AVK UK GAS VALVES AND FITTINGS

AVK UK GAS HANDBOOK

AVK UK GAS VALVES AND FITTINGS PRODUCT SELECTOR

Product	Description	Series	Range DN	Page Number	Connection
Gate valves / Slide valves	Softseal valve	555/300-001	80-300	**39**	Flanged
	Softseal valve (biogas)	555/300-002	80-300	**40**	Flanged
	PUR coated softseal valve	555/300-004	80-300	**41**	Flanged
	Softseal valve	555/301-001	80-300	**42**	Flanged
	Softseal valve	555/401-001	80-300	**43**	Flanged
	Softseal valve	555/411-001	50-250	**44**	Flanged
	PUR coated softseal valve	555/370-003	90-315	**45**	PE Ends
	PUR coated softseal valve	555/371-002	90-400	**46**	PE Ends
	PUR coated softseal valve	555/303-002	80-300	**47**	Flanged
	Softseal valve	555/303-001	80-300	**48**	Flanged
	Softseal valve	555/163-001	2"-12"	**49**	Weld ends
	Large diameter softseal valve	555/100-001	350-800	**50**	Flanged
	Large diameter softseal valve	555/101-001	400-600	**51**	Flanged
	Large diameter softseal valve	555/103-001	50-600	**52**	Flanged
	Baurer valve	777/11-001	750-1200	**53**	Flanged
	Under pressure drilling valve	158/04-001	80-300	**54**	Studded
	PUR under pressure drilling valve	158/04-002	80-400	**55**	Studded
	Wedge gate valve	562/00-001	80-600	**56**	Flanged
	Coke oven slide valve	662/00-002	675-1200	**57**	Flanged
Ball valves	Certus service isolation valve	85/30-001	20-180	**60**	PE Ends
	Ball valve	450/001-001	50-150	**61**	Flanged
	Ball valve	460/02-001	20-50	**62**	Flanged
	Ball valve with screwed ends	451/50-001	¾" - 2"	**63**	Screwed ends
	Ball valve with pe tails	451/70-001	25-63	**64**	PE ends
	Ball valve with screwed to pe ends	451/73-001	¾" - 2", 25-63mm	**65**	Screwed to PE ends
	Ball valve purge/bypass point	455/74-001	1" x 32mm, 2" x 63mm	**66**	PE to screwed ends
	Ball valve	445/51-001	¾", 1", 2"	**67**	Screwed ends
	Limited dimension ball valve	455/57-001	¾", 1"	**68**	Screwed ends
	Full bore ball valve	84/GBA	1/4" - 4"	**69**	Screwed ends
	Security valve for gas riser systems	666/80	¾"	**70**	Threaded ends
	Security valve for gas riser systems lever operated	666/90	1"-2"	**71**	Threaded ends
Butterfly valve	Centric fully lugged butterfly valve	75/41-001	50-350	**73**	Flanged
Mains to meter	Meter box adaptor	216/00-001,2,3	20-32	**75**	Crimp / Thread
	Factory entry elbow	217/31-001 & 002	40-180	**76**	PE / Plain end
	Factory entry elbow with split flange	217/31-003	90-180	**77**	PE / Split flange
	Below ground entry fitting	218/31-001 & 002	25-180	**78**	PE / Plain end
	Below ground entry fitting with split flange	218/31-003	90-180	**79**	PE / Split flange
	Meter module riser fitting	218/41-001	25-250	**80**	PE / Split flange
	Governor module riser fitting	218/41-002	90 - 250	**81**	PE / Split flange
	Building entry tee	219/31-001	20-63	**82**	Crimp / Thread
	Crimp tool set	456/58-001	16,20,25,32	**83**	N/A
	Flow limitor	310/061	32	**84**	Insertion
	Flow limitor	310/063	32	**85**	Insertion
	Flow limitor	310/066	25	**86**	Insertion
	Flow limitor (HC)	310/067	32	**87**	Insertion
	Flow limitor	310/080	32, 32x20, 32x25	**88**	Insertion
End Caps and Transition Fittings	Universal end cap	248/32-001	80-600	**90**	Insertion
	PE flange adaptor	39/50-001	50-400	**91**	PE / Flange
	PE flange adaptor with 2 flanged bosses	39/60	50-300	**92**	PE / Flange / Split Flange
	Universal transition coupler	604/1-001	90-355	**93**	PE / Metallic
Repair Collars, Clsmps and Tees	Multi band repair clamp	202/31-001	80-1450	**95**	Bolted
	Pipe saver repair clamp	203/31-001	15-60	**96**	Bolted
	Single band repair clamp	206/31-001	150-1200	**97**	Bolted
	Supercollar universal repair clamp	253/31-001	80-300	**98**	Bolted
	Fabricated “hot tap” weld-on tee	213/31-001	50-600	**99**	Welded
	Fabricated steel flowstop tee	214/31-001	80-600	**100**	Bolted
	Under pressure tee	215/31-001	80-1200	**101**	Bolted
	Universal under pressure tee	257/31-001	80-300	**102**	Bolted
	Live transfer fitting	207/31-001	1"-2"	**103**	Bolted

Note: Product information is correct at time of printing

Body Material	Flange drilling	Pressure rating	Standard Coating	Standards	Pipe Material				
	PN	PN			PE 80/100	Steel	Cast Iron	Ductile Iron	PVC
Cast iron	PN16	PN7	Blue Transit Coating	GIS/V7 Part 1	•	•	•	•	•
Cast iron	PN16	PN7	Blue Transit Coating	GIS/V7 Part 1	•	•	•	•	•
Cast iron	PN16	PN7	PUR	GIS/V7 Part 1	•	•	•	•	•
Ductile iron	PN16	PN7&10	Black Transit Coating	GIS/V7 Part 1	•	•	•	•	•
Ductile iron	ASA 150	PN7&10	Black Transit Coating	GIS/V7 Part 1	•	•	•	•	•
Ductile iron	PN16	PN7	Red Oxide Primed	GIS/V7 Part 1	•	•	•	•	•
Cast iron	N/A	PN7	PUR	GIS/V7 Part 1 & GIS/PL3	•				
Ductile iron	N/A	PN4/7	PUR	GIS/V7 Part 1 & GIS/PL3	•				
Cast steel	PN16	PN7/16/19	PUR	GIS/V7 Part 1	•	•	•	•	•
Cast steel	PN16	PN7/16/19	Grey Transit Coating	GIS/V7 Part 1	•	•	•	•	•
Cast steel	N/A	PN50/Class 300	Grey Transit Coating	API6D		•			
Cast iron	PN16	PN2	Blue Transit Coating	GIS/V7 Part 1	•	•	•	•	
Cast iron	PN16	PN7	Black Transit Coating	GIS/V7 Part 1	•	•	•	•	
Cast steel	PN16	PN7	Grey Transit Coating	GIS/V7 Part 1	•	•	•	•	
Fabricated steel	PN16/BS10 D	PN2/7	Grey Transit Coating	EN12266	•	•	•	•	
Cast iron	PN16	PN7	Blue Transit Coating	GIS/V7 Part 1	•	•	•	•	
Cast iron	PN16	PN7/2	PUR	GIS/V7 Part 1	•	•	•	•	
Cast iron/cast steel	PN16	PN2/7	Blue Transit Coating	EN1171 / EN12266		•	•	•	
Cast iron	PN16	PN0.25.0.35	Blue Transit Coating	EN1171 / EN12266		•	•	•	
PE100	N/A	PN5.5/10≥ 90-PN3/10	N/A	GIS/V7 Part 2	•				
Ductile iron	PN16	PN7	Blue Transit Coating	BS 5159	•	•	•	•	•
Carbon steel	PN16	PN7	Grey Transit Coating	BS ISO 7121	•	•	•	•	•
Ductile iron	N/A	PN7	Green Transit Coating	GIS/V4	•	•	•	•	•
Ductile iron	N/A	PN4	Green Transit Coating	GIS/V4 & GIS/PL3	•				
Ductile iron	N/A	PN4	Green Transit Coating	GIS/V4 & GIS/PL3	•	•	•	•	
Ductile iron	N/A	PN7	Black Transit Coating	GIS/V4 & GIS/PL3	•				
Ductile iron	N/A	PN7	Black Transit Coating	GIS/E1 & GIS/V4		•	•	•	
Ductile iron	N/A	PN7	Black Transit Coating	GIS/E1 & GIS/V4		•	•	•	
Brass	N/A	PN7	Nickel Plated	EN331		•			
Brass	N/A	PN5	Nickel Plated	GIS/V7:Part 3		•			
Brass	N/A	PN5	Nickel Plated	GIS/V7:Part 3		•			
Ductile iron	N/A	PN10/16	Orange Epoxy	T/SP/M/9: Part 1 and 2 - T/SP/PRS/38	•	•	•	•	•
Steel	N/A	PN4	Sealed Zinc	GIS/PL3	•				
Steel / PE	N/A	PN5.5	Black Fusion Bonded Epoxy	GIS/PL3	•	•			
Steel / PE	PN16	PN5.5	Black Fusion Bonded Epoxy	GIS/PL3	•	•			
Steel / PE	N/A	PN5.5	Black Fusion Bonded Epoxy	GIS/PL3	•	•			
Steel / PE	PN16	PN5.5	Black Fusion Bonded Epoxy	GIS/PL3	•	•			
Steel / PE	PN16	PN5.5 PE 80 / PN7 PE 100	Black Fusion Bonded Epoxy	GIS/PL3	•	•			
Steel / PE	PN16	PN5.5 PE 80 / PN7 PE 100	Black Fusion Bonded Epoxy	GIS/PL3	•	•			
Steel / PE	N/A	PN5.5	Black Fusion Bonded Epoxy	GIS/PL3	•	•			
Ductile Iron/steel	N/A	N/A	N/A	N/A	•				
HDPE	N/A	PN0.075-5	N/A	GIS/EFV1	•				
Acetal	N/A	PN0.69-6.90	N/A	MSS SP-115	•				
Acetal	N/A	PN0.5-4	N/A	MSS SP-115	•				
Acetal	N/A	PN0.5-4	N/A	MSS SP-115	•				
Acetal	N/A	PN4/7 (Depends on carrier fitting)	N/A	MSS SP-115	•				
Ductile Iron	N/A	2	Black Fusion Bonded Epoxy	GIS/F13		•	•	•	
Steel / PE	PN16	7	Black Fusion Bonded Epoxy	GIS/PL3	•	•	•	•	•
Steel / PE	PN16	7	Black Fusion Bonded Epoxy	GIS/PL3	•	•	•	•	•
Steel / PE	N/A	2	Black Fusion Bonded Epoxy	GIS/PL3	•	•	•	•	
Stainless Steel	N/A	3/5/7/10 ≤ 300mm	Bitumen coated	GIS/LC8 Part 4		•	•	•	
Stainless Steel	N/A	7/10	Bitumen coated	GIS/LC8 Part 4		•			
Stainless Steel	N/A	7/10 ≤ 300mm	Bitumen coated	GIS/LC8 Part 4		•	•	•	
Ductile Iron	N/A	16	Fusion bonded epoxy powder	GIS/LC8 Part 4		•	•	•	
Mild Steel	BS 10 or ANSI	7	Red Primed	ANSI B31.8 (Not approved to TS/SP/F/4)		•			
Mild Steel	PN16	7	Blue Epoxy	GIS/LC8 Part 4		•	•	•	
Stainless Steel	PN10/16	7 < 300mm	Bitumen coated	GIS/LC8 Part 4		•	•	•	
Ductile Iron	PN10/16	7	Black Fusion Bonded Epoxy	GIS/LC8 Part 4		•	•	•	
Stainless Steel	BSPT Thread	2	Bitumen coated	GIS/LC8 Part 4		•			

Note: Product information is correct at time of printing

AVK UK
GAS VALVES AND FITTINGS HANDBOOK

Manufacturing gas valves since 1847

As suppliers of the Donkin range of gas valves and fittings worldwide, AVK UK Ltd is part of the globally renowned AVK Group based in over 90 countries. AVK is recognised around the world as a leading innovator and manufacturer of high quality valves and fittings for the gas, water, waste water and fire fighting industries.

Our extensive product programme for gas comprises of a wide range of valves and mechanical fittings giving the customer the optimum cost effective solutions whether working on large diameter mains, small diameter services or right up to the meter box.

All of our products are designed using our in house facilities starting with our 3D CAD systems and development against the strict requirements of the relevant specifications either industrial, national or international. Our philosophy is always to aim for the highest standard.

Once designed the products are rigorously type tested (often to destruction) to ensure full compliance against the standards.

Most of our products for gas are manufactured in our modern manufacturing facilities in Chesterfield and Manchester using the latest techniques. They are supported by other AVK group companies, primary supply chain for component parts.

The following **Donkin Gas Valves and Fittings Handbook** is designed to be a comprehensive overview of the Donkin and AVK gas valve and fittings range, giving you all the information needed to correctly choose the right product for the application.

The handbook has also been created as a tool for you to use with in depth knowledge on the manufacturing processes, quality systems, accreditations and also terminology used within the industry. It also includes quick product selector tables linking to the relevant page number for more technical information.

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- Extent of ovality (if possible).
- For clamps DN50 to 450 (2” to 18”). Please state single or double band.
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- Delivery address and post code.
- An order number and/or ability to send a written order confirmation (electronic, fax, text).

For clamps DN50mm to 1200mm+ (2” to 48”)
Please state single or double band.
Range for single band clamps DN50mm to 450mm
Range for multi band clamps DN80mm to 1200mm+

FOR THE FULL RANGE SCAN HERE OR CLICK HERE

For fittings and other AVK products on standard service offer contact:

Gas Sales: +44 (0) 1246 479100
Water Sales: +44 (0) 1604 601188

WRAS

FLANGE TABLE

Flange tables	Nominal bore	O/D of Flange		No of Bolts	Dia of Bolts		Dia of Holes		PC Dia of Holes	
		inch	mm		inch	mm	inch	mm	inch	mm
B.S.'D'	2"/50mm	6"	152	4	5/8"		3/4"	19	4.1/2"	113
B.S.'E'	2"/50mm	6"	152	4	5/8"		3/4"	19	4.1/2"	113
PN10	2"/50mm	6.1/2"	165	4		M16	3/4"	18	5"	125
PN16	2"/50mm	6.1/2"	165	4		M16	3/4"	18	5"	125
ANSI 150	2"/50mm	6"	152	4	5/8"		3/4"	19	4.3/4"	119
ANSI 300	2"/50mm	6.1/2"	165	8	5/8"		3/4"	19	5"	125
B.S.'D'	3"/80mm	7.1/4"	184	4	5/8"		3/4"	19	5.3/4"	144
B.S.'E'	3"/80mm	7.1/4"	184	4	5/8"		3/4"	19	5.3/4"	144
PN10	3"/80mm	7.7/8"	200	8		M16	3/4"	17	6.1/2"	159
PN16	3"/80mm	7.7/8"	200	8		M16	3/4"	18	6.1/2"	160
ANSI 150	3"/80mm	7.1/2"	191	4	5/8"		3/4"	19	6"	150
ANSI 300	3"/80mm	8.1/4"	210	8	3/4"		7/8"	22	6.5/8"	166
B.S.'D'	4"/100mm	8.1/2"	216	4	5/8"		3/4"	19	7"	175
B.S.'E'	4"/100mm	8.1/2"	216	8	5/8"		3/4"	19	7"	175
PN10	4"/100mm	8.4/5"	220	8		M16	3/4"	17	7"	179
PN16	4"/100mm	8.4/5"	220	8		M16	3/4"	18	7"	180
ANSI 150	4"/100mm	9"	229	8	5/8"		3/4"	19	7.1/2"	188
ANSI 300	4"/100mm	10"	254	8	3/4"		7/8"	22	7.7/8"	197
B.S.'D'	6"/150mm	11"	280	8	5/8"		3/4"	19	9.1/4"	231
B.S.'E'	6"/150mm	11"	280	8	3/4"		7/8"	22	9.1/4"	231
PN10	6"/150mm	11.2/5"	285	8		M20	7/8"	21	9.1/2"	239
PN16	6"/150mm	11.2/5"	285	8		M20	7/8"	22	9.1/2"	240
ANSI 150	6"/150mm	11"	279	8	3/4"		7/8"	22	9.1/2"	238
ANSI 300	6"/150mm	12.1/2"	318	12	3/4"		7/8"	22	10.5/8"	266
B.S.'D'	8"/200mm	13.1/4"	336	8	5/8"		3/4"	20	11.1/2"	288
B.S.'E'	8"/200mm	13.1/4"	336	8	3/4"		7/8"	22	11.1/2"	288
PN 10	8"/200mm	13.3/5"	340	8		M20	7/8"	21	11.1/2"	294
PN16	8"/200mm	13.3/5"	340	12		M20	7/8"	22	11.1/2"	295
ANSI 150	8"/200mm	13.1/2"	343	8	3/4"		7/8"	22	13.1/2"	338
ANSI 300	8"/200mm	15"	381	12	7/8"		1"	25	15"	375
B.S.'D'	10"/250mm	16"	406	8	3/4"		7/8"	22	14	350
B.S.'E'	10"/250mm	16"	406	12	3/4"		7/8"	22	14	350
PN 10	10"/250mm		395	12		M20	7/8"	22	14	350
PN16	10"/250mm	16.1/5"	405	12		M24	1"	26	14.1/4"	355
ANSI 150	10"/250mm	16"	406	12	7/8"		1.1/8"	25	14.1/4"	361
ANSI 300	10"/250mm	17.1/2"	445	16	1"		1.1/8"	28	15.1/4"	381
B.S.'D'	12"/300mm	18"	457	12	3/4"		7/8"	25	16"	400
B.S.'E'	12"/300mm	18"	457	12	7/8"		1"	26	16"	400
PN 10	12"/300mm		445	12		M20	7/8"	22	16"	400
PN16	12"/300mm	18.2/5"	460	12		M24	1"	26	16.1/2"	410
ANSI 150	12"/300mm	19"	483	12	3/4"		1"	25	17"	425
ANSI 300	12"/300mm	20.1/2"	521	16	1.1/8"		1.1/4"	31	17.3/4"	444
B.S.'D'	14"/350mm	20.3/4"	525	12	7/8"		1"	25	18.1/2"	463

