EXPECT

QUICK FIX AND EASY INSTALLATION

Expect... AVK

TYPICAL PIPE CRACKS

Whenever a leakage in a water mains occurs due to a crack, it is essential that the repair is done quickly and efficiently so that the consumers and surroundings experience a minimum of disturbance. As most cracks occur without any prior notification it is of greatest importance that the repair products are available ex-stock either at the waterworks, the contractor or as minimum at the wholesaler. To make this possible the repair products must have multi functionality, flexibility and wide tolerances. Furthermore the key demands when conducting repairs are easy and fast installation and reliable functionality. For all these specific purposes and demands AVK offers a comprehensive range of products specially designed for all sorts of cracks in the most common pipe materials.

PVC Pipes have for many years been used for potable water pipelines as well as for sewage. The material has proved to be very stable because of the low weight and relatively high pressure class. If a crack appears it might be caused by earth settlements or increased traffic load. A typical crack will be unstructured and can move in both longitudinal and circumferential direction. The best way to repair a cracked PVC pipe is to cut out and replace by a new piece connected with couplings. In this way the stress in the pipe will be neutralised and new cracks prevented. If for some reason there is no possibility to use couplings, the AVK stainless steel repair clamps can be used.

Ductile Iron has been in use for 30 - 35 years. It is more resistant to impact and settlement forces. The most common failure mode is longitudinal cracking caused by cathodic attack i.e. a puncture in the pipe coating which will create a location for an electric cell from stray currents picked up from overhead power cables, adjacent railways or from alkaline soil. The longitudinal cracking can be quite dramatic - the pipe can virtually unzip. Common corrective action is to drill a small hole at both ends of the crack to prevent it from traveling further, and then mount a repair clamp on the pipe.

PE Pipes is one of the most used for water networks in recent times. Normally there are very few leak problems and very often the leaks are due to external damages such as digging. When repairing PE Pipe Systems the part to be repaired is cut out and replaced by a new piece of pipe, which is directly welded into the PE Pipe System by using socket fusion welding. With minor damages Repair Clamps of stainless steel can be used due to the fact that no stress relieve is required for PE pipes.

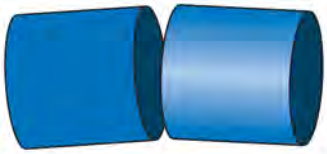
Cast Iron was widely used in water and gas systems in the past and today forms 90 - 95 % of all ferrow pipe failures. The most common leakage is circumferential cracking caused by:
A. Differing soil types causing earth settlement.
B. Increased road traffic resulting in settlements and cracking.
Cast Iron pipes can be repaired with ductile repair couplings since stress relief is essential.

Asbestos Cement Pipes is used mainly in water systems. Failure mode is similar to Cast Iron Pipes, a circumferential crack caused by earth settlements or increased road traffic.
Pipe dimensions are only reliable at the pipe ends. It is therefore essential to use e.g. a sliding caliper to determine the suitability of Repair Fitting as to tolerances. Also here AVK Ductile Repair Clamps are to be preferable.

Typical longitudinal crack in a pipe typicaly caused by earth settlement or increased traffic load.

Easy and fast neutralization of the crack is essential in order to minimize disturbance for consumer. Here AVK repair clamp is mounted.

Cracks in AC, steel, cast iron or PVC



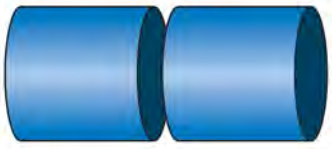
Pipe ends angled

Holes in AC, steel or cast iron

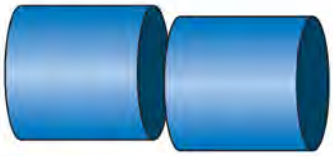
Damage caused by service crane or breaking-off of branching section

Breaks in AC and cast iron pipes

Corrosion leaks



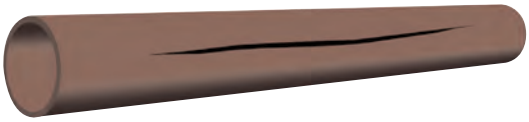
Pipes do not join up



Pipes do not join up and ends do not lie in the same plane

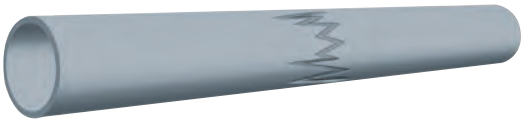
Cast iron pipes:

