





A COMPLETE SYSTEM FOR SERVICE CONNECTION

In 1969 AVK introduced the very first gate valve for water. Five years later we launched our first service connection valves in cast iron and later on we expanded our range by launching our brass and POM service connection valves.

For a complete service connection system we offer a comprehensive range of extension spindles, surface boxes and tapping saddles. Furthermore, the Supa Lock[™] range also comprises a wide range of fittings.

AVK's service connection system is a well-proven solution that secures easy and maintenance-free installation and long life. Each product in the range has outstanding design features, and when combined, the products form a system with the best possible durability and reliability.







HIGH STRENGTH STEMS AND SUPERIOR WEDGE DESIGN

AVK service connection valves are long lasting and maintenance-free due to high strength stems and superior wedge design securing low operating torques as well as a smooth operation of the valve.

Stainless steel stems with rolled threads The stem threads are rolled in a cold pressing process which maintains the steel structure and therefore increases the strength of the stem. This method results in smooth thread surfaces and brings about low operating torques and prolonged durability.





Superior wedge design

AVK's wedges are superior to the traditional wedge design. The wedge is made of dezincification-resistant brass vulcanised with EPDM rubber, and both brass and rubber are certified for use in contact with drinking water. The wedge core is immersed in two different baths providing a unique bonding between the rubber and brass core. As a result, we can offer the best rubber adhesion and corrosion protection at the market.

Unique features and benefits

- Double bonding vulcanisation process ensures maximum adhesion of the rubber.
- Shaped with a wedge guide and a special rubber profile ensuring low closing torques.
- Rubber vulcanised to the core with min. 1.5 mm on all pressure bearing surfaces and 4 mm on all sealing surfaces giving optimum corrosion protection.

- AVK's rubber compound features an outstanding compression set value, resistance to water treatment chemicals and minimised biofilm formation, and it meets the widest possible range of approval requirements.
- All dimensions have full and straight bore which prevents head loss and deposits in the valve bottom.



Impurities are absorbed in the rubber when the wedge is in closed position.



When the impurities have been flushed away, the rubber will regain its shape.



AVK rubber compounds

AVK GUMMI A/S develops and manufactures the rubber compound for wedges and gaskets using highly advanced technologies.

Data is collected throughout the entire manufacturing process securing traceability of every individual ingredient, each compound and the finalized components. Tests are made to ensure that the compression set values, the adhesion and the tensile strength meet the predefined requirements. AVK GUMMI A/S has a profound know-how within the science of a rubber's compression set. 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 thus the rubber will regain its shape.



DUCTILE IRON SERVICE CONNECTION VALVES

AVK offers a comprehensive range of service connection valves of ductile iron. With internal threads, push-in socket ends, screw couplings and PRK couplings as well as combinations with external thread.

Unique stem sealing

Our ductile iron valves are designed with a triple safety stem sealing system, where a manchette (1) is the main seal to the flow. Also four NBR O-rings in a polyamide bearing (2) provide tightness around the stem and an NBR wiper ring (3) protects against impurities from the outside. A full circle thrust collar (4) of dezincification resistant brass provides a low free running torque and fixation of the stem.

Two strong coatings

Our ductile iron valves are as standard with internal and external epoxy coating in compliance with DIN 3476 part 1 and EN 14901, GSK approved. The epoxy is applied manually or using a fluidized bed epoxy coating system. Optionally, we offer inside enamelling suitable for installation in special corrosive media where the complete smooth surface ensures that no impurities will stick to the surface. Enamelling gives a durability and resistance to be compared with glass and prevents creeping corrosion.





Thorough control of the coating

We thoroughly check each batch of coated components. The epoxy coated components are checked to ensure a layer thickness of minimum 250 μ and a pore-free surface. The coating must be completely free of penetrating pores to avoid subsequent corrosion of the casting underneath. The impact resistance and the curing of the coating is tested right after the coating process, see technical appendix for further information.

In addition to our own tests, the independent GSK authorities control the adhesion and cathodic disbonding of the epoxy coating according to their guidelines.

Enamelled products are tested for a minimum layer thickness of 200 μ and a pinhole-free surface.

