



DIAPHRAGM CONTROL VALVE SOLUTIONS

Expect... **AVR**



AVK UK

DIAPHRAGM CONTROL VALVE SOLUTIONS



AVK UK have manufacturing sites in Corby, Chesterfield, and Hyde, Greater Manchester. These are supported by sales and marketing in Chesterfield, Northampton, Hyde, Maidstone, Prestwick and Bognor Regis with distribution centres in Chesterfield, Corby, Maidstone, Kilmarnock and Bognor Regis.

With local technical expertise and on-site service teams, AVK UK also offers its customers product identification, diagnostics, selection and application advice. We also hold product training courses and operating & maintenance guidance.

All AVK customer facing staff hold the relevant Site Safety Passport and where necessary confined space and other relevant certification.

Leakage, water sustainability and how a diaphragm control valve can help.

High levels of water that have been produced but “lost” before it reaches the customer through leaks, theft or metering inaccuracies are a source of unwanted cost to the water utilities.

From a public health and drinking water quality perspective, water losses need to be minimised in order to avoid the risk of drinking water contamination in the distribution network. When supplying potable water to populated areas, the water quality required must meet high standards.

These standards also apply to the equipment being used to deliver the water such as pipes, pumps, isolation valves, automatic control valves and filtration systems. Installation of a potable water system is an investment and requires a full understanding of the dynamics within the system.

Automatic control valves such as pressure reducing, pressure sustaining, constant flow and pressure relief, control and optimise the systems performance. These can be used to provide optimum pressure and flow conditions for a system, resulting in:-

- Less leakage
- Less wastage
- Less impact on the environment
- Less disruption to consumers
- Improved financial savings to water companies

Reducing leakage, improving sustainability: the benefits

Financial gains from increased efficiency in water distribution are:-

- Facilitates early leak detection before they become major problems.
- Water systems work effectively when water pressure is stabilised and remains constant.
- Increased capability due to increased pressure improving transmission.
- Reduced property damage caused by water leakage.
- Better understanding of what is happening to the water after it leaves the treatment plant.
- Reduced risk of water contamination.
- Fluctuating water pressure usually denotes a problem in the water system, which affects the systems performance.
- Early detection will identify potential problems allowing the opportunity to carry out repairs, which will significantly reduce overall costs and disruptions.



INVESTORS IN PEOPLE

OUTSTANDING FEATURES



Quality management

Our quality control system certified to ISO 9001, complies with the procedures documented in all our quality manuals. All products are inspected and tested to existing standards before leaving our factory. We are dedicated to making quality guidelines an integrated part of our production processes.

Production

AVK is well known for the production of valves, which incorporate high design standards with a reputation for reliability and long trouble free operation. This reputation has been developed through extensive experience in supplying products that exceed customers expectations. This philosophy follows through into our after sales service support, where a fast, efficient and professional response is a key success factor.

We believe that our ability to make a difference by developing and supplying products will contribute to further strengthening our market leadership on a global scale, assisted by our years of manufacturing experience combined with an in-depth commercial knowledge of market needs around the world.

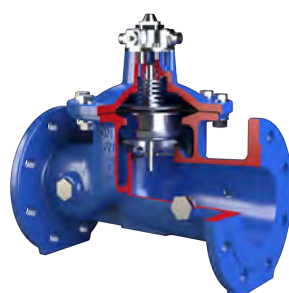
The expansion and success of AVK depends on brand recognition and quality. Only by listening to our customers will we be able to continue living up to the market expectations of today and tomorrow.

Pilot system: Patent Pending

- **Modular Design:** Interconnecting and interchangeable parts, comprising of three major components supplied in AISI 316 stainless steel as standard, minimising spare parts. Can be altered for different applications, using specific: Single Function Modules or Multi Function Modules.
- **Functionality:** The automatic control valve can easily be altered to suit different functions with an additional option of replacing the control module (original valve can be used)
- **External Fittings:** AISI 316 stainless steel as standard for all fittings.
- **Filter System:** Inline high capacity filter which can be easily cleaned. The procedure can be carried out while the valve is in operation, no need to close down the system. Optional extra: Flushing Discharge Valve.
- **Regulator Control Unit:** Easy adjustment capable of precise settings using the ergonomic design, modules can easily be changed with minor alteration.

Main valve:

- Lifted seat to avoid damage due to cavitation. High Kv valve at fully open position. All non coated internals made of AISI 316.
- Fusion bonded epoxy coated ductile iron body and bonnet.
- EPDM nylon reinforced diaphragm, positioned to give less stress near closed position, easy access to replace diaphragm.
- New parabolic plug design provides high ratio of travel allowing and improving a smooth control performance, reducing noise and vibration.
- **Anti Cavitation Trim:** Reduces noise and improves the life span of the valve by avoiding erosion. Optional extra in AISI 316 Stainless Steel.
- **Speed Adjustment:** Opening and closing speed of the parabolic plug can be easily controlled by adjustment on the distribution block using standard tooling.
- Size range DN50 - DN300.





SERIES TYPE

DESCRIPTION

APPLICATION

MAIN FEATURES

MAIN OPTIONS

SIZE

MAX WORKING PRESSURE

TEMPERATURE RANGE

BODY MATERIAL

APPLICABLE STANDARDS



AVK CONSTANT FLOW CONTROL VALVE PN10/16

For use with water.

- Stainless steel 316 internal and pilot components.
- Epoxy 300 microns coated internally and externally.
- Lifted seat design.
- Independent opening / closing speed control.
- High capacity filter.



AVK PRESSURE REDUCING CONTROL VALVE PN10/16

For use with water.

- Stainless steel 316 internal and pilot components.
- Epoxy 300 microns coated internally and externally.
- Lifted seat design.
- Independent opening / closing speed control.
- High capacity filter.



AVK PRESSURE RELIEF/ SUSTAINING CONTROL VALVE PN10/16

For use with water.

- Stainless steel 316 internal and pilot components.
- Epoxy 300 microns coated internally and externally.
- Lifted seat design.
- Independent opening / closing speed control.
- High capacity filter.

- Full bore and reduced bore options.
- Specific accurate spring ranges available as an option.
- 4 Orifice options for each valve size.
- Anti-cavitation trim.
- Multiple pilot options for additional settings.
- Solenoid override, fully opened/closed.
- Additional ball valves on upstream and downstream connections.
- Range of Y strainers.
- Full range of flange adaptors.

- Full bore and reduced bore options.
- Specific accurate spring ranges available as an option.
- Pilot isolation option.
- Anti-cavitation trim.
- Low pressure PRV for ultra-low downstream pressure (0.1 – 1 bar).
- 0.6–6bar, 5-10bar and 10-16bar spring ratings.
- Multiple pilot options
- Solenoid override, fully opened/closed.
- Additional ball valves for upstream and downstream connections.
- Range of Y strainers.
- Full range of flange adaptors.

