



# AIR VALVE SOLUTIONS

Expect... **AVK**



# AVK GROUP



- Sales companies
- Sales and production companies



AVK Denmark



Design Department



AVK GUMMI

AVK group who are based in over 85 countries and are known as one of the leading innovators and manufacturers of high quality valves and fittings for the water, waste water, fire fighting and gas industries worldwide.

Our product specialists carry out design and development in our state of the art technology centre in Denmark while sales and distribution are handled by local AVK sales companies, agents and distributors worldwide.

Only by listening to our customers, will we be able to live up to the market expectations and we value the importance of local customers being serviced by local sales organisations. Customer feedback, local market intelligence, component quality and environmental considerations are at the forefront of our design processes. In cooperation with the end user, new products are field tested before the final market launch, thus achieving the best result in individual markets.

Within the AVK group is AVK GUMMI which produces all the rubber used for AVK products and are known as one of the world leaders in rubber technology.

These considerations ensure that AVK are, at all times, pro-actively providing technically advanced products. Our products comply with, and often exceed, the highest standards of safety and durability and are in accordance with all common national and international standards such as BS, EN, ISO, CEN, DIN, GB AWWA, JWWA and many more.



INVESTORS IN PEOPLE

**WIMES** Compliant



# AVK AIR VALVES, INNOVATIVE DESIGN FOR TOP PERFORMANCE



Good performance, minimum maintenance and durability are the characteristics of AVK's wide range of automatic air valves, air and vacuum valves and combination air valves. The air valves are available in composite materials, which combine strength with extremely light weight.

The Air valves are installed in virtually every country in the world, providing bespoke solutions to various air management projects.

The correct air valve use provides protection from transit pressures and entrapped air in pipelines, the main causes for the bursting, collapsing, and fracturing of pipelines. These negative effects on the pipeline assets can be directly associated with reduced pipeline efficiency, premature failure and reduced whole life costs.

The AVK offer includes commitment to service that has won the confidence and loyalty of customers worldwide and provides:

- Established quality of design through build and testing
- Fully compliant with British Standards and WRAS approvals
- Pressure ranges from 0.05 bar to 100 bar; MOP
- Customer support incorporating project analysis, product selection and technical application
- Efficiencies in pipeline operation, including
  - Energy savings 20%+
  - Improving asset life
  - Reduction in leakage
  - Maximising pipeline performance
  - Ongoing product development



### Freely dissolved air exists in all fluid transmission systems.

The principal sources for this air are:

1. Incomplete filling of the line - which leaves air pockets in high places and in different accessories.
2. Air dissolved in the fluid that is released when the pressure drops and/or there is a rise in temperature.
3. Vortexes in the fluid, at the points where it is pumped, introduce air into the system.
4. Air is sucked into the system through openings and accessories.

### The lack of control over the air present in a fluid system can result in damage:

1. If destructive vacuum conditions are created.
2. The presence of air can have a detrimental effect on system drainage efficiency.
3. Reduced air pockets in the system cross sectional area, higher energy losses, tremors in the systems and in extreme conditions; the entire stoppage of flow.
4. High pressure surge.
5. Metal parts in the system and system accessories corrode at higher rate.
6. Lower pumping efficiency.
7. Physical risk - when large volumes of air under pressure are released at high velocities.
8. Inaccuracies in the measurement of fluid volumes.
9. Accelerated wear of moving parts and flow gauges.
10. Cavitation damage.

### Control of air in potable water systems using air valves supplied by AVK UK

There are many types of air valves installed in potable water supply systems: air and vacuum, automatic air release and combination (double) valves.

**Air and Vacuum** valves discharge large quantities of air from non-pressurised pipes and are used mainly when filling a line. Air and vacuum valves also make it possible to admit large quantities of air when lines are drained and when the pressure drops suddenly. Air and vacuum valves are also known as: kinetic valves, large orifice air valves, vacuum breakers, low pressure air valves and air relief valves.

**Automatic** air release valves continuously release relatively small quantities of air from a pressurized line. The automatic air release valve is also known as a small orifice air valve and as a pressure air valve.

