

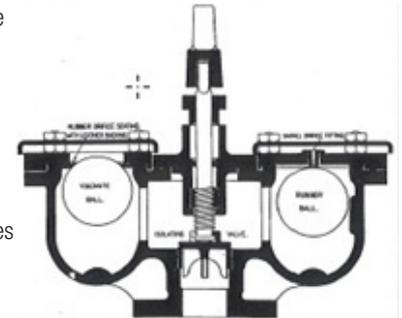
AVK UK CONNECT BACK TO BASICS - CHAPTER 6 AIR VALVES PAGE 1 OF 2

Expect... **AVR**

DUTY: Air valves, when fitted to a pipeline, will effectively allow air to be expelled as well as introduced into a pipeline during the many phases of operation including filling, pumping and emptying. Generally fitted at the peak points of the pipeline, these work automatically and come in many different shapes and sizes. The two main different types evolve around 1) clean water/potable water applications and 2) raw water, dirty water and sewage applications. It is vital that the correct air valve is used for the correct application, there are fundamental differences between the two ranges and failure to fit the correct valve will cause operational issues.

SIZING: Air valves should always be sized according to the volume of air within the pipeline and not just the size of the pipeline. Control of accumulated air within any pipe system will extend the whole life of the pipe system and deliver reduced operational costs and an efficient hydraulic performance.

HISTORICAL DESIGNS: The fundamentals and the function of an air valve have remained the same, with advancements in materials and technology, what has changed is the actual design as well as the choice of materials. See attached picture of an older heavy cast iron design with integral isolator.



DESIGNS: This chapter covers valves suitable for the first category only e.g. clean potable water applications. Air valves for raw water, dirty water and sewage applications are covered in Chapter 7. It is widely accepted that with proper sizing and siting of air valves in a rising main pipeline, can result in efficiencies in excess of 15% to 20% in terms of reduced power consumption on the pumps. Within these two basic categories the ranges are then split further into valve types; these relate to the many functions required and are further explained below.

NAMES: The clean water range that AVK UK offer is split into 3 types, all used for specific needs and duties



Single small orifice

This allows for releasing air in SMALL volumes in a pressurized system as and when it accumulates at the peak points within a pipeline. Available in a variety of materials; reinforced nylon, brass, cast/ductile iron or stainless steel.

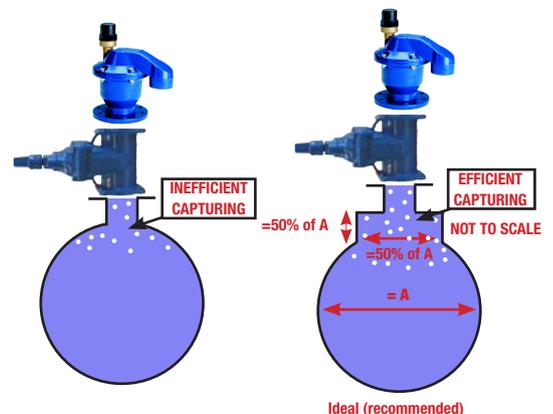
Single large orifice

This allows for air to be released in LARGE volumes from pipelines usually at the filling process, once the system becomes pressurized typically this valve will remain closed. It will only open once the system becomes depressurized and the valve will open allowing LARGE volumes of air to be brought back into the pipeline, breaking any vacuum that has been created. Available in a variety of materials; cast/ductile iron, with a number of coatings available relating to the environment of operation. This type of valve is often fitted just after a pump.

Double Orifice

This valve contains both large and small orifice so is a combination of the above and is by far the more popular valve type supplied. Available in a variety of materials.

EFFICIENT CAPTURING: The effective removal of air is also relevant to how it is captured. The smaller the collection area the greater the chance of the air flowing past the air valve.



IF IN DOUBT ASK - 01604 601188

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AVK UK CONNECT BACK TO BASICS - CHAPTER 6 AIR VALVES PAGE 2 OF 2

Expect... **AVR**

DESIGNS TODAY: AVK air valves offer a "rolling seal" in automatic air valves, allowing a more reactive performance to the variances of fluid pressures and conditions. On the large orifice valves, the main float is designed to remain open longer, allowing more air to escape and an EPDM seal that is formed to seal around the outer edge of the float, again offering improved performance on previous designs and requiring a lower minimum line pressure to secure tight seal.

PRESSURES: Maximum pressures are key in any valve selection however with air valves, minimum seating pressure needs to be considered. Our standard range will handle low pressure ratings of 0.2 bar sealing pressure with 0.1 bar option across the range. A 0.05 bar option is also available on selected models.

Air Valve Discharge flows at 16 bar for standard UK stock products:

Series 701/10 and 13, DN25 option	– 175 cubic meters per hour
Series 701/30, DN80 option	– 1,000 cubic meters per hour
Series 701/40, DN50 option	– 300 cubic meters per hour
Series 701/50, DN80 option	– 1,100 cubic meters per hour
Series 701/60, DN80 option	– 2,775 cubic meters per hour

WORKING AND TEST PRESSURES: All air valves are body tested to 1.5 x working pressure and seat tested to 1.1 x working pressure. Test pressure and durations are carried out in line with EN 12266-1.

SIZE RANGE: AVK offer DN12 to DN300, with variable inlet arrangements; BSP threaded and flanged.

TEMPERATURE: 0 degrees to +70 degrees (90 degrees intermittently).

INSTALLATION: Designers should aim for vertical installation, however valves can accommodate a 5 degree offset from vertical. If the air valve is to be installed off line from the pipeline, a minimum of 7 degrees is recommended of rise in the branch pipe.

RELEVANT STANDARDS: All AVK water air valves carry the full WRAS approvals. Where applicable the flanges are to BS EN 1074.

AIR VALVE SPARES: Full internal spares, rolling seals, floats, retaining pins and bodies are available along with training on field maintenance procedures.

MAINTENANCE: Recommended maintenance should be yearly, however each system should be reviewed in accordance with maintenance procedures.

ISOLATION: AVK always advocate the use of an isolator with an air valve in order to facilitate isolation. Typically these can be ball valves, gate valves or butterfly valves, depending on the installation details.



Butterfly valve with lever



ball valve



gate valve with bevel

EXPECT... LASTING INNOVATIONS

NEW PRODUCTS

SERIES 701/43 – one piece double orifice air valve, female BSP threaded inlet



SERIES 701/46 – one piece full bore double orifice air valve, NP16 flanged inlet, non-slam option available, 2,000+ m3/hr discharge



SERIES 701/65 – High Flow Non-Slam full bore double orifice air valve, NP16 flanged inlet



SERIES 701/84 – Chambered air valves with integral isolation



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