



FIRE DOESN'T
COMPROMISE
**NEITHER
SHOULD YOU**

Expect... **AVR**

WHEN EVERY SECOND COUNTS COUNT ON AVK VALVES AND HYDRANTS



Safety comes first – don't compromise on quality.

AVK offers quality products with long life that operate faultlessly even after a long period of standstill.

Build long life into your systems

Firemen rely fully on their equipment to function perfectly when needed. Therefore, it is crucial that the products installed are highly reliable, are easy to maintain and last a lifetime. AVK is a leading supplier of high quality hydrants and valves for fire protection and sprinkler systems. Our unique design and wide product range is based on the needs of customers worldwide.

From design to finished product

AVK's high design quality is based on thorough research of the customers' needs. AVK products are manufactured in modern factories using high technology, computerised machining centres and robots to ensure precision and uniformity. The overall framework for quality from development to distribution is our extensive quality assurance system certified to ISO 9001.

Extensive range

The complete fire protection package complies with international standards and consists of hydrants, NRS post indicator valves, handwheel operated OS&Y gate valves and post and wall indicators, swing check valves and a new range of butterfly valves, all UL/ULC listed and FM approved. Furthermore, AVK holds an VDS approval for NRS handwheel operated gate valves.





DRY BARREL FIRE HYDRANTS



Dry barrel fire hydrants are primarily designed for areas with frost, where the water main is located below the ground frost zone. AVK dry barrel fire hydrants meet or exceed AWWA C-502 and are UL/ULC listed and FM approved. They are designed for high performance, easy repair and minimum end user costs for labor and inventory.

High performance and easy repair

AVK dry barrel hydrants are designed with a breakable flange and a stem rod coupling which prevent leaking and enable easy repair at traffic knock down. The hydrant's main valve has a ductile iron core which is fully encapsulated in EPDM rubber. The nozzle section can be rotated 360 degrees. The upper section of the hydrant is repairable under pressure.

AVK's dry barrel hydrant has two drain outlets located just above the water main level. The main valve disc is designed with the purpose of flushing the drain channels for soil and other impurities during opening, as these impurities could lead to damage of the main valve disc.

After turning the operation key 2 to 3 times, the drain will stop flushing and the barrel will be filled with water which will flow directly into the hoses and pumper connection or whatever is connected.

Furthermore, the barrel will drain the water through the drain holes in the base when the hydrant is closed after service. Therefore, it is important to make sure that the base is surrounded by gravel allowing the hydrant to drain and flush without washing off the soil. Otherwise this could result in undermining of the pavement.





Numerous design features:

- High pressure rating - 17.2 bar (250 PSI)
- 2 x 2 ½" NST hose nozzles + 1 x 4" NST pumper nozzle. Nozzles available in most thread configurations
- 360° nozzle section rotation possible
- Removable nozzles secured with external stainless steel allen screw
- Travel stop nut in the nozzle section for additional safety
- 1 ½" pentagon operating nut
- The breakable flange and stem rod coupling prevent leaking and enable easy repair at traffic knock down
- Stainless steel traffic coupling designed for longer operational life and high corrosion resistance
- Extensions available in lengths from 6" to 60", bury depths 2' to 13'
- Ductile iron nozzle section, barrel section, bonnet and base
- Epoxy coating according to DIN 30677-2, GSK approved. Above ground parts additionally with UV-resistant red polyester coating
- Patented AVK main valve design with a ductile iron core fully encapsulated with EPDM rubber

- Hydrant drain easily plugged if required - may be plugged internally or externally
- 5 ¼" valve opening for high flow rating
- 360° all bronze drain channel
- Inlet shoe also available as straight or elbow in DN 100/DN 150 PN 10/16 or 4"/6" ANSI Class 150. Elbow also available with DN 150 SDR 11 PE pipe connection.
- Internal trim for higher corrosion resistance
- Hydrant serviceable under pressure
- Light-weight, inexpensive hydrant tools available

Optional extras:

- Monitor elbow
- Multioutlet
- Handwheel
- Landing valves
- Couplings



DRY BARREL MONITOR FIRE HYDRANTS



Monitor hydrants are primarily used for installation in chemical and petrochemical industrial plants as well as refineries, tank farms, airports and other plants with large quantities of inflammable liquids posing fire hazards.

Fast and effective fire extinguishing

The AVK monitor hydrant is based on the exact same design and components as our standard dry barrel fire hydrant. Therefore, it has all the same features and benefits as well as approvals, except that it has a 3" or 4" flanged elbow for connecting a monitor, thus making fast fire extinguishing possible directly from the hydrant without adding any hoses.

The monitor hydrant is, like the dry barrel hydrant, available in many different configurations regarding inlet and outlet connections, dimensions, materials, colours etc.

When used together with our standard monitor and spray nozzle it delivers more than 4000 liters/min. through the monitor.





AVK's standard monitor

Our high quality FM approved monitor is cast completely in brass for high corrosion resistance. The special casting shape with a cast-in guideway in the middle ensures a high flow rate of up to 4732 liters/min.

It has a high vertical travel from -60° to $+90^{\circ}$ (150°) and a continuous horizontal travel of 360° . The nozzle can be adjusted to supply everything from a straight stream to a 90° wide fog and has an effective reach of up to 90 m.

As standard it is supplied with a manual tiller bar and lock-in-position screws for precise and fast control, but it is also available with dual handwheels.

WET BARREL FIRE HYDRANTS



Wet barrel fire hydrants are primarily designed for non frost areas. AVK's wet barrel hydrant is designed to be easy to maintain, enabling one person to perform routine repairs and maintenance. The hydrant is rated for a working pressure of 200 psi, is UL listed and FM approved, and meets or exceeds the requirements of AWWA C503.

For non frost areas

AVK's wet barrel hydrant is designed with the shut-off device directly at the outflow nozzle for hose or pumper connection. This means that the hydrant is constantly filled with water and thus under pressure. The hydrant is mounted directly on the water main, giving full water pressure instantaneously when needed.

Only after 1/8 turn on the stem the water starts to flow, and after 12 turns the full flow capacity can be held against the fire.

The hydrant is not for use where the temperature may come below 0°C due to the risk of frost erosion. In order to service and maintain the hydrant we recommend installing an isolating gate valve on the upstream side.