**Combination** air valves fulfil the tasks required of both types of valve - air and vacuum and automatic. They discharge or intake large volumes of air when filling or emptying a system and continuously release small volumes of air when the line is pressurised.

Combination air valves are also known as double orifice air valves, double acting or dual orifice.



# SERIES 851 AIR RELEASE VALVE FOR WATER AND SEWER APPLICATIONS



## Air Release Valves for Water Pipeline Systems

Why have them at all?  
What types are available?  
What are their respective function? How many are required? What size should they be? Where should they be installed? What air flow will they give?

These are some of the questions which are posed by Engineers and Water Authorities when confronted with the subject of air valves.

**The consequences of air in a pipeline system are not always fully appreciated. Consider, for example, a typical pipeline of any diameter, one kilometre in length that has been filled with water and released of air.**

In most cases this pipeline would still contain enough dissolved air to completely fill over 20 metres length of the pipe, because water, at standard conditions, contains at least 2% dissolved air by volume.

The presence of air in a pipeline which is in the process of either being charged or actually in service can cause delay in filling, throttling, and hence reduction in discharge capacity, a higher risk of water hammer and surges, increased corrosion of the inner pipe surfaces and reduce pump efficiencies leading to increased energy costs.

The effective removal of air provides many benefits, such as increased pumping efficiency, reduced vibration and corrosion, all combining to give an important saving in energy consumption.

If maximum efficiency is to be obtained from a system, it is essential that the line be primed quickly, all the air removed and the fluid permitted to run full.

In order to attain this, it is necessary to adequately ventilate the pipeline by some means, since the ideal of having a uniform, upward gradient, in the direction of flow, free from all obstructions is not normally possible, due to such natural hazards as hills, valleys, bridges, rivers etc.

The simplest and most effective device for the purpose of ventilation is the vent pipe or vent stack. This, however, is not a practical proposition in the majority of installations, hence air valves are designed to fulfil this duty. Suitability designed air valves are thus automatically able to permit - in required quantities - the release of air from, and the introduction of air to the particular pipeline involved. They should also close and remain drop tight under a minimum of positive pipeline pressure and open whenever pipeline depression occurs.

We believe that 'size for size' the Glenfield designed AVK Series 851 will give better inflow pipe protection rates and higher outflow rates for increased pump efficiencies than any other valve available in the Australian market.

**“PUT US TO THE TEST”**

**“Better flow = better system efficiencies”**

# FEATURES & BENEFITS

## Series 851 Air Release Valves

Feature	Benefit
High air flow capability	Can use a smaller valve and isolator
Aerokinetic design float allows higher air flow rates and will not blow shut. Critical flow 0.9bar	Higher flow through smaller valve. Others are limited to 0.3bar
Aerokinetic design float prevents the chance of float closing via air surges or higher velocities	Increases the speed of filling and prevents the chances of water hammer damage or noise
Seat design allows sealing at pressures as low as 0.1bar	Seals in low flow, low pressure applications
Valve internals can be replaced easily and safely	No need to introduce water to float pistons to the surface of the chamber
Seals can be checked or tested without removing the covers	Valve operation can be checked quickly by one person



## Series 851 Sewage Air Release Valves

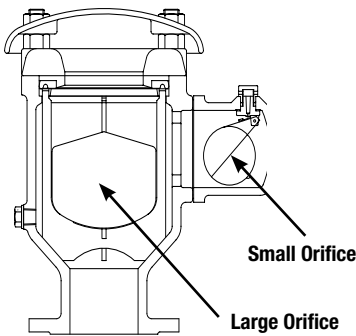
Feature	Benefit
Aerokinetic Principle	Will not blow shut
Cylindrical Float	Will not roll shut
ABS plastic Guides	No damage to internal coating
Full Bore Outlet	Maximum airflow capacity
Low sealing pressure	Optimum for low hydraulic gradients
Proven design	Reliability
Temp range – 10 to + 70°C	Wide range of application
Accessories	Flexibility
Vented non return valve	Surge alleviation
In flow check valve	Can be used with negative hydraulic gradient
Piped outlet connection	Enables use with noxious gases
High quality materials & FBE coating to AS 4158	Longevity
Boyles law complaint	Working parts totally clear of medium
Liberal body contours	Clogging free operation
Large clearance around float	No blockages



(Photo from AVK Civil AU)

## Air Release Valves designed for the purpose...

There are two basic air release valve types which are commonly referred to as single small orifice and double orifice air valves. These are illustrated in the following figures respectively.