Note: Product information is correct at time of printing

Flange tables	Nominal bore	O/D of Flange		No of Bolts	Dia of Bolts		Dia of Holes		PC Dia of Holes	
		inch	mm		inch	mm	inch	mm	inch	mm
B.S.'E'	14"/350mm	20.¾"	525	12	⅞"		1"	25	18.½"	463
PN 10	14"/350mm		505	16		M20	⅞"	22		460
PN16	14"/350mm	20.⅘"	520	16		M24	1"	26	18.½"	470
ANSI 150	14"/350mm	21"	533	12	1"		1.⅛"	28	18.¾"	469
ANSI 300	14"/350mm	23"	584	20	1.⅛"		1.¼"	31	20.¼"	506
B.S.'D'	16"/400mm	22.¾"	575	12	⅞"		1"	25	20.½"	513
B.S.'E'	16"/400mm	22.¾"	575	12	⅞"		1"	25	20.½"	513
PN10	16"/400mm		565	16		M24	1"	26	20.½"	515
PN16	16"/400mm	23.⅕"	580	16		M27	1.¼"	30	21"	525
ANSI 150	16"/400mm	23.½"	597	16	1"		1.⅛"	28	21.¼"	531
ANSI 300	16"/400mm	25.½"	648	20	1.¼"		1.⅜"	34	22.½"	563
B.S.'D'	18"/450mm	25.¼"	610	12	⅞"		1"	25	23"	575
B.S.'E'	18"/450mm	25.¼"	610	16	⅞"		1"	25	23"	575
PN10	18"/450mm	25.¼"	615	20		M24	1"	26	22.½"	565
PN16	18"/450mm	25.⅗"	640	20		M27	1.¼"	30	23.½"	585
ANSI 150	18"/450mm	25"	635	16	1.⅛"		1.¼"	31	22.¾"	569
ANSI 300	18"/450mm	28"	711	24	1.¼"		1.⅜"	34	24.¾"	619
B.S.'D'	20"/500mm	27.¾"	705	16	⅞"		1"	25	25.¼"	631
B.S.'E'	20"/500mm	27.¾"	705	16	⅞"		1"	25	25.¼"	631
PN10	20"/500mm		670	20		M24	1"	26	24.¾"	620
PN16	20"/500mm	28.⅗"	715	20		M30	1.⅜"	33	26"	650
ANSI 150	20"/500mm	27.½"	699	20	1.⅛"		1.¼"	31	25"	625
ANSI 300	20"/500mm	30.½"	775	24	1.¼"		1.⅜"	34	27"	675
B.S.'D'	24"/600mm	32.½"	825	16	1"		1.⅛"	28	29.¾"	744
B.S.'E'	24"/600mm	32.½"	825	16	1.⅛"		1.¼"	31	29.¾"	744
PN 10	24"/600mm		780	20		M27	1.¼"	30		725
PN16	24"/600mm		840	20		M33	1.½"	36	31"	770
ANSI 150	24"/600mm	32"	813	20	1.¼"		1.⅜"	34	29.½"	738
ANSI 300	24"/600mm	36"	914	24	1.½"		1.⅝"	41	32"	800
PN 10	28"/700mm		895	24		M27		30		840
PN 16	28"/700mm		910	24		M33		36		840
B.S. 'D'	30" /750mm	39.¼"		20	1.⅛"		1.¼		36.½	
B.S. 'E'	30" /750mm	39.¼"		20	1.¼"		1.½		36.⅓	
PN10 /PN16	30" /750mm	750mm dia does not exist for PN10 or PN16 standards								
PN 10	32"/800mm		1015	24		M30		33		950
PN 16	32"/800mm		1025	24		M36		39		950
PN 10	36"/900mm		1115	28		M30		33		1050
PN 16	36"/900mm		1125	28		M36		39		1050
PN 10	40"/1000mm		1230	28		M30		33		1160
PN 16	40"/1000mm		1255	28		M36		42		1170
PN 10	48"/1200mm		1455	32		M36		39		1380
PN 16	48"/1200mm		1485	32		M45		48		1390

Note: Product information is correct at time of printing

PIPE DIAMETER CHART

NOMINAL BORE																			
	INCHES	0.5	0.75	1	1.25	1.5	2	2.5	3	3.5	4	5	6	7	8	9	10	12	14
	MM	15	20	25	32	40	50	65	80	90	100	125	150	175	200	225	250	300	350
DUCTILE IRON	BS4772 (1988) DIN 28601, 28602 28603, 28605					56 DIN 28601	66 DIN 28605	82 DIN 28605	98		118	144 DIN 28601/3	170		222		274	326	378
uPVC	BS3505	21.4	26.8	33.6	42.3	48.3	60.4		88.9		114.3	140.2	168.3		219.1		273	323.9	355.6
	BS3506	21.4	26.8	33.6	42.3	48.3	60.4	75.2	88.9		114.3	140.2	168.3	193.8	219.1	244.5	273	323.9	355.5
(IMPERIAL CAST IRON) and ASBESTOS CEMENT (TURNED END)	BS1211(1981) (UTI 27" NB) BS78 (1981) BS486 (1966)	CLASS AB ONLY					2.20 55.9	2.72 69.1	3.24 82.3	3.76 95.5		4.80 121.9	5.90 149.9	6.98 177.3	8.06 204.7	9.14 232.2	10.20 259.1	11.26 286.0	13.14 333.8	15.22 387
		CLASS CD ONLY					2.20 55.9	2.72 69.1	3.24 82.3	3.76 95.5		4.80 121.9	5.90 149.9	6.98 177.3	8.06 204.7	9.14 232.2	10.20 259.1	11.26 286.0	13.60 345.4	15.72 399.3
		NON STD					2.25 57		3.25 82.5										
STEEL	ISO/4200 (1991) SER 1		21.3	26.9	33.7	42.4	48.3	60.3	76.1	88.9		114.3	139.7	168.3		219.1		273	323.9	355.6
	SER 2			25.0	32.0	40.0	57.0	63.5	70.0		101.6	127.0	133.0							
	SER 3			25.4	30.0	44.5	54.0		73.0	82.5		108.0	141.3	159.0	193.7		244.5			
	SER 3			35.0									152.4	177.8						
	BS1387		21.3	26.9	33.7	42.4	48.3	60.3	76.1	88.9		114.3	139.7	165.1						
	BS3600 (1998) & BS3601 (1993) (pipe ends to BS534 1990)		21.4	26.8	33.6	42.3	48.3	60.4	76.1	88.9	101.6	114.3	139.7	168.3	193.7	219.1	244.5	273	323.9	355.6
	API 5L & BS1600		21.4	26.7	33.4	42.2	48.3	60.3	73.0	88.9	101.6	114.3	141.3	168.3		219.1		273.1	323.9	355.6
GRP	BS5480															220		272	324	376
METRIC ASBESTOS CEMENT (TURNED END)	BS486	CLASS 15												177		232	259	286	334	392
		CL SS 20														232	259	286	345	405
		CLASS 25						69		96		122		177		240	268	295	356	419
ABS	BS5391																			

uPVC & POLYETHYLENE (METRIC) BS5556 (ISO/161/1)	METRIC uPVC & PE ARE SPECIFIED IN TERMS OF OUTSIDE DIAMETER													
	16	20	25	32	40	50	63	75	90	110	125	140	160	180

Note: Product information is correct at time of printing

15	16	18	20	21	22	24	26	27	28	30	32	33	34	36	40	42	44	48	52	56	64	72	80
375	400	450	500	525	550	600	650	675	700	750	800	825	850	900	1000	1050	1100	1200	1300	1400	1600	1800	2000
	429	480 BS ONLY	532			635			738		842			945	1048		1152 BS ONLY	1255 BS ONLY		1462 BS ONLY	1668 BS ONLY		
	406.4	457.2	508			609.6																	
	406.4	457.2	508		558.8	609.6																	
16.26 413	17.30 439	19.38 492	21.46 545	22.50 572	23.54 598	25.60 650	27.66 703	28.70 729	29.72 755	31.78 807	33.84 860	34.88 886	35.92 912	37.96 964	42.06 1068	44.12 1121	46.16 1172	50.26 1277					
16.78 426.2	17.84 453.1	19.9 506.9	22.06 560.3	23.12 587.2	24.16 613.7	26.26 667.0	28.36 720.3	29.40 746.8	30.44 773.2	32.52 826.0	34.62 879.3	35.66 905.8		38.76 984.5	42.92 1090.2	45.00 1143.0		51.20 1300.5					
	406.4	457	508			610			711		813			914	1016	1067	1118	1219		1422	1626	1829	2032
									762							1168			1321				
					559		660						864										
	406.4	457	508		559	610	660		711	762	813		864	914	1016			1219		1422	1626	1829	2032
	406.4	457.2	508		559	609.6	660.4		711.2	762	812.8		863.6	914.4	1016	1066.8	1117.6	1219.2	1320.8	1422.4	1125.6	1828.8	2032
	427	478	530			633			718		820			924	1027		1144	1228	1350	1449	1640	1844	2048
	448	498	568			654			761	808	882		927	970									
	463	515	586			672			780	830	904		952	996									
	478	532	605			691			801	852	915		977	1024									

RATHER THAN NOMINAL BORE, QUOTE PIPE CLASS, RATING OR WALL THICKNESS ON ENQUIRIES

200	225	280	315	355	400	450	500	560	630	710	800	900	1000	1200	1400	1600	1800	2000

Note: Product information is correct at time of printing

TESTING, QUALITY AND DESIGN

bsi. ISO 29001 Oil and Gas

AVK was the first manufacturer in the gas distribution sector to achieve the international standard ISO/TS 29001:2011 for its entire design-to-delivery, gas valve manufacturing process. Achieved by its Bryan Donkin Valves production facility, this is the highest safety-based standard a manufacturer can achieve in this sector.

AVK invested two years in securing the standard for the Donkin Valves brand, which has been supplied within the global gas sector for over 150 years.

ISO/TS 29001 defines the quality management system for product and service supply organisations for the petroleum, petrochemical and natural gas industries.

Achieving ISO/TS 29001 has seen us conduct a business-wide exercise starting with the design process, procurement and flow analysis at the foundry production stage. It also had to demonstrate how it has eliminated non-conforming products, installed specific preventative activities, imposed a new testing regime for safety factors and reduce variations and waste. It also means that AVK continuously verify and validate the exercises it carried out to achieve the standard.

AVK and Donkin have been manufacturing products in the UK for many decades to supply to the local and worldwide gas industries. We are proud to say that quality is built into our products, from the initial design, right through the manufacturing process.

All AVK products are rigorously type tested to ensure compliance with Gas Industry Standards, and are 100% quality checked before despatch to the customers. AVK quality is not only paramount in products but also in people and the way we deal with our customers. The Donkin brand has been successfully associated with the gas industry for over 170 years.

For the UK market AVK gate valves are all approved to Gas Industry Standards (GIS) and are certified by the BSI Kitemark scheme. Valves for other markets are tested and approved to relevant international standards.

AVK's quality assurance system is third party certified according to ISO 9001 and ISO 14001 for environmental management. AVK also operate and are certified to OHSAS 18001 the international standard for occupational health and safety.

All relevant products produced by AVK UK are compliant with the requirements of the European Pressure Equipment Directive (PED). Certificates of compliance are available on request for appropriate products.

bsi. ISO 14001 Environmental Management

bsi. ISO 9001 Quality Management

CE

INVESTORS IN PEOPLE

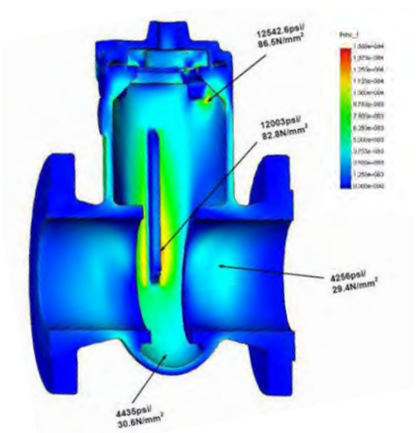
Note: Product information is correct at time of printing

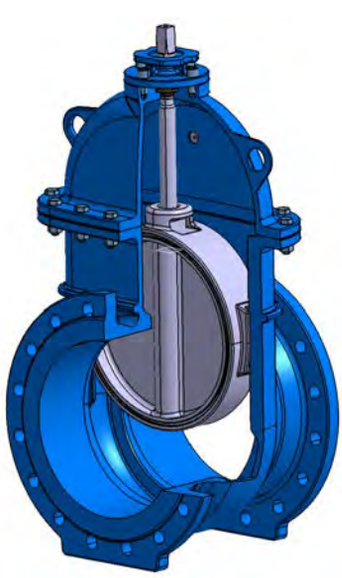
AVK and Donkin's product design and innovation is carried out at our facility in Chesterfield and employs the most modern design techniques to ensure the value engineered quality solution is always used.

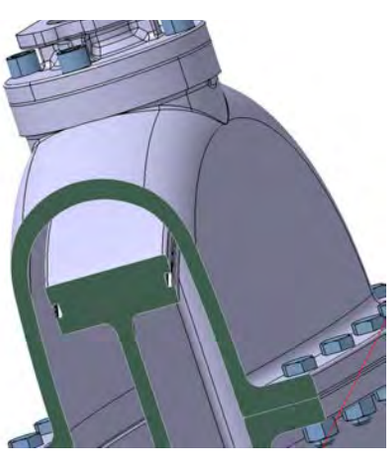
Starting with the 3D CAD system designs are developed against the strict requirements of the specification. Using the latest in product design software, the design is checked using finite element analysis to ensure stresses and strains within the assembly are within acceptable limits. When required, the flow characteristics can also be analysed with a fluid dynamic simulation. When the design is to be cast, a melt flow analysis will be run to ensure the casting process gives uniform properties and defect free castings. Prototype samples of castings are then X-rayed for defects.

All these processes are followed each time a new design or significant change to a design is introduced. Castings are X-rayed from every foundry if the supply chain is changed at any time. The valve will then go through the full type test which often requires test to destruction.

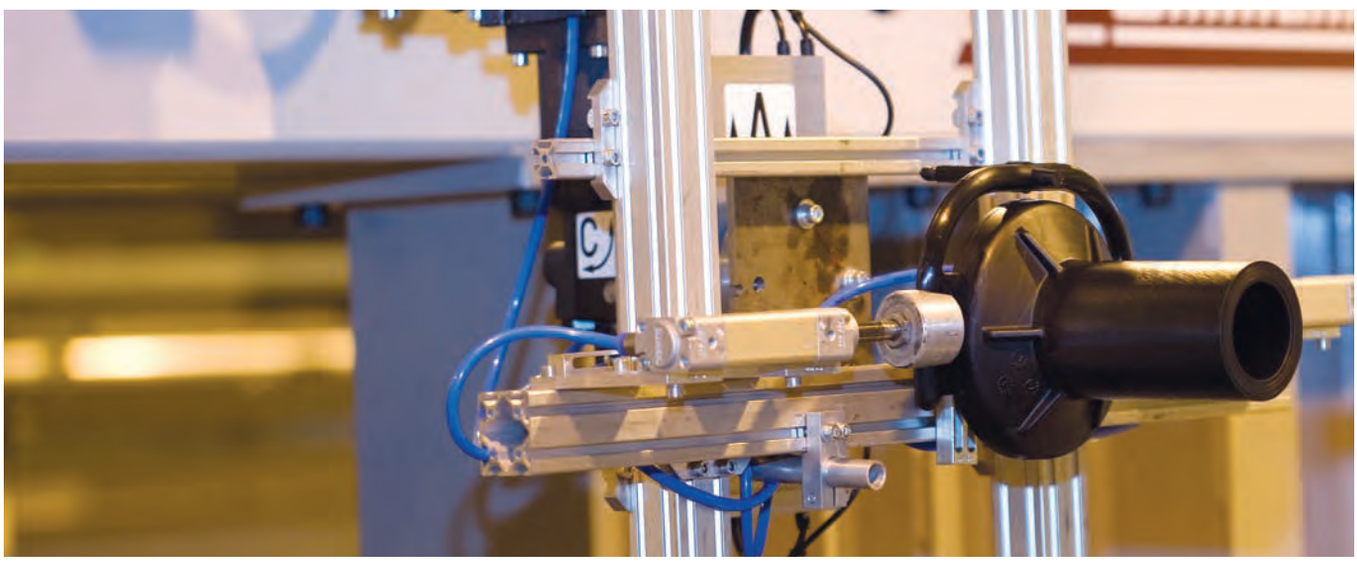
This test proves the theoretical strength and properties of a design according to the specification and the Pressure Equipment Directive. AVK and Donkin tests often exceed the requirements of the specification ensuring we fully understand the limits of the designs prior to any production run.







CERTUS™ PE BALL VALVES
TESTING AND QUALITY



Construction & material selection
The Donkin Certus ball valves are made out of PE100 material offering excellent resistance to slow crack propagation and can be welded to all PE100 and PE80 pipes.

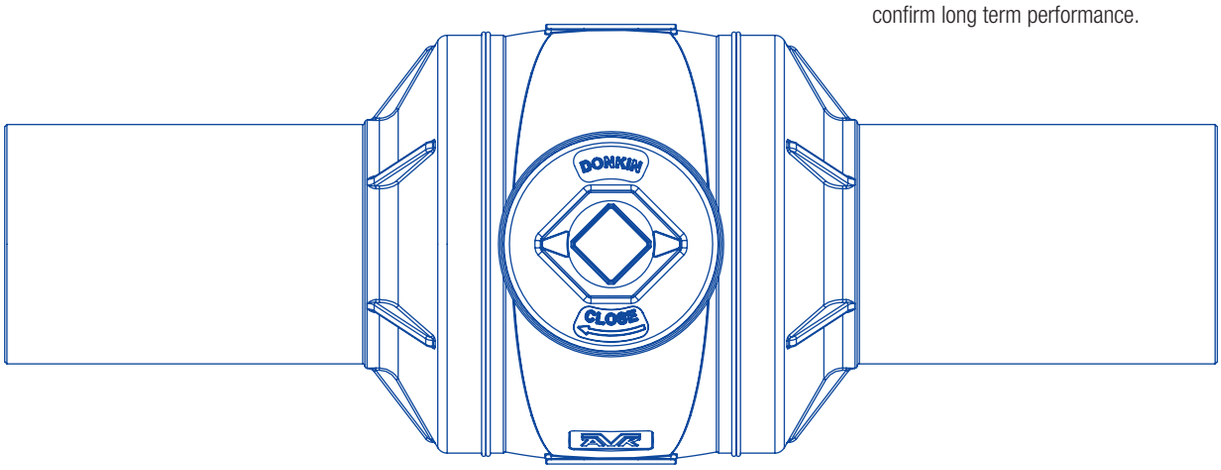
The main internal construction of the Donkin Certus is based on a sophisticated seat arrangement for reliable sealing performance. This is achieved by using a seat retainer, the ball seat is firmly kept in place. The seat compression is accurately set during the welding. The spigots are butt welded to the body. Butt welding is chosen because of the long term practical reliability. For the welding, the leading DVS2207-1 guidelines are strictly followed. The skimming and welding steps are performed by fully automated welding stations, guaranteeing ultimate consistency of the ball valves.