Features:

- UL listed and FM approved
- Meets or exceeds AWWA C503 (latest)
- High pressure rating (200 psi)
- Two-way outlet (1 x 2 ½" NST hose outlet and 1 x 4" or 4 ½" pumper outlet)
- Three-way outlet (2 x 2 ½" NST hose outlets and 1 x 4" or 4 ½" pumper outlet)
- Inlet: 6" AWWA flange inlet (standard)
- Operating nuts: 1 ½" pentagon
- 360° rotation possible when assembled with a breakable flange unit
- Ductile iron nozzle section with removable nozzles secured with external stainless steel allen screws
- Each stem sealed with two O-rings
- Replaceable cast iron dummy nuts for extra stem protection
- Fusion bonded polyester coating red RAL 3000
- Can be supplied with a wide range of nozzle thread specifications
- Available with monitor flange 4" to ANSI Class 150

Optional extras:

- Series 24/72 with working pressure 250 PSI
- Available in stainless steel and bronze



©Vejle Brandvæsen

POST INDICATORS AND GATE VALVES FOR POST INDICATORS



Post indicators are mounted end to end with the extension spindle connecting the valve, for instance on gate valves mounted on a water ring main in an airport or a factory area with e.g. oil refineries or chemical plants.

Open or closed position

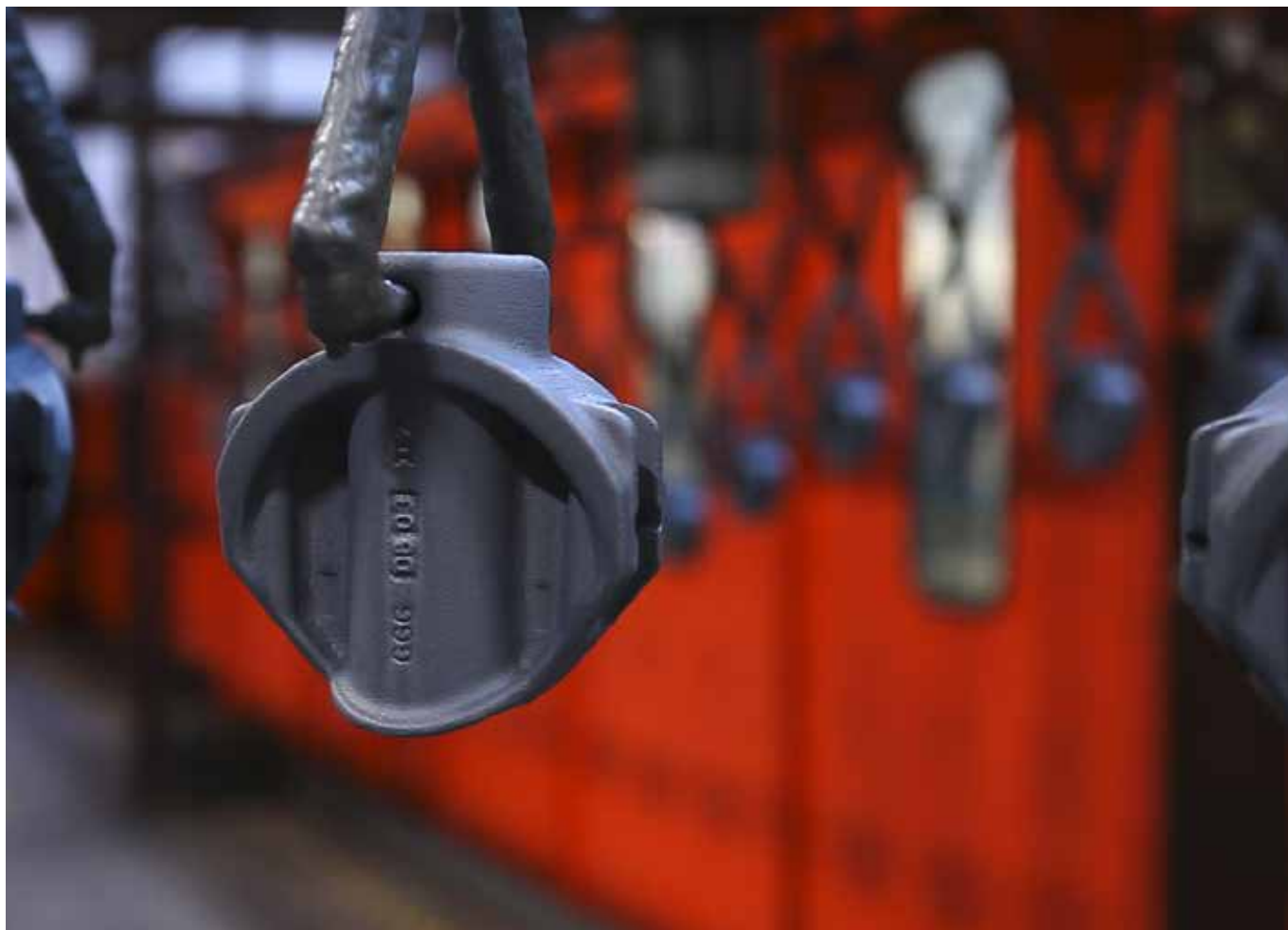
The post indicator indicates whether the valve is in open or closed position. According to government regulations it must be easy for firemen to see whether the valve is open or closed, even at a long distance. The post indicator signs "OPEN" and "SHUT" are mounted on the target according to valve size.

AVK post indicators have a unique telescoping stem design which eliminates the need to disassemble and saw off sections of the stem during installation. The operating wrench can be locked on to make the valves tamper proof, and the AVK post indicators have a pre-cast threaded boss for mounting a supervisory switch.

The post indicator valves are used for underground installation in fire protection systems. The post indicator flange is incorporated in the top gland giving a compact design.

AVK series 34/00 post indicators for fire protection waiting to be installed under pressure at FM Logistics - Petresti, Romania.





Resilient seated gate valves

A published test performed in City of Roseville, US, has proved that impurities up to Ø 8.7 mm can be handled by a DN 150 mm valve without any problems. The same test proved that the unique AVK EPDM rubber quality is the only rubber quality which instantly returns to the original shape when the valve is opened again.

Unique wedge design

- Fixed, integral wedge nut sealed with rubber prevents corrosion.
- Double bonding vulcanization process ensures maximum adhesion of the rubber.
- Guide rails with integrated wedge shoes ensure low friction and smooth operation.
- Rubber vulcanized to the core with min. 1.5 mm on all pressure bearing surfaces and 4 mm on all sealing surfaces gives optimum corrosion protection.
- Large rubber volume in the sealing area provides optimum sealing.

- Large plain and conical stem hole prevents stagnant water and accumulation of impurities.
- AVK's rubber compound features an outstanding compression set value.



GATE VALVES FOR SPRINKLER SYSTEMS



AVK resilient seated gate valves are designed with a fully vulcanized rubber wedge and a lot of unique features ensuring optimum performance and high durability. We offer flanged gate valves in OS&Y design and with pin indicator as well as grooved end valves with pin indicator.