- Cracks typically appear circumferentially on the pipe
- The cracks are most often caused by stress in the pipe
- The pipe should be stress relieved before repair
- With minor earth settlements part of the pipe is cut out and replaced by a new piece of pipe and couplings



Ductile iron pipes:

- Direct pipe cracks, where the pipe cracks in two, appear very seldom
- Most often leaks appear in connection with wrong pipe fitting, resulting in galvanic corrosion
- Longitudinal cracks are stopped by drilling the pipe at both ends of the crack



PVC-pipes:

- The pipe is typically deteriorated because of ozone and UV-radiation
- Crack zone longitudinal and circumferential of the pipe
- The pipe should be releived from stress before repair

Asbestos cement pipes:

- Pipe cracks typically appear circumferentially because of stress in the pipe
- Often the crack zone is in the middle of the pipe, where the external diameter fluctuates the most
- The tolerance area of the repair clamp is important
- Stress relief is required

PE-pipes:

- Cracks most often appear because of mechanical impact on the pipe
- Repair of big PE cracks is done by cutting out the damaged piece and inserting a new piece by means of socket fusion welding

WIDE RANGE OF HIGH QUALITY REPAIR CLAMPS

AVK Malaysia offers a wide range of repair clamps and off-take clamps designed for quick pipe repairs and easy installation. The excellent build and rubber quality ensure durable solutions for all sorts of cracks in most common pipe materials.

Excellent build
Corrosion is a key concern especially when metal is exposed to water or is under water. In the case of quick pipe repair works, materials used must be both flexible foir easy installation and anti corrosive.

AVK repair clamps are made of high quality stainless steel material, available in either AISI304 or AISI316. After welding procedures, the stainless steel repair clamp is completely passivated to guarantee optimum corrosion resistance.

State-of-the-art rubber technology
The rubber component is developed and produced by AVK GUMMI A/S with the use of highly advanced technologies.

The EPDM rubber composition is designed to minimise the building of biofilm in order to prevent the rubber from forming breeding ground for bacteria. The compound is also resistant to ozone and water treatment chemicals such as sodiumhypochlorite solutions.

Furthermore, AVK's EPDM rubber has a unique compression set, meaning the ability to regain original shape. Even after many years of service where the rubber has been compressed numerous times, it will regain its original shape and ensure a tight sealing.

AVK's continuous focus on high quality and innovation has paved the way for a global reach, and the repair clamp range has been widened substantially to meet local requirements.

AVK Malaysia has more than 15 year experience in manufacturing repair clamps and our products are sold in more than 10 countries. Equipped with repair clamp manufacturing facility at Klang, Selangor, dedicated technical and commercial team, AVK Malaysia is able respond swiftly to pipe repair situations with high quality repair clamps and services.

Delivery

The manufacturing time of standard stainless steel repair clamps is 2 weeks, but express delivery within Malaysia can be done within 24 hours. Give us a call!

AVK Rubber Compound - HALAL Certification

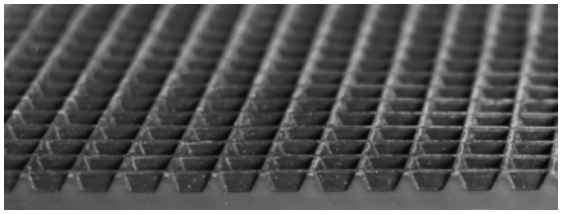
For more than 30 years AVK GUMMI has manufactured components for use in drinking water supplies. Our experience in this field derives from many years of close co-operation with leading manufacturers of fittings, valves and pumps.
The R&D department of AVK GUMMI uses this knowledge to develop rubber compounds with continuously improved properties.

SERIES 729
REPAIR CLAMPS

Series 729 repair clamps ensure a cost effective and reliable solution for quick repairs on steel, copper, asbestos cement, cast iron and plastic pipes. A pipe with a hole or a crack will be repaired permanently. The stainless steel repair clamps are passivated in order to ensure an optimum corrosion resistance. The clamps are provided with a waffle structured rubber gasket and blunt ending to create a fully circumferential seal.