- Full bore and reduced bore options.
- Specific accurate spring ranges available as an option.
- Anti-cavitation trim.
- 0.6 – 6Bar, 5-10Bar and 10-16Bar spring ratings.
- Multiple pilot options for additional settings.
- Solenoid override, fully opened/closed.
- Additional ball valves for upstream and downstream connections.
- Range of Y strainers.
- Full range of flange adaptors.

DN50-300

DN50-300

DN50-300

16 Bar.

16 Bar.

16 Bar.

+70°C.

+70°C.

+70°C.

Ductile Iron
BS EN 1563 EN-GJS-500-7

Ductile Iron
BS EN 1563 EN-GJS-500-7

Ductile Iron
BS EN 1563 EN-GJS-500-7

BS EN 1074-5
BS EN 1092-2 (ISO 7005-2)
Reg 31 compliant
WIMES 8.09 compliant

BS EN 1074-5
BS EN 1092-2 (ISO 7005-2)
Reg 31 compliant
WIMES 8.09 compliant

BS EN 1074-5
BS EN 1092-2 (ISO 7005-2)
Reg 31 compliant
WIMES 8.09 compliant

SERIES 859



AVK LEVEL CONTROL VALVE PN10/16

For use with water.

- Stainless steel 316 internal and pilot components.
- Epoxy 300 microns coated internally and externally.
- Lifted seat design.
- Independent opening / closing speed control.
- High capacity filter.

- Full bore and reduced bore options.
- Specific accurate spring ranges available as an option.
- Modulating and non-modulating float options.
- Altitude pilot (no float necessary).
- Anti-cavitation trim.
- Multiple pilot options for Solenoid override for fully opened/closed.
- Additional ball valves for upstream and downstream connections.
- Range of Y strainers.
- Full range of flange adaptors.

DN50-300

16 Bar.

-10°C to +70°C.

Ductile Iron
BS EN 1563 EN-GJS-500-7

BS EN 1074-5
BS EN 1092-2 (ISO 7005-2)
Reg 31 compliant
WIMES 8.09 compliant



AVK BOOSTER PROTECTION / SURGE PREVENTION CONTROL VALVE PN10/16

For use with water.

- Stainless steel 316 internal and pilot components.
- Epoxy 300 microns coated internally and externally.
- Lifted seat design.
- Independent opening / closing speed control.
- High capacity filter.

- Full bore and reduced bore options.
- Specific accurate spring ranges available as an option.
- Multiple pilot options for additional settings.
- Anti-cavitation trim.
- Solenoid override, fully opened/closed.
- Additional ball valves for upstream and downstream connections.
- Range of Y strainers.
- Full range of flange adaptors.

DN50-300

16 Bar.

+70°C.

Ductile Iron
BS EN 1563 EN-GJS-500-7

BS EN 1074-5
BS EN 1092-2 (ISO 7005-2)
Reg 31 compliant
WIMES 8.09 compliant



Generic photo, multiple variations available

AVK MULTI FUNCTION CONTROL VALVE PN10/16

For use with water.

- Stainless steel 316 internal and pilot components.
- Epoxy 300 microns coated internally and externally.
- Lifted seat design.
- Independent opening / closing speed control.
- High capacity filter.
- Hydraulic and/or electronic control
- Combination of all pilot variants: Pressure; Flow and Level.
- Full solenoid control/overrides.
- Remote operation.

- Full bore and reduced bore options.
- Specific accurate spring ranges available as an option.
- Multiple pilot options for additional settings.
- Anti-cavitation trim.
- Solenoid override, fully opened/closed.
- Additional ball valves for upstream and downstream connections.
- Range of Y strainers.
- Full range of flange adaptors.
- Normally open (NO) or Normally closed (NC) solenoid
- 12 or 24 volt solenoid
- Direct or non-direct current solenoid
- Multi switch setting options

DN50-300

16 Bar.

+70°C.

Ductile Iron
BS EN 1563 EN-GJS-500-7

BS EN 1074-5
BS EN 1092-2 (ISO 7005-2)
Reg 31 compliant
WIMES 8.09 compliant



Generic photo, multiple variations available

AVK SOLENOID OVERRIDE CONTROL VALVE PN10/16

For use with water.

- Stainless steel 316 internal and pilot components.
- Epoxy 300 microns coated internally and externally.
- Lifted seat design.
- Independent opening / closing speed control.
- High capacity filter.
- Any pilot override to fully open/close.
- Remote operation.

- Full bore and reduced bore options.
- Specific accurate spring ranges available as an option.
- Multiple pilot options for additional settings.
- Anti-cavitation trim.
- Solenoid override, fully opened/closed.
- Additional ball valves for upstream and downstream connections.
- Range of Y strainers.
- Full range of flange adaptors.
- Normally open (NO) or Normally closed (NC) solenoid
- 12 or 24 volt solenoid
- Direct or non-direct current solenoid
- Fully open/close options

DN50-300

16 Bar.

+70°C.

Ductile Iron
BS EN 1563 EN-GJS-500-7

BS EN 1074-5
BS EN 1092-2 (ISO 7005-2)
Reg 31 compliant
WIMES 8.09 compliant

PRODUCT SELECTION



Select the right control valve

The following conditions should be taken into consideration in order to select the right solution for your application:

- Working conditions
- Maximum flow
- Minimum flow
- Continuous flow
- Maximum inlet pressure
- Minimum inlet pressure
- Required outlet pressure
- Pipe size

Our online sizing tool provides guidelines for the selection. Find it at www.avkuk.co.uk on the tech support tab, under "Series 859 control valve information and specification tool".

Strainers and isolating valves

It is highly recommended to install a protection strainer on the inlet side to filter out impurities that could damage the control valve. Isolating valves on each side of the control valve facilitate commissioning and maintenance.

AVK gate valves are available in a vast number of configurations. For isolating control valves, we recommend our standard flanged gate valve with short face-to-face length or the variant prepared for actuator.

Find in-depth information about our gate valves, visit www.avkuk.co.uk

Air valves

In many cases it is recommendable to install an air valve at the inlet of the control valve in order to avoid trapped air pockets in the system. Air pockets may cause increased energy consumption and operation costs, pressure loss and increased risk of water hammer.