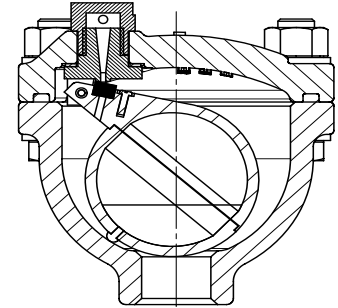


### AvK Series 851/00 Single Small Orifice Air Release valves

The small Orifice valve is designed to open and allow the escape of air which has accumulated in the system during the pressurised working conditions.

When air has collected in the valve body, it depresses the water level until a point is reached where the buoyancy is reduced such that the opening force created by the weight of the float is greater than the closing force generated by the system pressure operating on the unbalanced area of the Orifice.

With the AVK Series 851 Air Release Valve illustrated, the Orifice size ranges from 3.5mm (PN6) to 1.75mm (PN25) diameter giving optimum performance on varying working pressures from 6 to 25 bar respectively.



### AVK Series 851/10 & 851/20 Double Orifice Air Release valves

In most pipeline systems, the ventilation requirements are such as to warrant the use of both small and large Orifice air valves at the same point.

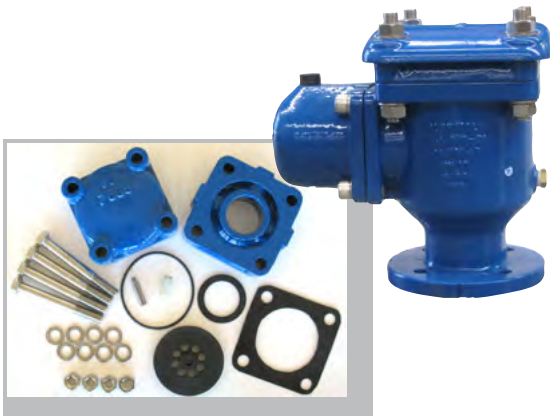
Hence, it is usual to install a valve of the Double Orifice Air Release Valve type Series 851, which incorporates both of these valve functions in a single unit. The performance of such a valve is namely ventilating the pipeline during filling and emptying sequences together with the ability to release air under pressure working conditions. It also embodies the unique Glenfield designed Aerokinetic Principle which has been incorporated in this valve since 1970.

The purpose of this valve is to permit large volumes of air to exhaust during initial filling of a pipeline and also allow air to enter the pipeline in sufficient quantities during emptying. This air inflow rate must be adequate to enable pipeline dewatering or scouring to be conducted

quickly and without endangering the pipeline to high vacuum pressures. It remains in the open position during filling until buoyed on to its rubber seat (EPDM) by the arrival of the water.

In the large Orifice float design it is most important so that the float is not prematurely blown or forced shut. This was a problem experienced in the older rubber covered ball type valves. This difficulty has now been overcome by the 'Glenfield Aerokinetic' feature which will not allow the valve to blow shut while discharging air at any pressure or discharge rate. Essentially, this feature gives a resultant pressure on the float which acts in a downward direction and increases in magnitude as the emergent air velocity increases.

Thus, for a similar sized inlet, the Aerokinetic valve has a much higher discharge capacity than other valve designs. This enables in most instances, the use of an air valve one size smaller than was previously possible, for a given discharge rate with a cost effective outcome.



## When should you use anti slam units on air release valves?

A wise man once said...

"If a pipeline is properly de-aerated you can't guarantee against a line break. However, if you don't properly de-aerate the pipeline you should be prepared for one".