Series 729 repair clamp features:

- Clamp is made out of pre-rolled plate of stainless steel AISI304
- Design with welded AISI 304 studs and ribs
- Clamp is completely pickled and passivated after welding
- Studs are coated with PTFE to prevent cold welding (galling)
- Gasket of EPDM rubber with waffle structure and blunt ending
- Stainless steel AISI316 is available as an option upon request



Waffle structured rubber gasket for effective circumferential seal

Single-band repair clamp
FS10

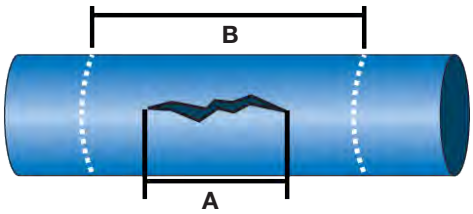
Double-band repair clamp
FS20

Triple-band repair clamp
FS30

The AVK Series 729 is a widely used repair clamp when dealing with leaky pipes or complete ruptures in the pipe system. The clamp construction ensures a cost effective and reliable solution for quick repairs of pipes in any pipe material. The clamps can be used for permanent repair of punctures, longitudinal and circumferential cracks.

The functional principle of the repair clamp rests on a stainless steel, rolled plate, which is clamped round the pipe and fastened with lugs and nuts. The clamp has a rubber lining. The tensile force applied by the clamp fastening is converted to a radial pressure on the rubber lining.

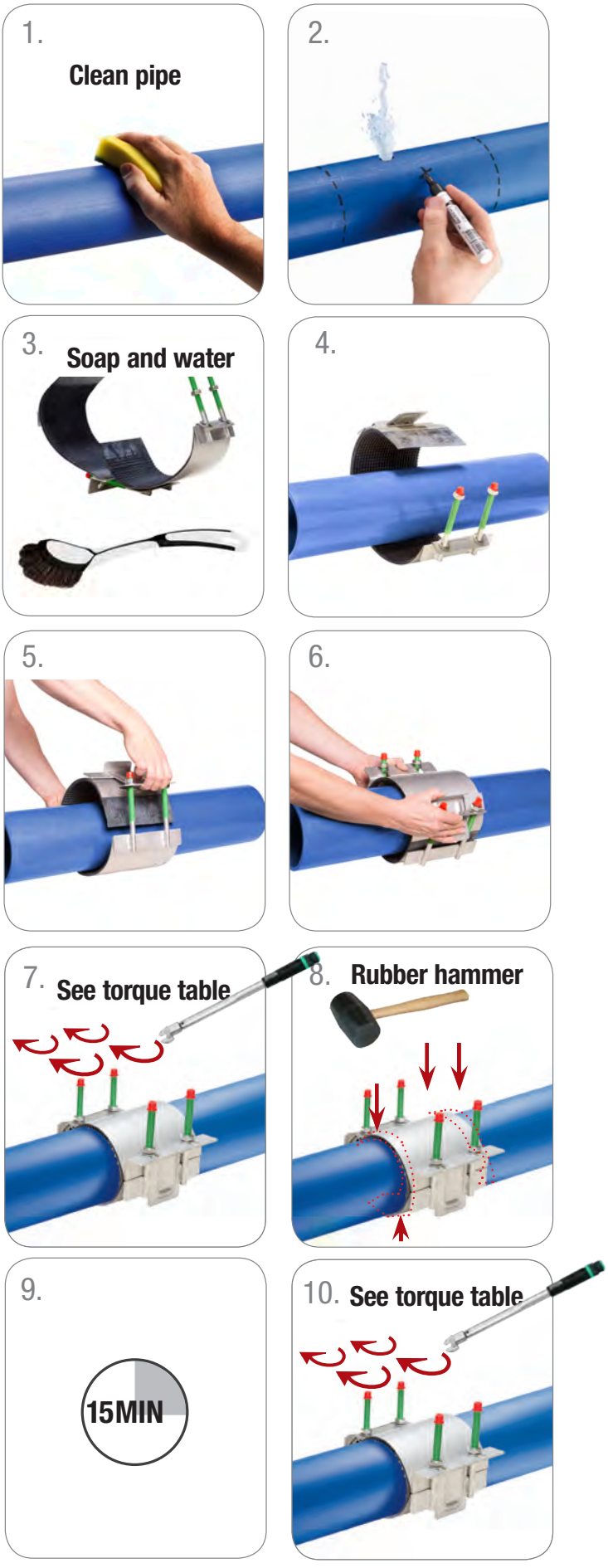
Width of repair clamp:



Width of repair clamp, B, shall be at least 3 times of length of length of crack or hole, A.

Plastics require 50% more clamp length.
Repair is not permanent for PE pipes.