AVK air valves are available in many variants. For control valve installations, we recommend our combination air valves of ductile iron or reinforced polyamide. Please refer to our datasheets found via our product finder at www.avkuk.co.uk



859/000X-001
Pressure reducing
valve



859/001X-001
Pressure sustaining/relief
valve



910/21-001
Y-strainer



21/35
Flanged gate valve



21/78
Flanged gate valve
prepared for actuator



701/50-003
Combination air
valve, ductile iron



701/40-010
Combination air valve,
reinforced polyamide

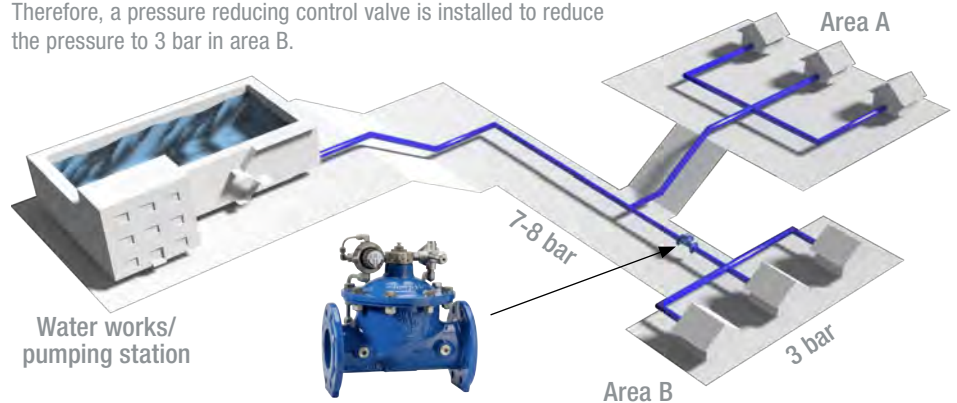
REDUCE OR SUSTAIN

Pressure reducing control valve

A pressure reducing control valve automatically reduces a higher inlet pressure to a lower outlet pressure regardless of changes in flow rate or inlet pressure.

The pressure reducing pilot senses the outlet pressure through the connection on the valve outlet port. Under flowing conditions, the pressure reducing pilot reacts to small changes in the outlet pressure, controlling the valve position by modulating the pressure in the control chamber. When the outlet pressure changes according to the set-value of the pilot, the pilot modulates to ensure pressure control.

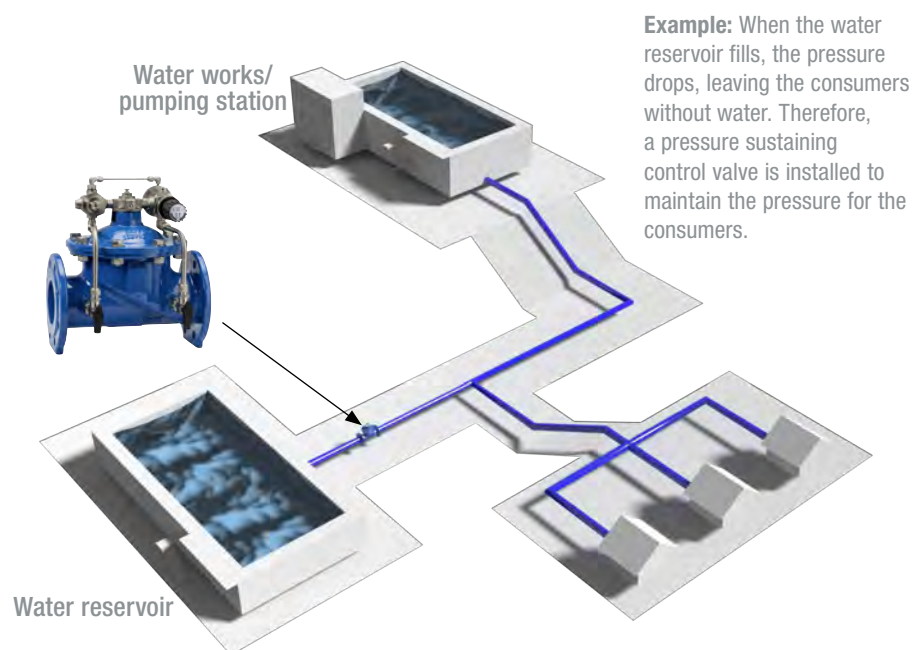
Example: The pressure is 7-8 bar, which is appropriate to supply the consumers in area A but too high for the consumers in area B. Therefore, a pressure reducing control valve is installed to reduce the pressure to 3 bar in area B.



Pressure sustaining/relief control valve

A pressure sustaining control valve automatically maintains a minimum preset inlet pressure by relieving excess pressure, regardless of changes in flow rate.

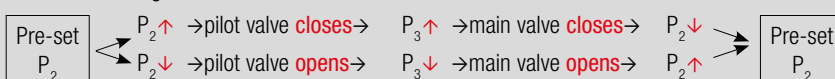
The pressure sustaining pilot reacts to small changes in the inlet pressure, controlling the valve position. If the inlet pressure falls below the set point, the main valve closes or modulates to ensure a minimum inlet pressure. The sustaining valve holds a minimum back pressure on the inlet and normally allows flow. The relief valve normally remains closed and only opens when pressure exceeds a pre-determined set-point.



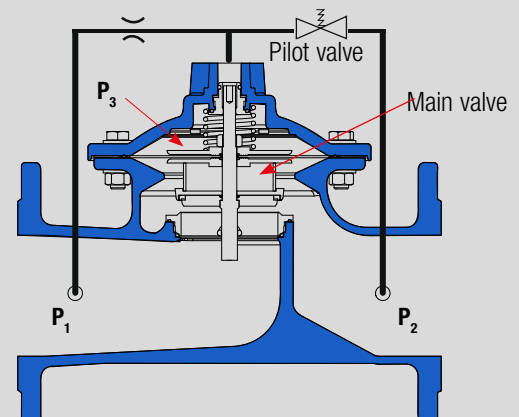
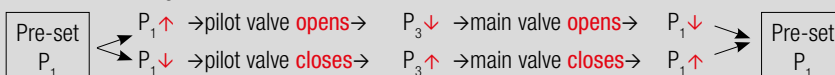
Basic function of a control valve

P_1 : Inlet/upstream pressure P_2 : Outlet/downstream pressure P_3 : Control chamber pressure

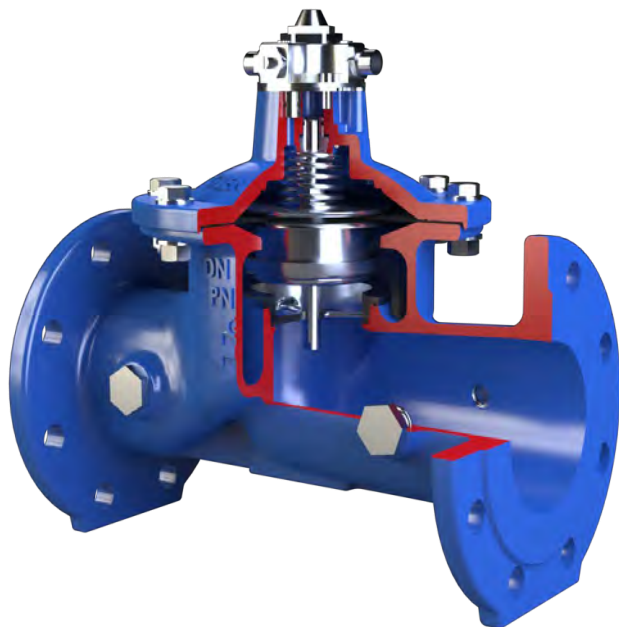
Pressure reducing control valve:



Pressure sustaining/relief control valve:



DIAPHRAGM OPERATED THE BENEFITS



The safe choice with 10-year warranty

AVK diaphragm operated control valves are designed according to EN1074-5 and provide network stability, accurate regulation, easy maintenance and long durability.

