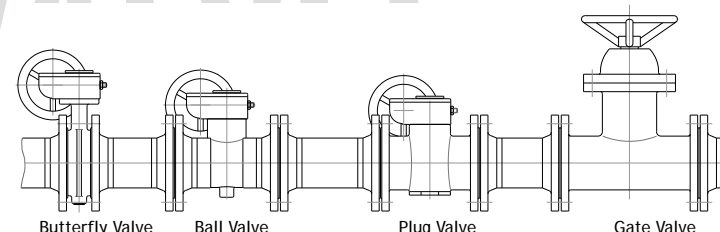
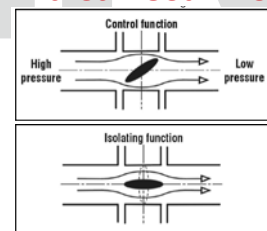


# AVK UK CONNECT BACK TO BASICS - CHAPTER 4 BUTTERFLY VALVES PAGE 1 of 2

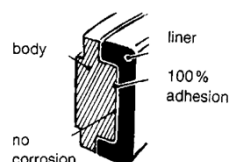
Expect... **AVK**

**DUTY.** Butterfly valves have traditionally been used for process applications, they have become a truly versatile product that is used in many different applications and industries. Butterfly valves are broad in all aspects - media usage, pressure resistance, combinations of materials, operating options and approvals/certifications. For the water sector the design of butterfly valves is approved for usage in clean potable water, final effluent, air scour duty and UV systems providing the appropriate valve materials and liners are used. It is both used for isolation and regulation duties and has excellent flow control functionality.

**NAMES.** Bonded liner butterfly valve, rubber lined butterfly valve, vulcanised butterfly valve, fixed liner butterfly valve



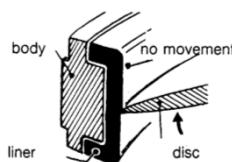
**DESIGNS.** Unlike a gate valve, the butterfly valve is commonly known as a quarter turn valve. This means that the valve disc moves in a 90 degree movement from fully open to fully closed and visa versa. The disc will remain inside the waterway at all times. The main advantages of using a butterfly valve are: short face to face dimension, both isolating as regulation function, fast operating times, bi-directional shut off and flexibility in materials and applications.



**TYPES.** AVK manufactures a wide range of butterfly types and design. In this chapter we discuss the Wouter Witzel Concentric/Vulcanised liner type. What do these terms mean?

**Concentric** refers to the relationship between the valve shaft and the sealing face. A concentric butterfly valve design means that the valve shaft is directly aligned with the valve centre lines and the centre of the pipe.

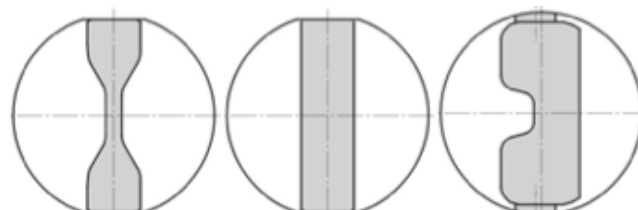
**Vulcanized Liner (bonded)** The main characteristics of this type of valve is a liner bonded or vulcanized to the valve body, it is the interference of the valve disc and the seal/ liner (in valve body) that creates the valve seal. The process, as well as giving a high reliability, means that the liner cannot move during cyclical operation of the valve so prevents internal body corrosion and gives excellent sealing properties and low torque. This type of butterfly valve has proven to be leak tight after more than 500,000 movements so it can also perfectly be used in a regulation function.



**STREAMLINED DISC.** In comparison with the high resistance of the double eccentric and centric one shaft design valves, AVK produces a butterfly valve with two shaft design and a slim disc. Due to this feature high Kv values can be achieved giving less resistance of the medium and less pump energy is needed.

**WIDE CHOICE OF MATERIALS.** Due to the special 'dry shaft' design only the liner and the disc are in contact with the medium. This makes it possible to use these valves in very abrasive, corrosion and chemical environments. For the water sector the liner is normally a rubber EPDM or nitrile material and the disc is stainless steel or coated ductile iron. However duplex, aluminium bronze, hastelloy and even titanium are available.

Flow characteristics/ flow resistance



Centric two shaft design, Centric one shaft design, Double eccentric Streamlined disc

**VALVE SIZES AND TYPES.** AVK S75 range covers from DN40 – DN2200. Wafer, lugged, tapped, mono and double flanged body types are available.



**SERIES 75/10  
EVS**  
Flangeless wafer type  
(for in line duty)  
DN 40-1400



**SERIES 75/30  
EVBS**  
Semi lugged wafer type  
(for in line/ end of line duty)  
DN 50-1200



**SERIES 75/41  
EVTLS**  
Lug wafer type with tapped holes  
(for in line/ end of line duty)  
DN 50-1200



**SERIES 75/20  
EVFS**  
Double flanged short type  
(for in line/ end of line duty)  
DN 40-2000



**SERIES 75/21  
EVFL**  
Double flanged long type  
(for in line/ end of line duty)  
DN 50-1500



**SERIES 75/22  
EVUS**  
U section wafer type with full flanges  
(for in line/ end of line duty)  
DN 600-2200



**SERIES 75/51  
EVML**  
Single flanged wafer short type.  
(for in line/ end of line duty)  
DN 80-800

## If in doubt ask - 01604 601188

For more information on this product range contact:  
Stuart Montgomery - AVK Market Sector Manager.

