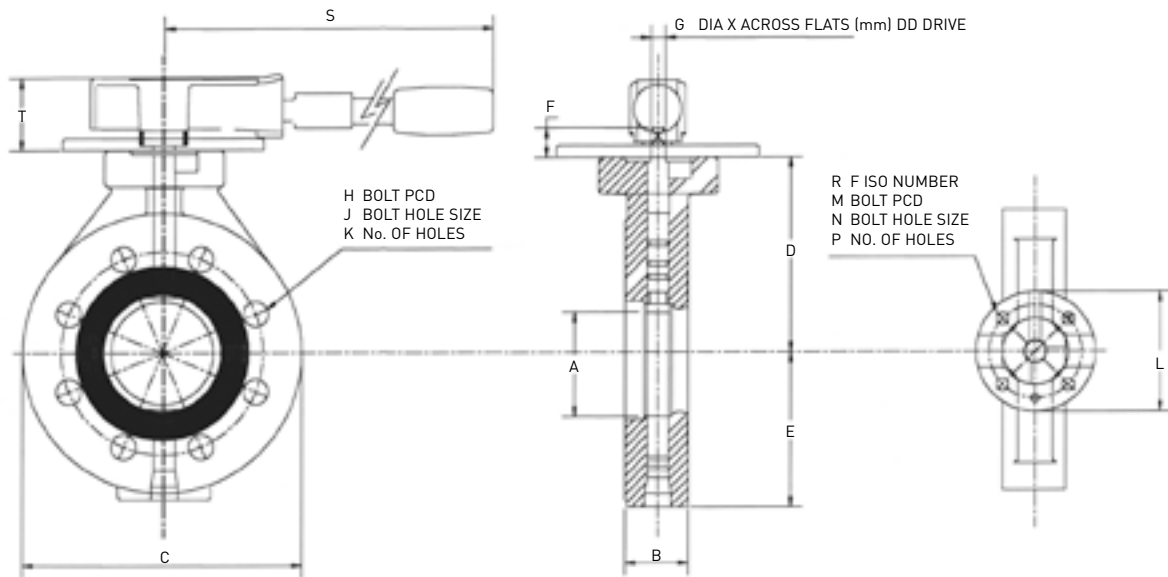
The off-set of the shaft with respect to the axis of the bore combined with the first degree of off-set ensures that the sector of the seat sealing surface that passes through the sealing face is effectively cleared from contact by a very small angular motion.

The introduction of this second degree of off set reduces wear and break out torque.



Cutaway View





Dimensions for ANSI 150 valves

Full Flange Faced Eccentric Butterfly Valve - Dimensions Inches										Mounting				Lever		Weight		
A	B	C	D	E	F	G (mm)	H	J	K	L	M	N	P	R	S	T	kg	lbs
3"/80mm	1.88	8.25	6	4.3	0.78	16x10	6.0	0.75	4	3.5	2.75	0.35	4	F07	12.63	2.12	3.82	8.42
4"/100mm	2.12	9.12	6.4	4.9	0.78	18x12	7.5	0.75	8	3.5	2.75	0.35	4	F07	12.63	2.12	4.82	10.63
6"/150mm	2.25	12.2	8.1	6.3	0.78	26x16	9.5	0.88	8	5	4	0.475	4	F10	12.63	2.12	9.40	20.72
8"/200mm	2.5	15	9.8	7.6	1.5	32x16	11.75	0.88	8	6.3	4.9	0.55	4	F12	24.13	2.12	14.80	32.63
10"/250mm	2.8	17.5	11.4	8.9	1.5	36x20	14.25	1.0	12	6.3	4.9	0.5	4	F12	24.13	2.12	21.00	46.30
12"/300mm	3.2	20.5	13.1	10.6	1.5	40x20	17.0	1.0	12	6.3	4.9	0.55	4	F12	25	2.12	33.00	72.75

Refer to individual specification sheets for ANSI 300, DIN, ISO and PN standards that are available.