Tight assembly of valve body and bonnet

A bonnet gasket fits into a recess between the valve body and the bonnet, which prevents it from being blown out at pressure surges. The stainless steel bonnet bolts are encircled by the bonnet gasket, countersunk in the bonnet and finally sealed to prevent corrosion.



Series 03/00 - Internal thread. Optionally series 03/10 with enamel internally.



Series 03/30 - push-in socket ends for PE pipes.



Series 03/40 - side tapping with external thread / internal thread and tensile resistant socket joint.



Series 03/65 - Tensile resistant screw couplings for PE pipes.



Series 03/85 - Tensile resistant screw coupling for PE pipes/external thread.



Series 11/00 - angle valve with external thread on inlet and internal thread on outlet.



Series 11/30 - angle valve with external thread on inlet and tensile resistant socket joint for PE pipes on outlet.



Series 03/90 - PRK couplings for PE pipes.



Series 36/80 - PE pipe ends PE100, PN16.

BRASS SERVICE CONNECTION VALVES



Certified for drinking water

Our brass valves are made of hot forged dezincification-resistant brass certified for use in contact with drinking water. They are available with tensile resistant brass screw couplings or PRK couplings and with AVK or T-type top - all in DN25-50 for 32-63 mm PE pipes.





- An NBR O-ring ensures tightness in the boltless connection between valve body and bonnet. The O-ring is countersunk and compressed when the valve bonnet is screwed on to the body thus ensuring a tight valve (4).
- Designed to fulfil the requirements of PN16. All couplings are fitted with a standard pipe thread.



Series 16/00 - Tensile resistant screw couplings for PE pipes and AVK-top for AVK extension spindles.



Series 16/05 - Tensile resistant screw couplings for PE pipes and T-top for Norwegian extension spindles.



Series 16/20 - PRK couplings for PE pipes and T-top for Norwegian extension spindles.



Series 16/25 - PRK couplings for PE pipes and AVK-top for AVK extension spindles.

POM SERVICE CONNECTION VALVES



Six connection types

Our POM valves are available with PRK couplings, tensile resistant socket joints, PE-ends and Pentomech[™] couplings as well as combinations with external thread. In addition there are options of a special T-top.

- An NBR wiper ring encircles the stem of stainless steel as protection against penetration of impurities (1). Two EPDM O-rings seal against the internal pressure (2).
- A built-in friction collar prevents overtorque of the valve (3).
- Bonnet, body and joints of POM are friction welded ensuring optimum strength (4).



Series 16/01 - With PRK coupling for PE pipes / external conical pipe thread.



Series 16/29 - Tensile resistant socket joint for PE pipes / external conical pipe thread.



Series 16/59 – with tensile resistant Pentomech[™] couplings for PE pipes.



Series 16/80 - with PE ends for fusion welded installations. Optionally series 16/83 with T-top.



Series 16/90 - with PRK couplings for PE pipes. Optionally series 16/93 with T-top.



AVK SUPA LOCKTM THREADLESS CONNECTION SYSTEM



Heavy duty O-rings provide extra safety

All Supa Lock[™] joints are fitted with heavy duty Ø7 mm O-rings. They provide extra safety when taking into account that a moderate permanent deformation of the O-rings is to be expected over the lifetime of the product. Also, when the joint is exposed to bending as a result of ground movements, the large O-rings provide maximum safety.

Self-locking safety retainer

Supa LockTM is designed as a tensile joint and withstands pressures up to PN 16 x 1.5. The safety retainer is designed with an edge (1), which makes it self-locking whenever The Supa Lock[™] system guarantees a 100% corrosion free joint combined with fast and easy assembly with maximum flexibility.

The wide Supa Lock[™] range consists of valves, tapping saddles and fittings in ductile iron as well as ball valves and fittings in low lead dezincification resistant brass.

there is pressure in the pipeline. Therefore, no accidental dissambly can take place. The safety retainer has two finger knobs (2) for easy assembly and disassembly.

No rotation of valves and connectors

Free rotation is restricted for the valves and the threaded connectors used for drilling machines to enable effective drilling. Small cast notches placed on the outer rim of the socket end and on the inner rim of the spigot end interlock and prevent rotation.