Mobile: +44 (0) 07876 798 775

Email: [stmo@avkuk.co.uk](mailto:stmo@avkuk.co.uk)

All documentation for valves are available on the AVK UK website [www.avkuk.co.uk](http://www.avkuk.co.uk)



# AVK UK CONNECT

## BACK TO BASICS - CHAPTER 4

### BUTTERFLY VALVES PAGE 2 of 2

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#### Concentric - Vulcanised liner

**OPERATION.** This is greatly dependant on the application and the function of the valve.

**Manual.** Basic manual operation begins on the smaller sizes as a lever operation. Valves above DN250 would require a gearbox option, this can be handwheel or cap for tee key operation. If valve/gearbox is buried please ensure valve coating and gear specification are appropriately aligned.

**Electric.** Any size can be supplied and tested with an electric actuator whether for on/off application or full modulating duty. Commonly used types are Rotork and Auma dependent on water authority preferences.

**Pneumatic.** Any size can be supplied and tested with a pneumatic actuator whether for on/off application or full modulation duty. Where applicable this can be supplied with switch boxes, solenoid valves and throttle valves. All wired and tested.

**ACTUATOR SIZING.** The bonded liner ensures a constant low operating torque reducing the actuator size. In addition often the cost of the valve is significantly lower than the cost of the actuator/gearing requirements. The actuator/gearing size should be defined by the actual working pressure/differential pressure within the pipeline which relates directly to the operating torque. To reduce the torque requirements and subsequent cost of the total unit especially on larger valves. It is important that full differential pressures are advised at time of enquiry/order. In addition the actual rating of the valve can be reduced to match the actual working conditions. For example DN1400 butterfly valve can be supplied 6 or 10 bar working pressure rating with fully rated PN16 flanges. This would also assist in reducing the power consumption of the actuator/gearbox combination.

**FLOW CONTROL.** The S75 range of butterfly valves can be used for regulation duties as well as flow control applications. It is vital that the valve must be sized against the actual flow conditions and not the pipeline size. Maximum permissible velocity in the fully open position is 5m /sec. The control phase of the valve is typically where disc movement between the 20° to 70° operation will have the biggest impact on the flow. Full CV/KV details available on request, please contact AVK UK for details.

**WORKING PRESSURE.** Vulcanized butterfly valves can be used up to 25 bar and in vacuum conditions without collapsing of the liner.

**RELEVANT STANDARDS.** EN 593 Series/BS EN 558 series 13, series 14 , series 16, series 20 EN12266-1, EN1092-2

**QUALITY & LIFE TIME.** 100% of the AVK / Wouter Witzel valves are tested before leaving the European factories. All butterfly valves are body tested to 1.5 working pressure and seat tested to 1.1 the working pressures. Test pressures and durations are carried out in line with EN12266-1.

**APPROVALS & CERTIFICATION.** The S75 range fully comply with BS EN1074/EN12266-1 leakage rate A which states that there is zero visual detectable leakage. The S75 range is also designed for use where vacuum is present in the line and will fully seal where vacuum conditions are present at <10-5mbar.

**TEMPERATURE.** Due to vulcanized liner, the S75 valve is suitable for most applications within the water sector which are generally -20 deg to +110 deg. Other temperature ratings are available on request for example - where valves are used on air scour duties where air temperatures can exceed these normal rates, AVK UK can offer a solution using a wide range of valve component/materials.

**VERTICAL APPLICATION.** Most applications call for the valve shaft to be in the horizontal plain. The AVK S75 range of butterfly valves can be used so that the stem is also in the vertical plain. The valve disc is fitted with bearings top and bottom which support the weight of the valve disc in place.

**OPERATION STRETCHED NECKS.** Where actuators/gearboxes are mounted remotely from the valve, the typical arrangement would include extension stem and headstock etc. As an option we can offer for the valve and actuator to be fitted with a stretch neck feature which allows for improved installation and avoids potential alignment issues which may be more prevalent with the traditional setup. This also negates the need for chamber requirements for the valve being potentially buried. Please ensure valve coating and gearbox specification are appropriately aligned.



**OTHER APPLICATIONS.** AVK also offers similar concentric vulcanized liner valves for fire protection, oil & gas, chemical, mining sector, power plants, all with the applicable approvals

**COATINGS.** AVK offer a wide range of coating for the valve body, please ensure gearbox/operator specification is aligned with valve specification in particular buried applications.



WW COATING  
ORANGE,  
RAL 2000  
100 MICRONS  
DFT



AVK BLUE,  
RAL 5017  
200 MICRONS  
DFT



FULL WRAS  
APPROVED  
LIGHT BLUE,  
RAL 5012  
120 MICRONS  
DFT  
WRAS  
APPROVED  
PRODUCT



BURIED DUTY  
BLACK EPOXY,  
350 MICRONS  
DFT