Break Torque Ratings

	3"/80mm		4"/100mm		6"/150mm		8"/200mm		10"/250mm		12"/300mm	
	Inch-lb	Nm	Inch-lb	Nm	Inch-lb	Nm	Inch-lb	Nm	Inch-lb	Nm	Inch-lb	Nm
0 Bar	60	6.5	120	13.5	144	16.2	180	20.25	191	21	221	25
5 Bar	120	13.5	264	29.7	576	64.8	708	79.65	836	94	1150	130
10 Bar	168	18.9	576	64.8	1200	135	1488	167.40	1761	199	2389	270
20 Bar	348	40.3	1140	128.25	2376	267.3						

To allow for variations in break torque due to pressure and viscosity variations, it is recommended that actuators capable of developing forces a minimum of 30% greater than the above are used. Higher safety factors may be required in some applications. e.g when operations are infrequent.

CV Values

Disc position - Degree Open										
Valve	10	20	30	40	50	60	70	80	90	
3"/80mm	7	18	35	53	85	118	173	229	278	
4"/100mm	11	31	60	92	148	207	301	399	485	
6"/150mm	30	79	156	240	385	541	787	1043	1267	
8"/200mm	52	136	271	413	661	927	1350	1790	2174	
10"/250mm	82	216	431	656	1050	1475	2146	2845	3457	
12"/300mm	118	311	619	944	1509	2120	3087	4091	4971	

Note: Specifications are subject to alteration. Please refer to our website, advalve.com for design updates.

Ball Valves - Corrosion resistant, firesafe (optional) full port ball valves

Operator Design

Corrosion resistant, lightweight, lockable levers are offered for all Ball Valves up to 150 mm (6 inch). Standard gearboxes can be fitted on to the valve.

Actuation

Any standard actuator can be fitted including ancillary equipment such as switch boxes, solenoids, beacon indicators, etc.

Standard Mounting Pad

Energised Chevron

or 'O' ring seal
Maintenance free

Stem

Blow-out proof design, non-wetted composite shaft with Hastelloy C-276 core as standard. Titanium and 316 stainless steel materials are optional - either encapsulated or bare metal.

Seating System

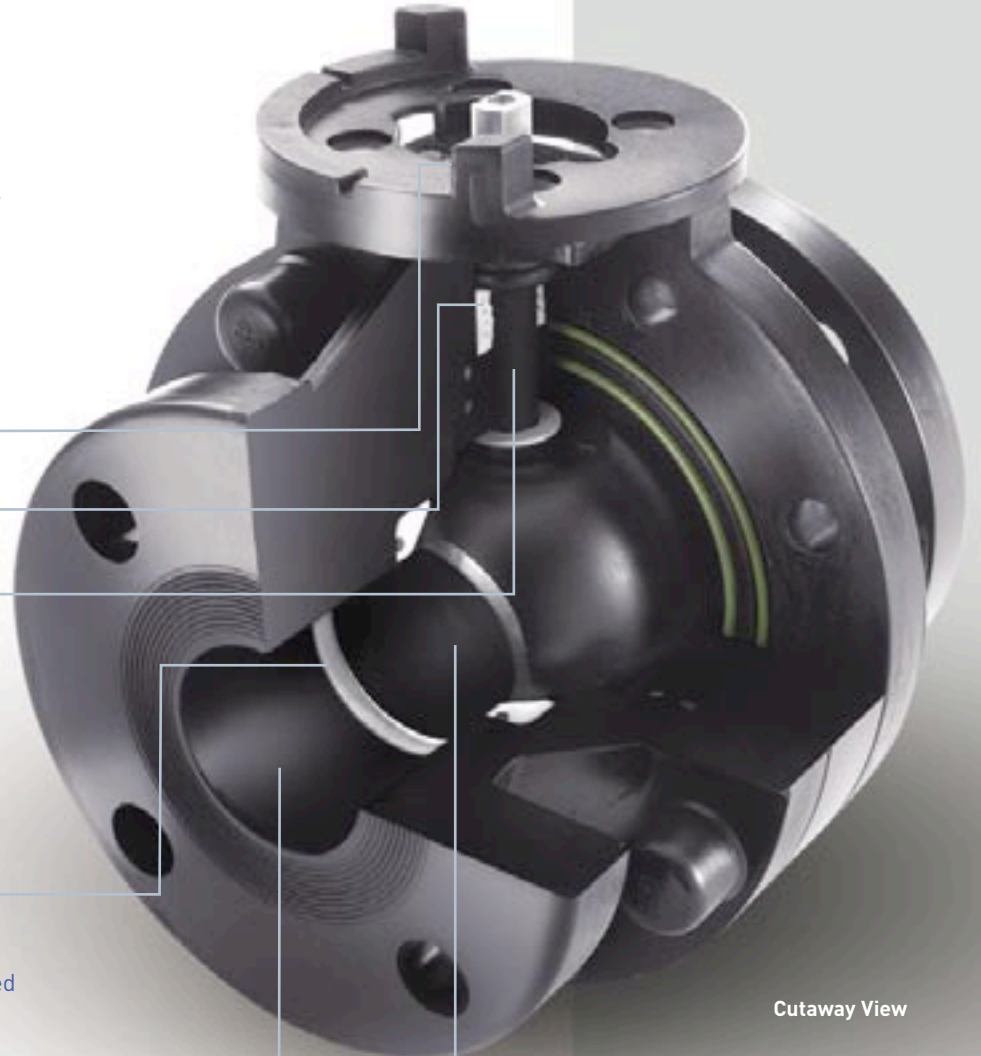
Bubble tight sealing.
Available in Super PTFE TFM or Virgin PTFE seats. Options include, glass filled PTFE, carbon filled PTFE or PEEK.