The seals are manufactured from high quality and durable NBR rubber. The ball is made out of an engineering plastic that has a high scratch resistance and machined to give the lowest operating torque. The construction and material used for the valve gives it a good chemical resistance allowing it to be used with a range of medias. The grease has been selected after numerous tests to achieve the maximum ease of operating. This universal grease has a very low wearing off from the lubricated surfaces, ensuring long term performance of the valve.

Approvals & testing
Donkin Certus valves are fully type tested at an external laboratory. The valves meet all the requirements of the EN1555-4, ISO4437-4 and GIS/V7-2.

During type testing, the valves are not only submitted to various long and short term leak tightness checks, but also to rigorous pulling, bending and thermal cycling tests. The operating mechanism and topcap can withstand high prescribed torques at extreme temperatures.

AVK Syntec is equipped with advanced test equipment, ensuring the highest quality of valves. Each valve is tested for operating torque and leak tightness at low and high pressure. Besides, per batch, valves undergo hydrostatic strength testing (at elevated temperatures) to confirm long term performance.



Note: Product information is correct at time of printing

MATERIALS AND TRACEABILITY

The primary Donkin product is a Series 555 gate valve. The body and bonnet of this model are available in three materials.

Steel – ASTM A216 WBC / BS EN 10213-2 GP240GH
Steel construction is usually chosen to suit the higher pressure rating or strength requirements of the application. On applications such as a bridge crossing, steel construction should be considered where the connecting pipes are steel. Generally when steel pipelines are laid the valve material should be of an equal strength to the material of the pipe. Steel pipelines and valves normally have some type of cathodic protection when buried.

Ductile iron – EN 1563 Grade 450-10
Ductile iron construction is usually chosen to suit the superior ductility requirements of the application. On applications such as underground pipe-work where ground movement can be an issue, the superior ductility of the material can accommodate the higher stresses. Careful consideration should be given to corrosion protection when burying ductile iron due to the material characteristics.

Cast iron – EN 1561 Grade GJL 250
Cast iron construction is the most commonly used material on gate valves. It can be successfully used in most applications when careful consideration is given to pipe stresses. Careful consideration should also be given to corrosion protection when burying cast iron due to the material characteristics.

Note: Product information is correct at time of printing

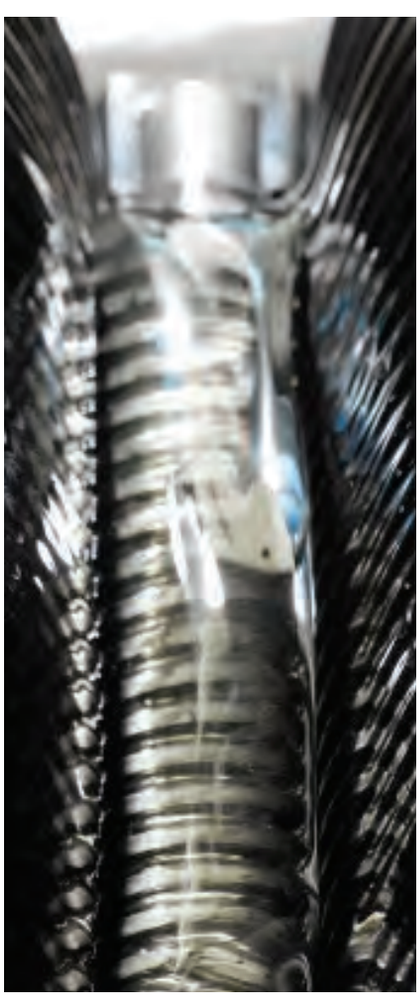
MATERIALS AND TRACEABILITY

Valve component options:
There are many options available for the components used in valve construction depending on which application the product is being used for. Selecting the correct component materials for the application is important to ensure a long, trouble free working life for the valves used.

Spindle
The standard spindle material is carbon steel. If the application involves the use of corrosive gasses or if the valves are to be buried in aggressive soil conditions, then Grade 303 stainless steel should be considered. All AVK spindles are manufactured with rolled threads to guarantee smooth running and maximum strength.

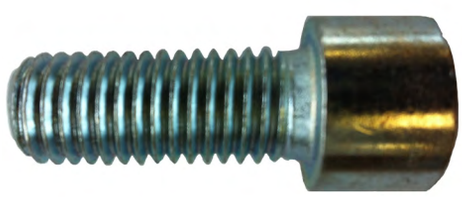
O-rings
All seals are available in two rubber materials to accommodate different mediums. For natural gas, Nitrile EN682 Grade G is used as standard whereas when used for manufactured gas, methane or more aggressive mediums then the seals can be changed to Viton. Normally a gas analysis should be considered against the O-ring material properties table to check the suitability of the seal material for the medium in the pipeline. (See pages 186 -198)

Fastenings
The valve fastenings are primarily used to connect the valve body and bonnet and are available in two options. Grade 8.8 black bolts to BS EN ISO 898 Part 1 are standard with an option of marine grade stainless steel Grade A4 to BS EN ISO 3506. On burying a valve, consideration must be given to the selection of bolt fastenings material and adequate corrosion protection.



Note: Product information is correct at time of printing

Traceability is essential on valves and other key components in a gas system. Each gate valve has a unique serial number allocated after successful production testing. This gives complete traceability of the raw materials in the key components along with the manufacturing details. Keeping clear records of the serial number and location of valves assists rapid identification of a component should the need arise. The process in our factory includes:



Valve door, body and bonnet marking
Each door, body and bonnet has a raised cast number identifying the foundry, typically a four digit number, followed by five further numbers and letters which identify the date of the casting. This identification can be traced back to a test bar on the day of casting which records the details of the "alloy" content. The same number is recorded against the unique serial number of the valve when allocated after testing.

Fasteners
Each batch of fasteners are supplied with 3.1 test certificates and a unique material certificate number from the manufacturer who must hold a valid ISO 9001 certificate registered with a leading European accreditation body.

A quantity of bolts according to ISO 2859-1 (BS 6001) are then preload tested for a 72 hour period allowing zero defects to accept the batch. The unique material certificate number is written on every box (typical content 100) and this number is then recorded against the unique valve serial number.

This process ensures complete traceability throughout the whole manufacturing process.

Individual valve testing
On successfully passing the production test, each valve is then allocated a unique serial number (Ball valves are cold stamped and flow limitors are labelled, both are batch coded).

The serial number is permanently etched onto the valve spindle (As shown in the top left photo). The same information is recorded against valve test records for traceability and is further displayed on the valve as part of the QR code label.

AVK strongly recommends that this serial number is recorded on the customers valve installation records.

Records
AVK records and retains all of the traceable information for each valve. This includes materials, components and test data of each individual valve from the casting date of a component through to the successful testing of the valve. This information is electronic to enable rapid and accurate access should the need arise. Finally, when each valve is despatched, the unique numbers are recorded against the date of despatch and the customer to give full traceability from raw material to customer warehouse. As previously stated, on installation adding the unique valve number and location to the site records completes the chain.

Note: Product information is correct at time of printing

AVK ASSIST
TAKE CONTROL OF YOUR CRITICAL ASSETS

AVK ASSIST is a free app aimed at gas and water network engineers. The app is made up of 4 key elements which will help specify, select and then record the installation quality and GPS location of the asset.

The AVK ASSIST app is available to download for free on the App Store and Google Play.

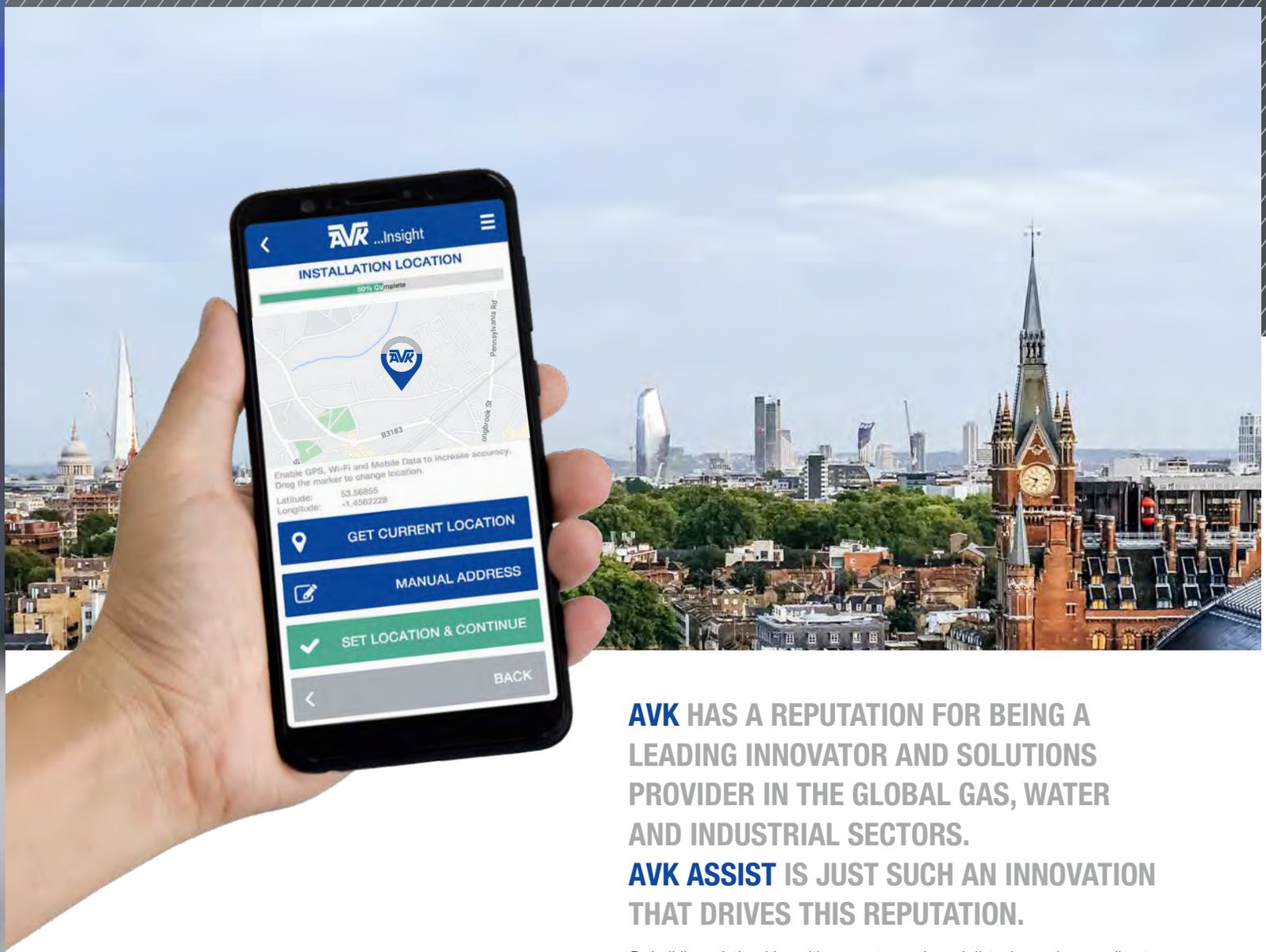
DOWNLOAD THE APP HERE

Download on the App Store

GET IT ON Google Play

- **INCREASED ASSET TRACEABILITY**
- **RECORD INDIVIDUAL ASSET INSTALLATIONS**
- **ACCURATE GPS PIN LOCATION**
- **VISUALLY AUDIT THE INSTALLATION QUALITY**
- **EXPORTABLE DATA INTO STANDARD FORMATS**
- **PERIODIC INSTALLATION AUDIT REPORT AVAILABLE**

Note: Product information is correct at time of printing



AVK HAS A REPUTATION FOR BEING A LEADING INNOVATOR AND SOLUTIONS PROVIDER IN THE GLOBAL GAS, WATER AND INDUSTRIAL SECTORS. AVK ASSIST IS JUST SUCH AN INNOVATION THAT DRIVES THIS REPUTATION.

By building relationships with our partners, through listening and responding to both their key strategies and to their daily operational challenges, we are able to develop solutions led products and services which help deliver and resolve.

Network management and asset mapping are 2 key subjects highlighted in the majority of utility strategies as ongoing issues, the AVK ASSIST mobile app can make a major contribution on the journey to a resolution.

AVK ASSIST is a free app aimed at utility and industrial, gas and water network engineers. The app is made up of 4 key elements which will help specify, select and then record the installation quality and GPS location of the asset.

The AVK ASSIST app is available to download for free on the App Store and Google Play.

FULL TRACEABILITY IN A FEW SIMPLE STEPS...

The QR code is generated when the valve successfully passes all the relevant test procedures. It assigns a unique serial number for the product which is linked to the full material and test records. When installed the data record becomes complete from raw material to accurate position and application.

SCAN THE QR CODE

SET LOCATION

TAKE THE INSTALLATION PICTURE

Note: Product information is correct at time of printing

COATING OPTIONS

As part of AVK's commitment to provide our customers with solutions, not only products, we have developed the Donkin Asset Protection System for our market leading gas valve range.

The system in its entirety has been designed to ensure that valve installations are quicker, of a consistently high quality, and are fully traceable and auditable. The system also improves the asset life and integrity of the valve whilst negating the need for additional protection systems.

The full system is comprised of five main elements that deliver these benefits

- A unique, factory applied, high performance Polyurethane coating, specially developed by AVK to withstand the rigors and challenges of underground installation
- Factory fitted PE tails
- The AVK Valve Installation Tracker to log, locate and audit the valve installation
- Stainless steel spindle
- Stem cap

Reduce valve wrapping
The Polyurethane coated, PE tailed, Series 555 can be installed without any further corrosion protection, so it's just a case of install, record and backfill. Valves with flanged ends have fully protected valve bodies but will still need to be wrapped on the connecting flanges to ensure that the connecting bolts are fully protected. This is a major saving on both models when compared to wrapping the whole valve.

Speed up installation
Fitting the Donkin Polyurethane coated, PE tailed valves increases the speed of installation by eliminating the time taken to bolt up the connecting flanges and fully wrap the installation. The estimated potential labour saving is up to 2 hours on a DN300 valve.

When compared to field applied liquid coatings (which can take up to 24 hours to cure) there is a considerable time saving using this factory applied system.

Reduce potential for underground leaks
The Donkin PE tailed Polyurethane coated valves are factory fitted and tested. The PE ends are directly electrofused to the PE pipeline, eliminating the need for bolted joints, reducing the potential for leaks and increasing the asset integrity value of the pipeline.

Valve asset tracking
The AVK Valve Installation Tracker ensures installed valves are logged with a GPS location, photograph and installation record, providing easily accessible and accurate data to allow full auditing of installed works. (See page 18-19)

Extended warranty
When you purchase the Series 555 PE tailed valves with the Donkin Polyurethane coating, stainless steel spindle, stem cap and register with the AVK Valve Installation Tracker, AVK will offer a comprehensive 20 year warranty on the corrosion protection of the valve.

Approved to recognised standards
The Donkin Polyurethane coating offered by AVK has been used extensively by gas customers on mainland Europe since 1995. It is fully type tested to European standard EN 10290 and also complies with all the relevant parts of UK gas standard GIS/CW6. In addition we have undertaken site specific tests to validate and approve the robustness of the coating. These high level tests assure total confidence in its ability to fully protect your buried assets.

Note: Product information is correct at time of printing

DONKIN ASSET PROTECTION SYSTEM

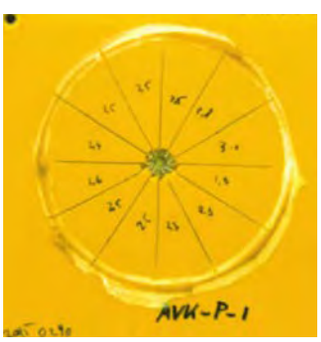
	BS EN 10290	GIS/CW-6	DONKIN IN-HOUSE TESTS	
STANDARD	Steel tubes and fittings for onshore and offshore pipelines	Specification for the external protection of steel line pipe and fittings using fusion bonded powder and associated coating systems — Part 2: Factory applied coatings.	Additional tests	Donkin Polyurethane coating test results
MINIMUM THICKNESS	Class A 1000 microns Class B 1500 microns	Minimum 1500 microns		Min. coating thickness measured ≥1500 microns (Coated in accordance with BS EN 10290 class B)
HOLIDAY DETECTION	8 volts per micron with max of 20kV	125 volts per 25 microns (i.e. 5 volts per micron)	Test at 20kV	No holidays detected at 20kV
IMPACT RESISTANCE	5 Joules per mm (1500 microns) of coating at 23°C. This equates to a minimum of 7.5 Joules (1.5 x 5) at 23°C. In layman's terms this is equivalent to dropping a M24 spanner from a height of 0.83 metres	5 Joules at 23 °C		No visual damage or holidays detected with a 3.5kg bar with 25mm spherical tip up to 15 Joules per mm at 23°C. This is equivalent to dropping a M24 spanner from a height of 2.5 metres at 23°C. (Based on 1.5mm thickness)
	3 Joules per mm of coating at -5°C.			No visual damage or holidays detected up to 12 Joules per mm at -5°C.
CHIP TEST (SIMULATE BACK FILLING)			Drop 16kg of nominal 14mm diameter rounded stones from 2 metres. Perform holiday test. Repeat. The coating must be able to withstand 2 drops in succession.	No visual damage or holidays detected.
DROP TEST			Roll valve (71kg) off pallet (145mm height) and check for visual impact damage and holidays.	No visual damage or holidays detected when tested up to 97 Joules.

MINIMUM COATING THICKNESS

HOLIDAY DETECTION

ADHESION - PULL OFF TEST

CATHODIC DISBONDMENT



Note: Product information is correct at time of printing

COATING OPTIONS

AVK's gate valve range offers a number of alternative coating options. The application and environment in which the valve is to be installed should determine which corrosion protection coating is selected and applied, either before or after installation.

AVK offers a range of factory applied corrosion protection coatings capable of protecting the valves in buried applications. Ranging from twin pack epoxy to polyurethane, suitable for extreme conditions.

Care must be taken on installation as damage to any coating can effect its ability to protect the valve.

Note: If corrosion coatings are damaged, AVK can offer repair kits for on-site repairs.

Red zinc phosphate primed coating
If the end user intends to overcoat the valve to a specific specification, such as when the valve is installed as part of a pressure reduction station, then the valve can be supplied with just a primer coating.

Blue transit coating
(Series 555 and 555 PE cast iron valves)
The blue transit coating is offered on cast iron gate valves with the option of flanged or PE tails.

This sprayed coating is applied on top of the zinc phosphate primer. It is designed to protect the valves during handling storage and installation and should not be considered a suitable corrosion protection for buried applications.