360° rotation of fittings

The design allows for a 360° rotatation of the

single piece fittings, which is a unique feature only offered by the Supa LockTM system. The free rotation of the joint allows the installer to direct the service pipe outlet in any direction from the main pipe, thus avoiding collision with other pipes or obstacles in the trench.

Corrosion-free access point

For flanged connections in DN80-400, the wafer type spacer with Supa Lock[™] socket connections offers a corrosion protected access point to the pipe. It can replace a tapping and in that way avoid weakening of the pipe.



Easy two-step assembly After having greased the 0-rings, the Supa LockTM spigot end is pushed into the Supa LockTM socket end, and the safety retainer is clicked on - and the assembly is done!



Series 103/00 - Service connection valve with one Supa LockTM spigot end and one Supa LockTM socket end, ductile iron.



Series 103/31 - Service connection angle valve with one Supa Lock[™] spigot end and one Supa Lock[™] push-in socket end for PE pipes Ø32-40 mm, ductile iron.



Series 100/14 - Tapping saddle for iron/steel pipe, Ø60-223 mm, ductile iron.



Series 107/31 - 90° push-in fitting for PE pipes 032-63 mm, ductile iron.



Series 106/01 - Fitting with PRK coupling for PE pipes Ø32-40 mm, ductile iron.



Series 106/01 - Threaded connector for drilling machines, ductile iron.



Series 103/50 – Service connection valve with one Supa Lock[™] spigot end and one PRK coupling end, ductile iron.



Series 103/02 - Service connection angle valve with one Supa Lock[™] spigot end and one Supa Lock[™] socket end, ductile iron.



Series 343 – Ball valve with 1"-1 $\frac{1}{2}$ " BSP thread, brass. Also available with PRK coupling and tensile screw coupling.



Series 100/85 - Universal tapping saddle with blade shut-off for iron/steel pipes Ø50-360 mm, ductile iron.



Series 107/21 - Straight push-in fitting for PE pipes Ø32-63 mm, ductile iron.



Series 106/02 - Fitting with tensile screw coupling for PE pipes Ø32-40 mm, brass. Also available with PRK coupling.



Series 106/02 - Threaded connector for drilling machines, brass.



Series 100/00 - Tapping saddle for PE/PVC pipe, Ø63-225mm, ductile iron.



Series 107/74 - Universal tapping head with blade shut-off for iron/steel pipes, ductile iron.



Series 107/36 – Fitting with PE pipe end for PE pipes 032-40 mm, ductile iron



Series 106/00 - Blind plug for temporary plugging, DN80-400, ductile iron.



Series 109/10 - spacer for flanged connections, DN80-400, ductile iron.

USER FRIENDLY EXTENSION SPINDLES



Extension spindles are used for easy access to operation of valves installed below ground. AVK extension spindles are produced on fully automated state-of-the-art production equipment to ensure a uniform quality.

The extension spindles are made of corrosion resistant materials and are torque tested with up to 200 Nm to ensure long service life. The conical key adaptor fits most standard T-keys. The inner tube is press fit to the top spanner and bottom adaptor to safeguard the galvanization of the tube and the bottom cover protects the valve spindle from impurities and enables it to rotate freely.









Telescopic and fixed length

- Fixed length version offers the market's easiest shortening of length
- Telescopic version enables height adjustment after installation
- Patented AVK "Safe Click" provides a fast and safe mounting on the service connection valve.

Fixed length design features easy shortening

Fixed length extension spindles are used when the distance between the valve and the ground surface is known so that adjustment of the length after installation is required to a limited extent or not at all.

The patented AVK design facilitates fast and easy shortening of the extension spindle. The complete adjustment of the length can be done by mere use of a hacksaw.

The extension spindles are available with a pipe cover of 800-1000-1500-2000-3000 mm.