Every Valve Body Tested

to 600psi (40 bar)

Full Port

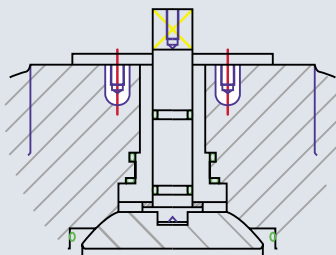
For maximum flow rate



Cutaway View

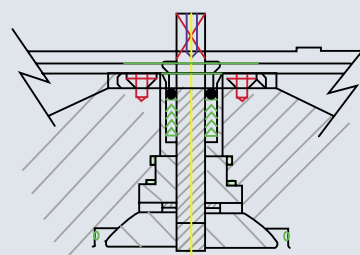
Design Features: AVT offers two stem sealing options:

Stem Sealing System "O" ring system

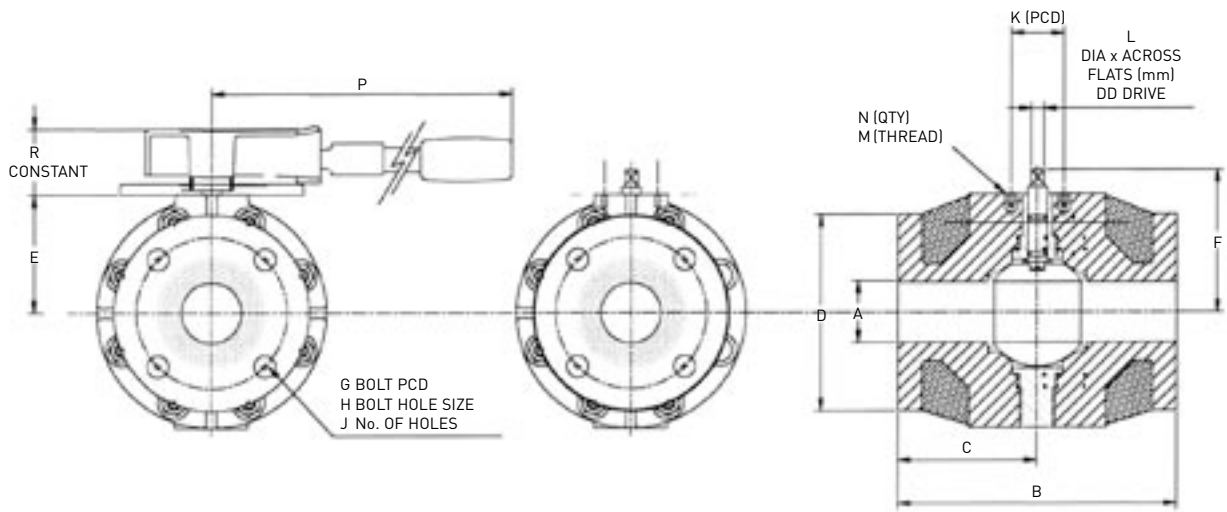


Multi Viton "O" ring shaft seals for multi-cycle maintenance free use and low operating torque.