Note: Product information is correct at time of printing

Grey chlorinated micaceous rubber iron oxide coating (Series 555S steel valves)
Donkin steel gate valves firstly receive a coating of zinc phosphate primer followed by the top coat of chlorinated micaceous rubber iron oxide which is spray applied after final pressure testing. The total dry film thickness of this coating is 75µm and is recommended as a transit coating similar to that offered on the cast iron valves. Steel pipelines and valves normally have some type of cathodic protection when buried.

Black high build twin pack epoxy (Series 555D ductile valves)
The Donkin black twin pack epoxy coating is applied by spraying over the primed valves to provide a matt finish coating that is available either in 150µm or 300µm dry film thickness depending on customer requirements. Although this is a robust coating, AVK still recommend that the further corrosion protection may be necessary dependant upon the valve application.

High build twin pack epoxy for larger diameter valves
For larger diameter valves in cast iron, ductile iron or steel, Donkin can offer a high build twin pack epoxy coating with 300µm dry film thickness* and 100% holiday testing. This is available in buff colour for cast iron, black for ductile iron and grey for steel valves.

AVK still recommend that the further corrosion protection may be necessary dependant upon the valve application.

*300µm coating thickness not applicable on corners and sharp edges

Note: Product information is correct at time of printing

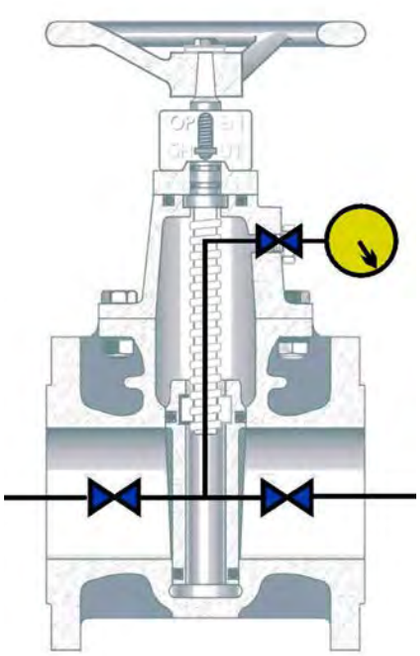
GATE VALVES
DOUBLE BLOCK AND BLEED

Double block and bleed is an essential safety feature requirement on most gas valve applications. This safety feature was originally achieved with the use of three separate valves where the space between the upstream and downstream valves was vented through a third valve. The Donkin Series 555 range of gate valves has incorporated the double block and bleed facility in one valve.

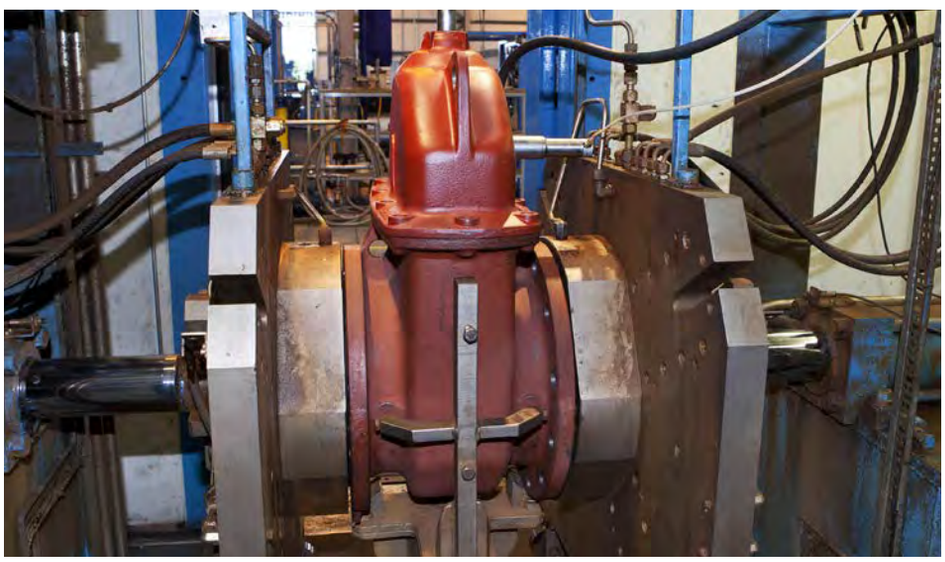
The Series 555 valve has full double block and bleed facility. This is achieved with independent O-ring seals on the upstream and downstream sides of the door, a cavity all around the door and a vent from the cavity, between the seals. When maintenance is being carried out downstream of a double block and bleed valve, the engineer can work in confidence in the knowledge that the medium is isolated and cannot leak past the valve when it is closed and properly vented.

Vent Plug

The Series 555 vent plug is designed specifically with a cross drilled hole to allow safe removal when the block and bleed feature is used. After closure of the valve, the plug can be undone one and a half turns allowing the pressure in the cavity to be safely vented through the cross drilled hole. The plug can then be fully removed for an extended vent to be fitted. The sealing of the valve can also be tested when in-line using a pressure gauge. Once the cavity is vented the pressure in the cavity will remain at zero if the valve is closed and 100% sealed.



Note: Product information is correct at time of printing



Valve Testing

Every gas valve is tested prior to leaving our facility. On a standard through bore test the force of the pressure on the upstream of the valve can assist the sealing of the downstream seat. To ensure the valves are tested to be bubble tight, regardless of the line pressure, AVK test the door seals at both high pressure (1.1 times the maximum working pressure) and at low pressure (6mbar) in each direction. This ensures the independence and leak tightness of each seat. The block and bleed port is tested at the same time to ensure no leakage over the upstream seat in either direction. With the door in the open position, each valve is also tested to 2.25 times the MOP for GIS/V7-1 or 1.5 times the MOP on non GIS V7-1 valves. This is done to ensure the integrity of the valve body and shell.

In compliance with EN12266-1 (cross referenced in GIS/V7-1) all the Series 555 valves are shell tested prior to any final coating.

Single Block Option

In applications where there is no requirement for double block and bleed AVK can offer a single block valve which is different in design to the Series 555 range. Instead of having both upstream and downstream seals, the single block valve relies on a metal door encapsulated in a double bonded, rubber coating which seals onto the full circumference of the valve bore. AVK can offer both flanged end (Series 06) and PE tailed versions (Series 36) of the single block valve both of which come coated with yellow fusion bonded epoxy coating.

Note: Product information is correct at time of printing

GATE AND SLIDE VALVES
INDUSTRIAL APPLICATIONS

Donkin gate and slide valves have been offered for industrial purposes for over a century.

The current donkin range of gate and slide valves have been supplied into the worldwide industrial markets for many years and are mostly used in steel works for coke and blast furnace gas applications and also coke oven liquor recovery.

In the UK every steel manufacturing plant and coke ovens have Donkin valves in evidence as part of the plant infrastructure and have been supplied for so long that we are now supplying valves as replacements that were supplied as part of the original plant builds.

Series 662
This 662 valve design has been extensively used for over 50 years by the worlds steel industry. This demonstrates the excellent pedigree of the valve design and its suitability within the harsh environment of a working steel plant.

Features and benefits

Water sealing facility To ensure 100% safety the Donkin Series 662 valve is water sealable. Water can be introduced into the bonnet of the valve and into the cavity between the sealing faces around the circumference of the valve door. With the door closed any small leak on the upstream seat is carried away with the water flow and cannot be carried over to the downstream of the valve.

Steam cleaning points The valve is available with up to 16 strategically placed and easily accessible steam cleaning points. These facilitate the injection of steam into the valve internals to dislodge and remove excessive solidified tar deposits.

2" full bore drain A large full bore drain point is situated on the access plate at the base of the valve body which allows residue and debris to wash out of the valve during any cleaning process.

Note: Product information is correct at time of printing

Accessible area with inspection plate
Situated at the base of every valve is a large deep accessible area with inspection plate to accommodate build up of debris in the pipeline without effecting the valve door travel. It also provides access to the internals at the base of the valve in order to carry out maintenance or clear debris.

Jacking screw Positioned to the side of the drain plug is a high tensile jacking screw facility which can be utilised to free the valve door should it become stuck in the closed position due to excessive tar deposits.

Orientation flexibility The single door wedge gate design and the standard fitting of guides and rollers, makes the valve totally flexible in orientation so it can be used in either the vertical and horizontal positions in vertical and horizontal pipelines. This allows greater confidence and flexibility of the use of this valve regardless of position.

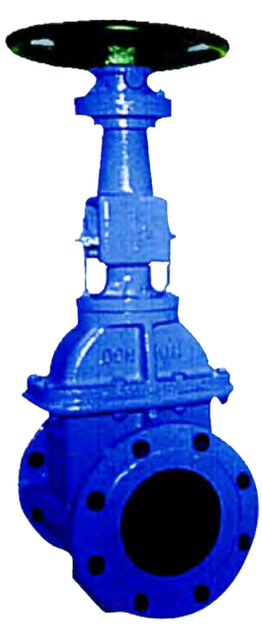
Single door wedge gate design The single door design, when compared to more complex double door designs, offers a much simpler solution to valve obturation requiring less maintenance to ensure valve sealability.

Short face to face The single door design is much lighter than double door designs and the shorter face to face dimension is advantageous especially for retrofitting into existing pipework.

Series 562
The Donkin 562 valve range has been in production for over 50 years and is a general use, metal seated, packed gland, gate valve for flushing liquor and coke oven gas applications.

It is available for pressures up to 7bar and 600mm diameter.

These valves are supplied without outside screw and yoke.



Note: Product information is correct at time of printing

GATE VALVES
VALVE CONNECTIONS

Donkin gate valves can be offered with several connection options to accommodate the application.

PE Tails

Gate valves are available with PE Tails. The ability to fuse a valve directly into line offers a number of advantages when a valve is required in a PE underground pipeline. The benefits include:

- No flanged joints below ground eliminating a potential leak path
- Reduction on installation time
- Fewer parts needed resulting in a lower unit cost
- Less complex shape aids corrosion protection
- PE pipe tails can be supplied in a number of options including PE80, PE100, peelable pipe, alternative SDR (wall thicknesses) and extra long tails according to the application and customer requirements.

Note: Product information is correct at time of printing

Flanged End
Several flange specification options are available. Our most common supply is PN16 to BS EN 1092 and ASA 150 to ANSI B16.5, BS 10:2009 Table D and others table drilling are available on request.

Note: The flange rating may not be the same as the MOP of the valve.

Weld Ends
When the valve is required in a steel pipeline for high pressure application, the Series 555/163 can be welded directly into line for higher integrity. The weld preparation must be confirmed to accommodate the schedule of the pipe.

Studded Ends
On construction valves a studded flange is standard, this product is only available in PN16 flange specification. The Series 158 valve has extra long studs to accommodate PE stub flanges.

Note: Product information is correct at time of printing

BALL VALVES
CONNECTION TYPES

PE Connection
The DONKIN CERTUS Series 85/30 is a range of PE ball valves up to OD180mm, which have been extensively and independently type tested against worldwide leading standards such as EN1555-4, GIS/V7-2 and ISO4437-4.

The Donkin Certus ball valves have undergone additional testing over and above that required in the specifications. This ensures that the valve is suitable for distribution systems and environments anywhere in the world.

The extensive Donkin Certus ball valve range consists of multiple sizes starting at OD20 and up to OD180mm. Depending on the requested pressure rating the valves are available with SDR11 or SDR17.6 spigot ends. The selected materials are tested and approved for GAS applications. The valves are rated up to MOP 10.

Flanged Connection
Donkin have two options for flanged ball valves, both of which have been supplied into the UK gas market for over 40 years and are recognised within the industry for their reliability and quality. We should never forget that a valve is designed to operate for a minimum 50 year life cycle after installation.

Ductile bodied - The Donkin Series 450 is a ductile iron reduced bore, general purpose ball valve which is suitable for both very low pressures and also up to 7bar MOP. It is a floating ball design and comes with double block and bleed facility. Available up to DN150.

Steel bodied - The Donkin 460 is a one piece steel bodied reduced bore ball valve which is generally used for under pressure connections and stand pipes on 7bar intermediate pressure systems. Available up to DN50 and can be supplied with either a false cap for buried service or lever operation.

Screwed Connection
Series 451 is a valve range that was originally designed to fit into steel gas services but is now used for general purposes such as pressure point and bypass connections. This range is ductile bodied, reduce bore and available with the choice of female threads both ends, female thread combined with a PE tail or PE tails both ends. These valves are available up to 2" and come with a false cap fitted for buried service applications.

Series 445 valves are clear bore, ductile bodied valves, specifically designed for under pressure connections. There are two versions available with screwed connections. We have the "LD" version which has a male and female thread combination, with the male thread for direct insertion into the pipe wall. The female to female thread combination is generally used via a connection called an "EMID" plug.

Note: Product information is correct at time of printing

PE Connection
Series 451 ball valves are available with PE80 tails at both ends. These are used in some markets as service isolation valves but can be used for any purpose where the valves need to be welded in to a PE pipe line.

Series 455 screwed end valves are available with a long PE80 tail on one end and can be used as a standpipe valve to provide bypass and purge points either upstream or downstream of a line valve in a PE pipeline. These valves are available in either 32mm x 1" or 63mm x 2" and should be used with the anti rotation device which is fitted over the valve just before backfilling to anchor the valve and prevent rotational movement being transferred to the pipeline.

Security Emergency Control Valve
Series 666/80 brass security ball valves have been designed for use on the laterals of gas riser systems to provide safe shut off in emergency situations.

These valves are anti tamper design and are equipped with a special spinning mechanism in the top cap which means the valves can only be open and closed using the recommended reset key.

Full bore design is fully fire safe to GIS/V7-3 requirements.

These are available in ¾" with BS21 female threaded ends.

Security Emergency Control Valve with Handle
Series 666/90 - 91 brass security ball valves have been designed for use on gas riser systems to provide safe shut off in emergency situations.

These valves are anti tamper design and are equipped with a special mechanism in the top cap which means the valves can be easily closed but not reopened without the use of the recommended reset key.

Full bore design is fully fire safe to GIS/V7-3 requirements.

These are available in 1", 1½" and 2" with BS21 female threaded ends.

Note: Product information is correct at time of printing

MAINS TO METER
ABOVE GROUND CONNECTION

SERIES 217 FACTORY ENTRY ELBOW

Donkin Series 217 Factory Entry elbows
The Donkin Series 217 is designed to take gas into a building above ground and comes complete with factory fitted PE tails.

It incorporates a 90 degree steel elbow enabling the gas to be conveyed through the wall cavity of a building for connection to internal steel pipe work.

The range consists of 15 options from 40mm PE x 1.5" steel up to 180mm PE x 6" with different lengths of pipe to suit different wall widths and different length PE spigots. The standard range has a BSP threaded connection up to and including 2" steel and a plain end above 2" for welding.

Kitemark approved to GIS/PL3

SERIES 217 FACTORY ENTRY ELBOW WITH SPLIT FLANGE

AVK Series 217 Split flange option
On larger sizes, above 2", AVK has designed an option with a unique split flange for the internal connection which eliminates the need for a welder on site. The simple design and ease of installation contributes to major cost savings for the installer.

Kitemark approved to GIS/PL3

SERIES 219 BUILDING ENTRY TEE

Donkin Series 219 Building Entry Tees
Designed to meet industry demand to have a transition fitting connecting the PE service pipe through the wall cavity to internal pipework and the gas meter box. The product has been developed to work with all existing tooling on the market including the Donkin Series 456 crimp tool kit.

Corrosion resistance was a design priority on this product range which we have addressed in several ways including a domed head on the anti tamper plug and a unique system to prevent ingress of water onto the horizontal "through wall" pipe. Along with the enhanced corrosion resistance AVK has the same GRP pipe retention system as our meter box adaptor.

The full range is available from 20mm x ¾" through to 63mm x 2" and suits all cavity depths from 150mm up to 1000mm if required.

Kitemark approved to GIS/PL3

Note: Product information is correct at time of printing

SERIES 216 METER BOX ADAPTOR

Donkin Series 216 Meter Box Adaptors
Available for the domestic gas market and are suitable for use on all commonly used designs of meter box including both above ground and below ground versions. These products are a simple transition fitting designed to connect the PE service pipe to the emergency control valve inside the meter box with a 'C' Clip design to hold them in place. The PE connection is a crimped joint which can be completed with existing tooling including the Donkin Series 456 crimp tool kit.

The product was designed considering customer feedback to address the long standing industry issue of GRP sleeving slippage during backfilling, these products have a unique system for gripping the GRP sleeving that covers the PE service pipe above ground. This unique system holds the sleeve firmly in place to prevent any slippage.

5 sizes are available ranging from 20mm x ¾ through to 32mm x 1".

Kitemark approved to GIS/PL3

SERIES 218/41 METER & GOVERNOR MODULE RISER FITTINGS

Donkin Series 218/41 Meter and Governor Module Riser fittings
The riser fittings are designed as the transition between the underground PE pipe work and above ground installation (AGI) skids.

The governor riser is designed to connect to a pressure reduction station. The meter riser has an additional bracket to fix to the concrete pad and set the meter emergency control valve (ECV) at the height specified in SER-8. Both fittings can also be used on the outlet pipework to transition back from PE to steel.

Small diameters are available with threaded ends and the larger sizes with PN16 flanges for easy connection.

Available with either PE80 or PE100 pipe. Kitemark approved to GIS/PL3.

CRIMP TOOL

Donkin Series 456 Crimp Tool Kit
A part of our complementary tooling range for our gas service solutions and has been designed and manufactured to provide safe and consistent crimp connections for PE to metallic joints.

"One-size-fits-all". The Series 456 eliminates the need for individual tools to crimp each size of pipe. This AVK design is a simple, cost effective kit using different fitted magnetic shells which will safely crimp all sizes of pipe from 16, 20,25 and 32mm.

The kits are operated via a hexagon drive nut, made extra long, to safely attach either a ratchet spanner or an air driven socket to make the crimping quick and trouble free. The kits are fully compatible with the crimping of both Donkin and other manufacturers fittings available in the market place.

These kits have been extensively field trialled by our customers and are now fully approved by National Grid for use on their Network.

Note: Product information is correct at time of printing

MAINS TO METER
BELOW GROUND CONNECTION

SERIES 310/061 FLOW LIMITOR

The Donkin flow limitor is an emergency shut-off valve that provides service line safety, service line theft protection and automatic shut-off. Should gas flow exceed limits, the flow limitor will simultaneously trip and shut-off the gas, remaining closed until repairs have been made.

Once the fault has been rectified, a small bleed-by flow enables the service to regain pressure, once equalised allowing the unit to reset for normal operation.

For direct insertion into the 32mm outlet of a standard tapping saddle. When inserted into the saddle outlet, rather than the service pipe, one size flow limitor can be used for all services of 32mm and below through the use of a reducing electrofusion coupler.