Gate valves dedicated to UL/FM requirements

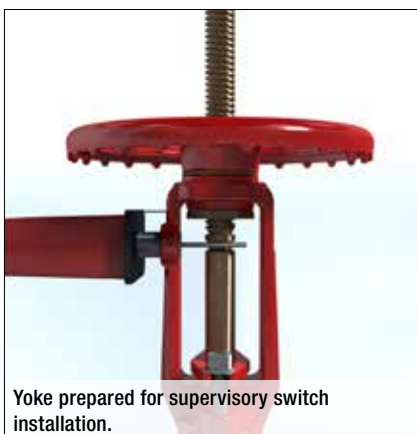
As the first manufacturer in the world AVK offers a range of gate valves dedicated to the UL and FM requirements. This range has been designed specifically to fulfil the requirements in the UL 262 and FM 1120/1130 standards.

The gate valves are available both as OS&Y (Outside Screw and Yoke) and NRS (Non-Rising Stem) versions. OS&Y gate valves with flanges are used in above ground installations, where the rising stem design makes it easy to recognise

the wedge position, open or closed, even at a distance. The yoke in the OS&Y version is prepared for installation of a fixed monitoring switch enabling a very fast and easy switch installation.

The weight of the valves has been reduced significantly and consequently the carbon emission during the production processes is also minimised. The low weight also makes the handling of the valves much easier without compromising on the well-known AVK quality.





Yoke prepared for supervisory switch installation.



Scalloped flanges for weight optimization.

VdS approved gate valves

The lightweight flanged gate valve with pin indicator is very suitable for use in fire protection systems as an isolating gate valve for maintenance purpose. The pin indicator indicates the wedge position. Micro switches for remote indication of the wedge position are available as an optional extra.

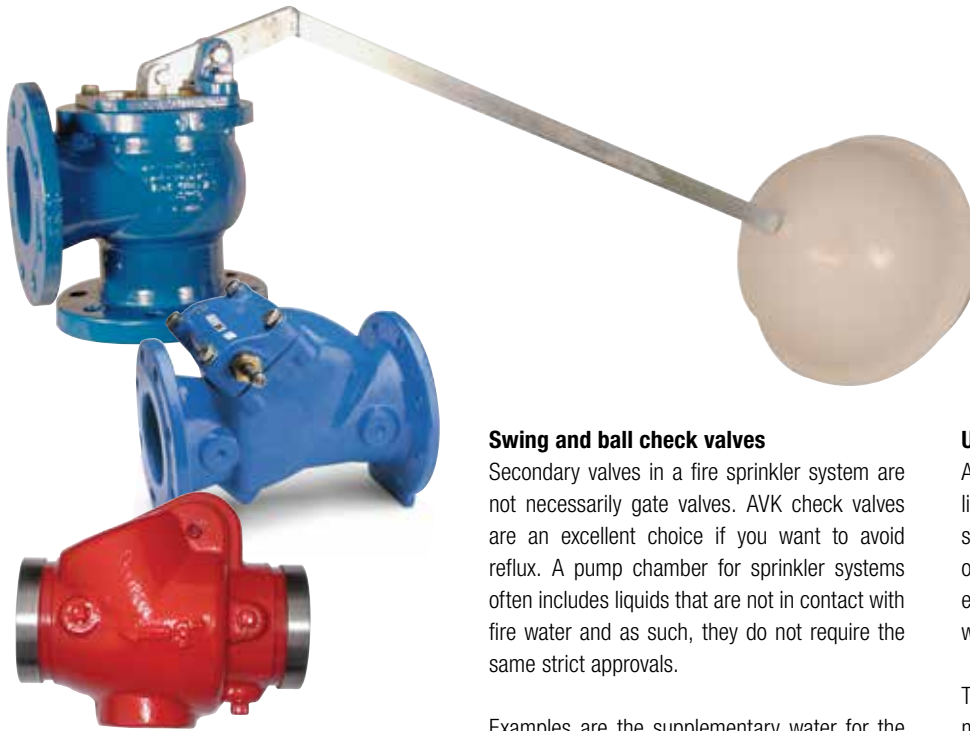
The grooved end gate valve is fixed to the pipe by means of standard clamping couplings. The grooved end clamping system has proved to be one of the fastest and most efficient ways of joining pipes due to its high degree of flexibility. Furthermore, it absorbs vibrations and noise transmission through the system. It has a certain degree of angular deflection of the pipe joints and alignment in all positions 360° around the pipe axis. Therefore, the system has gained a footing in high rise buildings where vibrations and stress of pipe systems are of significant importance.

Additional features

In addition to the unique wedge design AVK gate valves offer a number of great features:

- Rolled threads increase the stem's strength
- Wedge stop on the stem provides a firm stop against the wedge nut to protect seals and coating
- Triple safety stem sealing ensures tightness
- Full circle thrust collar provides fixation of the stem and low free running torques
- The bonnet gasket is fixed in a recess and encircles the bonnet bolts to prevent blow-out
- The stainless steel bonnet bolts are countersunk and sealed to protect against corrosion
- Full bore ensures low head loss
- Low operating torques ensure easy operation
- Epoxy coating according to DIN 30677-2

CHECK VALVES AND FLOAT VALVES



Swing and ball check valves

Secondary valves in a fire sprinkler system are not necessarily gate valves. AVK check valves are an excellent choice if you want to avoid reflux. A pump chamber for sprinkler systems often includes liquids that are not in contact with fire water and as such, they do not require the same strict approvals.

Examples are the supplementary water for the pumps and the replenishment of containers and reservoirs from the public water supply net. Such liquids are handled excellently with AVK ball check valves or swing check valves.

The ductile iron body, made in a modern design with soft sealing elements in an advanced rubber quality from AVK's own rubber factory, will ensure an efficient shut-off whenever needed.

UL/FM swing check valves

AVK also offers swing check valves with UL listing and FM approval. The range includes spring loaded swing check valves with flanged or grooved ends in DN 50-200. The grooved end valve is also available in a "shotgun" version with a drainage thread machined on the wet side.

The valve has a very compact design which makes it ideal for fast and easy installation.

When fully open, the clapper is completely out of the flow stream to maintain a maximum flow area and to keep a low pressure drop. The spring loaded disc prevents slam closing caused by the backflow when the flow stops.

Ball float valves

AVK's ball float valves can be installed in a sprinkler system's water tank or reservoir to ensure that it is constantly and automatically filled with water – water when you need it!

The ball float valve automatically controls discharge of water into a tank or reservoir in response to water level variation. The float mechanism holds the valve until the water level falls. The float then follows the water level thus matching the inflow. If outflow ceases, water level rises and the float closes the valve.



BUTTERFLY VALVES



Butterfly valves with fixed liner

AVK offers butterfly valves with fixed liner with three different connections; wafer, semi lug and double flanged.