AVK control valves are available in DN50-300, with reduced and full bore. Control valves with reduced bore are appropriate for most applications, as the smaller bore often offers more accurate regulation. Control valves with full bore are recommended, if high Kv values are needed, e.g. in front of hydrants.

High quality WRAS approved materials

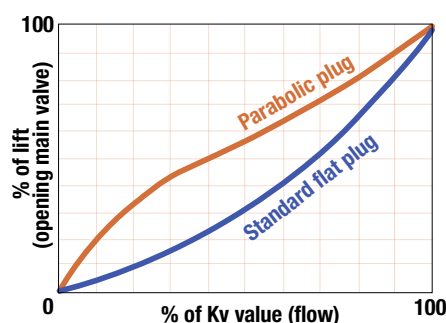
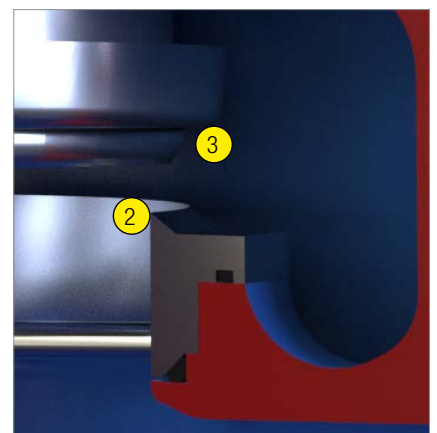
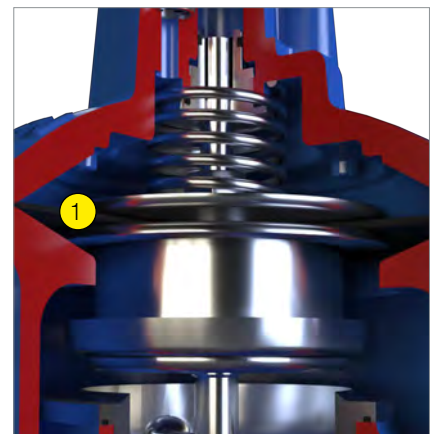
The body and bonnet are made of ductile iron with fusion bonded GSK approved epoxy coating.

The diaphragm is manufactured by AVK GUMMI and made of drinking water approved EPDM rubber with polyamide reinforcement.

All non-coated internals are of stainless steel AISI 316 as standard and all materials are WRAS approved.

Design features of the valve

- Large diaphragm design (1) secures fast reaction to changes in pressure. Its asymmetric axial position gives less stress near closed position.
- Lifted seat design (2) prevents damage inside the valve body caused by cavitation.
- Parabolic plug design (3) provides precise regulation and stability at low flow. Furthermore, it reduces noise and vibration. See below characteristics, illustrating the performance compared to a standard flat plug design.



PRODUCT SPECIFICATION



Product description:

- Diaphragm control valve for water to max. 70°C.
- Full bore and reduced bore to suit a wider range of flow applications.
- Geometry of regulating disc provides high ratio of travel allowing optimal control performance.
- All non-coated internals made of AISI 316.
- External pipes and fittings AISI 316 as standard.
- Parabolic plug design.
- Large diaphragm: non-symmetric axial position of rubber diaphragm, giving less stretch/stress, near closed position.

Tests:

- Hydraulic testing according to EN1074-1 and 5, EN12266.
- Seat: 1.1 x PN (bar). body: 1.5 x PN (bar).
- Test of duty point (optional extra if specified).

Standards:

- Designed according to EN1074-5.
- Face to face according to EN558 table 2 basic series 1.
- Standard flange drilling to EN1092 (ISO 7005-2), PN10/16.
- Body and bonnet of ductile iron with fusion bonded epoxy to DIN 30677-2, GSK approved, RAL 5017, according to WRAS / DVGW/W270/UBA.
- WRAS approved materials.

Optional extras:

- Pressure gauges
- Position indicator
- Filter valve (back flushing)
- Anti-cavitation system
- External pipes and fittings AISI 316
- Different sfm's (single function modules) according to application
- Different mfm's (multiple function modules) according to application
- Lifting device (bow nuts BS 3974)

Installation:

It is highly recommended to install a protection filter as well as isolating valves to facilitate commissioning and maintenance. If necessary install an air vent at inlet of control valve.



PATENTED PILOT SYSTEM



Pressure reducing valve



Pressure sustaining/relief valve

Modular pilot system

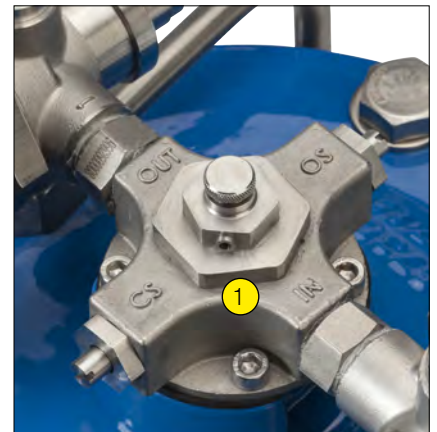
The modular design with interchangeable parts offers great flexibility as the pilot system is easily altered to fit other or multiple applications without replacing the valve. The pilot system consists of three main components:

- The distribution block (1) connects the pilot system to the main valve. As a unique feature, it offers independent opening and closing speed, easily adjusted using standard tooling, and giving full control e.g. in situations, where water hammer may occur.
- The filter (2) features high capacity and easy maintenance. When using the optional flush valve it also offers easy access to cleaning, while the valve is in operation.
- The hydraulic control block (3) can be set up for different applications. It features easy hand adjustment of the balanced pilot valve which is capable of very precise settings.

Compact design

The external pipework takes up less space and is less vulnerable to damage during installation compared to many other control valves.

It is designed using components with standard threads offering easy sourcing of replacements as well as easy fitting using standard tools. All metal parts are of stainless steel AISI 316 as standard.



