



SERIES 75 BUTTERFLY VALVES INSTALLATION, OPERATION & MAINTENANCE MANUAL

Instruction for use

Thank you for selecting an AVK product. With correct use, it will give long and reliable service. This manual has been prepared to assist you install, operate and maintain the valve to the maximum efficiency. For ease of reference, it has been divided into sections covering all aspects of use, and it is in the users best interests to read it and ensure that it is fully understood.

Health and Safety

It is always recommended that wherever work is being carried out on a valve that the valve is fully depressurised prior to carrying it out, and for the convenience draining of the line may be beneficial.

It is essential that the user of the valve is aware of the weight of the components and/or assemblies that must be handled and manipulated during installation and maintenance. It is the users responsibility to ensure that safe working practices are followed at all times.

Whenever AVK products are installed, operated, or maintained, it is essential that the staff that undertake these operations be adequately trained. The hazards of pressurised liquids and gases can be severe, and it is the responsibility of the users to ensure that trained, competent staff undertake these duties. This manual has been designed to assist, but it can never fully replace quality training in the workplace. AVK technical staff will always be available to answer any questions relating to specific problems that may not be covered by this manual.

AVK products are designed and manufactured to be fit for purpose, and to a high and reliable standard. This provides a safe product with minimum risk to health when used correctly for the purpose for which it was designed. However, this assumes that the equipment is used and maintained in accordance with the manual, and the user is advised to study this manual, and to make it available to all staff that may need to refer to it.

AVK cannot be held responsible for any incidents arising from incorrect installation, operation or maintenance. The responsibility for this must rest wholly with the user.

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1. Introduction

The series 75 butterfly valve is a bi-directional double flanged concentric valve with a vulcanised body. The valve is for use in waterworks applications and is available in PN16 and PN21 from DN600 and up.

The valve can be fitted with either manual or automatic operators. The standard valves come with an IP67 rated Cast Iron gearbox or with an IP68 gearbox for buried service applications.

Materials:

Castings (body)
Ductile Iron

Coating
2 pack epoxy

Disc, shaft, cover plates, pin and external fasteners
Stainless Steel

Bearing
Bronze PTFE coated

Seat/liner
EPDM rubber

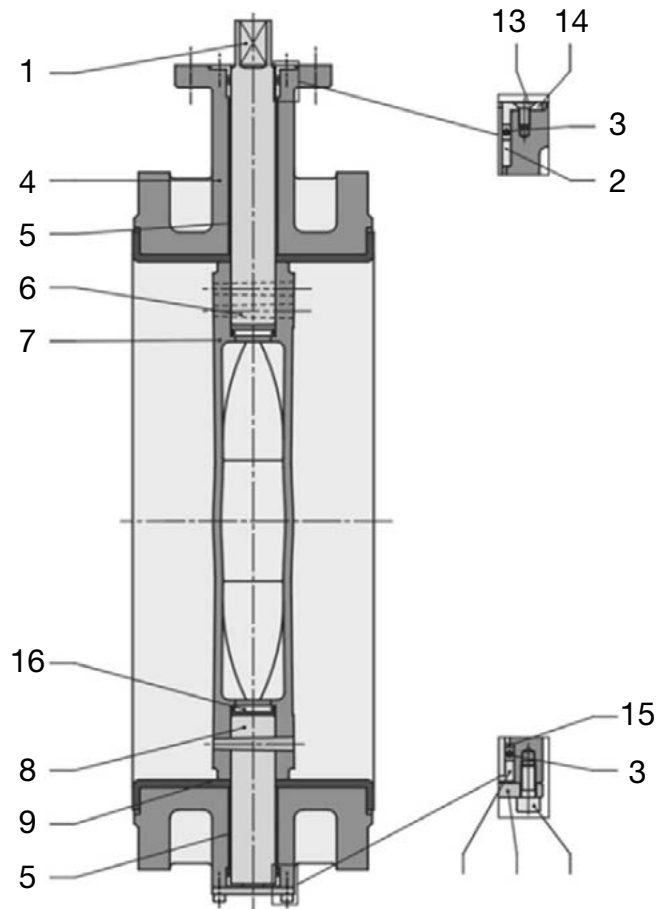
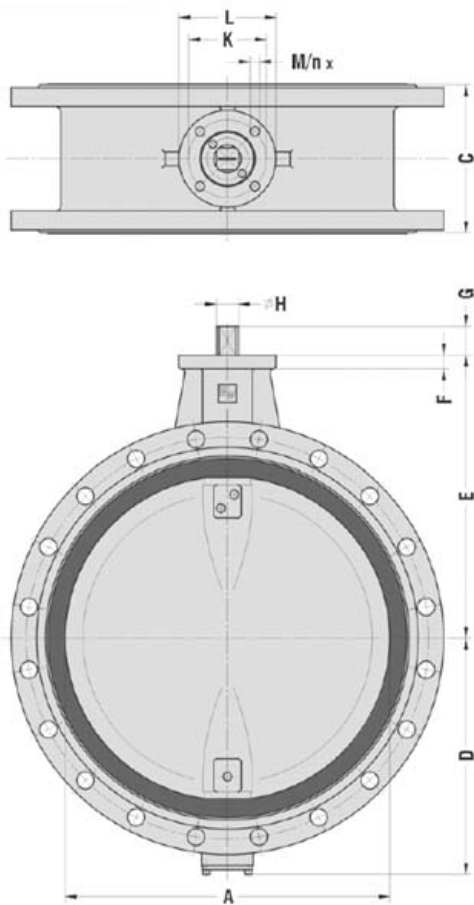
Refer to individual datasheets for specific information