Easy installation:



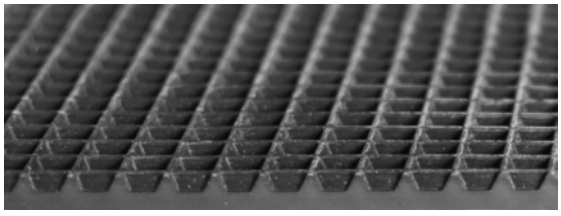
Torque table		
Bolts	Torque	Wrench
M14	70-90 Nm	22
M16	100-120 Nm	24
Recommendations:		
- Turn nuts in steps of 20 Nm		
- Cross tightening		

SERIES 729
OFF-TAKE CLAMPS

Series 729 tapped off-take clamps are intended to provide a permanent threaded connection into new and existing pipelines and may be used for replacement of existing damaged tapped connections. Flanged off-take clamps are intended to provide a permanent means of making a flanged connection to a pipeline. Off-take clamps may also be used for under pressure cut-in connections. The clamps are provided with a waffle structured rubber gasket and blunt ending to create a fully circumferential seal.

Series 729 off-take clamp features:

- Off-takes are available both in BSP threaded tapping (1/2 in to 3 in) or flanged outlet (50 to 300 mm)
- Exclusively used as hot-tapping saddle
- Clamp is made out of pre-rolled plate of stainless steel AISI304
- Design with welded AISI 304 studs and ribs
- Clamp is completely pickled and passivated after welding
- Studs are coated with PTFE to prevent cold welding (galling)
- Gasket of EPDM rubber with waffle structure and blunt ending
- Stainless steel AISI316 is available as an option upon request



Waffle structured rubber gasket for effective circumferential seal

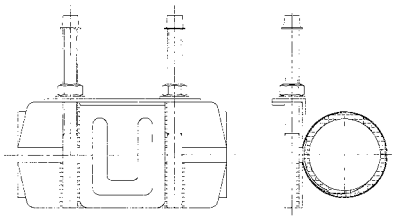
Single band tapped off-take clamps FSA10

Double band tapped off-take clamps FSA20

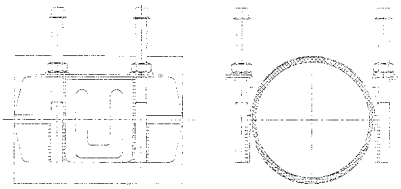
Double band flanged off-take clamps FST20

EMERGENCY
REPAIR BOX

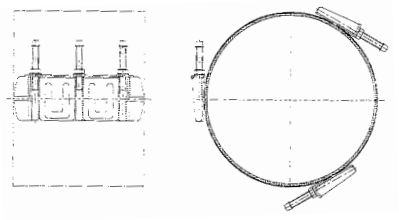
AVK's repair box is an easy, quick and flexible solution for emergency repair of damaged pipes, With the stainless steel repair elements you can create your own repair clamp that can be used for permanent repair of cracks, pinholes or other damages to the pipes. The repair box consist of 6 or 10 stainless steel elements as standard, which can cover a range from diameter 85mm up to diameter 954mm, only by connecting the elements. Available in AISI 304, sealing material can be EPDM or NBR. The elements comes in standard width 300mm.



Single element



Two elements combined



Three elements combined

Repair box features:

- One repair box with 6 stainless steel AISI304 elements, makes it possible to repair pipes from diameter 86mm up to 732mm.
- Elements are marked with labels from A to F. Use schedule to achieve required range. Elements G to J are optional to increase the repair range up to 954mm.
- Used elements can be re-ordered to complete the repair box for next emergency.
- Made entirely of stainless steel - no corrosion.
- Clamp is completely passivated after welding procedure.
- Lightweight - easy to handle, no loose parts that can be lost during assembly.
- PTFE coating on threads prevents nuts and bolts from cold welding (galling)
- Spanner plate is completely vulcanized into rubber gasket
- Studs protected with plastic protection caps

Element	Length, mm	Width, mm	Pipe OD range, mm
A	320	300	91 - 101
B	380	300	111 - 121
C	440	300	130 - 140
D	540	300	162 - 172
E	640	300	194 - 204
F	300	300	81 - 91
G	350	300	101 - 111
H	410	300	121 - 131
I	470	300	140 - 150
J	500	300	149 - 159