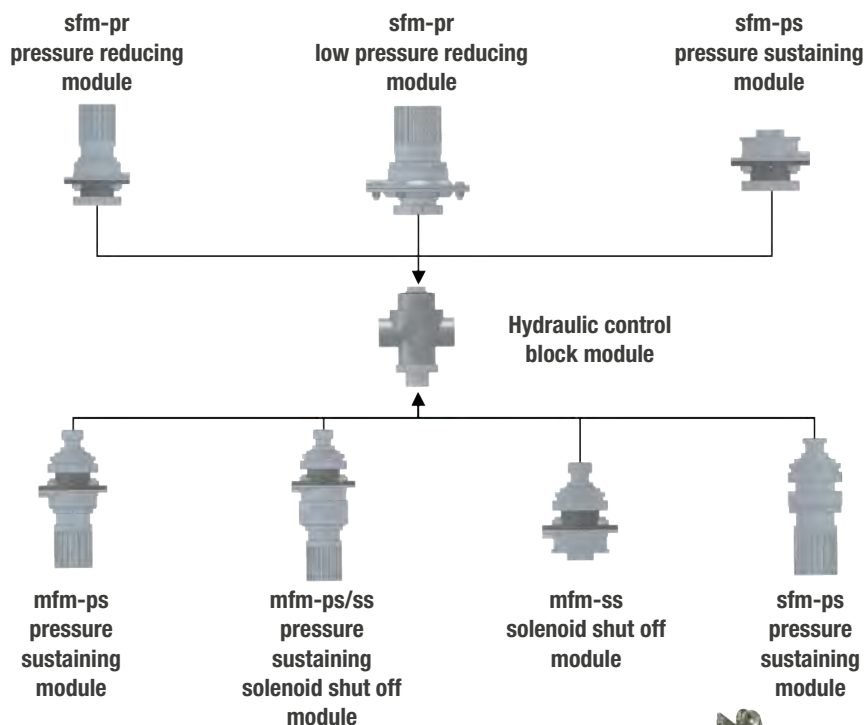


The innovative pilot system is of modular type with balanced pressure design, which is used to compensate for changes in water pressure, providing stable pressure.

The base of all control pilots is the hydraulic control block. Single or multiple function modules can be easily connected.

SFM: Single Function Modules, used for one specific application.

MFM: Multiple Function Modules (Double Seat Design) used for multi function applications.



VARIANTS



Pressure control

- Pressure Reducing : SFM
- Low Pressure Reducing : SFM
- Pressure Sustaining : SFM
- Pressure Relief : SFM
- Pressure Reducing – Solenoid Shut Off : MFM
- Pressure Reducing – Pressure Sustaining : MFM
- Pressure Reducing – Pressure Sustaining Solenoid Shut off : MFM
- Pressure Reducing – Check valve : MFM
- Pressure Sustaining – Electric Shut off : MFM

Level control

- Float Level Valve : SFM
- Altitude Single Level – Solenoid Shut Off : MFM
- Altitude Single Level – Pressure Sustaining : MFM
- Altitude Single Level – Pressure Sustaining – Solenoid Shut Off : MFM
- Modulating Float Level – Solenoid Shut Off : MFM
- Modulating Float Level – Pressure Sustaining : MFM
- Modulating Float Level – Pressure Sustaining – Solenoid Shut off : MFM

Flow control

- Constant Flow : SFM
- Hydraulic Non Return Valve : SFM
- Constant Flow Solenoid Shut Off : MFM

Pressure management

- Dynamic Pressure Management
- Dual Stage Pressure Management
- Dual Stage Pressure Management (electric)
- Pressure Management Control Valve (with orifice plate)
- Pressure Management Control Valve (motorized)

Pump control

- Booster Pump Control : SFM
- Deep Well Pump Control

SFM = Single Function Modules
MFM = Multiple Function Modules



OPERATION



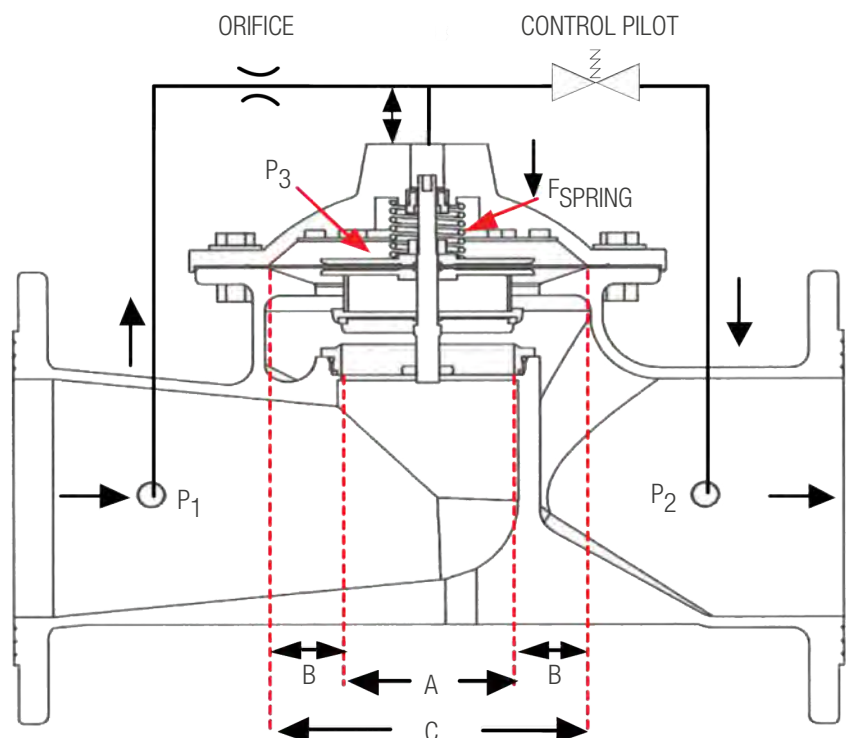
A restriction orifice inside of the “Distribution through the pilot system Block” located upstream of the control chamber, will limit the flow rate. A restriction orifice located just downstream of the filter will limit the flow rate. The valve will open if the flow rate allowed through the control pilot located downstream of the control chamber is greater than the flow rate allowed through the restriction orifice.

Taking “A” as the area of seat, the diaphragm area is approximately “C”. “P1” acts on area “A”. “B” is the diaphragm area that is exposed to “P2”.

The pilot controls the main valve by controlling the pressure.

Description Location

- | | |
|--|--|
| 1. Upstream Pressure “P1” within area “A” | $P_1 \times A$ |
| 2. Downstream Pressure “P2” within area “B” | $P_2 \times B$ |
| 3. Control Chamber Pressure “P3” within area “C” | $P_3 \times C$ |
| 4. Spring Force | F_{Spring} |
| 5. Opening Operation | $P_1 \times A + P_2 \times B > P_3 \times C + F_{\text{Spring}}$ |
| 6. Closing Operation | $P_1 \times A + P_2 \times B < P_3 \times C + F_{\text{Spring}}$ |
| 7. Modulating Operation | $P_1 \times A + P_2 \times B = P_3 \times C + F_{\text{Spring}}$ |
| 8. No Flow, No Pressure | $P_1 = P_2 = P_3$ |