Kitemark approved to GIS/EFV1 specification

PN 0.075 - 5 barg

SERIES 310/080 FLOW LIMITOR

The Donkin 310/080 flow limitor has been designed to be used as an integral part of an electrofusion coupler or reducer enabling the product to be used for 32, 25 or 20mm PE services.

Approved to MSS SP-115

PN 0.5 - 7 barg

SERIES 310/063 FLOW LIMITOR

For direct insertion into the 32mm outlet of a standard tapping saddle. When inserted into the saddle outlet rather than the service pipe one size flow limitor can be used for all services of 32mm and below through the use of a reducing electrofusion coupler.

Approved to MSS SP-115

PN 0.69 - 6.90 barg

Note: Product information is correct at time of printing

SERIES 310/066-067 FLOW LIMITOR

For direct insertion into the service pipe. The Donkin 25 or 32mm Flow Limitor is an emergency shut-off valve that provides service line safety, service line theft protection and automatic shut-off, remaining closed until repairs have been made.

310/066 (25mm)
Approved to BGE/S/V/5 and MSS SP-115
PN 0.5 - 4 barg

310/067 (32mm)
Approved to MSS SP-115
PN 0.5 - 4 barg

SERIES 218/31-001 AND 002 BELOW GROUND ENTRY FITTING

As with the Series 217 these products are also PE to steel transition fittings designed to take gas safely into a building, this time below ground level.

Smaller diameter products in 25mm and 32mm are commonly called ‘cellar entry fittings’ and come with SDR11 PE 80 ends and a BSP screwed connection on the steel.

The rest of the range is available from 63mm x 2” up to 180mm x 6” and comes with various options of length of PE spigot and steel pipe lengths (please see data sheet for details). All sizes up to 125mm are PE 80 SDR 11 and the 180mm is available in SDR17.6.

Kitemark approved to GIS/PL3

SERIES 218/31-003 BELOW GROUND ENTRY FITTING WITH SPILT FLANGE

The underground entry fitting is a simple transition fitting to connect PE service pipes into the interior of a building via an underground entry. The fitting provides a steel onward connection to connect to the internal pipework. The PE/Steel connection is done under controlled factory conditions and has been fully type tested to GIS/PL3 Specification.

This Split Flange version is available in sizes above 63mm and is designed with an innovative split flange arrangement to eliminate the need for a welder on site thereby saving time and cost on installation.

Kitemark approved to GIS/PL3

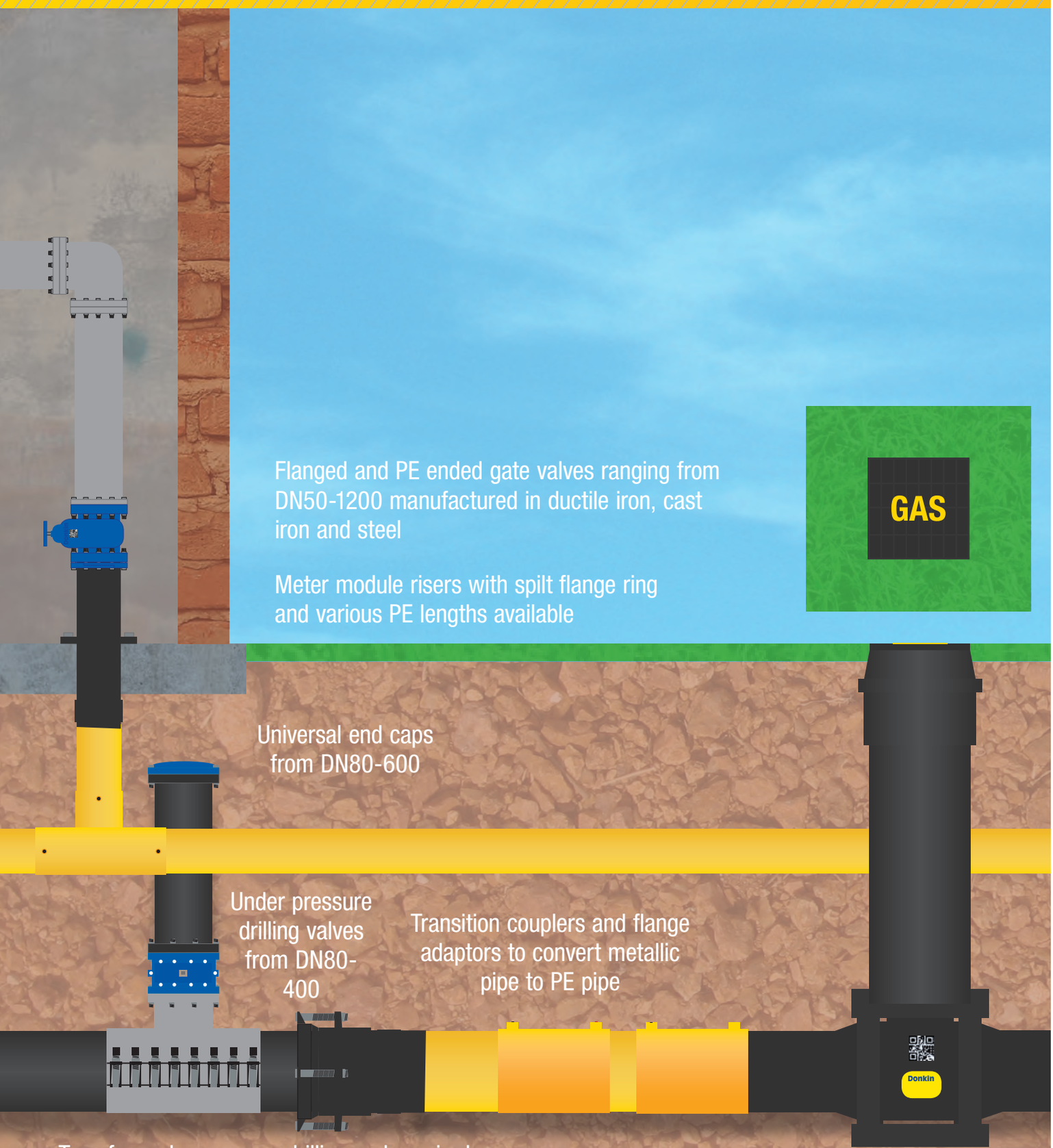
Note: Product information is correct at time of printing

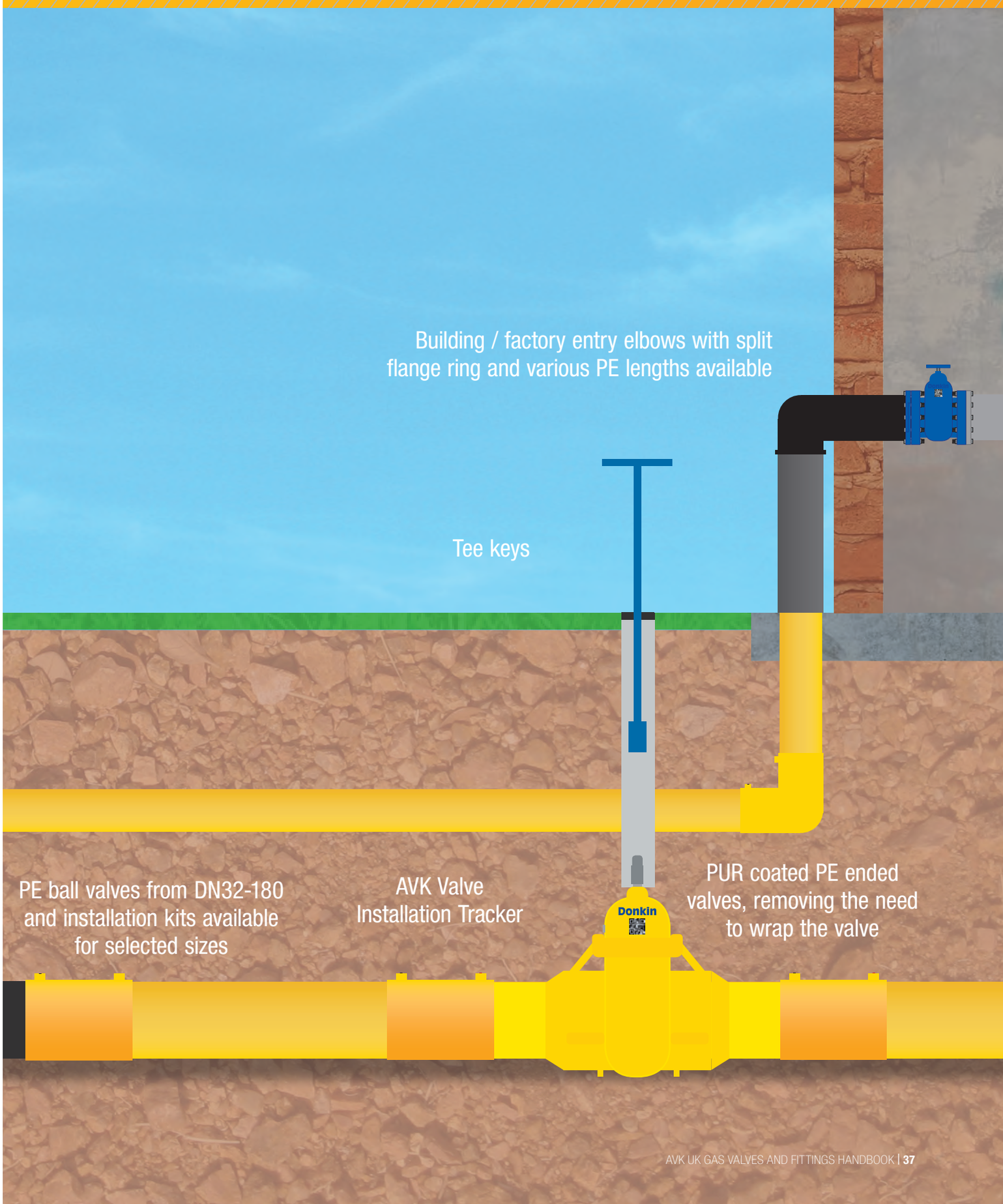
GAS SECTION

AVK GAS VALVES AND FITTINGS

TYPICAL APPLICATION SCHEMATIC

Example of product range




Building / factory entry elbows with split flange ring and various PE lengths available
Tee keys
PE ball valves from DN32-180 and installation kits available for selected sizes
AVK Valve Installation Tracker
PUR coated PE ended valves, removing the need to wrap the valve
Donkin

GATE VALVES / **SLIDE** VALVES

Series 555/300-001

Donkin Cast Iron Softseal Valve

Use	Isolation of natural gas, LPG and SNG

Features and benefits

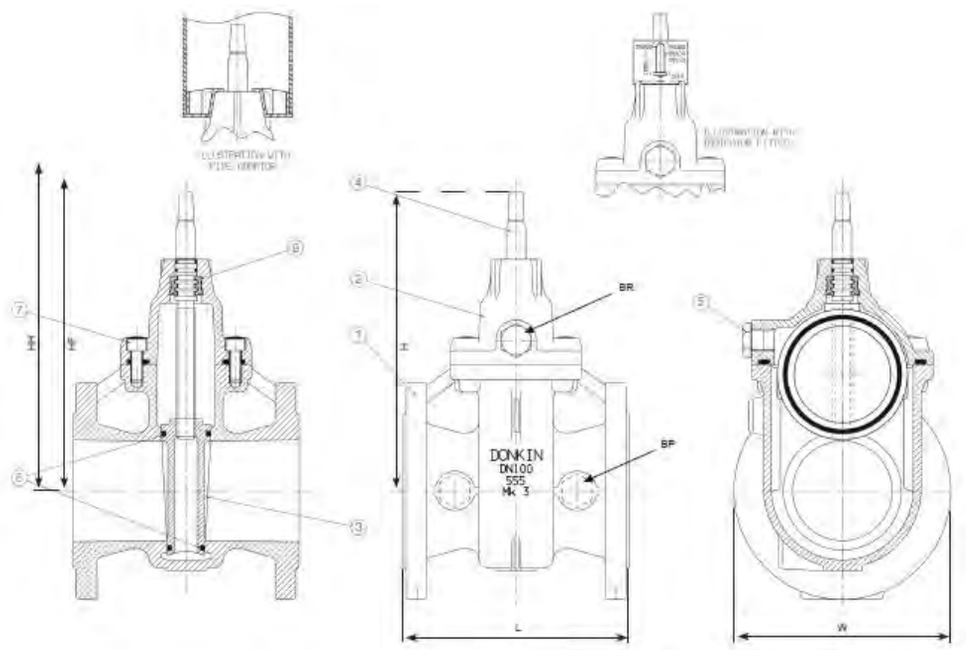
- Full double block and bleed facility with pressure relieving plug
- Soft seal positive shut off, metal to metal secondary seal
- Maintenance free
- Self supporting "flange feet" for ease of installation and stockholding
- Fasteners fully encapsulated with hot melt
- Profiled O-ring body/bonnet joint
- Suitable for under pressure drilling and tapping operations (For stoppling operations use the Series 158/04 valve)
- Suitable for end of line service
- Integral lifting lugs on all sizes
- EN1092 PN16 flanges

Options

- Pressure points / by-pass bosses
- False cap, handwheel
- Clip on indicator
- Primed finish available for painting.
- Street access down pipe adapter
- Anti tamper device
- Alternative flange drillings
- *DN50 Series 555/200-001

Size	DN80* - 300
Pressure	PN7
Temperature Range	-10°C to +60°C
Body	Cast iron
Applicable Standards	GIS/V7 Part 1 BGE/S/V/3 EN 1171 EN 12266 MSS SP - 70

AVK Ref	DN	PN	L	H	W	HF With false cap	HH With hand wheel	BR	BP	Approx Turn to closes	Weight
	mm	bar	mm								kg
555-080-03-010	80	7	203	288	200	307	308	Rp½	Rp½	13½	22
555-100-03-010	100	7	229	303	220	322	323	Rp½	Rp¾	15½	26
555-150-03-010	150	7	267	391	285	410	411	Rp¾	Rp¾	14½	54
555-200-03-010	200	7	292	478	340	497	498	Rp¾	Rp¾	19	82
555-250-03-010	250	7	330	617	405	684	628	Rp¾	Rp¾	25	150
555-300-03-010	300	7	356	696	460	763	707	Rp¾	Rp¾	27	200



AVK VALVE INSTALLATION TRACKER

Materials of Construction

No.	Description	Material
1	Body	Cast iron. EN 1561-GJL 250
2	Bonnet	Cast iron. EN 1561-GJL 250
3	Wedge gate	Cast iron. EN 1561-GJL 250
4	Spindle	Standard: carbon steel. EN 10087 11SMn30 (ENIA). Option: stainless steel. EN 10088 X8CrNiSi8-9 (303S31)
5	Pressure relief plug	Carbon steel. EN 10087 11SMn30 (ENIA)
6	Body / bonnet, gate and spindle seals	Standard: nitrile rubber. EN 682. Type G. Option: Viton
7	Fastenings	Grade 8.8 steel. FZB. BS EN ISO 4762. sealed with hot melt
8	Thrust collar	Brass BS2872 CZ 132

Note: Product information is correct at time of printing

Series 555/300-002

Donkin Cast Iron Softseal Valve

Use	Isolation of biogas and wet/dirty gases

Features and benefits

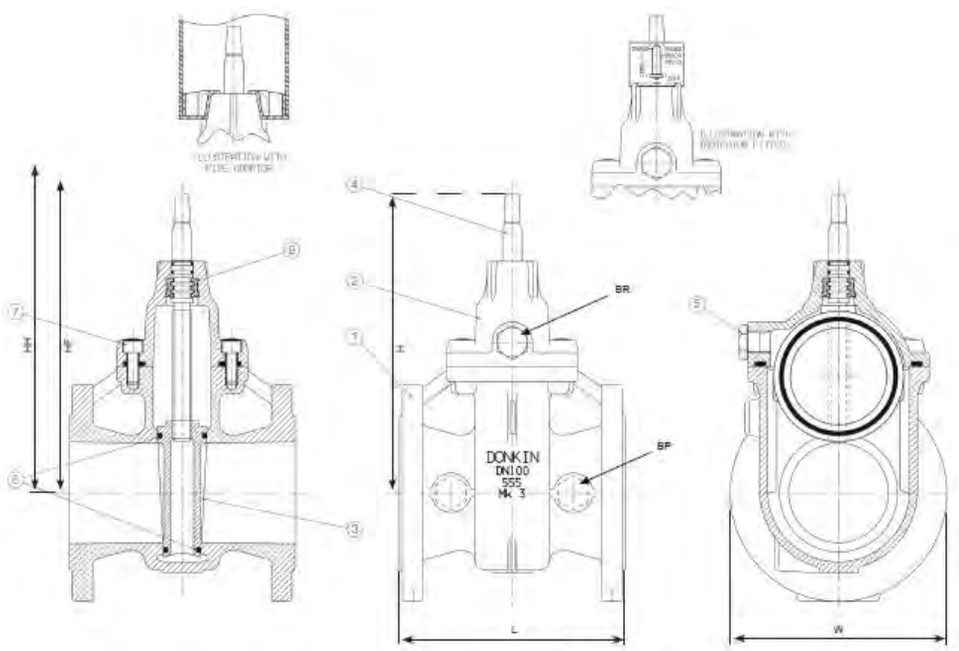
- Full double block and bleed facility with pressure relieving plug
- Soft seal positive shut off, metal to metal secondary seal
- Maintenance free
- Self supporting “flange feet” for ease of installation and stockholding
- Fasteners fully encapsulated with hot melt
- Profiled O-ring body/bonnet joint
- Suitable for under pressure drilling and tapping operations (For stoppling operations use the Series 158/04 valve)
- Suitable for end of line service
- Integral lifting lugs on all sizes
- EN1092 PN16 flanges

Options

- Pressure points / by-pass bosses
- False cap, handwheel
- Clip on indicator
- Street access down pipe adapter
- Anti tamper device
- Alternative flange drillings
- *DN50 Series 555/200-001

Size	DN80* - 300
Pressure	PN7
Temperature Range	-10°C to +60°C
Body	Cast iron
Applicable Standards	GIS/V7 Part 1 BGE/S/V/3 EN 1171 EN 12266 MSS SP - 70

AVK Ref	DN	PN	A	C	Handwheel	P.R. Plug When fitted	Approx Turn to closes	Weight
	mm	bar	mm	mm	Diameter mm			kg
555-080-33-010380	80	7	203	296	200	Rp¾	13	23
555-100-33-010380	100	7	229	334	200	Rp¾	15½	28
555-150-33-010380	150	7	267	446	300	Rp¾	15	62
555-200-33-010380	200	7	292	529	300	Rp¾	19½	90
555-250-33-010380	250	7	330	665	400	Rp¾	25	182
555-300-33-010380	300	7	356	730	400	Rp¾	27	228