Telescopic design facilitates on-site adjustments

Telescopic extension spindles are used when the distance between the valve and the ground surface is unknown and when an adjustment of the extension spindle is required after the installation. The top adaptor is designed with a defrosting hole and with ears that can be fixed into AVK surface boxes and support tiles. A lock spring prevents the telescopic part from collapsing during installation, as it creates friction inside the inner tube. The blue center sleeve protects against penetration of impurities between the two outer PE pipes.



adjustment on fixed length extension spindles.



COMPREHENSIVE RANGE OF SURFACE BOXES



AVK offers a very comprehensive range of surface boxes in various material combinations: synthetic body with synthetic lids, synthetic body with cast iron lids, synthetic body with ductile iron surface plate/lid as well as cast iron body and lid.

Cast iron surface boxes

The ductile iron surface boxes are available in a floating design and a fixed/floating reversible design. The reversible surface box allows for deflection and internal fixation of telescopic extension spindles from both ends.

The fixed surface boxes of grey cast iron are height adjustable using ductile iron distance rings of a height of 10-50 mm.

Floating surface boxes with great flexibility

The internal fixation of telescopic extension spindles enables height adjustment after installation. The deflection ability secures optimal fit on sloped surfaces.

The large chamber provides easy access for mounting and demounting of the extension spindle, and the closed design protects the extension spindle against impurities.



Series 04/11: Ductile iron surface box, floating

- Grey cast iron lid - Ductile iron body Series 04/10: Cast iron surface box, fixed - Grey cast iron lid - Grey cast iron body

Series 04/12: Ductile iron surface box. reversible - Ductile iron lid - Ductile iron body

Series 04/43: Composite surface box. floating - Ductile iron lid - Synthetic body

box. floating

Series 04/007: Composite surface - Ductile iron lid - Synthetic body

Series 04/007: Composite surface box, floating - Ductile iron lid - Synthetic body

Series 04/008: Ductile iron surface box. floating - Ductile iron lid - Ductile iron body















Why choose synthetic surface boxes?

AVK offers a wide range of fixed and height adjustable surface boxes in various dimensions, which can be used in many fields of application. Apart from economic benefits, AVK synthetic surface boxes are lightweight, user-friendly, easy to open, noiseless and maintenance free. Most of AVK surface boxes are designed and approved according to DIN/EN standards, but can also be designed according to local standards or customer specifications. The carbon footprint (CO2 emission) of synthetic surface boxes, measured from resource to end of life, is significantly lower compared to surface boxes made of traditional materials, making AVK surface boxes ecologically sound.

Height adjustable surface boxes

AVK offers a wide range of DVGW DIN approved height adjustable surface boxes, which are specifically designed for tarmac installation. Using height adjustable surface boxes enables easy and precise installation thanks to flexible





positioning of the top part. Height adjustable surface boxes prevent costly corrections after installation and save time and money when roads are renovated. AVK also offers height adjustable surface boxes with reinforced rim, ensuring better support of the top part and making this product even more robust, stable and suitable for heavy duty application areas.

Recognisable synthetic lids

Lids made of synthetic materials are corrosion free, unattractive to thieves, more aesthetic (making them highly suitable for shopping areas and city centres) and lightweight, complying with Health and Safety Regulations.

To prevent the lid from being lifted by the suction of a passing vehicle, the reduced weight is compensated with a locking clip around the bolt. In cases where surface box lids get covered with snow, leafs or soil, AVK offers a solution making the surface box easily detectable by means of a ferromagnetic detector.

Support tiles and top frames

Support tiles significantly increase the support required by surface boxes in weak soils. They also prevent telescopic extension spindles from being pushed back.

Top frames protect surface boxes in green zones and improve the visibility of the surface box. Synthetic top frames are lightweight, especially compared to concrete top frames. With a top frame, grass will not overgrow the surface box and combined with a support tile, easy access to valves installed below is guaranteed.