Pipe OD range, mm	Element Combination	Total Element Length, mm	Combined Pressure Rating, PN
85 - 95	F	300	16
91 - 101	A	320	16
101 - 111	G	350	16
110 - 120	B	380	16
121 - 131	H	410	16
130 - 140	C	440	16
140 - 150	I	470	16
149 - 159	J	500	16
161 - 171	D	540	16
177 - 197	A + F	620	16
193 - 203	E	640	16
196 - 216	B + F	680	16
202 - 222	A + B	700	16
215 - 235	C + F	740	16
221 - 241	A + C	760	16
241 - 261	B + C	820	16
253 - 273	A + D	860	16
272 - 292	B + D	920	16
285 - 305	A + E	960	16
291 - 311	C + D	980	16
304 - 324	B + E	1020	16
323 - 343	C + E	1080	16
332 - 362	A + B + C	1140	16
364 - 394	A + B + D	1240	16
383 - 413	A + C + D	1300	10
396 - 426	A + B + E	1340	10
402 - 432	B + C + D	1360	10
415 - 445	A + C + E	1400	10
434 - 464	B + C + E	1460	10
447 - 477	A + D + E	1500	10
466 - 496	B + D + E	1560	10
485 - 515	C + D + E	1620	10
494 - 534	A + B + C + D	1680	10
526 - 566	A + B + C + E	1780	10
558 - 598	A + B + D + E	1880	10
571 - 611	C + D + E + F	1920	6
596 - 636	B + C + D + E	2000	6
612 - 662	A + B + C + E + F	2080	6
643 - 693	A + B + D + E + F	2180	6
682 - 732	B + C + D + E + F	2300	6
717 - 767	B + C + D + E + H	2410	6
755 - 805	C + D + E + H + J	2530	6
783 - 833	A + B + C + D + E + F	2620	6
802 - 862	C + D + G + H + I + J	2710	6
859 - 919	C + D + E + F + I + J	2890	6
894 - 954	C + D + E + H + I + J	3000	6

USER GUIDE
SEALING RANGE

Single Band (Applicble for FS10, FSA10) Pipe OD Range, mm	
48 - 52	165 - 175
54 - 58	167 - 177
56 - 63	170 - 180
60 - 67	174 - 184
67 - 74	175 - 185
70 - 77	176 - 186
73 - 80	180 - 190
76 - 83	186 - 196
82 - 89	193 - 203
87 - 94	200 - 210
88 - 95	209 - 220
91 - 98	215 - 225
95 - 102	219 - 229
98 - 108	222 - 233
102 - 112	228 - 239
105 - 115	230 - 240
106 - 116	237 - 247
108 - 118	239 - 249
110 - 120	248 - 258
112 - 122	250 - 260
113 - 123	253 - 263
115 - 125	257 - 267
118 - 128	261 - 271
120 - 131	270 - 280
121 - 131	273 - 283
125 - 135	278 - 288
130 - 140	280 - 291
132 - 142	290 - 300
135 - 145	300 - 310
140 - 150	310 - 320
145 - 155	315 - 325
151 - 161	320 - 330
155 - 165	325 - 335
158 - 168	334 - 344
159 - 170	340 - 350
160 - 170	350 - 360

Double Band (Applicable for FS20, FSA20, FST20) Pipe OD Range, mm	
88 - 110	322 - 344
100 - 120	330 - 350
108 - 128	338 - 358
114 - 134	340 - 360
120 - 140	347 - 367
130 - 150	365 - 385
135 - 155	382 - 402
140 - 160	390 - 410
150 - 170	396 - 420
156 - 176	400 - 420
159 - 180	410 - 430
165 - 185	420 - 440
168 - 189	435 - 455
195 - 215	440 - 460
210 - 230	450 - 470
215 - 235	468 - 488
218 - 238	484 - 505
225 - 246	490 - 510
235 - 255	500 - 520
240 - 260	510 - 530
250 - 270	520 - 540
260 - 280	540 - 560
264 - 284	550 - 570
269 - 289	570 - 590
273 - 293	590 - 610
295 - 315	605 - 625
305 - 325	620 - 640
310 - 330	625 - 645
315 - 335	630 - 650

Tapped off-take clamps FSA10 / FSA20

Off-take sizes (BSP threaded) - available for all sealing ranges:

½ in
¾ in
1 in
1½ in
1¼ in
1¾ in
2 in
3 in

Flanged off-take clamps FST20

Off-take sizes (Standard drilling EN1092 PN16):

50 mm	All pipe OD
80 mm	All pipe OD
100 mm	Pipe OD > 110mm
150 mm	Pipe OD > 160mm
200 mm	Pipe OD > 210mm
250 mm	Pipe OD > 260mm
300 mm	Pipe OD > 310mm