AVK VALVE INSTALLATION TRACKER

Materials of Construction

No.	Description	Material
1	Body	Cast iron. EN 1561-GJL 250
2	Bonnet	Cast iron. EN 1561-GJL 250
3	Wedge gate	Cast iron. EN 1561-GJL 250
4	Spindle	Standard: carbon steel. EN 10087 11SMn30 (ENIA). Option: stainless steel. EN 10088 X8CrNiSi8-9 (303S31)

No.	Description	Material
5	Pressure relief plug	Carbon steel. EN 10087 11SMn30 (ENIA)
6	Body / bonnet, gate and spindle seals	Viton
7	Fastenings	Grade 8.8 steel. FZB. BS EN ISO 4762. sealed with hot melt
8	Thrust collar	Brass BS2872 CZ 132

Note: Product information is correct at time of printing

Series 555/300-004

Donkin Cast Iron PUR Coated Softseal Valve

Use

Isolation of natural gas, LPG and SNG

Features and benefits

- High integrity coating for buried service
- Valve installation tracker
- Full double block and bleed facility with pressure relieving plug
- Soft seal positive shut off, metal to metal secondary seal
- Maintenance free
- Self supporting "flange feet" for ease of installation and stockholding
- Fasteners fully encapsulated with hot melt
- Profiled O-ring body/bonnet joint
- Suitable for under pressure drilling and tapping operations
- Suitable for end of line service
- Integral lifting lugs on all sizes
- EN1092 PN16 flanges

Options

- Pressure points / by-pass bosses
- False cap, handwheel
- Clip on indicator
- Alternative flange drillings
- Viton seals
- *DN50 Series 555/200-001

Size

DN80* - 300

Pressure

PN7

Temperature Range

-10°C to +100°C

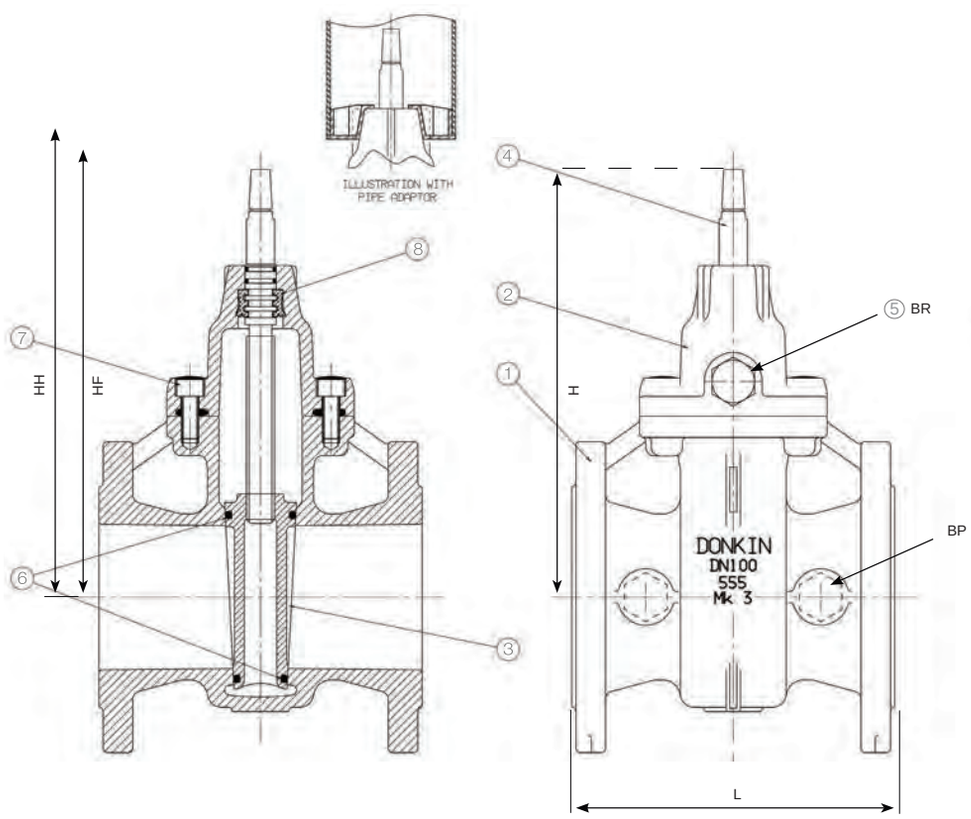
Body

Cast iron

Applicable Standards

GIS/V7 Part 1
EN 1029
EN 1171, EN 12266
MSS SP - 70
GIS/CW-6

AVK Ref	DN	PN	L	H	W	HF	HH	BR	BP	Approx Turn to closes	Weight
	mm	bar	mm			with false cap	with hand wheel				kg
555-080-03-01033040	80	7	203	288	200	307	308	Rp½	Rp½	13½	22
555-100-03-01033040	100	7	229	303	220	322	323	Rp½	Rp¾	15½	26
555-150-03-01033040	150	7	267	391	285	410	411	Rp½	Rp¾	14½	52
555-200-03-01033040	200	7	292	478	340	497	498	Rp¾	Rp¾	19	82
555-250-03-01033040	250	7	330	617	405	684	628	Rp¾	Rp¾	25	150
555-300-03-01033040	300	7	356	696	460	763	707	Rp¾	Rp¾	27	200



DONKIN ASSET PROTECTION SYSTEM

Materials of Construction

No.	Description	Material
1	Body	Cast iron. EN 1561-GJL 250
2	Bonnet	Cast iron. EN 1561-GJL 250
3	Wedge gate	Cast iron. EN 1561-GJL 250
4	Spindle	Standard: stainless steel. EN10088 X8CrNc518-9 (303531)
5	Pressure relief plug	Carbon steel. EN10087 115Mn30 (ENIA)
6	Body / bonnet, gate and spindle seals	Standard: Nitrile rubber. EN 682. Type G. Option: Viton
7	Fastenings	Grade 8.8 steel. FZB. BS EN ISO 4762
8	Thrust collar	Brass BS2872 CZ 132
	Coating	Polyurethane to EN10290 Class B and T/SP/CW/6-2

Note: Product information is correct at time of printing

Series 555/301-001

Donkin Ductile Iron Softseal Valve

Use

Isolation of natural gas, LPG and SNG

Features and benefits

- Full double block and bleed facility with pressure relieving plug
- Soft seal positive shut off, metal to metal secondary seal
- Maintenance free
- Self supporting “flange feet” for ease of installation and stockholding
- Fasteners fully encapsulated and sealed with hot melt
- Profiled O-ring body/bonnet joint
- Suitable for under pressure drilling and tapping operations
- Suitable for end of line service
- Integral lifting lugs on all sizes
- PN16 flanges

Options

- Pressure points / by-pass bosses
- False cap, handwheel
- Clip on indicator
- Street access down pipe adapter
- Anti tamper device
- 10 bar version available
- Alternative flange drillings

Size DN80 - 300

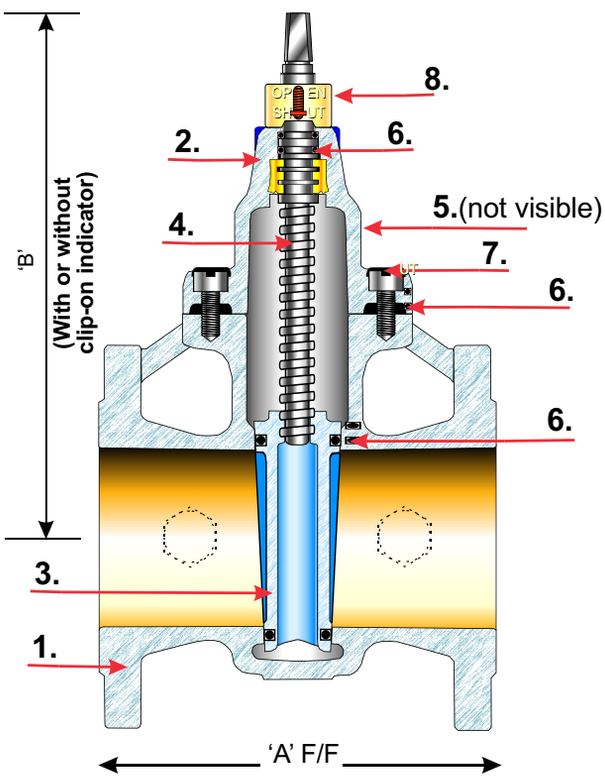
Pressure PN10

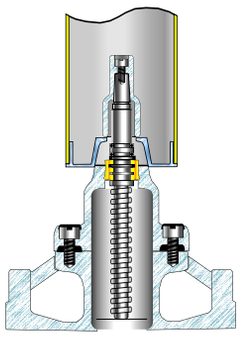
Temperature Range -10°C to +60°C

Body Ductile iron

Applicable Standards GIS/V7 Part 1, BGE/S/V/3, EN 1171, EN 12266, MSS SP - 70

AVK Ref	DN	PN	A	B	Extra height		P.R. Plug When fitted	Approx Turn to closes	Weight
	mm	bar	mm		with false cap	with hand wheel			kg
555-080-13-0413	80	10	203	288	19	20	Rp½	13½	22
555-100-13-0413	100	10	229	303	19	20	Rp½	15½	26
555-150-13-0413	150	10	267	391	19	20	Rp½	14½	52
555-200-13-0413	200	10	292	478	19	20	Rp¾	19	82
555-250-13-0413	250	10	330	617	67	11	Rp¾	25	150
555-300-13-0413	300	10	256	696	67	11	Rp¾	27	200





Valve fitted with access pipe adaptor.

AVK VALVE INSTALLATION TRACKER

Materials of Construction

No.	Description	Material
1	Body	SG (ductile) iron to EN1563 450-10, GG40
2	Bonnet	SG (ductile) iron to EN1563 450-10, GG40
3	Wedge gate	Cast iron to BS EN1561 Gr250, GG25
4	Spindle	Standard: Carbon steel. EN10087 11SMn30 (ENIA) Option: Stainless steel. EN10088 X8CrNiS18-9 (303S31)

No.	Description	Material
5	Pressure relief plug	Carbon steel. EN10087 115Mn30 (ENIA)
6	Body / bonnet, gate and spindle seals	Standard: Nitrile rubber. EN 682. Type G Option: Viton
7	Fastenings	Grade 8.8 steel. FZB. BS EN ISO 4762 Option: Stainless steel
	Indicator (optional)	Plastic

Note: Product information is correct at time of printing

Series 555/401-001

Donkin Ductile Iron Softseal Valve

Use

Isolation of natural gas, LPG and SNG

Features and benefits

- Full double block and bleed facility with pressure relieving plug
- Soft seal positive shut off, metal to metal secondary seal
- Maintenance free
- Self supporting “flange feet” for ease of installation and stockholding
- Fasteners fully encapsulated and sealed with hot melt
- Profiled O-ring body/bonnet joint
- Suitable for under pressure drilling and tapping operations
- Suitable for end of line service
- Integral lifting lugs on all sizes
- ASA 150 flanges

Options

- Pressure points / by-pass bosses
- False cap, handwheel
- Clip on indicator
- Street access down pipe adapter
- Anti tamper device
- 10 bar version available
- Alternative flange drillings
- PN16 flanges also available

Size

DN80 - 300

Pressure

PN10

Temperature Range

-10°C to +60°C

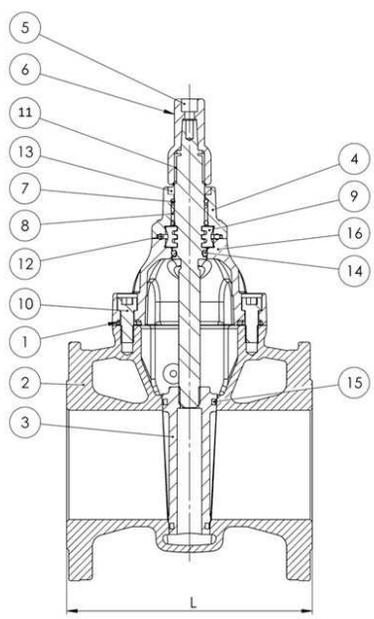
Body

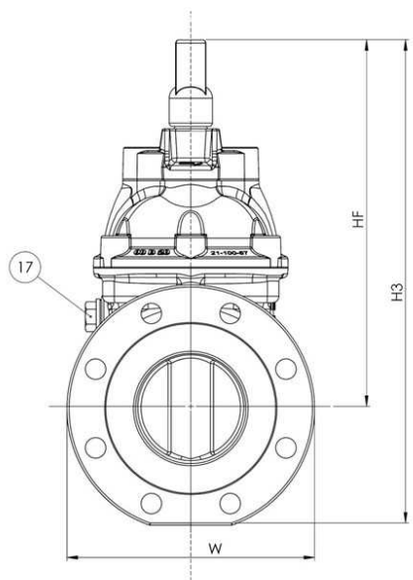
Ductile iron

Applicable Standards

GIS/V7 Part 1
BGE/S/V/3
EN 1171
EN 12266
MSS SP - 70

AVK Ref	DN	BR	H3	HF	L	W	Approx Turn to open	Weight
	mm	bar	mm					kg
555-050-14-0413	50	0.5	329	262	178	152	9	12
555-080-14-0413	80	0.5	409	319	203	190	12.5	21
555-100-14-0413	100	0.5	449	341	229	229	15.5	26
555-150-14-0413	150	0.75	564	431	267	279	14.5	45
555-200-14-0413	200	0.75	680	518	292	343	20	69
555-250-14-0413	250	0.75	880	683	330	442	24	127
555-300-14-0413	300	0.75	996	766	356	483	28	165





AVK VALVE INSTALLATION TRACKER

Materials of Construction

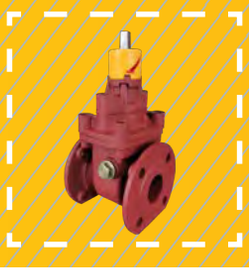
No.	Description	Material
1	Body	SG (ductile) iron to EN1563 450-10, GG40
2	Bonnet	SG (ductile) iron to EN1563 450-10, GG40
3	Wedge gate	Cast iron to BS EN1561 Gr250, GG25
4	Spindle	Standard: Carbon steel. EN10087 11SMn30 (ENIA) Option: Stainless steel. EN10088 X8CrNiS18-9 (303S31)

No.	Description	Material
5	Pressure relief plug	Carbon steel. EN10087 115Mn30 (ENIA)
6	Body / bonnet, gate and spindle seals	Standard: Nitrile rubber. EN 682. Type G Option: Viton
7	Fastenings	Grade 8.8 steel. FZB. BS EN ISO 4762 Option: Stainless steel
	Indicator (optional)	Plastic

Note: Product information is correct at time of printing

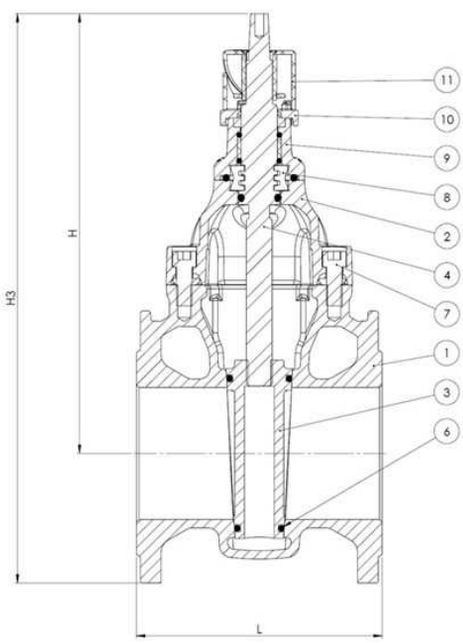
Series 555/411-001

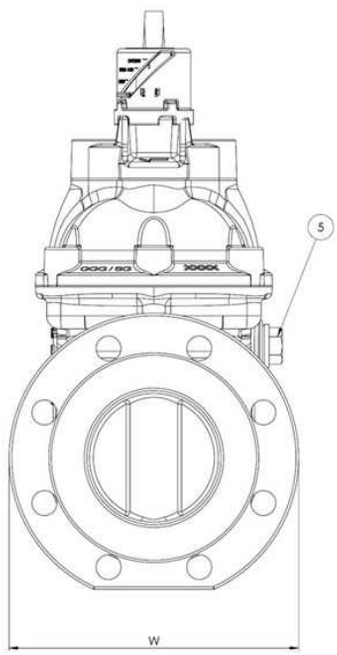
SHORT FACE VALVE



Use	Isolation of natural gas, LPG and SNG
Features and benefits	• Short face to face valve DIN 3202, F4. • Optimized size for compact skids. • New light weight design. • Primed for painting. • Full double block and bleed facility with pressure relieving plug • Soft seal positive shut off, metal to metal secondary seal • Maintenance free • Self supporting "flange feet" for ease of installation and stockholding • Fasteners fully encapsulated and sealed with hot melt • Profiled O-ring body/bonnet joint • PN16 flanges
Options	• Open/closed indicator • False cap, handwheel
Size	DN50 - 250
Pressure	PN7
Temperature Range	-10°C to +60°C
Body	Ductile iron
Applicable Standards	GIS/V7 Part 1 BGE/S/V/3 EN 1171 EN 12266 MSS SP - 70

AVK Ref	DN	BR	H3	HF	L	W	Approx Turn to open	Weight
	mm	bar	mm					kg
555-050-04-11-1302	50	0.5	325	258	150	165	8	7.5
555-080-04-11-1302	80	0.5	407	316	180	200	12.5	20
555-100-04-11-1302	100	0.5	440	340	190	220	17	14
555-150-04-11-1302	150	0.75	558	428	210	285	14.5	40
555-200-04-11-1302	200	0.75	675	515	230	340	18.5	60
555-250-04-11-1302	250	0.75	834	641	250	405	23.5	105





AVK VALVE INSTALLATION TRACKER

Materials of Construction

	Description	Material
1	Body	Ductile iron GJS-500-7
2	Bonnet	Ductile iron GJS-500-7
3	Wedge	Cast iron GJL-250 (GG-25)
4	Spindle	Stainless steel 1.4021 (420)
5	Pressure relief plug	Steel
6	Seal	NBR rubber

No.	Description	Material
7	Fasteners	Steel gr. 8.8, zinc plated
8	Thrust collar	Brass, DZR CZ132
9	Gland	Ductile iron GJS-500-7
10	Adaptor	Ductile iron GJS-500-7
11	Indicator	Plastic