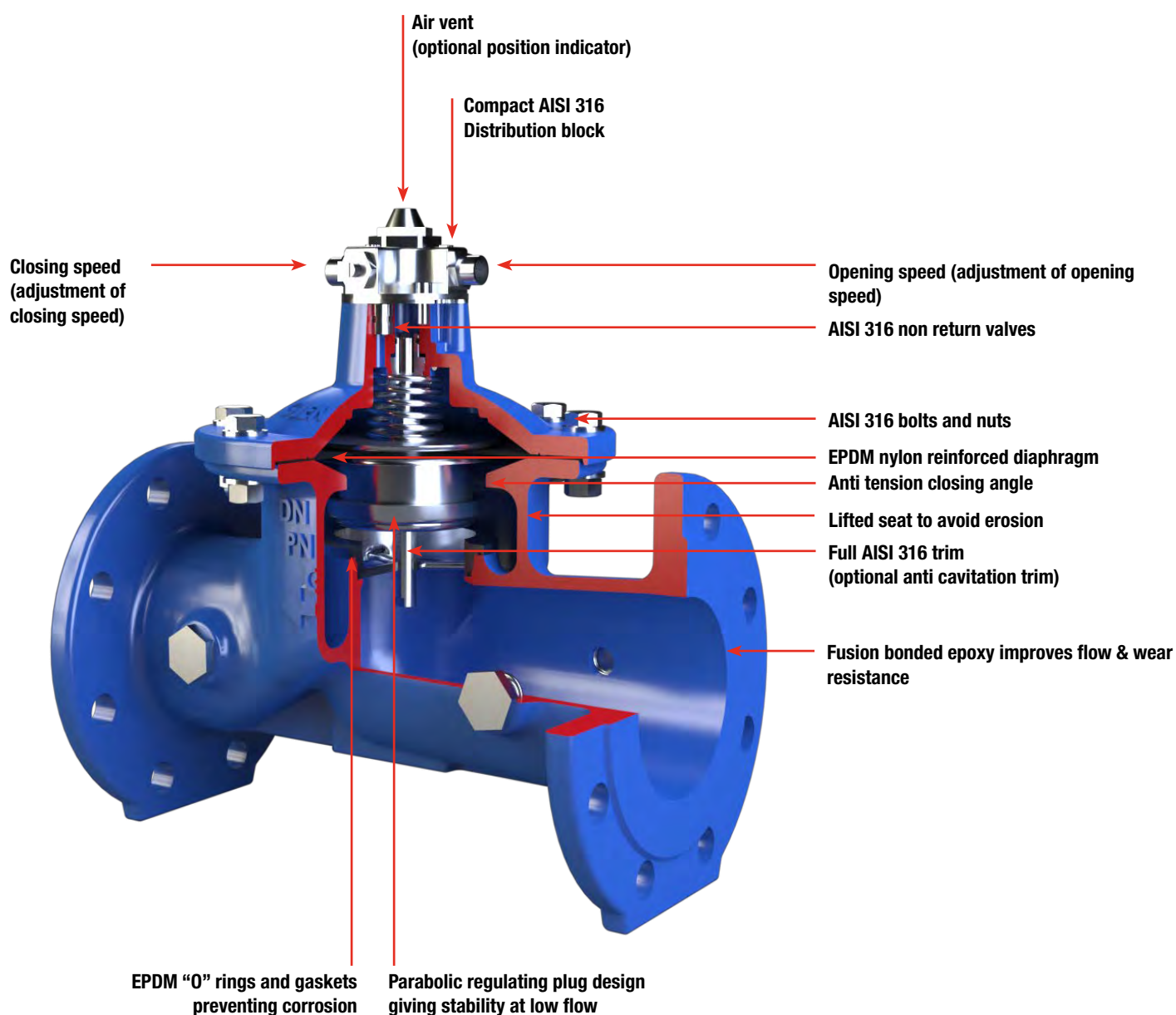
MAIN VALVE SERIES 859

Hydraulic operated,
diaphragm actuated globe
valve.

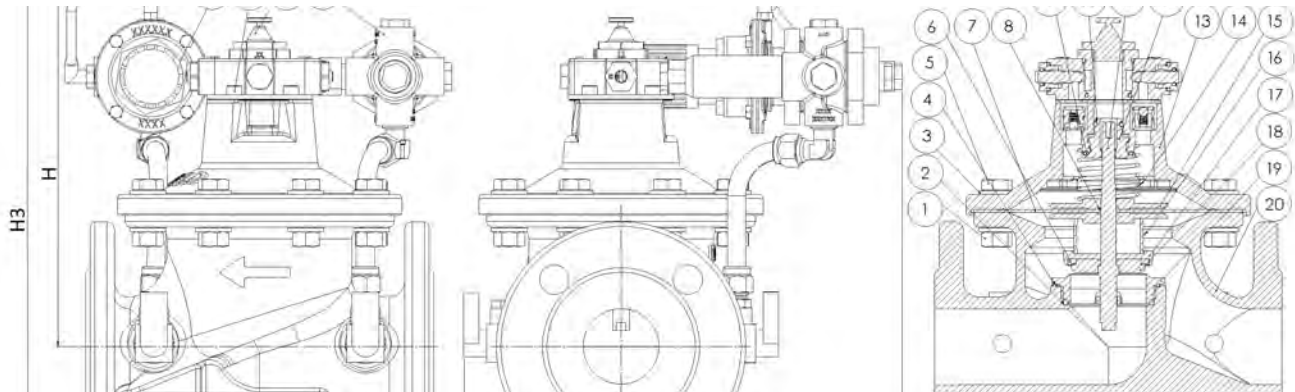
Components:

- Body
- Bonnet
- Diaphragm assembly

The stem of the diaphragm assembly is fully guided into the seat, from top and bottom within the valve diaphragm assembly and is the only moving part. It forms a sealed chamber separating the operating pressure from the line pressure.



TECHNICAL DETAIL

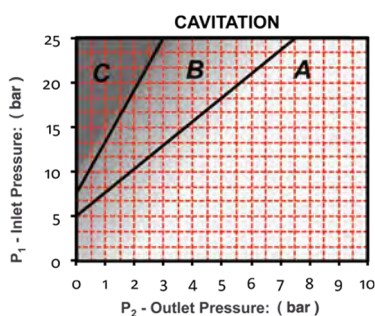


Cavitation

Locate inlet and outlet pressure on cavitation chart. If point location falls in shaded area C or B, cavitation can occur. Continued use of standard valve in shaded area can cause deterioration in valve body and produce more noise and vibration.

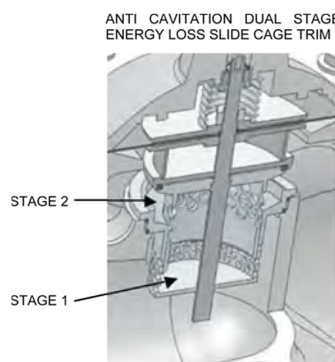
AREA A – Standard Valve
AREA B – With Anti Cavitation System
AREA C – Valves in Series

Consult AVK Technical Department for Special Applications - customerservice@avkuk.co.uk



Anti cavitation trim

To reduce the risk of cavitation the valve incorporates a double sliding cage design of AISI 316 construction. The seat slots are oriented around the plug cage. When the valve opens, flow converges in the centre of the first chamber of the seat cage, allowing the potential cavitation to dissipate. The upper slots of the internal sliding cage will divide the upstream flow before the regulating plug. The second chamber will dissipate energy before bubbles come in contact with internal surfaces of the main valve body and implode thus preventing cavitation erosion. The seat and regulating plug design will guide the velocity vortices and steam bubbles to collapse out of body and avoids damage.