Outside diameter of commonly used pipes

DN Nominal Sizing, mm	Ductile iron BS 4772 BS EN 545, mm	Mild steel JKR old std, mm	Mild steel JKR BS534, mm	uPVC mm	ABS MS 1419 / BS 5391, mm	Asbestos cement MS 712, mm	HDPE DIN 8061 / 8062, mm
40	56,0			48,3	48,3	55,9	50,0
50	66,0		60,3	60,3	60,3	69,1	63,0
65	82,0		76,1			82,3	75,0
80	98,0		88,9	88,9	88,9	95,5	90,0
100	118,0	121,9	114,3	114,3	114,3	121,9	110,0
125	144,0	139,7		140,2		149,9	140,0
150	170,0	177,3	168,3	168,3	168,3	177,3	160,0
175		193,7				204,7	200,0
200	222,0	232,2	219,1	219,1	219,1	232,2	225,0
225		244,5				259,1	250,0
250	274,0	286,0	273,0			273,0	286,0
				280,0			
300	326,0	345,4	323,9	323,9		345,4	315,0
350	378,0	399,3	355,6	355,6		399,3	355,0
375		426,2		426,2			
400	429,0	453,1	406,4	406,4		453,1	400,0
450	480,0	506,9	457,0	457,0		506,9	450,0
500	532,0	560,3	508,0	508,0		560,3	500,0
525				587,2			
550		650,0	559,0	613,7			
600	635,0	667,0	610,0	610,0		667,0	630,0
650		692,0	660,0				
700	738,0	754,0	711,0				
750		804,0	762,0				
800	842,0	854,0	813,0				
850		904,0	864,0				
900	945,0	954,0	914,0				

REPAIR CLAMPS, OFF-TAKE CLAMPS AND REPAIR BOX

729/A1 (FS 10)
Single band repair clamp,
EPDM,ribs, stainless steel
304/316
10/16 bars

Options:
• Pipe OD: 48-370mm

729/A2 (FS 20)
Double band repair clamp,
EPDM,ribs, stainless steel
304/316
10/16 bars

Options:
• Pipe OD: 88-650mm

729/A3 (FS 30)
Triple band repair clamp,
EPDM,ribs, stainless steel
304/316
PN10/16

Options:
• Pipe OD: 270-880mm

729/D2 (FST 20)
Double band repair clamp,
EPDM,ribs, stainless steel
304/316 with flanged
outlet
10/16 bars

Options:
• Pipe OD: 48-370mm

729/D2 (FST 20)
Double band repair clamp,
EPDM,ribs, stainless steel
304/316 with flanged
outlet
10/16 bars

Options:
• Pipe OD: 90-788mm

729/D2 (FST 20)
Double band repair clamp,
EPDM,ribs, stainless steel
304/316 with flanged
outlet
PN16

Options:
• Pipe OD: 90-788mm

729/E1
Stainless steel
Repair elements
EPDM
6/10/16 bars

Options:
• Pipe OD: 85-954mm

EXPECT US TO TAKE RESPONSIBILITY

Water is a scarce resource
Access to clean water is often taken for granted, just like the fresh air we breathe. But we are facing an invisible, yet crucial problem of water loss, also referred to as non-revenue water.

Non-revenue water is water that has been produced and cleaned but which is lost somewhere in the water distribution system without being used or paid for, and the levels of non-revenue water range from about 5% to as much as 80% in certain areas.

AVK offers a wide range of reliable and long-lasting valves, including control valves, that can help reduce water losses and contribute to efficient water supply management by maintaining a certain pressure, flow or level, regardless of changes in the supply network.

Pressure management is considered the single most beneficial and cost-effective leakage management activity, but it is also of considerable importance to use valves of a sufficient quality to ensure tightness many years after the valves have been installed, whenever they have been used frequently or not at all.

Supporting world-transforming goals
Our solutions contribute to the UN sustainable development goals by ensuring clean water and sanitation, by reducing water waste, electricity consumption and CO_2 emissions, and by turning wastewater into affordable and clean energy.

Our valve design is not only optimised to ensure long durability and 100% tightness, but also offers low operating torque, which allows for the use of cost-efficient electrical actuators.

AVK has entered into partnerships with other leading Danish companies with the purpose of sharing knowledge within water technology and offering joint solutions for a more sustainable world.

Sustainable production
The AVK Group has outlined strict objectives for activities and processes in its manufacturing companies regarding recycling as well as energy and water consumption.

In addition, our suppliers must comply with our ethical standards to be a certified supplier of the AVK Group, since it is vital for AVK to ensure sustainability throughout the supply chain. Therefore, we choose partners who are strongly committed to complying with international legislation in the field of labour.

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