# AIR VALVES FOR WATER APPLICATION

## SERIES NUMBER

## DESCRIPTION

## APPLICATION

## MAIN FEATURES

## SIZE

## MAX WORKING PRESSURE

## TEMPERATURE RANGE

## BODY MATERIAL

## APPLICABLE STANDARDS

## PRODUCT PICTURE

## SERIES 851/40

### AVK DOUBLE ORIFICE AIR RELIEF VALVE , PN16

for clean water (not sewage or waste water) and other neutral liquids

- A clever float design prevents air rushing out of the system from prematurely closing the valve
- Large air flow capacity
- All iron parts with contact to the water are coated with drinking water approved, fusion bonded epoxy
- The resilient seals are made of EPDM rubber and the seat is ABS, all drinking water approved
- All other internal parts are highly corrosion resistant AISI 316 stainless steel or ABS
- No moving parts are touching the internal coating
- The complete product is approved for drinking water

DN40 - DN200

16 bar

Air relief valve for drinking water (not wastewater) and neutral liquids max. 70° C

Ductile iron

EN 1074-4



## SERIES 861/01

### AVK AIR RELIEF VALVE, ANTI-SLAM, PN16-40

Fox 3F-AS, full bore for clean water

- Single chamber body in ductile cast iron, PN40 bar rated.
- Internal ribs ensure a consistent and accurate guiding of the mobile block.
- Drainage valve for chamber control and pressure relief during maintenance.
- Nozzle and gasket holder are wear resistant due to the gasket compression control.
- Easy maintenance without removing the air valve from the pipesystem.
- The Anti water hammer system consists of a spring and shaft in stainless steel and a disc with adjustable nozzels for control of the air flow. Thereby the system is never in contact with the water.
- Working conditions 0,2 - 40 bar differential pressure.

DN25-DN250

16-40 bar

Air relief valve for clean water and neutral liquids to max., 70°C

Ductile iron

AWWA C512, EN 1074 part 1



## SERIES 861/12

### AVK AIR RELIEF VALVE, ANTI-SLAM, PN16-40

for clean water and neutral liquids

- The spray effect during closing and the risk of drowning are reduced compared to standard combination air valves.
- Mobile block composed of a main float and upper disc, joined together by the air release system in AISI 316, and a additional anti surge obturator.
- Nozzle and gasket holder are wear resistant due to the gasket compression control.
- Cover in ductile iron and sreen in stainless steel prevents materials and insects entering the valve. Outlet for submerged applications are optional.
- Working conditions 0,2 - 40 bar differential pressure.

DN50 - DN400

40 bar

Air relief valve for clean water and neutral liquids to max., 70°C

Ductile iron

AWWA C512, EN 1074 part 1





# AIR VALVES FOR WATER APPLICATION

## SERIES NUMBER

## DESCRIPTION

## APPLICATION

## MAIN FEATURES

## SIZE

## MAX WORKING PRESSURE

## TEMPERATURE RANGE

## BODY MATERIAL

## APPLICABLE STANDARDS

## PRODUCT PICTURE

## SERIES 701/20

### AVK AUTOMATIC AIR VALVE, PN16

For use with potable and filtered water

- Orifice size of 12 mm<sup>2</sup>
- The enlarged orifice is less exposed to obstruction by debris
- The orifice in the automatic valve releases large volumes of air at high flow rates when the line is under pressure
- Body of high-strength composite material with protective shell of ductile iron
- A discharge outlet enables removal of excess fluids
- Very low weight
- With BSP thread connection

DN20- DN32

0.05 – 16 bar

Automatic air valve for water and neutral liquids to max. 60°C (temporarily up to 90°C)

Ductile iron

BS5163 Type B, EN 1074-4



## SERIES 861/80

### AVK AIR RELIEF VALVE, ANTI-SLAM, PN16

For water

- Single chamber body in glass reinforced polypropylene, PN16 bar rated
- Internal ribs for accurate guiding of the float
- The aerodynamic full bore body prevents premature closures of the mobile block also at high velocity air intake and discharge.
- Compact and reliable construction made from parts that are fully corrosion and chemical resistant.
- Low maintenance

1" to 2"

0.2 – 16 bar

Air relief valve for clean water and neutral liquids to max., 60°C

reinforced polypropylene

EN 1074-4



## SERIES 851/00

### AVK AIR AND VACUUM VALVE, PN16

For water

- Orifice sizes:  
DN 50: 794 mm<sup>2</sup>  
DN 80: 1809 mm<sup>2</sup>  
DN 150: 7850 mm<sup>2</sup>
- Reliable operation reduces water hammer incidents
- Dynamic design allows for high velocity air discharge while preventing premature closure
- Body and cover of ductile iron with blue epoxy coating
- Float of polycarbonate
- With connection flange or BSP thread.