Series 80/32-000: Synthetic surface box, fixed height, heavy duty - Cast iron lid - Synthetic body





Series 80/32-611: Synthetic surface box, fixed height, medium duty - Cast iron lid - Synthetic body

Series 80/32-100: adjustable height, heavy duty - Cast iron lid - Synthetic body



Series 80/32-800: adjustable height, heavy duty - Cast iron lid

Synthetic body



Series 80/32-700: Synthetic surface box, Synthetic surface box, Synthetic surface box, Support tile adjustable height, heavy duty - Cast iron lid

Synthetic body

Series 80/46: Synthetic







WIDE RANGE OF TAPPING SADDLES

AVK offers a wide range of tapping saddles. A range that comprises tapping saddles for PE/PVC, ductile iron, cast iron, asbestos cement and steel pipes. Furthermore, AVK tapping saddles offer easy and fast installation and reliable, maintenance-free function.

Series 10/00 and 10/14

- Stainless steel bolts and nuts and a fusion bonded epoxy coating secure long life without the risk of corrosion.
- Nut of acid-resistant stainless steel with anti-friction coating to prevent it from galling against the stainless steel bolt. The nut is located in a recess in the lower part making the installation fast and easy.
- A large profiled rubber gasket of drinking water approved EPDM rubber ensures a drop tight seal against a rough pipe surface.

Only a quick cleaning and lubrication of the surface is necessary.

 The female pipe connection is a standard BSP pipe thread. The thread depth is kept to a minimum to ensure that no raw threads are exposed to the water once the male thread fitting is mounted.

Series 727/10 and 730

Ductile iron saddle head with an open slot on one side and a closed slot on the other side for easy mounting of the stirrup.

- Bolts of stainless steel with anti-friction coating supported by a POM washer to give optimum flexibility and minimum friction upon installation.
- M16 bush cylinder, drilled and tapped, with the stirrup plate rolled around ensuring long life and passive safety without welding.
- A large profiled rubber gasket of drinking water approved EPDM rubber ensures a drop tight seal against a rough pipe surface.
- · Safety without welding.

Series 10/00: Tapping saddle for PVC and PE pipes. DN50-300, BSP 34-2"







Series 727/10: Universal tapping saddle for PVC and PE pipes, DN50-200, BSP ½-2"



Series 730:

Universal tapping saddle for underpressure drilling and tapping for shut-off, for ductile iron, steel and other metal pipes, DN50-300, BSP ½-2"





Series 10/9-20

- Valve gasket in PUR (polyurethane) for maximum resistance.
- Fitted with a swivelling shut off that moves to the side during drilling and returns to closed position when the tapping device is removed.
- Upper part of the valve and lower sleeve enclose the plastic pipe completely to provide an optimum load distribution on the plastic pipe.

Series 6731

- Large profiled rubber gasket of drinking water approved EPDM ensures a drop tight seal against a rough pipe surface
- Shut-off by means of a special tilting blade
- Precision opening system to avoid unattended disassembly at blade insertion
- Open ears on one side for easy installation of stirrups
- Tapping saddle fitted with a multi-diameter pipe gasket
- The slim line model has a reduced height compared to traditional necked saddles and the flange bolts are secured in an anti-turn hexagon to prevent rotation when clamping.

Series 727/08 and 727/09

- Integrated cutter enables under pressure tapping where the cut off piece stays in the cutter.
- After drilling the tapping saddle can be used as a valve.
- No electrical machines needed when drilling. Drilling done within a few minutes.
- Bolts, washers and nuts of stainless steel and a fusion bonded epoxy coating secure long life without the risk of corrosion.
- An NBR wiper ring encircles the stainless steel stem and protects against impurities from outside.
- Only one type of saddle head needed for all dimensions.



Series 10/9-20: Tapping saddle type SVK for PVC pipes, DN100-250, BSP 1½-2"



Series 6731: Flanged universal tapping saddle with blade shut-off DN65-100 for iron/steel pipes Ø100-30 mm and PE/PVC pipes Ø160-355



Series 727/X9: Tapping saddle type SWIC for PE and PVC pipes with integrated cutter, DN50-225, BSP ½-2"

Series 727/08: Tapping saddle type SWIC for metal pipes e.g. ductile iron, cast iron, asbestos

for metal pipes e.g. ductile iron, cast iron, asbestos cement and steel pipes, DN80-300, BSP/NPT ½-2"

TECHNICAL APPENDIX

Pressure tests:

Hydraulic test according to EN 1074-1 and 2 /EN 12266

Shell test with water:

Valves PN 10 tested at 15 Bar Valves PN 16 tested at 24 Bar

Seat test with water: Valve PN x 1.1 Seat tests are done from both sides and with one end open.