AVK centric butterfly valves with fixed liner feature an outstanding seating concept. The rubber is injection moulded directly on the valve body forming a permanent bond. Consequently, there is no risk of deformation or dislocation of the liner making the valves suitable under vacuum conditions.

The streamlined disc with minimum flow resistance is made of stainless steel or alu-bronze. The valve will not cause any turbulence, pressure drops or valve vibration, and will reduce energy costs for the user. The saving of energy costs may be several times the initial cost of the valve.

The profiled disc edge requires minimal deformation of the liner to achieve tight sealing. The combination of the profiled disc edge and the excellent AVK rubber quality ensures maximum durability of the liner and low operating torques.

All butterfly valves are supplied with approved gear box, handwheel and opening indicator.

Grooved end butterfly valves

The new AVK butterfly valve with grooved ends is designed specifically for fire protection applications, and is UL listed and FM approved.

It features a rubber vulcanized disc with high quality rubber compounds produced at AVK's own rubber factory. The disc design ensures a high flow rate and a low pressure drop across the valve. The valve is delivered with a manual gearbox fitted with integrated electric supervisory switches. It is a compact valve, which requires a minimum of space for installation.

The grooved end butterfly valve is fixed to the pipe by means of standard clamping couplings. The grooved end clamping system is one of the fastest and most efficient ways of joining pipes due to its high degree of flexibility. Furthermore, it absorbs vibrations and noise transmission through the system.

FIRE SAFETY APPROVALS



Most of AVK's products in the fire protection range hold internationally recognized approvals such as UL, FM and VdS.

UL (Underwriters Laboratory) has ever since 1900 worked to ensure fire safety in many fields. UL started originally in America but is today an internationally known institute signaling high quality and safe reliable products. The UL standards describe requirements for metallic parts, non-metallic parts, outlets/inlets, rated working pressure, marking as well as test methods of the approved products.

FM (Factory Mutual) is an international leader in 3rd party certification and approval of fire protection equipment. FM has written its own product standards since many years back. FM has own test laboratories, and ensures continued quality guarantee through follow up audits at the manufacturing sites minimum 4 times a year.

VdS (Vertrauen durch Sicherheit - in English "confidence through safety") is a German test institute working within fire protection and security. VdS has more than 100 years of experience with its main field – fire protection – and makes test and certification of both products and complete sprinkler systems.

By choosing UL, FM or VdS approved AVK products for your fire protection system, you are ensured a reliable and safe function, which is essential when it comes to protecting your values, and most important – human lives!

Besides that, you can in many cases benefit from the advantage of lower insurance costs.



Our hydrants and valves are being used in:

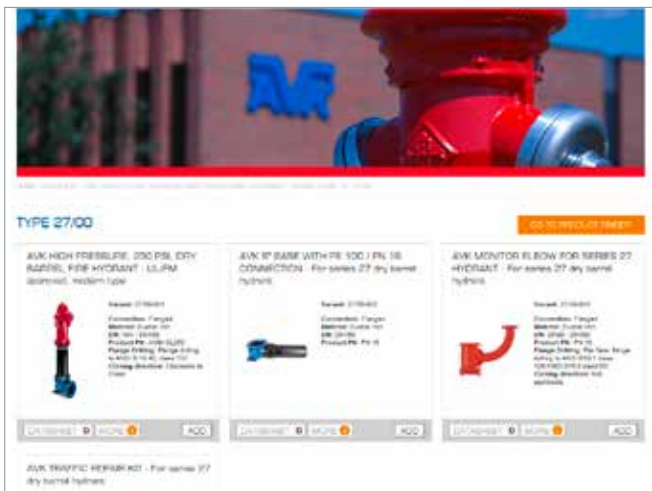
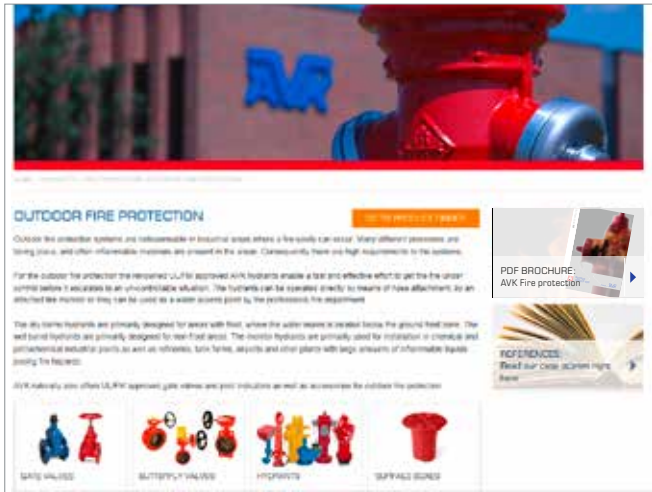
- power plants
- harbors
- production facilities
- hospitals
- warehouses

and elsewhere you need to construct a safe and secure solution for fire protection.

HOW TO FIND FULL DOCUMENTATION



Applications:



Two paths to our documentation

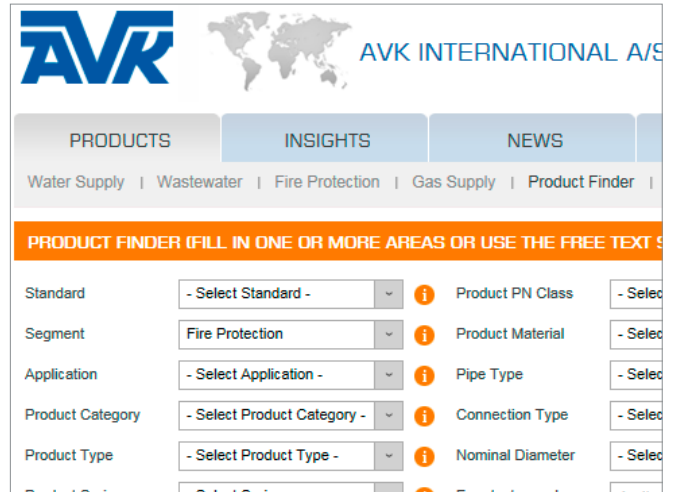
We have done our utmost to make it easy to find specific product documentation on www.avkvalves.eu.

Choose your area of interest in the upper menu. e.g. "fire protection", and get an overview of our products within this area (to the left).

You can also go directly to the "product finder", and pick your choice in the drop down lists. You can choose to fill in all the blanks to find a specific product, or just fill in a few to get an overview of the range.

Or you can choose the quick path, "product series", using the product series numbers stated in this brochure. In the free search field you can state other details such as a specific item number.