DN50- DN150

0.2 – 16 bar

Air & vacuum valve - inlet flange for water and neutral liquids to max. 60°C (temporarily up to 90°C)

EN 1074-4



# AIR VALVES FOR WASTEWATER APPLICATION

## SERIES NUMBER

## DESCRIPTION

## APPLICATION

## MAIN FEATURES

## SIZE

## MAX WORKING PRESSURE

## TEMPERATURE RANGE

## BODY MATERIAL

## APPLICABLE STANDARDS

## PRODUCT PICTURE

## SERIES 851/50

### AVK DUAL ORIFICE SEWAGE AIR VALVE, PN16

for sewage & effluent systems  
max. 70° C

- A clever float design prevents air rushing out of the system from prematurely closing the valve
- Increased air flow capacity, ventilates large pipelines
- Large operating float chamfer, no fouling of working parts
- Ductile iron parts coated with GSK approved fusion bonded epoxy
- No moving parts are touching the internal coating

DN80

16 Bar (1.6 mpa)

for sewage & effluent systems  
max. 70° C

Ductile iron

EN 1074-4



## SERIES 861/50

### AVK AIR RELIEF VALVE, PN10/16

for waste water

- Large lower body designed with sloped sides to avoid deposit of grease or other materials
- Four ribs securing a trouble free operation of the float
- The air release system is protected by a steel deflector against spurts caused by rapid filling
- Obiturator is in solid polypropylene in order to avoid deformations and prevent it to get stuck to the gasket
- Compact, light and with innovative technology makes it suitable for even the most demanding environments.

DN50 - DN100

16 Bar (1.6 mpa)

for waste water and neutral liquids  
to max., 70°C.

Ductile iron

Approved according to EN  
1074-1 and 4



## SCF-U

### AIR VALVE, PN10/16

for Pressurized sewage  
systems.

- The model is designed to provide an alternative solution to conventional air valves installations avoiding chambers, structures, pits and sectioning devices between the air valve and the pipeline.
- Stand pipe in PVC with drain port in the lower part which avoids accumulation of water inside the pipe.
- Various sizes and drilling of the flange.
- Floats in stainless steel.

2"

10-16 Bar

Water and waste water max. 60°  
C.

Ductile iron/ PVC Cover

EN 1074 part 1



# AIR VALVES FOR SEAWATER AND INDUSTRY APPLICATION

## SERIES NUMBER

## DESCRIPTION

## APPLICATION

## MAIN FEATURES

## SIZE

## MAX WORKING PRESSURE

## TEMPERATURE RANGE

## BODY MATERIAL

## APPLICABLE STANDARDS

## PRODUCT PICTURE

Also available in:

1. Combination air valves
2. Anti-surge non-slam
3. Anti water-hammer and submerged applications.

## SERIES 861/22

### AVK AIR RELIEF VALVE, RAPID FILL PREVENTION, PN16-40

Golia 3F-RFP for clean sea water or sewage & effluent systems max. 70° C

- The air valve with RFP mechanism will automatically adjust the outflow capacity, thus reducing the velocity of the incoming water column minimizing the risk of water hammer
- The spray effect during closure and the risk of downing, compared to standard combination air valves, are reduced
- Entirely made in high resistant materials suitable for industrial and aggressive environments
- Mobile block composed of a cylindrical float and obturator, joined together by the air release system, along with the upper disk all made in solid polypropylene. The solid cylindrical floats, obtained by CNC machining, avoid deformations and ensure a great sliding precision