Chevron Stuffing Box System



PTFE chevron packing combination stem sealing system with energiser. A parallel "O" ring backup. A parallel motion adjuster applies even pressure on the chevron pack for simpler and quicker adjustment.



Dimensions for ANSI 150 valves

Full Port Ball Valve - Dimensions Inches									Mounting				Lever		Weight	
A	B	C	D	E	F	G	H	J	K	L (mm)	M	N	P	R	kg	lbs
1"/25mm	5	2.5	5.1	n/a	n/a	3.13	0.625	4	n/a	8x12	n/a	n/a	n/a	n/a	2.20	4.85
1.5"/40mm	6.5	3.25	6.4	3.15	4	3.88	0.6	4	2.44	14x9	M6	4	8.75	2.12	4.30	9.48
2"/50mm	7	3.5	6.5	3.9	4.75	4.75	0.75	4	2.44	14x9	M6	4	8.75	2.12	5.80	12.79
3"/80mm	8	4	8.5	4.7	6.1	6	0.75	4	2.44	19x12	M6	4	12.63	2.12	10.32	22.75
4"/100mm	9	4.5	10.25	5.9	6.75	7.5	0.75	8	2.75	20x12	M6	4	12.63	2.12	18.18	40.08
6"/150mm	15.5	7.75	12.6	9.45	10.44	9.5	0.88	8	5.11	25x14	M10	2	19.88	2.12	44.00	97.00
8"/200mm	18	9	13.5	11.4	12.4	11.75	0.88	8	6.89	30x17	DIA 0.5	2	24.13	2.12	53.48	117.90

Refer to individual specification sheets for ANSI 300, DIN, ISO and PN standards that are available.

Break Torque Ratings

	1"/25mm		1.5"/40mm		2"/50mm		3"/80mm		4"/100mm		6"/150mm		8"/200mm	
	Chevron		Chevron		Chevron		Chevron		Chevron		Chevron		Chevron	
	Inch-lb	Nm	Inch-lb	Nm	Inch-lb	Nm	Inch-lb	Nm	Inch-lb	Nm	Inch-lb	Nm	Inch-lb	Nm
0 Bar	75	8.5	79	9	88	10	97	11	106	12	1003	113	1003	113
5 Bar	84	9.5	97	11	132	15	318	36	584	66	1422	160	1422	160
10 Bar	97	11	168	19	221	25	743	84	1002	120	2114	238	2114	238
20 Bar	123	14	221	25	345	39	1327	150	2124	240	4193	473	4193	473

To allow for variations in break torque due to pressure and viscosity variations, it is recommended that actuators capable of developing forces a minimum of 30% greater than the above are used. Higher safety factors may be required in some applications. e.g when operations are infrequent.

Note: Specifications are subject to alteration. Please refer to our website, advalve.com for design updates.

High Performance Butterfly Valve

For applications where face to face dimensions and exceptional value are important, as well as outstanding performance, AVT's double offset high performance butterfly valve offers unique capability, combined with proven material technologies giving extraordinary corrosion resistance.

Standard

Valve Type	High Performance Butterfly - Double Offset (eccentric) Shaft & Disc					
Sizes	3" (80mm) - 12" (300mm)					
Body Material Please contact AVT for material compatibility	AVT530	AVT520	AVT550			
	Composite Epoxy Filled Resin System	Composite Proprietary Novolac Filled Resin System	Composite Filled Resin System			
Max Long Term Temperature °C/°F**	120°C / 248°F	140°C / 284°F	120°C / 248°F			
Disc Material	AVT530	AVT520	AVT550			
Shaft - Standard	Titanium grade 5					
Elastomer - Standard	EPDM					
Rated Pressure	10 Bar	16 Bar	20 Bar	150 psi	240 psi	300 psi
Manufacturing Body Test Pressure	30 Bar	30 Bar	30 Bar	450 psi	450 psi	450 psi
Burst Safety Factor (minimum) vs. rated	4 times	4 times	4 times*	4 times	4 times	4 times*
Shutoff	Bubble Tight / Class 6 API 598 / BS-6755					
Flange Configurations	Full ANSI 150*, ANSI 300, DIN, BS, ISO, drilled through (Wafer)					
	Full ANSI 150*, ANSI 300, DIN, BS, ISO, lugged (Tapped)					
Approvals & Accreditations	Lloyds, ABS, CE PED Cat 3 (H), ISO 9001, Firesafe - API 607					
Other Standards	ANSI B16-5, MSS SP-68, ANSI B16-10					