Product finder:



FIRE PRODUCTS FOR OUTDOOR USE



Series 27/00

Dry barrel fire hydrant
Modern style
Bury depth 2½' - 10'
250 PSI
Ductile iron
UL/ULC listed,
FM approved

Inlet options:

- 4"-6" flanged
- 4"-6" PE end



Series 27

Dry barrel monitor fire hydrant
Bury depth 2½' - 10'
250 PSI
Ductile iron
UL/ULC listed,
FM approved

Monitor flange options:

- 3"-4"



Series 27

Monitor with spray nozzle.
Flow rate up to 4732 l/min.
3" or 4" inlet flange.
360° continued horizontal travel
-60° to +90° vertical travel
FM approved.
Other spray nozzles available.



Series 24/10

Wet barrel fire hydrant 200 PSI
With monitor flange 4"
2 x 2½" + 1 x 4/4½" outlets
Ductile iron
UL listed, FM approved



Series 24/70

Wet barrel fire hydrant 200 PSI
1 x 2½" + 1 x 4 / 4½"
outlets
Ductile iron
UL listed, FM approved



Series 24/90

Wet barrel fire hydrant 200 PSI
2 x 2½" + 1 x 4 / 4½"
outlets
Ductile iron
UL listed, FM approved



Series 36/00

Gate valve with PE ends and post indicator flange
DN 50-400

PN 10 or 16
Ductile iron



Series 145/40 NRS

Flanged gate valve with wrench nut dedicated to UL and FM requirements
250 PSI
DN 65-200
Ductile iron
UL/ULC listed, FM approved



Series 45/59 NRS

Flanged gate valve with wrench nut to AWWA C509
DN 50 and DN 250-400
DN 50 and DN 250-300: 250 PSI
DN 350-400: 200 PSI
Ductile iron
UL/ULC listed, FM approved



Series 45/59

Flanged gate valve with post indicator flange
DN 50-300: 250 PSI
DN 350-400: 200 PSI
Ductile iron
UL/ULC listed, FM approved



Series 34/00

Post indicator, telescopic for DN 50-400 P.I. gate valves
Bury depth: 505-2210 mm
Ductile iron
UL/ULC listed, FM approved

FIRE PRODUCTS FOR INDOOR USE



Series 06/35
Flanged gate valve
with position indicator
DN 50-400
PN 10 or 16
Ductile iron
VdS approved
(DN 50-200 only)



Series 06/37
Grooved end gate valve
with position indicator
DN 50-300
PN 16
Ductile iron
VdS approved
(DN 50-200 only)



Series 145/40 NRS
Flanged gate valve
with wrench nut dedicated
to UL and FM requirements
250 PSI
DN 65-200
Ductile iron
UL/ULC listed, FM approved



Series 45/59 NRS
Flanged gate valve
with wrench nut to AWWA
C509
DN 50 and DN 250-400
DN 50 and DN 250-300:
250 PSI
DN 350-400: 200 PSI
Ductile iron
UL/ULC listed, FM approved



Series 145/46
Flanged gate valve
with rising stem dedicated to
UL and FM requirements
250 PSI
DN 65-200
Ductile iron
UL/ULC listed, FM approved



Series 45/56
Flanged gate valve
with rising stem
DN 50 and DN 250-400
DN 50 and DN 250-300:
250 PSI
DN 350-400: 200 PSI
Ductile iron
UL/ULC listed, FM approved

Options:
• Grooved ends or grooved/
flanged ends



Series 34/80
Wall post indicator,
for DN 50-400 P.I.
gate valves
Stem length
250-1250 mm
Ductile iron
UL/ULC listed, FM approved



Series 75/10
Butterfly valve
Centric with fixed liner
Wafer
DN 50-300
PN 10 or 16
Ductile iron
FM approved

Options:
• semi lug



Series 75/41
Butterfly valve
Centric with fixed liner
Double flanged short
DN 50-300
PN 10 or 16
Ductile iron
FM approved



Series 815
Centric butterfly valve
Rubber vulcanized disc
Grooved ends to AWWA
C606
DN 65-200
300 PSI
Ductile iron
UL/ULC listed, FM approved



Series 41/60
Swing check valve
Resilient seated
Free shaft
DN 50-300
PN 10 or 16
Ductile iron

Options:
• lever and weight
• lever and spring



Series 5190/10
Swing check valve
Spring loaded
Grooved ends to AWWA
C606
DN 50-200
350 PSI
UL/ULC listed, FM approved



Series 5190/20
Swing check valve (shotgun
type)
Incl. drainage hole
Spring loaded
Grooved ends to AWWA
C606
DN 50-200
350 PSI
UL/ULC listed, FM approved



Series 910
Y-strainer
DN 50-300
PN 10/16
Ductile iron
Stainless steel screen



Series 854
Ball float valve
with lever and float

DN 50-300
PN 16
Ductile iron

ACCESSORIES



Series 04
Extension spindle
for gate valves
Telescopic or fixed length
Key adaptor #23-32
with spindle adaptor fitting
to US type
wrench nut
DN 40-400



Series 04/74
Surface box
Reversible
Ductile iron



Series 04/15
T-key for below ground gate
valves



Series 04/24
Wrench nut for gate valves



Series 27/00
6" base with PE 100 / PN 16
connection for series 27 dry
barrel hydrants



Series 27/00
Monitor elbow for series 27
hydrant
33 or 4" outlet flange



Series 24/80
Breakable flange kit for
series 24 wet barrel hydrant



Series 24
Breakable flange for series
24 wet barrel hydrant



Series 27
Traffic repair kit for series
27 dry barrel hydrant



Series 27
Operating wrench for series
27 dry barrel hydrant



Series 96/00
Micro switch with bracket
for monitoring the position of
OS&Y valves series 45



Series 96/00
Limit switch I 88 with
bracket for monitoring the
position of NRS gate valves
UL listed



Series 96/00
Limit switch BI 2 for
monitoring the position of
NRS gate valves
UL listed



Series 96/00
Supervisory switch for
monitoring the position of
post indicator valves and
series 145 OS&Y valves
UL listed
FM approved



Series 96/00
Mounting kit for micro
switch (NRS valves)
Ductile Iron
DN 50-400

OPERATION OF DRY BARREL FIRE HYDRANTS



UL listed and FM approved

The AVK dry barrel hydrant meets or exceeds the requirements of FM 1510 and UL 246.