DN50 - DN250

40 Bar

for clean sea water and neutral liquids to max., 70°C

Stainless steel

AWWA C512, EN 1074 part 1



## SERIES 861/40

### COMBINATION AIR VALVE IN SS AISI 316 - SCS MODEL

for sewage and industrial lines

- Lower body in AISI 316 designed with strongly sloped walls to avoid grease and/or other material deposit.
- Upper body in AISI 316 containing the air release device in stainless steel, protected against possible projections and spurts during rapid filling phases by a stainless steel deflector.
- Mobile block including a shaft and a large float, both in stainless steel AISI316, placed on the lower body and connected to the air release mechanism and to the main orifice obturator.
- Drainage valve for chamber control and draining
- Maintenance can be easily performed from the top without removing the air valve from the pipe.

2"

16 Bar (1.6 mpa)

Waste water max. 60°C.

Stainless steel

Designed in compliance with EN-1074/4.



## SERIES 861

### AVK AIR RELEASE VALVE, PN16-40

Ventolo stainless steel for high temperature and for:

- Industrial plants
- Heating systems.
- Process plants.
- Buildings and civil installations in general.

- Entirely made in high resistant materials suitable for industrial and aggressive environment
- Mobile block composed of a cylindrical float and upper disk in solid polypropylene, joined together with the air release system. The solid cylindrical floats avoid deformations and ensure a great sliding precision
- Mesh and cap in stainless steel
- High flow design with reduced turbulence thanks to the single chamber design
- Supplied with flanged or threaded outlets including studs

DN25

40 Bar

Treated water max. 100°C.

Stainless steel

Certified and tested in compliance with EN 1074/4.



# AIR VALVES FOR WATER, DAMS AND RESERVOIR/ IRRIGATION APPLICATION

## SERIES NUMBER

## DESCRIPTION

## APPLICATION

## MAIN FEATURES

## SIZE

## MAX WORKING PRESSURE

## TEMPERATURE RANGE

## BODY MATERIAL

## APPLICABLE STANDARDS

## PRODUCT PICTURE

## SERIES 851/10

### AVK DOUBLE ORIFICE AIR RELIEF VALVE, PN25

drinking water (not wastewater) and neutral liquids

- Triple function with rapid air release, rapid air intake and venting
- A clever float design prevents air rushing out of the system from prematurely closing the valve
- Large air flow capacity
- All iron parts with contact to the water are coated with drinking water approved, fusion bonded epoxy
- All composite materials in contact with the medium are approved for drinking water
- All other internal parts are highly corrosion resistant AISI 316 stainless steel or ABS
- No moving parts are touching the internal coating
- All composite materials in contact with the medium are approved for drinking water

DN50 - DN150

25 Bar

for drinking water (not wastewater) and neutral liquids max. 70° C

Ductile iron

EN 1074-4



## SERIES 851/43

### AVK DOUBLE ORIFICE AIR RELIEF VALVE, PN10/16

drinking water (not wastewater) and neutral liquids

- A clever float design prevents air rushing out of the system from prematurely closing the valve
- Large air flow capacity
- All iron parts with contact to the water are coated with drinking water approved, fusion bonded epoxy
- The resilient seals are made of drinking water approved EPDM
- The float is made of ABS and all other internal parts are highly corrosion resistant AISI 316 stainless steel
- No moving parts are touching the internal coating
- The complete product is approved for drinking water

DN50 - DN200

25 Bar

for drinking water (not wastewater) and neutral liquids max. 70° C

Ductile iron

EN 1074-4



## SERIES 851/20

### AVK DOUBLE ORIFICE CLUSTER AIR VALVE, PN16

drinking water (not wastewater) and neutral liquids

- A clever float design prevents air rushing out of the system from prematurely closing the valve
- Large air flow capacity
- Ductile iron parts coated with GSK approved fusion bonded epoxy
- Internal components are EPDM or ABS, WRAS approved
- No moving parts are touching the internal coating
- The complete product is approved for drinking water

DN50 - DN250

16 Bar

for drinking water (not wastewater) and neutral liquids max. 70° C

Ductile iron

EN 1074-4



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Expect... **AVR**