Options

Shaft Option	Hastelloy C, 316 SS, Monel
Elastomer Options	Viton B, Viton F, Nitrile NBR, others by request

Full Port Ball Valve

For applications where unimpeded flow characteristics and valve capabilities are important, the AVT full port ball valve offers outstanding performance and valve, combined with proven technologies giving exceptional corrosion resistance.

Standard

Valve Type	Full Port Ball Valve - Floating Ball					
Sizes	1" (25mm) - 8" (200mm) (1" - 6" full port, 8" is standard port)					
Body Material Please contact AVT for material compatibility	AVT530	AVT520	AVT550			
	Composite Epoxy Filled Resin System	Composite Proprietary Novolac Filled Resin System	Composite Filled Resin System			
Max Long Term Temperature °C/°F**	120°C / 248°F	140°C / 284°F	120°C / 248°F			
Ball Material	AVT530	AVT520	AVT550			
Shaft - Standard	316 SS Encapsulated in body material					
Seats - Standard	Super PTFE - TFM, Virgin PTFE					
Elastomer - Standard	Viton B & F					
Rated Pressure	10 Bar	16 Bar	20 Bar	150 psi	240 psi	300 psi
Manufacturing Body Test Pressure	40 Bar	40 Bar	40 Bar	600 psi	600 psi	600 psi
Burst Safety Factor (minimum) vs. rated	4 times	4 times	4 times*	4 times	4 times	4 times*
Shutoff	Bubble Tight / Class 6 API 598 / BS-6755					
Flange Configurations	Full ANSI 150, ANSI 300, DIN, BS, ISO					
Approvals & Accreditations	Lloyds, ABS, CE PED Cat 3 (H), ISO 9001, Firesafe - API 607					
Other Standards	BS-6755, ISO 5208, API 598, ANSI B16-10, B16-10, B16-5, MSS SP-68					

Options

Shaft Options	Titanium Grade 5 and Hastelloy C with or without encapsulation in body material
Elastomer Options	Viton F, EPDM, all PTFE Encapsulated Viton B, NBR, Custom
Seat Options	Glass filled PTFE, Carbon filled PTFE, PEEK, Custom

* Not applicable to all sizes, please contact AVT for details. .
** Subject to media.

How to specify AVT valves

ADVANCED VALVE TECHNOLOGIES LIMITED ASSEMBLY SELECTION

TYPE OF PRODUCT

10	Butterfly, full flanged wafer	25	Ball reduced port "O" ring
12	Butterfly, lugged	26	Ball reduced port "Chevron"
17	Wafer Butterfly	50	Blind Flanges
20	Ball, full bore "O" ring shaft	57	Levers Vertron Standard
21	Ball, full bore "Chevron" shaft	58	Heavy Duty Levers LM6

VALVE SIZES NOMINAL BORE

019	19mm NB or 3/4" ANSI	100	100mm NB or 4" ANSI
025	25mm NB or 1" ANSI	150	150mm NB or 6" ANSI
040	40mm NB or 1.5" ANSI	200	200mm NB or 8" ANSI
050	50mm NB or 2" ANSI	250	250mm NB or 10" ANSI
080	80mm NB or 3" ANSI	300	300mm NB or 12" ANSI

STYLE OF FLANGE/PRESSURE RATING

01	BS.PN 10 short	11	ANSI 300
02	BS.PN 16 short	12	ANSI 150, 300 psi
03	BS.125/150 short	16	ANSI 150, 240 psi
04	BS.PN 16 long	20	DIN 10 bar
05	BS.125/150 long	21	DIN 16 bar
06	BS.PN 10 long	30	ISO 10 bar
10	ANSI 150, 150 psi	31	ISO 16 bar