Note: Product information is correct at time of printing

Series 555/370-003

Donkin Cast Iron PUR coated Softseal Valve with PE ends

Use

Isolation of natural gas, LPG and SNG

Features and benefits

- High integrity coating for buried service
- Valve installation tracker
- PE ended, no mechanical joints below ground
- Full double block and bleed with pressure relieving plug
- Double 'O' ring stem seal
- Soft seal positive shut off, metal to metal secondary seal
- Maintenance free
- Self supporting base for ease of installation and stockholding
- Fasteners fully encapsulated
- Profiled O-ring body/bonnet joint
- Integral lifting lugs on all sizes
- Full bore valve
- PE80 as standard

Options

- PE 100 or PE 80
- False cap, indicator
- Extra long tails
- Viton seals
- Stainless steel spindle street access downpipe adapter
- Some sizes with profuse pipe
- 20 year warranty

Size

90mm - 315mm

Pressure

PN2/4/7

Temperature Range

-10°C to +40°C

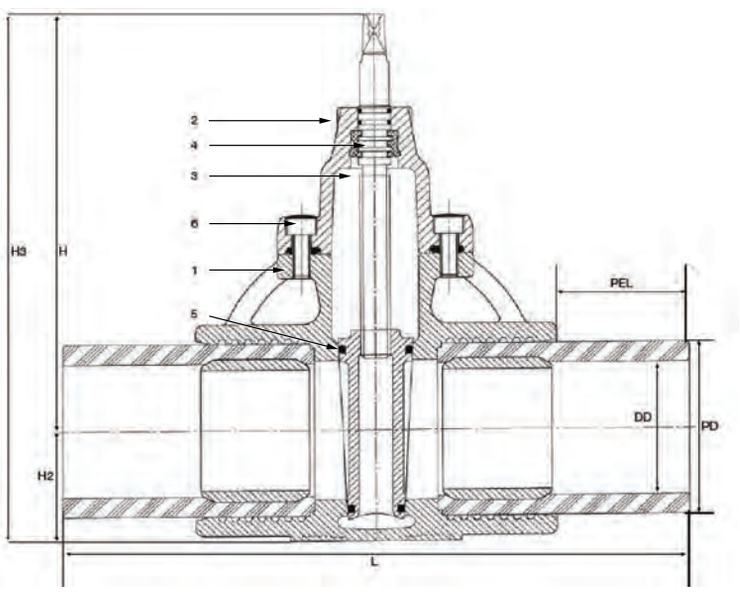
Body

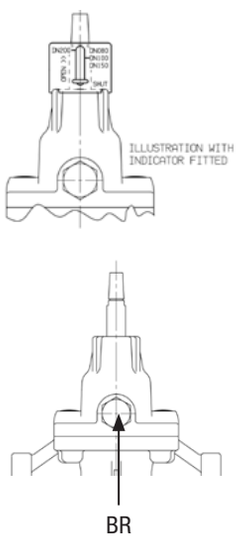
Cast iron/PE

Applicable Standards

GIS/V7 Part 1
GIS/PL3
EN 12266
EN 10290
GIS/CW-6

AVK Ref	DN	PN bar PE		H3	L	H2	H	PD	PEL	BR	DD	SDR PE		Approx Turn to closes	Wgt
	mm	80	100	mm							mm	80	100		kg
555-090-6371033040	80	4	7	367	596	80	287	90	191	Rp½	63	11	11	13½	28
555-125-63-71033040	100	4	7	400	767	98	302	125	255	Rp½	88	11	11	15½	34
555-180-63-71033040	150	4	7	520	800	130	390	180	245	Rp¾	133	11/17	11/17	14½	71
555-250-63-79033040	200	2	7	629	1128	152	477	250	391	Rp¾	181	17	11	19	140
555-315-63-79033040	300	2	4	906	1172	220	686	315	361	Rp¾	277	17	11	27	271





Materials of Construction

No.	Description	Material
1	Body	Cast iron. EN 1561 - GJL 250
2	Bonnet	Cast iron. EN 1561 - GJL 250
3	Wedge Gate	Cast iron. EN 1561 - GJL 250
4	Spindle	Standard: stainless steel. EN10088 X8CrNc518-9 (303531)
5	O-ring seals	Standard: Nitrile rubber. EN 682. Type G Option: Viton
6	Fastenings	Grade 8.8 Steel FZB. BS EN ISO 4762
	Coating	Polyurethane to EN10290 Class B and GIS/CW-6

DONKIN ASSET PROTECTION SYSTEM

Note: Product information is correct at time of printing

Series 555/371-002

Donkin Ductile Iron PUR Coated Softseal Valve with PE Ends

Use

Isolation of natural gas, LPG and SNG

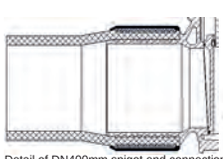
Features and benefits

- High integrity coating for buried service
- Valve installation tracker
- PE ends eliminates mechanical joint requirement below ground
- Full double block and bleed with pressure relieving plug
- Soft seal positive shut off, metal to metal secondary seal
- Stainless steel spindle
- Maintenance free
- Self supporting base for ease of installation and stockholding
- Full bore valve
- Integral lifting lugs on all sizes
- Profiled O-ring body/bonnet joint
- PE100 SDR11 as standard

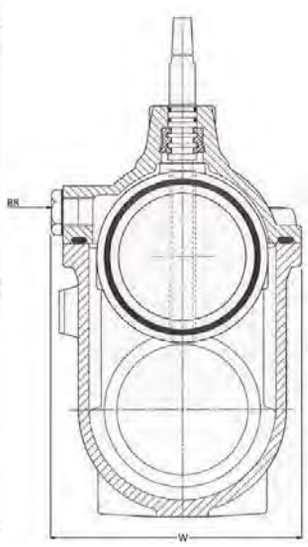
AVK Ref	BR	H	H2	H3	L	PD	PE L	W	SDR	Turns to open	Wgt
	mm		mm								kg
555-090-63-76133040	RP0.75	296	76	372	1090	90	450	188	11	13.5	30
555-125-63-76133040	RP0.75	334	83	417	1630	125	700	188	11	15.5	38
555-180-63-76133040	RP0.75	180	121	587	1676	180	700	294	11	14.5	70
555-250-63-76133040	RP0.75	597	152	749	1346	250	500	349	11	19	150
555-315-63-76133341	RP0.75	710	220	930	1450	315	500	517	11	27	275
555-400-63-78133440	RP0.75	731	247	978	1450	400	190	517	11	27	400

Options

- PE 80 Tails (PE100 standard)
- Viton O-rings
- PE100 profuse pipe
- False cap, handwheel, indicator
- Street access down pipe adaptor
- 20 year warranty



Detail of DN400mm spigot end connection



Size 90mm - 400mm

Pressure PN7

Temperature Range -10°C to +40°C

Body Ductile iron/PE

Applicable Standards

GIS/V7 Part 1
GIS/PL3
EN12266
GIS/CW-6

DONKIN ASSET PROTECTION SYSTEM

Materials of Construction

No.	Description	Material
1	Body	Ductile iron GJS-450-10
2	Bonnet	Ductile iron GJS-450-10
3	Wedge	Cast iron GJL-250 (GG-25)
4	Spindle	Stainless steel 1.4305 (303)
5	Seals	NBR Rubber
6	Fastenings	Stainless steel A4, sealed with hot melt
	Coating	Epoxy Polyurethane to EN10290 Class B and GIS/CW/6-2

Note: Product information is correct at time of printing

Series 555/303-002

Donkin Cast Steel PUR Coated Softseal Valve

Use	Isolation of natural gas, LPG and SNG

Features and benefits

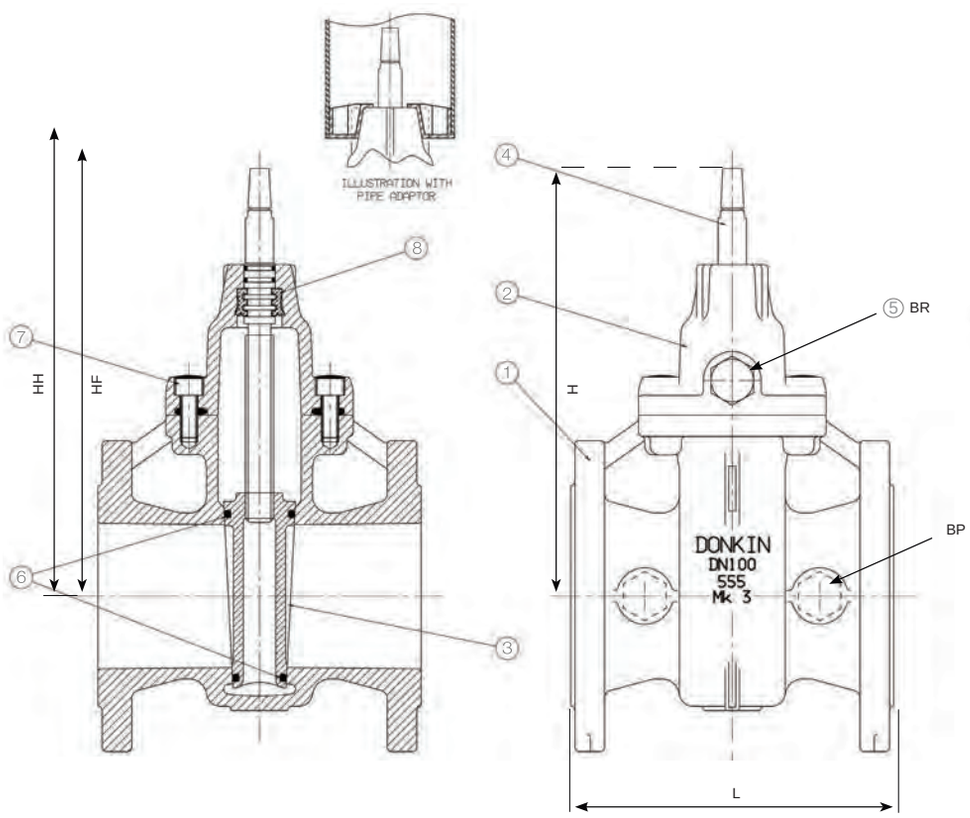
- High integrity coating for buried service
- Valve installation tracker
- Full double block and bleed facility with pressure relieving plug
- Soft seal positive shut off, metal to metal secondary seal
- Maintenance free
- Self supporting “flange feet” for ease of installation and stockholding
- Fasteners fully encapsulated with hot melt
- Profiled O-ring body/bonnet joint
- Suitable for under pressure drilling and tapping operations
- Suitable for end of line service
- Integral lifting lugs on all sizes
- EN1092 PN16 flanges

Options

- Pressure points / by-pass bosses
- False cap, handwheel
- Clip on indicator
- Alternative flange drillings
- Viton seals
- 20 years warranty
- * DN50 is a Series 555/103-002

Size	DN50 - 300
Pressure	PN7/16/19
Temperature Range	-20 to +60 C
Body	Cast Steel
Applicable Standards	GIS/V7 Part 1 EN 1171, EN 12266 MSS SP - 70 GIS/CW-6

AVK Ref	DN	PN	L	H	H3	Approx Turn to open	Weight
	mm	bar	mm				kg
555-050-00-01333040	50	16	178	231	363	8.5	22
555-080-03-01333040	80	16	203	304	404	14	23
555-100-03-01333040	100	16	229	319	434	15	34
555-150-03-01333040	150	16	267	415	558	14.5	58
555-200-03-01333040	200	16	292	499	671	19.5	87
555-250-03-01333040	250	16	330	657	860	24	152
555-300-03-01333040	300	16	356	747	1192	28	300



DONKIN ASSET PROTECTION SYSTEM

Materials of Construction

No.	Description	Material
1	Body	Cast iron. EN 1561-GJL 250
2	Bonnet	Cast iron. EN 1561-GJL 250
3	Wedge gate	Cast iron. EN 1561-GJL 250
4	Spindle	Standard: stainless steel. EN10088 X8CrNc518-9 (303531)
5	Pressure relief plug	Carbon steel. EN10087 115Mn30 (ENIA)
6	Body / bonnet, gate and spindle seals	Standard: Nitrile rubber. EN 682. Type G. Option: Viton
7	Fastenings	Grade 8.8 steel. FZB. BS EN ISO 4762
8	Thrust collar	Brass BS2872 CZ 132
	Coating	Polyurethane to EN10290 Class B and GIS/CW-6

Note: Product information is correct at time of printing

Series 555/303-001

Donkin Steel Softseal Valve

Use

Isolation of natural gas, LPG and SNG

Features and benefits

- Full double block and bleed facility with pressure relieving plug
- Soft seal positive shut off, metal to metal secondary seal
- Maintenance free and fitted integral lifting lugs on all sizes
- Self supporting "flange feet" for ease of installation and stockholding
- Fasteners fully encapsulated with hot melt
- Profiled O-ring body/bonnet joint
- Suitable for under pressure drilling and tapping operations
- Suitable for end of line service

Options

- DN50 available - refer to 555/103
- False cap, handwheel, indicator
- Street access downpipe adapter
- Pressure point/by-pass bosses
- Alternative flange drillings
- Viton O-rings
- Stainless steel spindle

Size

DN50 (103) / DN80 - 300 (303)

Pressure

PN7/16/19

Temperature Range

-20°C to +60°C

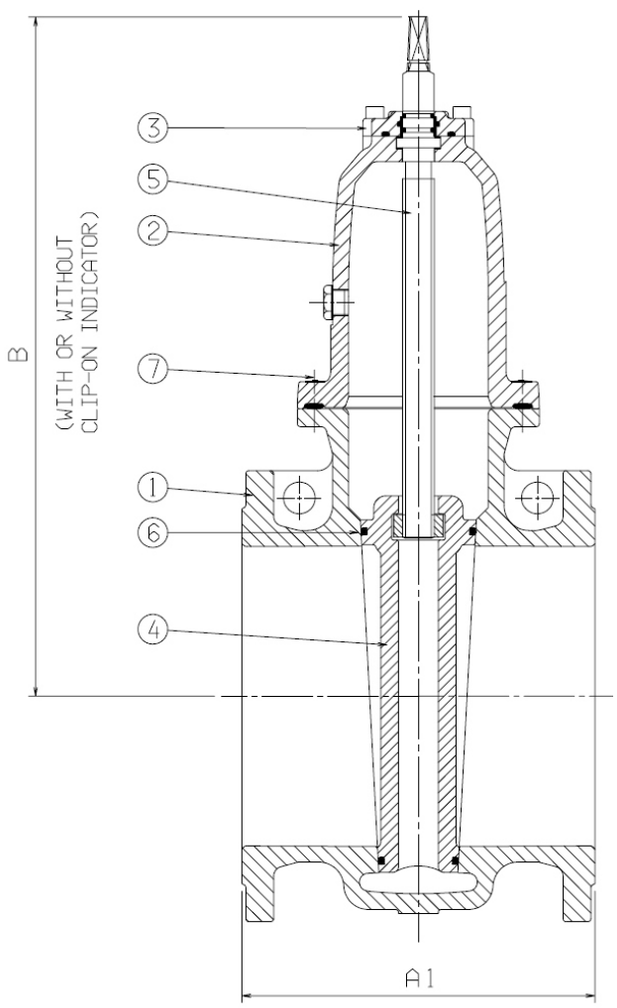
Body

Cast steel

Applicable Standards

GIS/V7 Part 1
EN 12266
MSS SP - 70

AVK Ref	DN	PN	A1	B	Turns to open	Weight
	mm	bar	mm			kg
555-080-03-013	80	16	203	288	13½	22
555-100-03-013	100	16	229	303	15½	26
555-150-03-013	150	16	269	391	14½	52
555-200-03-013	200	16	292	478	19	82
555-250-03-013	250	16	330	617	25	150
555-300-03-013	300	16	356	696	27	200



AVK VALVE INSTALLATION TRACKER

Materials of Construction

No.	Description	Material
1	Body	Cast steel, EN10204 GP240GH
2	Bonnet	Cast steel, EN10204 GP240GH
3	Gland	Cast steel, EN10204 GP240GH, ASTM A216 WCB
4	Wedge gate	Ductile iron to EN1563-GJS-450-10
5	Spindle	Standard: Carbon steel to EN10087, 11SMn30/1.0715/230M07/ENIA Option: Stainless steel to EN10088 X8CrNiS8-9/1.4305/ 303S31/ EN58M
6	O-ring seals	Standard: Nitrile rubber. EN 682. Type GBL Option: Viton
7	Fastenings	High tensile steel Gr8.8

Note: Product information is correct at time of printing

Series 555/163-001

Donkin Steel Softseal Valve, Weld-end

Use	Isolation of natural gas, LPG and SNG

Features and benefits

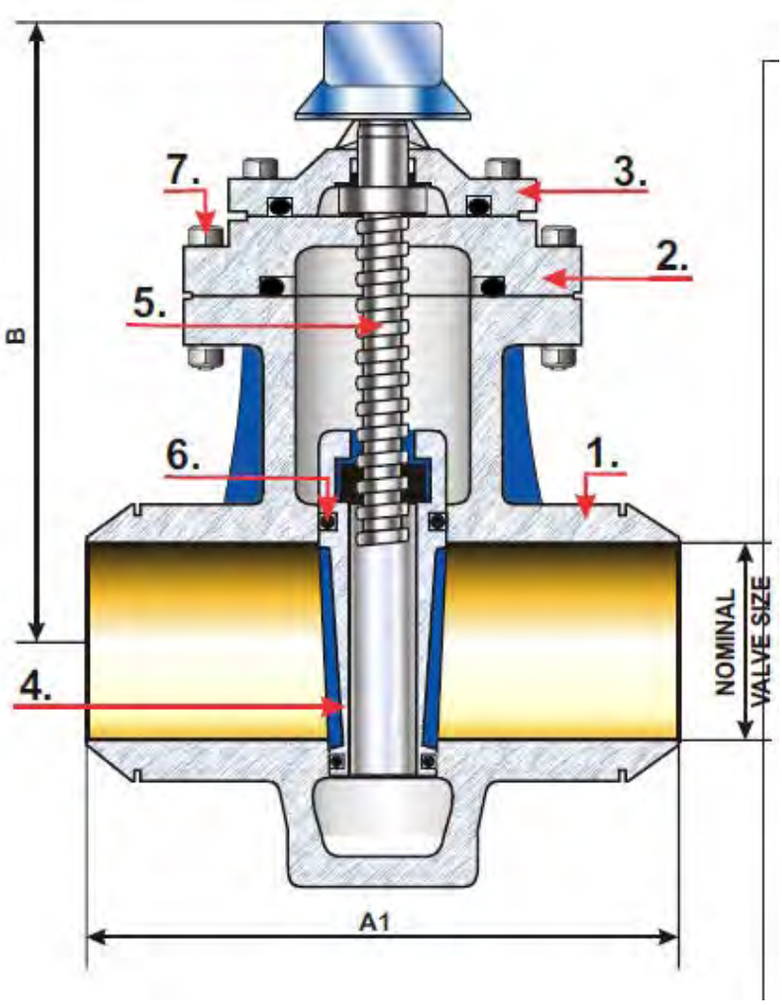
- Clear bore
- Double O-ring stem seal
- Soft seal positive shut off
- Metal to metal secondary seal
- Maintenance free
- Suitable for above or below ground use
- Lifting lugs on all sizes
- Direct welding into the pipeline