Valve performance, seat and regulating plug design

The parabolic design of the regulating plug ensures, at low flows, a smooth, precise and accurate regulation, reducing noise and vibration. In standard valves a lift of 10% represents a K_V value of 20%. With the new design a lift of 20% represents a K_V value of 10%.

Diaphragm closing angle

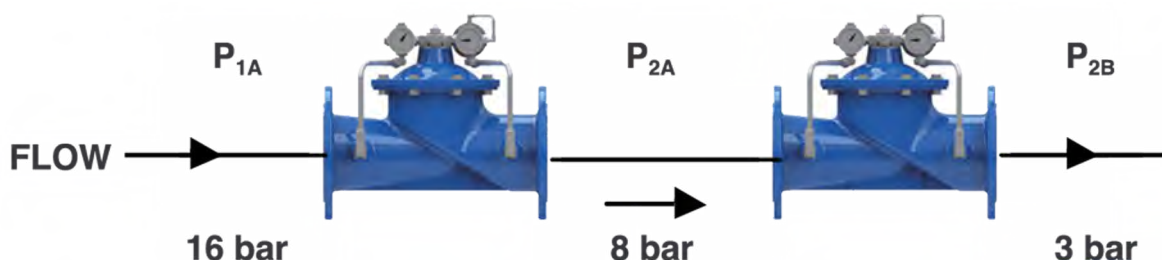
The plug design associated to the angle of diaphragm when the valve is closing, ensures seat chatter will not occur, causing no "stress" on diaphragm (tension). This means that the valve is designed for controlling precisely any flow rate from zero demand up to the maximum flow, without decreasing the valve performance.

Valve selection

- Check Working Conditions
- Maximum Flow
- Minimum Flow
- Continuous Flow
- Maximum Upstream Pressure
- Minimum Upstream Pressure
- Downstream Pressure
- Pipe Size
- Velocity
- Electrical Current

Installation valves in series

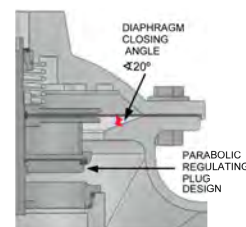
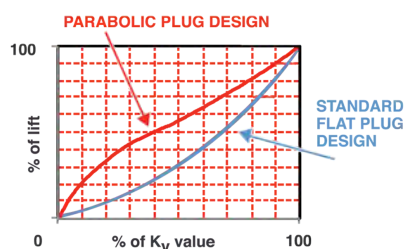
To prevent cavitation in high pressure drop application two valves in series can be used. Example: P1: 16 BAR, P2: 3 BAR





Spring ranges / Coil voltage

Pressure Reducing / Pressure Sustaining	SR1: 0.6 - 6 bar SR2: 5 - 10 bar SR3: 10 - 16 bar SR4: 0.1 - 1 bar
Low Pressure Reducing Solenoid Coils	24v DC, 24v AC, 230v AC



DO NOT OVERSIZE OR UNDERSIZE VALVE. USE THE FORMULAE.

MODEL	K _V VALUES								
DN	50	65	80	100	125	150	200	250	300
1	44	76	116	175	NA	400	710	947	1355
2	NA	53	83	119	135	202	435	734	990

1 = FULL BORE 2 = REDUCED BORE

FORMULAE (ONLY FOR WATER)

K_V: Cubic meters of water, at 18° Celsius flowing through the open valve in one hour with a Δp of one bar.

$$Q = K_V \sqrt{\Delta p}, \quad K_V = \frac{Q}{\sqrt{\Delta p}}, \quad \Delta p = \left(\frac{Q}{K_V} \right)^2$$

HEAD LOSS

Use the formula:

$$\Delta p = \left(\frac{Q}{K_V} \right)^2$$

VELOCITY

Use the formula: $V = \left(\frac{354 \cdot Q}{DN^2} \right)$

Note: For intermittent high flow or low pressure application, please contact AVK - customerservice@avkuk.co.uk

EXAMPLE: Pressure Reducing Valve

P1: 8 bar, P2: 3 bar

Flow: MAX – 130 m³/hr, MED – 40 m³/hr, MIN – 10 m³/hr

$$K_V = Q/\sqrt{\Delta P} \quad \Delta P = 5 \quad K_V = 130/2.24 \quad K_V = 58$$

For proportional control valves use a safety 1.3 to avoid control failure in momentary high flows.

Safety factor 1.3 x 58 = 75

Valve DN 80 Reduced Bore



MATERIAL OF CONSTRUCTION

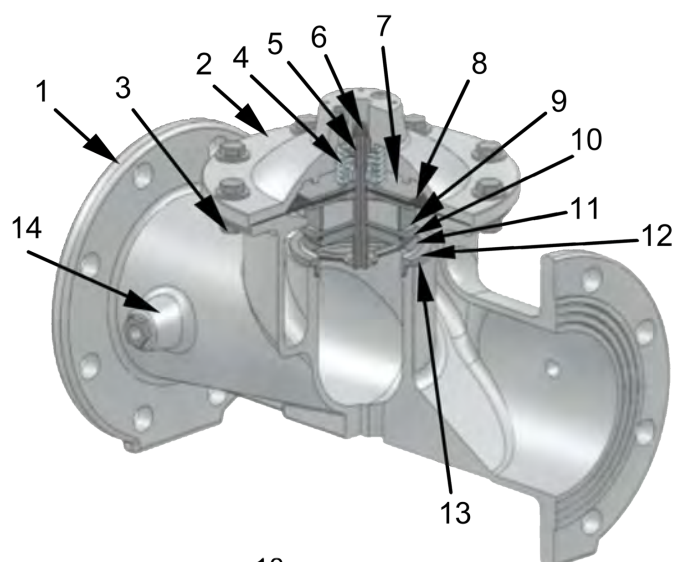


Item

1. Body
2. Cover
3. Bolts / Nuts
4. Spring
5. Stem Guide
6. Stem
7. Diaphragm Washer
8. Diaphragm
9. Spacer
10. Disc Cage
11. 1Disc
12. Plug
13. Seat
14. "O" Rings Ductile Iron,

Standard material

GJS-500/7
Ductile Iron, GJS-500/7
AISI 316
AISI 316
AISI 316
AISI 316
AISI 316
EPDM-WRAS/DVGW
AISI 316
AISI 316
EPDM-WRAS/DVGW
AISI 316
AISI 316
EPDM-WRAS/DVGW