SEATS

0	Old style part number	5	Viton B seats
1	Virgin PTFE seats	6	Viton F seats
2	Glass filled PTFE seats	7	PEEK seats
3	Carbon filled PTFE seats	8	Nitrile NBR seats
4	EPDM seats	9	TFM seats

BODY MATERIALS

3	Novolac, Glass reinforced system AVT520
5	Epoxy (Aromatic Amine) Glass reinforced system AVT530
7	Epoxy Glass reinforced system AVT550 Firesafe

DISC/BALL MATERIALS

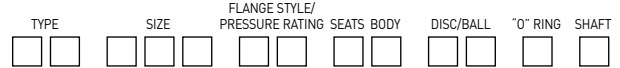
03	Novolac, Glass reinforced system AVT520
05	Epoxy (Aromatic Amine) Glass reinforced system AVT530
07	Epoxy Glass reinforced system AVT550 Firesafe

SEAL AND "O" RING MATERIALS

Q	EPDM seals	U	PFA encapsulated Viton seals
R	Viton B seals	V	Nitrile seals
T	Viton F seals		

SHAFT

1	Stainless Steel 316 encapsulated	5	Titanium Grade 5
2	Stainless Steel 316	7	Hastelloy encapsulated
4	Titanium encapsulated	8	Hastelloy



WORKED EXAMPLES FOR COMMON APPLICATIONS

HYDROCHLORIC ACID

Butterfly A 4"/100mm butterfly valve, ANSI 150 (240psi), with body and disc materials constructed using AVT530. Viton B seal and "O" ring materials with a Hastelloy C-276 shaft are ideal for hydrochloric acid.

1 0 1 0 0 1 6 5 5 0 5 R 8

Ball A 2"/50mm ball valve, ANSI 150 (300psi), PTFE chevron shaft seal, PTFE seat, with body and ball materials constructed using AVT530. Viton B "O" ring materials with a Hastelloy C-276 encapsulated shaft are ideal for hydrochloric acid.

2 1 0 5 0 1 2 1 5 0 5 R 7

SULPHURIC ACID

Butterfly A 4"/100mm butterfly valve, ANSI 150 (240psi), with body and disc materials constructed using AVT520. Viton B seal and "O" ring materials a Hastelloy C-276 shaft are ideal for sulphuric acid.

1 0 1 0 0 1 6 5 3 0 3 R 8

Ball A 2"/50mm ball valve, ANSI 150 (300psi), PTFE chevron shaft seal, PTFE seat, with body and ball materials constructed using AVT520. Viton B "O" ring materials with a Hastelloy C-276 encapsulated shaft are ideal for sulphuric acid.

2 1 0 5 0 1 2 1 3 0 3 R 7

SEAWATER/BRINE

Butterfly A 4"/100mm butterfly valve, ANSI 150 (240psi), with body and disc materials constructed using AVT550. EPDM seal and "O" ring materials with a titanium shaft are ideal for seawater and brine.

1 0 1 0 0 1 6 4 7 0 7 Q 5

Ball A 2"/50mm ball valve, ANSI 150 (300psi), PTFE chevron shaft seal, PTFE seat, with body and ball materials constructed using AVT550. EPDM seal and "O" ring materials with a titanium shaft are ideal for seawater and brine.

2 1 0 5 0 1 2 1 7 0 7 Q 5

SIZE



Marine and Special Products

The unique attributes of AVT's technology are:

Intrinsic corrosion resistance to a wide spectrum of chemicals including sea water and essentially all other media likely to occur in Naval, Marine and Offshore environments, ensuring a long and useful life.

- Light-weight, increasing payload whilst reducing delivery to site, installation and support costs.
- A unique tooling technology that readily lends itself to the viable production of relatively small runs of special purpose valves and other products.

With ability to match and frequently, outperform conventional exotic metal alternatives in meeting the onerous fire and shock resistance requirements of applications in major and minor warships, offshore platforms and merchant ships AVT's reinforced composite valves are now widely recognised as the valves of choice in many applications where continuous service is a critical need.