Hydrant, bury depth of 1.5 meters to bottom of pipe:

- head loss = max. 0.069 bar per hose connection
- flow = min. 946 l/min per hose connection

Hydrant with pumper connection:

- head loss = max 0.345 bar, when flow = 3785 l/min

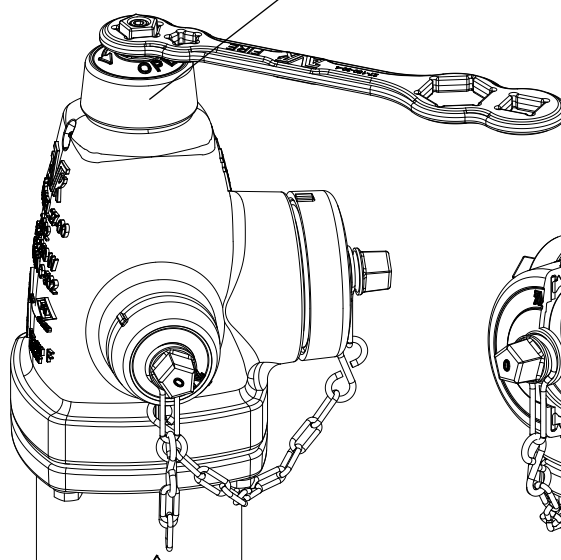
Operating the hydrant

The AVK modern hydrant is designed to be an easily operated, low torque, high flow fire hydrant.

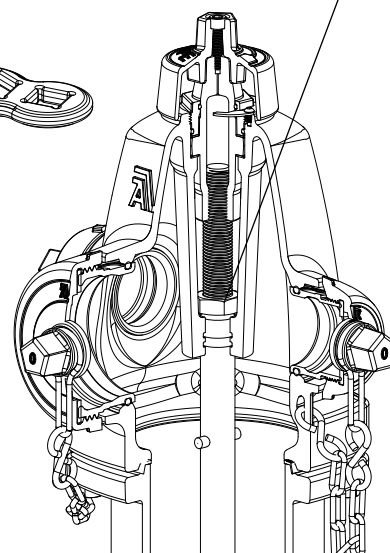
The thrust bearing hydrant requires a minimum of torque to operate. It is possible to damage the hydrant by forcing it beyond its limits of travel with excess torque; therefore:

- Check direction of opening as marked on the hydrant weather shield.
- To open, turn the operating nut in the opening direction, indicated by an arrow on the weather shield, until the main valve is fully open (approximately 19 to 21 turns). The stop nut should prevent the hydrant from opening beyond the fully open position. Do not force the hydrant in the opening direction beyond full open as indicated by sudden resistance to turning. If water does not flow when the hydrant is open, it is probably due to a closed valve upstream from the hydrant.
- To close, turn the operating nut until the main valve stops off the flow. It is not necessary to close this type of hydrant with great force. Once the flow has stopped, loosen the operating nut in the opening direction, 1/2 to 1 turn to take the strain off the operating parts of the hydrant and to make it easier to open the hydrant.

Weather shield note:
open left shown.



Stop nut resting against
internal lubrication reservoir
in the nozzle section.



TECHNICAL APPENDIX

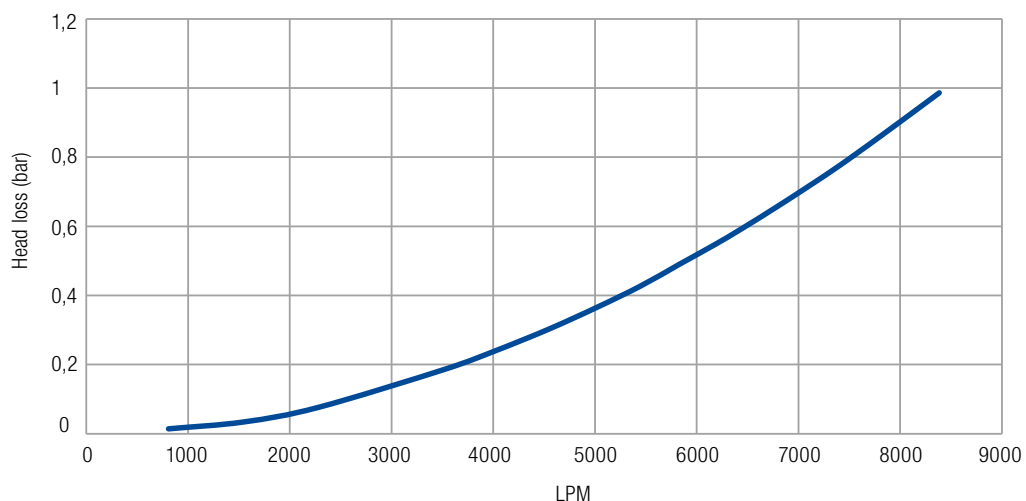
FLOW CHARACTERISTICS



27/00 - flow/pressure loss

1 x hose (2,5") = 212 m³/hour
 1 x pumper (4") = 450 m³/hour
 1 x pumper (4,5") = 470 m³/hour

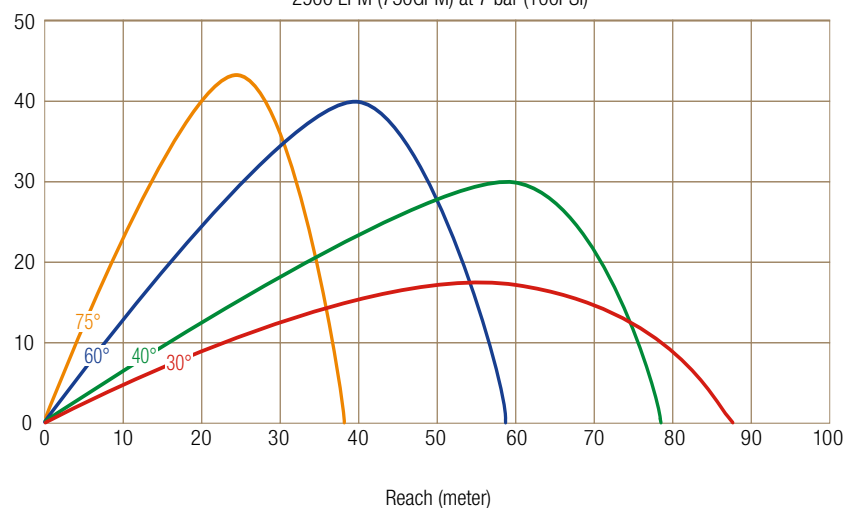
Series 27 head loss - 4.5" Pumper nozzle



825-BC

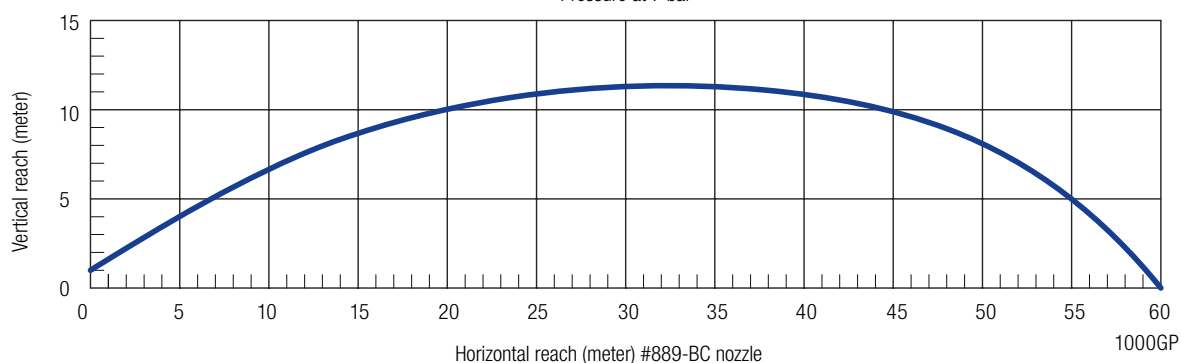


2900 LPM (750GPM) at 7 bar (100PSI)



889-BC

Pressure at 7 bar



TECHNICAL APPENDIX

CORROSION PROTECTION

First all cast components are blast cleaned according to ISO 12944-4, SA 2½.