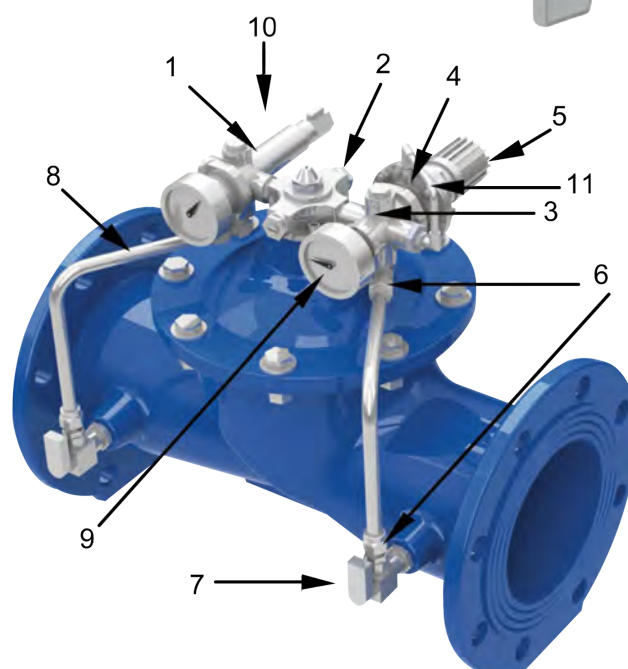


Item

1. Filter
2. Distribution Block
3. Hydraulic Control Block
4. Diaphragm Actuator
5. Regulator
6. Unions
7. Ball Valve
8. Pipe
9. Manometer
10. Fittings
11. Pipe

Standard material

AISI 316
AISI 316
AISI 316
AISI 316
Techno Polymer
AISI 316
AISI 316
AISI 316
N/A
AISI 316
AISI 316



ASSOCIATED PRODUCTS



SERIES 01/79

AVK Resilient Seat Gate Valve with SupaPlus Socket Connections
DN80-400
PN16
Ductile Iron
BS EN 1074-1&2
BS 5163-2
EN 12842



SERIES 36/89

AVK PE Tailed Resilient Seat Gate Valve
DN80-300
PN16
Ductile Iron
BS EN 1074-1&2
BS 5163-2



SERIES 32/49

AVK Long Spigot End Gate Valve
DN80-300
PN16
Ductile Iron
BS EN 1074-1&2
BS 5163-2



SERIES 21/35

AVK Resilient Seat Gate Valve
DN80-200
PN10/16 upto DN150
PN16 only on DN200
Ductile Iron
BS EN 1074-1&2
BS 5163-1&2
BS EN 1092 (ISO 7005-2)



SERIES 21/78

AVK Resilient Seat Gate Valve with ISO Flange
DN50-400
PN10/16
Ductile Iron
BS EN 1074-1&2
BS EN 1092 (ISO 7005-2)
BS 5163-1



SERIES 764/01

AVK Eccentric Plug Valve
DN80-300
PN16
Ductile Iron
BS EN 1092-2 (ISO 7005-2)
EN 558 SERIES 3
AWWA C517
NBR rubber 764/01-001
EPDM rubber 764/01-002



SERIES 41/20

AVK Resilient Seat Swing Check Valve
DN50-300
PN16
Ductile Iron
BS EN 1074-3
BS EN 1092-2 (ISO 7005-2)
EN 558-1 Series 48



SERIES 53/30

AVK Threaded Ball Check Valve
DN32-50
PN10
Ductile Iron
EN 12050-4
DIN 3202-F6



SERIES 702/50

AVK Knife Gate Valve with ISO Top
DN50-1000
PN 10/16/25/40
Ductile Iron
BS EN 1092-2 (ISO 7005-2)
EN 558-1 Series 20



SERIES 772/61

4 Sided Sealing Penstock
DN150-2000
Stainless steel
DIN 19569-4
BS 7775



SERIES 75/10

AVK Wafer Concentric Butterfly Valve, Vulcanised Liner
DN50-1400
PN6/10/16
Various Materials
BS EN 593
EN 558 Series 20



SERIES 76/70-002

AVK Wafer Butterfly Valve, Concentric with Loose Liner
DN50-400
PN10/16
Ductile Iron
BS EN 593
BS EN 1092-2 (ISO 7005-2)
EN 558 Series 20



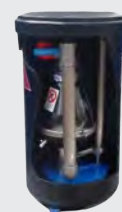
SERIES 756/100

AVK Double Eccentric Butterfly Valve with Rotork Gearbox and Handwheel
DN200-2200
PN10/16/25 to DN1200
Ductile Iron
BS EN 593
BS EN 1092-2 (ISO 7005-2)
EN 558 Series 14



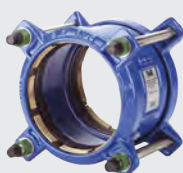
SERIES 701/40

AVK Double Orifice Composite Material Air Release Valve
¾, 1, 2" inlet,
PN16
Reinforced nylon
BS EN 1074-4
For water use



SERIES 701/79

AVK Underground Air Release Valve System
DN80
PN10/16
Reinforced Nylon
BS EN 1074-4
For waste water use



SERIES 621

AVK Tensile Resistant Coupling
DN40-300
PN16
Ductile Iron
BS EN 12842



SERIES 258

AVK Fabricated Coupling
DN350-1600
PN16
Mild Steel



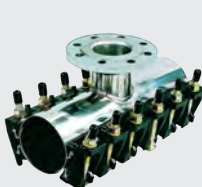
SERIES 601

AVK Universal Coupling
DN40-400
PN16
Ductile Iron



SERIES 202/30

AVK Multiple Band Repair Clamp
DN80-1200
PN10
Stainless Steel



SERIES 215/30

AVK Stainless Steel Tee
DN80-1200
PN10
Stainless Steel
EN 1092-2 (ISO 7005-2)



SERIES 253/40

AVK Universal Supacollar Repair Clamp with Tapping Point
DN80-300
PN16
Ductile Iron

CONTROL VALVE INTERACTIVE SELECTION TOOL



The new user friendly, interactive, product selection tool for control valves allows you to easily view, select and size valves to suit your requirements. By simply identifying a valve using the applications map, you can find all the technical information you need to ensure you have made the correct choice of valve.

Once selected, use the valve sizing program to assist you to confidently select the correct size valve by entering a small amount of application information.

BENEFITS:

- Instant and accurate valve sizing.
- Easy to use site navigation.
- Valve identification.
- Valve application.
- Downloadable technical brochures.

S859 specification sheet on page 19

CONTROL VALVE VIDEOS



AVK has launched a range of Control Valve videos including maintenance, pilots changes, hints and tips, solenoid overrides and PRV controllers.

These informative videos are 3 minutes long or less and are presented by the AVK UK Technical Sales Manager for Control Valves, David Hurley.



www.avkuk.co.uk - downloads - videos and animations



FOR USE WHEN ORDERING

Note: Please see the **S859 CONTROL VALVE INTERACTIVE SELECTION TOOL PAGE** available on our website (www.avkuk.co.uk - click on the tech support tab and scroll down) for instant and accurate valve sizing and selection.

Expect... AVR

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Webshop

<https://shop.avkuk.co.uk/>

Expect... **AVR**