AVT's naval products have passed fire safe, toxicity, and 200g shock testing with some of the world's largest navies.

AVT's innovative rapid install In Line valve solution replaces traditional flanges with stub connections ready for use with axial connection systems. These permanent fully rated piping assemblies enhance cost savings by minimising the skill and labour input required for their installation whilst substantially reducing weight. The new system eliminates the need for skilled welding or jointing as it can be pre-supplied with couplings – it can be simply fitted with a hack saw and a torque wrench.

AVT's Special products division is now acknowledged to be a much sought after partner to assist many engineering companies embrace the opportunities now available from the state of art application of composite technology to all types of demanding service where weight and corrosion resistance are key requirements.





Ship & Marine Services

Ballast, Cargo, Crude oil washdown, Venting, Fire water and sprinkler systems, Potable and waste water lines, Sea water lines, Cooling Lines, HVAC, Fuel Lines, Lubrication oil lines, Washdown services, Sanitary systems, Water purifications- Compressed air lines.



Electrical Power Generation

Oil feed lines, Lubrication oil lines, Chemical feed lines, Oily waste, Venting, Condensate return, Slurry disposal, Fire mains, General purpose water distribution, Effluent and sewage service



Oil & Gas Distribution

Fire water and sprinkler systems, Potable and waste water lines, Sea water lines, Cooling Lines, HVAC, Vent lines, Fuel lines, Lubrication oil lines, Drilling mud lines, Chemical lines, Low pressure product and disposal systems, Washdown services, Sanitary systems, Water purification, Ballast, Compressed air lines



Chemical Plants

Product lines, Potable water Lines , Waste water lines, Effluent Lines, Drains, Vent Lines, Sewage systems, Fire Mains, Condensate return lines, Deluge systems, Sludge lines, Brine transmission, Corrosive Liquid transmission, Compressed air lines

Water Distribution and Water Treatment

Domestic Water, Cooling Towers, Water Purification, Condensate return, Heating water supply and return, Chilled water supply and return

Drainage, Sewage and Effluent Treatment

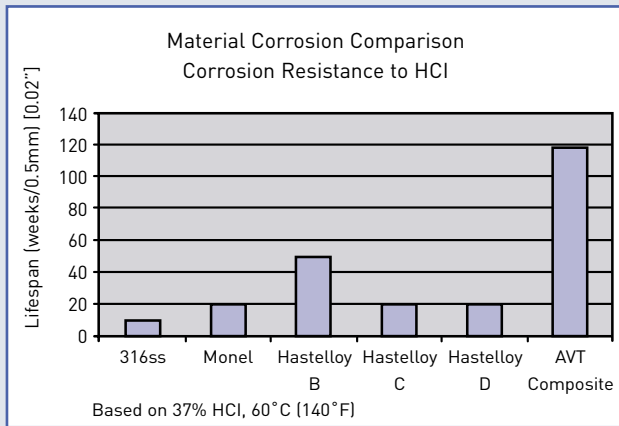
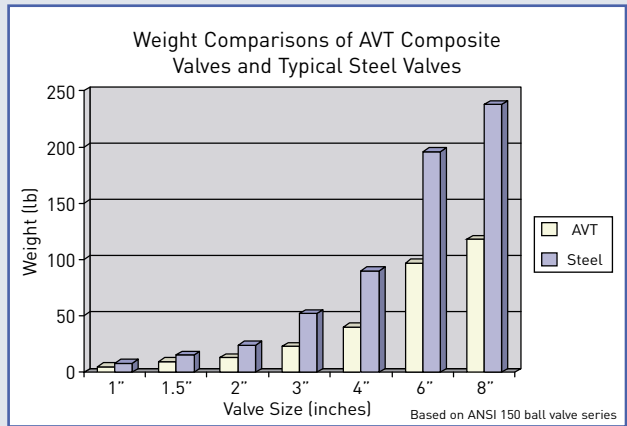
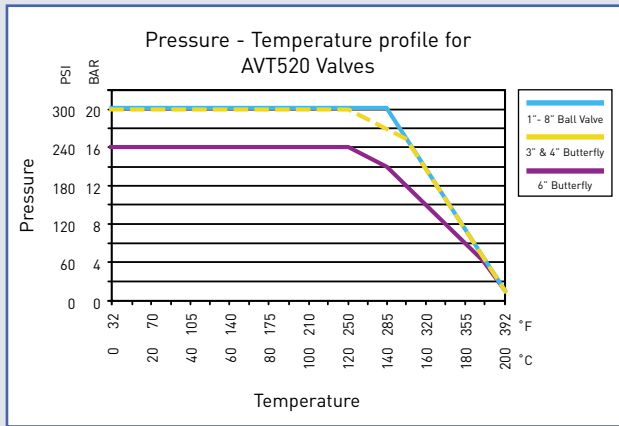
Potable water distribution, Effluent lines, Raw water lines, Chlorinated water lines, Fire mains, Sludge lines, Aeration lines, General purpose water distribution, Effluent and sewage service