The valve and hydrant bodies and bonnets and other components are epoxy coated according to DIN 30677-2 and GSK guidelines. The high quality epoxy coating is GSK approved and applied manually or using a fluidized bed epoxy coating system. After the valve components have been blast cleaned, the clean and preheated components are submerged in epoxy powder. The powder melts when in contact with the preheated components and cures when the components enter the cooling tunnel shortly after the coating process.

Test procedure:

- Coating thickness:

The coating layer thickness shall be no less than 250 µ.

- Pore-free coating:

The coating must be completely free of penetrating pores to avoid subsequent corrosion of the casting underneath. A 3 kv holiday detector with a brush electrode is used to electrically reveal and locate any pores in the coating.

- Impact resistance:

The impact resistance test is carried out at least 24 hours after the coating process by means of a stainless steel cylinder dropped on the coating surface through a one meter long tube

corresponding to an impact energy of 5 Nm.

After each impact the component is electrically tested, and no electrical breakthrough shall occur.

- Cross linkage:

Several drops of methyl isobutyl ketone are put on a horizontal epoxy resin coated surface of the test piece at room temperature. After 30 seconds the test area is wiped with a clean white cloth. It is checked that the test surface has not become neither matt nor smeared, and that the cloth remains clean. The test is carried out 24 hours after the coating process.

- Adhesion:

The adhesion of the powder coating on one of each type of component is tested at least four times a year using the punch separation method according to DIN 24624. The coating thickness over a dispersed area of the test item shall be within the range 250 µ to 400 µ.

The test pieces are immersed for seven days in deionised water at 90°C, and then dried in an oven for 3 hours. A conditioning phase of 3 to 5 days in normal atmosphere is then allowed to elapse. No blisters may arise during the period immersed in the water bath.

The surface of the test piece is degreased and then roughened with abrasive paper. The roughened surface is cleaned from dust with oil-free compressed air and recleaned.

The adhesion on both the core and the moulding sand sides is tested with a minimum pulling force of >12 N/mm².

- Cathodic disbonding:

Cathodic disbonding tests are carried out on one of each type of component at least twice a year. No bubbles in the coating may develop during the test for cathodic disbonding. For this test, the coating thickness over a dispersed area of the test item shall be within the range 250 µ to 400 µ.

Approvals:

The coating is approved for use in drinking water systems, meeting all specified toxicological conditions, by the following institutes:

- Hygiene Institute, Germany
- Hydrocheck, Belgium
- CARSO L.S.E.H.L., France

Extra top coating

All our hydrants and post indicators have an additional layer of UV-resistant polyester coating. The polyester coating will protect the color of the products from fading, even though the products are installed in places with a strong UV-light exposure.



TECHNICAL APPENDIX

RUBBER TECHNOLOGY

Ability to regain shape:

The high quality rubber used on the wedge has an excellent compression set also called memory (the ability to recover the original shape after being compressed). Even after many years of service where the wedge rubber has been compressed numerous times, the rubber will regain its original shape and ensure a tight sealing.

Impurities will not affect the rubber surface or the tightness of the valve, as they will be absorbed in the rubber when the valve is in closed position. When the valve is reopened, the impurities will be flushed away, and the rubber will regain its shape.

EN 681-1:

A common European standard states the minimum requirements for the compression set (permanent deformation). To test the compression set, the rubber is deformed by 25% of its original thickness at a constant temperature for a specific time. The pressure on the rubber is relieved and the layer thickness is measured after half an hour. The smaller the deformation, the better the memory effect.

Double bonding system:

The wedge core is immersed in two different baths - the first to prepare the ductile iron core and the second to vulcanize the rubber to the core.

The rubber is vulcanized to the metal wedge

core with a process that fully bonds the two materials. Even if a sharp object penetrates the rubber the bonding is so strong that there is no risk of creeping corrosion underneath the rubber. As a result, we can offer the best rubber adhesion and corrosion protection on the market.

Since no international bonding standard is available, AVK has developed its own harsh test method to ensure that the adhesion also withstands a worst-case scenario. Testing is done both during production and after immersion in 90°C water for 3 weeks. When peeling off rubber from the core, the core must still be covered with rubber.

Protection against wear

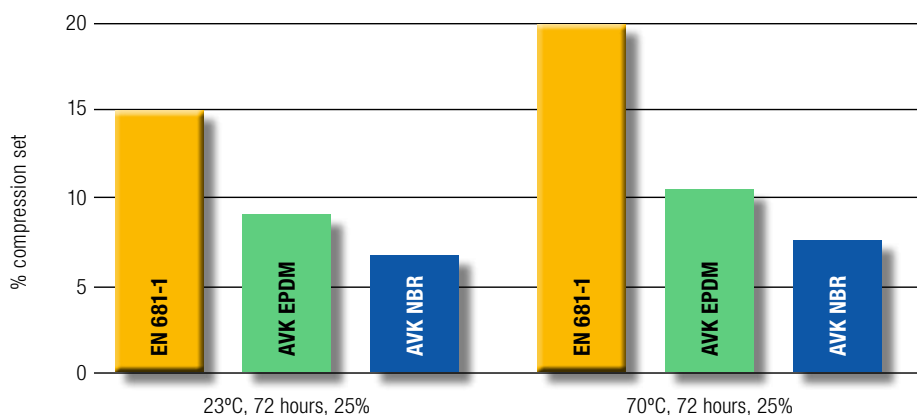
The wedge guide rails and wedge shoes ensure a smooth operation and keep the operating torque to a minimum. The wedge shoes ensure that AVK supersedes the life time requirements stated in EN 1074-2. Even at maximum differential pressures and high flow velocities the friction between the body and wedge is kept to a minimum.