Field of application:

The field of application is stated in the data sheet of each valve series. If the medium contains special substances, information of the chemical designation, concentration, and the temperature of the medium must be given on inquiry of the valves.

Operation:

To avoid a seizure of the internal parts, it is recommended to operate water valves every year, which at the same time ensures a long durability. After operation the valve must be fully open and the stem released from stress or closed with the closing torque stated in the table below.

Temperature: Max. 70°C. For valves with PE ends max. 40°C. The valve must not be exposed to low temperature, causing the medium to freeze.

→ F1 .←							
→ F ←				F	F1	F	F1
	DN	Н	H1	mm	mm	mm	mm
	mm	mm	mm	AVK-top	AVK-top	T-top	T-top
'' ★L!	25	35	200	7	20	100	200
	32	35	200	9	20	100	200
	40	35	200	11	40	100	200
	50	35	200	14	40	100	200

Torques and number of	•	3 (ductile iron) a	nd 16 (brass)	AVK series 16 (POM)			
Valve dim. DN	Closing torque Nm	Rupture torque Nm	Turns to open Nm	Closing torque Nm	Rupture torque Opening direction Nm	Rupture torque Closing direction Nm	Turns to open Nm
25	35	200	7	20	100	200	7
32	35	200	9	20	100	200	9
40	35	200	11	40	100	200	11
50	35	200	14	40	100	200	14

Advanced technology in products and processes

AVK products are manufactured in modern factories characterized by streamlined flows and a high degree of automation. We are entirely committed to ensuring that quality remains an integrated part of our production flow.

AVK's quality assurance system is certified according to ISO 9001. Moreover, we are certified to ISO 14001, the international standard for environmental management, and to ISO 45001, the international Occupational Health and Safety Standard.



EXPECT SUSTAINABILITY



We contribute actively to the UN SDGs

Our solutions contribute to the UN sustainable development goals by ensuring clean water and sanitation, by reducing water waste, electricity consumption and CO2 emissions, and by turning wastewater into affordable and clean energy. Our valve design is not only optimised to ensure long durability and 100% tightness; it also offers low operating torque, allowing for the use of cost-efficient electrical actuators.

AVK has entered into partnerships with other leading Danish companies aimed at sharing knowledge within water technology and at offering joint solutions for a more sustainable world. Furthermore, to help implement the already known and well-proven technologies, we have founded and host a summer school which runs under the name "Advanced Water Cycle Management Course". With the latest knowledge at hand and a holistic approach to the journey of water through society, we focus on obtaining the most efficient supply and treatment processes.

Sustainable production

At the AVK Advanced Castings foundry, supplying the AVK Group with castings for valves and hydrants and other metal castings, we use the innovative lost foam method, and this method allows for an improvement in performance, reducing energy consumption and the amount of particle emissions into the atmosphere. In our castings, we use recycled steel scrap as the principal component – up to 85-90% of the total melt.

The AVK Group has strict requirements and standards for energy and water consumption its production companies must meet. Consequently, all companies make great efforts to reduce consumption wherever they can.

AVK is a global company operating worldwide and must as such take different circumstances and conditions in different countries into account and the consequent risks. In all countries where AVK is present, it is fundamental to act responsibly towards employees, environment and the surrounding society.

The AVK Group keeps a close watch on all business units and ensures through regular visits that all AVK companies comply with the defined human rights principles and criteria. Whatever country or location, we focus on the health and safety of our employees. We carefully monitor the number of work-related accidents and work proactively on preventive measures. The result of this is a steady decline in the number of accidents. We also ensure maintenance, inspection and development of working conditions, equipment and tools that are necessary to complete a given business process.

The AVK Group has agreed to adhere to standards that our suppliers must adhere to as well in order to become a certified supplier of the Group. Sustainability is vital for us throughout the entire supply chain. Therefore, we only cooperate with partners with high ethical standards, who are strongly committed to comply with international legislation in the field of labour.



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