Pulp and Paper

Process, cooling, waste, potable and deionised water supplies, Stock lines, Black green white and waste liquors, Acid lines, Caustic lines, Chlorinated water, fire mains, General purpose water distribution, Effluent and sewage service

Miscellaneous Applications

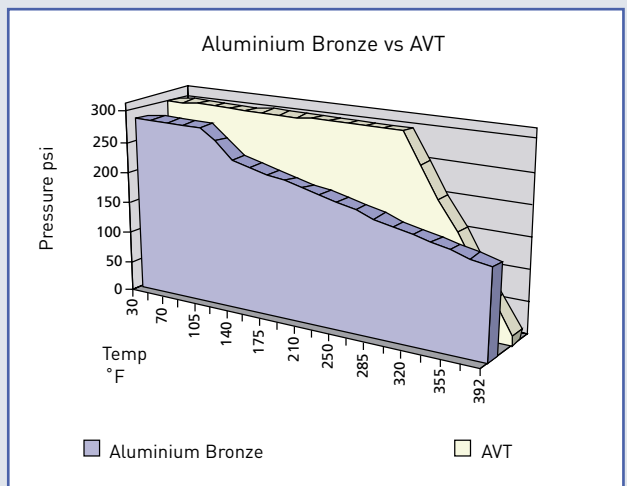
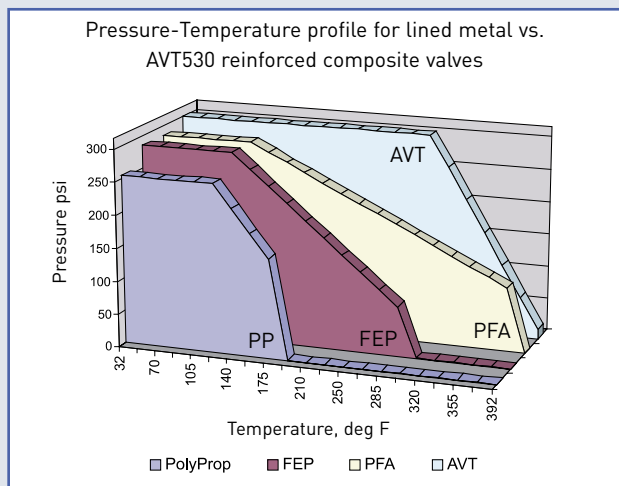
Dockside Services, Airport fuel, lubrication oil, water, sanitary sewage drainage and other services, Emergency water purification and distribution, Aquariums, Fish Farms, District Heating, Marshland drainage, Electro-planting plants , Potable and irrigation water distribution, Storm and flood water drainage, Fire mains



In comparisons, AVT valves are viewed extremely positively AVT Advantage

Compared to	Cost saving	Service Life	Weight saving	Lead time saving**	Lifetime cost saving
Super Duplex	50%	3-4 times longer*	50%	50%	85%
Titanium	90%	similar	similar	75%	90%
PTFE Lined	30-50%	2-10 times longer	50%	30%	65% - 95%

* Based on seawater above 15°C (60°F)
** Manufacturing lead time



Please note, AVT520 Resin is not recommended for long term temperatures above 140°C/285°F
Pressure-temperature curves based on nominal media.

Local Representative



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