A unique vulcanization process ensures that the entire wedge core is covered with rubber and that the shoes are attached to the wedge core. This process is one of the secrets keeping the wedge protected from corrosion and thus securing a long service life and smooth operation of the valve.

High quality rubber compounds

AVK uses rubber compounds durable enough to resist repeated open/close operations. Furthermore, the friction against the valve body's internal epoxy coating is very low with this rubber quality, whereby very low operating torques and closing torques are achieved.

The ductile iron core is fully vulcanized with rubber both inside and outside. A minimum of 1.5 mm rubber is applied on all pressure bearing surfaces and a minimum of 4 mm on all sealing surfaces regardless of the design.



EXPECT SUSTAINABILITY

Given the nature of the business that AVK operates in, we have the possibility and obligation to contribute to the preservation of the environment.

For AVK sustainability and common sense go hand-in-hand. By reducing water waste you not only save money, you actively help reduce electricity consumption and protect one of our most valuable resources. Our high-quality solutions minimise environmental impacts that excavation, repair or replacement may cause. Thereby we ensure that your business is based on a sustainable foundation that lives up to the requirement of social responsibility and environmental conscience.

Lasting solutions

Sustainability is about creating a sustainable business. Our solutions reduce electricity consumption and CO2 emissions in facilities all over the world. They significantly reduce water wastage simply because we have put a lot of effort into optimising our design. Innovation is a central part of a modern business, and we are dedicated to finding new ways to reduce water wastage and optimise your business.

United Nations Global Compact Principles

The AVK Group realises that a global presence demands high ethical standards. Throughout our organisation and in all our actions we therefore recognise the principles laid out in the United Nations Global Compact document.

International standard for environmental management (ISO 14001)

AVK complies with the internationally accepted ISO 14001 standard, which provides a foundation for eco-management in companies.

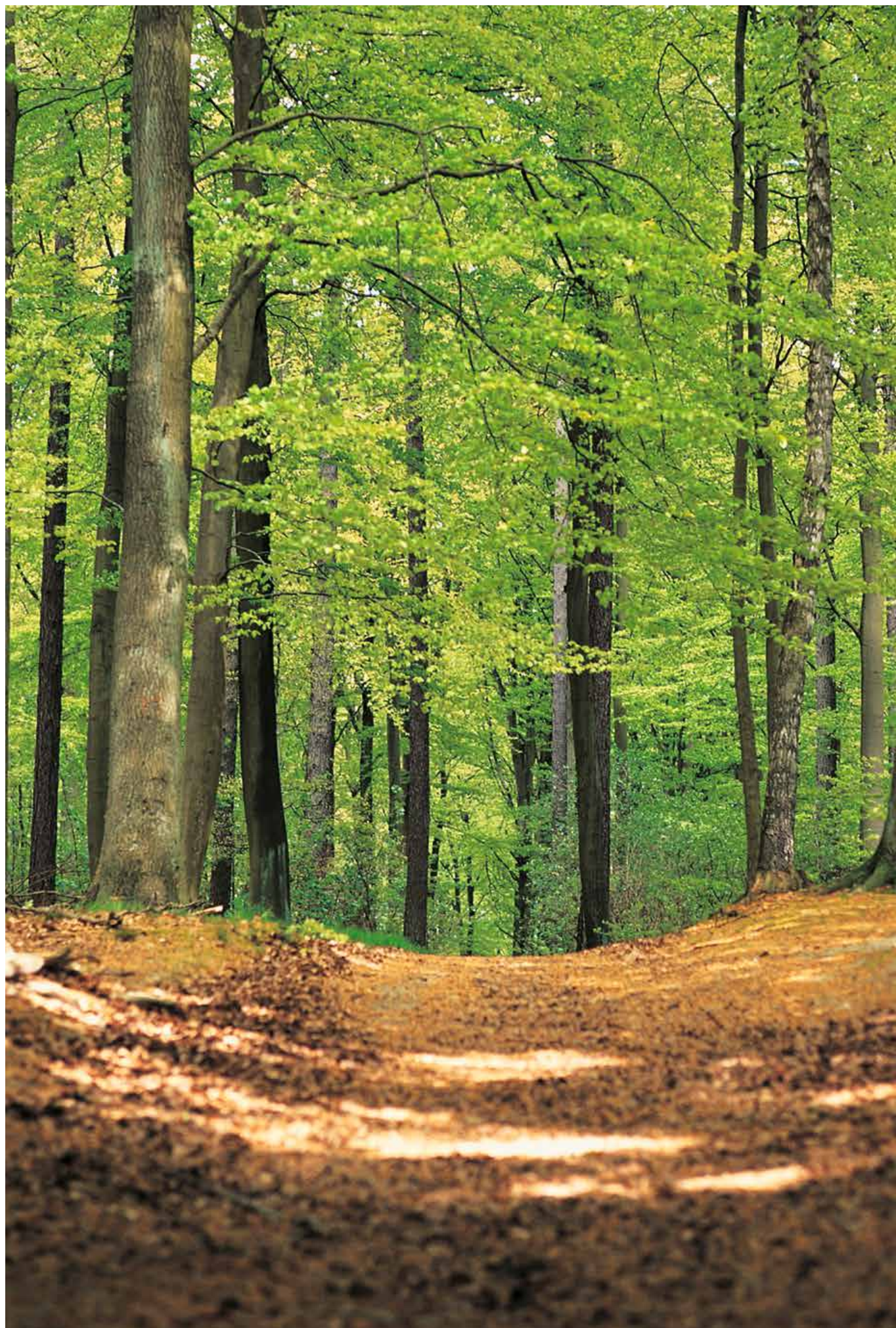
The AVK Group has outlined a number of strict objectives for its manufacturing companies

regarding energy and water consumption, as we are aware that pure water is a scarce resource.

Every AVK employee is motivated to identify areas of improvement in the way we do business to the benefit of the environment. We do not only focus on activities and processes in our manufacturing companies, we also focus on the behaviour and business model of our suppliers.

The AVK Group companies have agreed to a number of standards that our suppliers need to comply with in order to be a certified supplier of the AVK Group. In a world of intensified globalisation, resulting in increasing business relations between countries and cultures, it is vital for AVK to achieve sustainability throughout the supply chain.

We wish to assure our customers that we work with responsible partners who adhere to the same standards as we do. Therefore, we seek partners with high ethical standards. Partners who also comply with international legislation in the field of labour. Thus we naturally also respect all child labour restrictions throughout the entire supply chain and do not accept any discrimination in respect of employment and occupation.



AVK International A/S

Bizonvej 1
Skovby
8464 Galten
Denmark

Tel.: +45 8754 2100
Fax.: +45 8754 2120
sales@avk.dk
www.avkvalves.eu

2016-10-04
Copyright©AVK Group A/S 2016

Expect... **AVR**