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Component list

- | | | | |
|-----------|----------------|-------------------------|------------------------|
| 1. Shaft | 5. Bearing | 9. Lining | 13. Counter sunk screw |
| 2. Bush | 6. Conical pin | 10. Axial bearing | 14. Collar bearing |
| 3. O-ring | 7. Disc | 11. Cover plate | 15. Ring |
| 4. Body | 8. Shaft | 12. Cylinder head screw | 16. Sealing plate |



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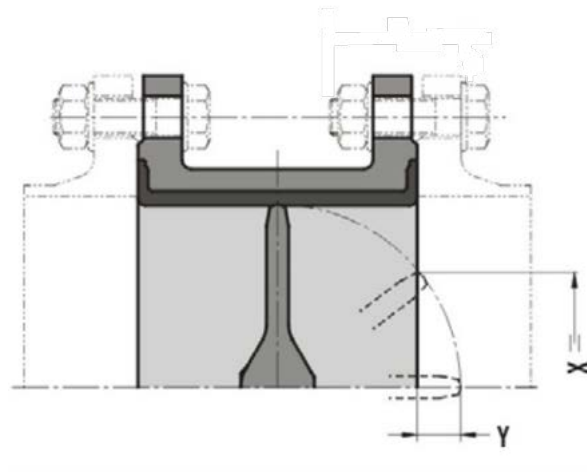
2. Installation

- When installing the valve ensure that the seat and flanges are clean.
- Valves should be installed in the horizontal position wherever possible.
- When installed in close proximity of centrifugal pumps, orientation of the pump may require vertical orientation.
- When lifting valves use lifting lugs/points provided.
- No flange gaskets are required as vulcanised rubber liners provide integral seal on flange faces.
- Place valve between pipe flanges and insert bolts.
- Tighten bolts loosely.
- Tighten bolts in a diagonal sequence to ensure flanges are pulled parallel.
- Finally, tighten bolts to correct torque as recommended in WSA 109.

DN	B5		Table F	
	Bolts	Qty	Bolts	Qty
600	M27	16	M33	24
700	M27	20	M33	24
750	M30	20	M33	28
800	M33	20	M36	28
900	M33	24	M36	32
1000	M33	24	M36	36
1200	M33	32	M39	40

- Disc protrusion

SIZE DN	DISC PROTRUSION	
	X	Y
700	621	197
800	719	234
900	823	278
1000	897	288
1200	1089	358



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3. Operation

FLOW CALCULATIONS

ISOLATING VALVES (ON-OFF)

Flow data of isolating valves is normally used within the calculations for pipework sizing and system pressure losses when the valve is in the fully open position. Many on/off isolating valves spend most of the time in the fully open position and therefore these valves should have high K_V figures to reduce pressure drops, increase plant efficiency and contribute to reducing energy costs.

Table: Flow coefficient K_V at fully open valve position

DN	K_V	
	PN16	PN21
600	37200	22249
700	34470	29511
750	38005	33790
800	45540	38818
900	58290	46739
1000	73510	60253
1100	92940	68542
1200	108400	89906

Note: $C_V = 1,16 K_V$

Flow sizing formulae:

Incompressible fluid flow (liquids): $\Delta\rho = \frac{\rho}{\rho_o} \frac{Q^2}{K_V^2}$ $K_V = Q \sqrt{\frac{\rho/\rho_o}{\Delta\rho}}$ $Q = K_v \sqrt{\frac{\Delta\rho}{\rho/\rho_o}}$

Flow velocity: $v = \frac{354 Q}{DN^2}$

The maximum recommended flow velocity, avoiding cavitation, vibration, noise etc is: - for liquids: 5 m/sec

Nomenclature:	K_V	=	Valve flow coefficient in m ³ /h water (5 - 30°C) at pressure drop of 1 bar across the valve.
	Q	=	Flow capacity (m ³ /h).
	$\Delta\rho$	=	Pressure drop across the valve (bar)
	ρ	=	Density of fluid (kg/m ³).
	ρ_o	=	Density of water at 288 K = 1000 (kg/m ³).
	v	=	Flow velocity based upon nominal pipe size (m/s).
	DN	=	Nominal valve size (mm)

4. Maintenance

Series 75 butterfly valves are maintenance free.

If valves are to be stored for long periods of the time over 3 months it is recommended that the valve be operated several times whilst in storage.