Options

- False cap, handwheel
- Bespoke weld prep to customer specification
- Drain and body vent tapping

Size	DN2" - 12"
Pressure	PN50/Class 300
Temperature Range	-20°C to +60°C
Body	Cast steel
Applicable Standards	API6D BS EN 12266-1 Z245-15-09

AVK Ref	DN	PN	A1	B	Weld Prep W.T	Operating Torque	Turns to open	Weight
	Inch	bar	mm			lbs/Ft		kg
555-050-72-64331140	2"	50	215	279	3.9	30	8¾	18.5
555-100-72-64331140	4"	50	305	343	5.6	35	15½	41.2
555-150-72-64331140	6"	50	403	456	6.4	70	15	81.6
555-200-72-64331140	8"	50	419	533	6.7	100	19	122.4
555-300-72-64331144	12"	50	502	657	7.5	185	27	246.3



AVK VALVE INSTALLATION TRACKER

Materials of Construction

No.	Description	Material
1	Body	Cast steel to ASTM A352 LCC
2	Bonnet	Cast steel to ASTM A352 LCC
3	Gland	Cast steel to ASTM A352 LCC
4	Wedge gate	Ductile iron to BS EN1563 GJS 400-18-LT

No.	Description	Material
5	Spindle	Stainless steel EN10088 X12CrS13/1.4005/416S21
6	O-ring seals	Standard: Nitrile rubber. EN 682. Type GBL. Option: Viton.
7	Fastenings	Stainless steel to B8M to ASTM A193 CLASS 2

Note: Product information is correct at time of printing

Series 555/100-001

Donkin Large Diameter Cast Iron Softseal Valve

Use

Isolation of natural gas, LPG and SNG

Features and benefits

- Soft seal, positive shut off
- Full double block and bleed with pressure relieving plug
- Clear bore for under pressure drilling operations
- Metal to metal secondary seal
- Maintenance free
- "Flange feet" to aid installation and stockholding
- No lubrication required
- Double O-ring stem seal
- Lifting lugs on all sizes
- Suitable for above and below ground use

Options

- Pressure points / by-pass bosses
- False cap, handwheel, indicator
- 4 Bar version available on certain sizes
- Alternative flange drilling
- Gear box
- Primed finish available for painting.
- Electric/pneumatic actuation
- Stainless steel spindle
- DN400, 450 and 600 available as 4 bar on request
- Stainless spindle and viton O-ring with CI thrust collar for Biogas

Size

DN350 - 800

Pressure

PN2

Temperature Range

-20°C to +60°C

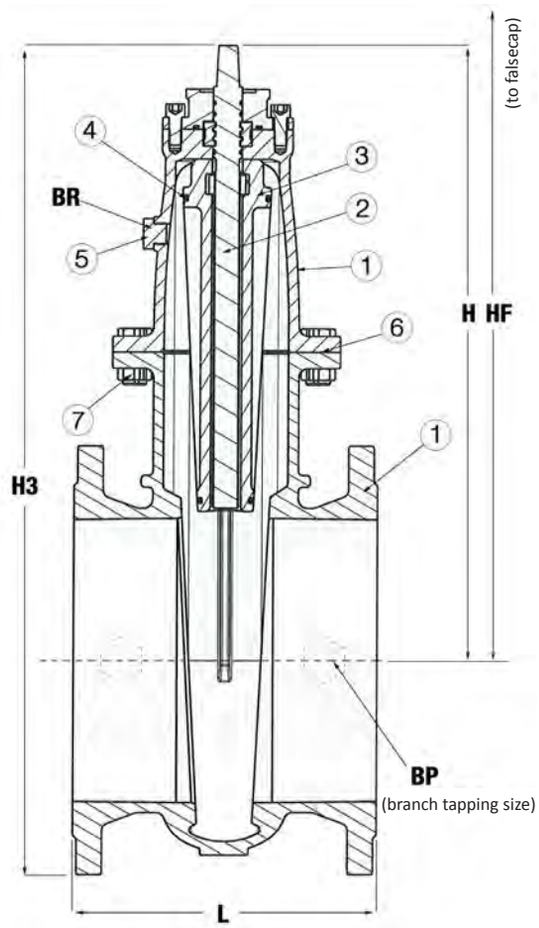
Body

Cast iron

Applicable Standards

GIS/V7 Part 1
BGE/S/V/3
EN 1171
EN 12266-1
MSS SP - 70

AVK Ref	DN	H3	H	HF	BR	BP	L	Turns to open	Weight
	mm	mm			DN		mm		kg
555-350-00-010	350	997	730	793	Rp¼	Rp½	381	32	270
555-400-00-010	400	1158	848	911	Rp¼	Rp½	406	36	301
555-450-00-010	450	1257	930	993	Rp¼	Rp½	432	40	340
555-500-00-010	500	1318	1015	1078	Rp¼	Rp½	457	45	480
555-600-00-010	600	1601	1173	1236	Rp¼	Rp2	508	52	745
555-800-00-01010050	800	2271	1520	1706	Rp1	N/A	660	32	1241



AVK VALVE INSTALLATION TRACKER

Materials of Construction

No.	Description	Material
1	Body and Bonnet	Cast iron GJL-250 (GG-25)
2	Spindle	Steel 11SMn30 (EN1A)
3	Wedge Gate	Cast iron GJL-250 (GG-25)
4	Stem / Seat Seal	NBR rubber

No.	Description	Material
5	Pressure Relief Plug	Steel 11SMn30 (EN1A)
6	Bonnet gasket	CNAF fibres
7	Fastenings	Steel gr. 8.8

Note: Product information is correct at time of printing

Series 555/101-001

Donkin Large Diameter Ductile Iron Softseal Valve

Use	Isolation of natural gas, LPG and SNG

Features and benefits

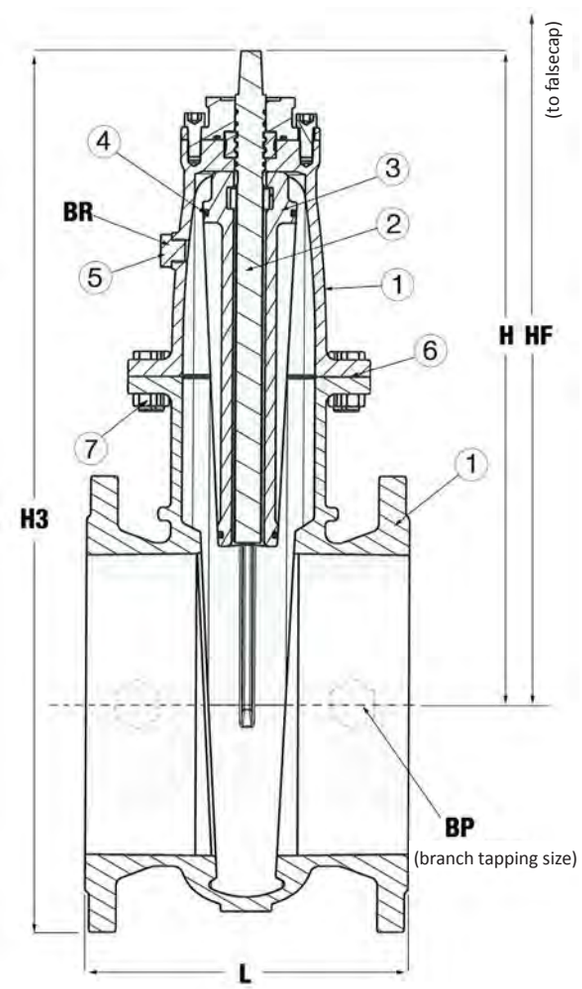
- Soft seal, positive shut off
- Full double block and bleed with pressure relieving plug
- Clear bore for under pressure drilling operations
- Metal to metal secondary seal
- Maintenance free
- "Flange feet" to aid installation and stockholding
- No lubrication required
- Double O-ring stem seal
- Lifting lugs on all sizes
- Suitable for above and below ground use

Options

- Pressure points / by-pass bosses
- False cap, handwheel, indicator
- Viton O-rings
- Alternative flange drilling
- Bare shaft end
- Gearbox
- Electric/pneumatic actuation
- Stainless steel spindle

Size	DN400 - 600
Pressure	PN7
Temperature Range	-10°C to +60°C
Body	Ductile iron
Applicable Standards	GIS/V7 Part 1 BGE/S/V/3 EN12266 MSS SP - 70

AVK Ref	DN	H3	H	HF	BR	BP	L	Approx Turn to closes	Weight
	mm	mm			DN		mm		kg
555-400-00-010	400	1158	848	911	Rp¼	Rp½	634	36	301
555-450-00-010	450	1257	930	993	Rp¼	Rp½	703	40	340
555-600-00-010	600	1601	1173	1236	Rp¼	Rp2	887	52	745



AVK VALVE INSTALLATION TRACKER

Materials of Construction

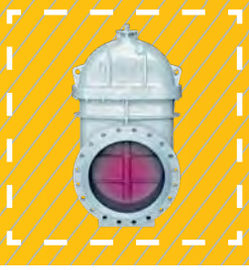
No.	Description	Material
1	Body and bonnet	Ductile iron. EN 1563 GJS 450-10
2	Spindle	Carbon steel. EN10087 11SMn30 (ENIA)
3	Wedge gate	Cast iron. EN 1561 GJL 250
4	Stem / seat seal	Nitrile rubber. EN 682. Type G

No.	Description	Material
5	Pressure relief plug	Carbon steel. EN10087 115Mn30 (ENIA)
6	Bonnet gasket	CNAF
7	Fastenings	Carbon steel. 8.8

Note: Product information is correct at time of printing

Series 555/103-001

Donkin Large Diameter Steel Softseal Valve



Use

Isolation of natural gas, LPG and SNG

Features and benefits

- Soft seal, positive shut off
- Full double block and bleed with pressure relieving plug
- Clear bore for under pressure drilling operations
- Metal to metal secondary seal
- Maintenance free
- "Flange feet" to aid installation and stockholding
- No lubrication required
- Double O-ring stem seal
- Lifting lugs on all sizes
- Suitable for above and below ground use

Options

- Pressure points / by-pass bosses
- False cap, handwheel, indicator
- Viton O-rings
- Alternative flange drilling
- Bare shaft end
- Electric/pneumatic actuation
- Gearbox

Size DN50 - 600

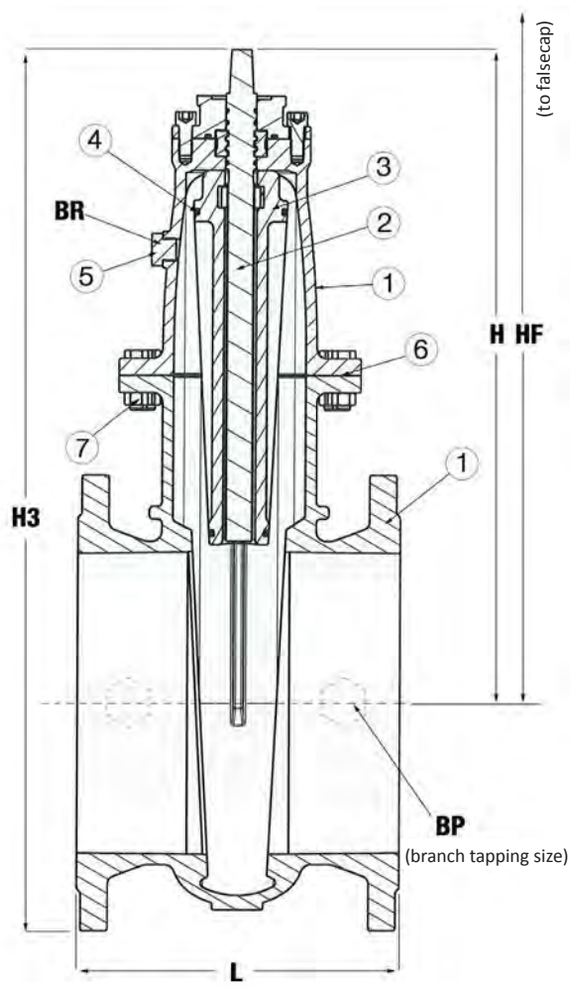
Pressure PN7/16/19

Temperature Range -10°C to +60°C

Body Cast steel

Applicable Standards GIS/V7 Part 1, EN12266, MSS SP - 70

AVK Ref	DN	H3	H	HF	BR	BP	L	Approx Turn to closes	Weight
	mm	mm			DN	DN	mm		kg
555-050-00-013	50	363	280	358	Rp½	N/A	178	9	22
555-400-00-013	400	1158	848	911	Rp¼	Rp½	406	36	376
555-450-00-013	450	1257	930	993	Rp¼	Rp½	432	40	461
555-600-00-013	600	1601	1173	1236	Rp¼	Rp2	508	52	925



AVK VALVE INSTALLATION TRACKER

Materials of Construction

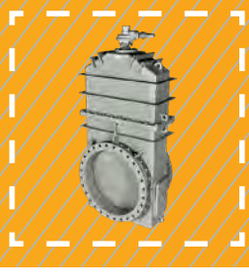
No.	Description	Material
1	Body and bonnet	Cast steel. EN10213 GP240GH
2	Spindle	Carbon steel. EN10087 11SMn30 (ENIA)
3	Wedge gate	Cast iron. EN 1561 GJL 250
4	Stem / seat seal	Nitrile rubber. EN 682. Type G

No.	Description	Material
5	Pressure relief plug	Carbon steel. EN10087 115Mn30 (ENIA)
6	Bonnet gasket	CNAF
7	Fasteners	Stainless steel Grade A2-70

Note: Product information is correct at time of printing

Series 777/11-001

Donkin Baurer Valve



Use	Isolation of natural gas, LPG and SNG

Features and benefits

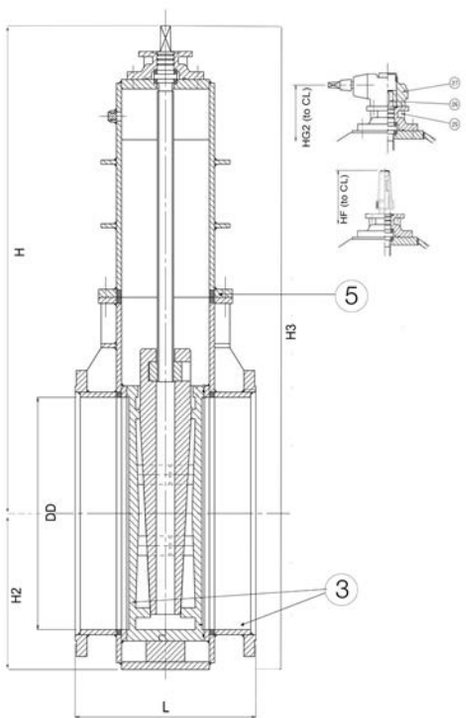
- Mechanically loaded seating for low pressure sealing and cleaning
- Double O-ring stem seal
- The valves may be machined with clear bore for under-pressure drilling work if required
- Two cleaning covers are fitted as standard to allow easy access for the removal of dust and dirt

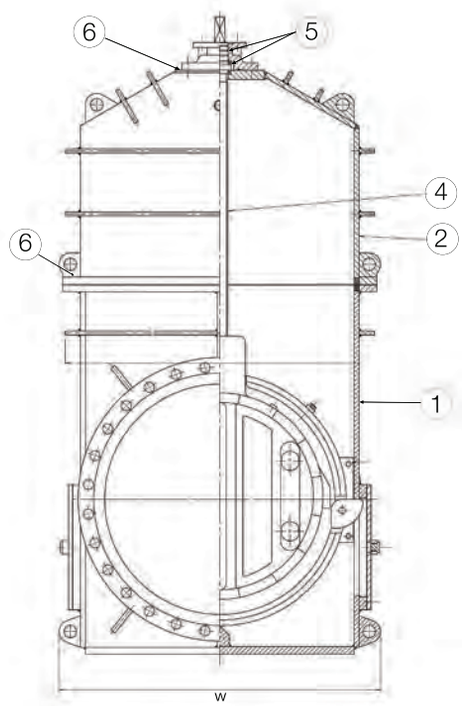
Options

- Horizontal or vertical pattern
- Handwheel, indicator
- Water sealable block and bleed
- Double block and bleed
- Available for vertical or horizontal operation
- PED Version available for above ground
- Alternative flange drillings available
- Alternative coatings / corrosion protection available

Size	DN750 - 1200
Pressure	PN2
Temperature Range	-20°C to +260°C
Body	Fabricated steel
Applicable Standards	EN 12266

AVK Ref	DN	PN	Flange Drilling	L	Dd	H	H2	H3	HF	HG2	W	Wht
	mm	bar		mm								kg
777-0750-11-0131211	750	2	PN16	559	762	1558	499	2057	N/A	1508	1086	1217
777-0750-11-073	750	2	BS10 D	559	762	1558	499	2057	N/A	N/A	1086	1200
777-0750-11-07312	750	2	BS10 D	559	762	1558	499	2057	N/A	N/A	1086	1200
777-0800-11-0131414	800	2	PN16	559	762	1804	513	2317	1622	1754	1086	1865
777-0900-11-0131040	900	2	PN16	711	914	1916	614	2606	1992	N/A	1277	2690
777-0900-11-0131211	900	2	PN16	711	914	N/A	614	2580	N/A	1918	1277	2718
777-1200-11-0131211	1200	2	PN16	763	1220	2326	824	3169	N/A	2295	1639	5428





Materials of Construction

No.	Description	Material
1	Body	Fabricated steel. BS EN 10025
2	Bonnet	Fabricated steel. BS EN 10025
3	Door	Cast iron to EN1561 Grade 250
4	Spindle	Carbon steel BS EN 10087
5	Seals	NBR
6	Fasteners	Grade 8.8

Note: Product information is correct at time of printing

Series 158/04-001

Donkin Under Pressure Drilling Valve

Use

Under pressure connections to natural gas distribution systems

Features and benefits

- Soft seal positive shut off
- Double O-ring stem seal
- Lightweight and easy to handle
- Clear bore
- Maintenance free
- No lubrication required
- Unique valve identification
- Supplied with long stud bolts to EN1092
- PN16 configuration
- Bi-directional
- Lifting lugs on DN150 and above

Options

- Handwheel
- Bare shaft end
- False cap

Size

DN80 - 300

Pressure

PN7

Temperature Range

-10°C to +60°C

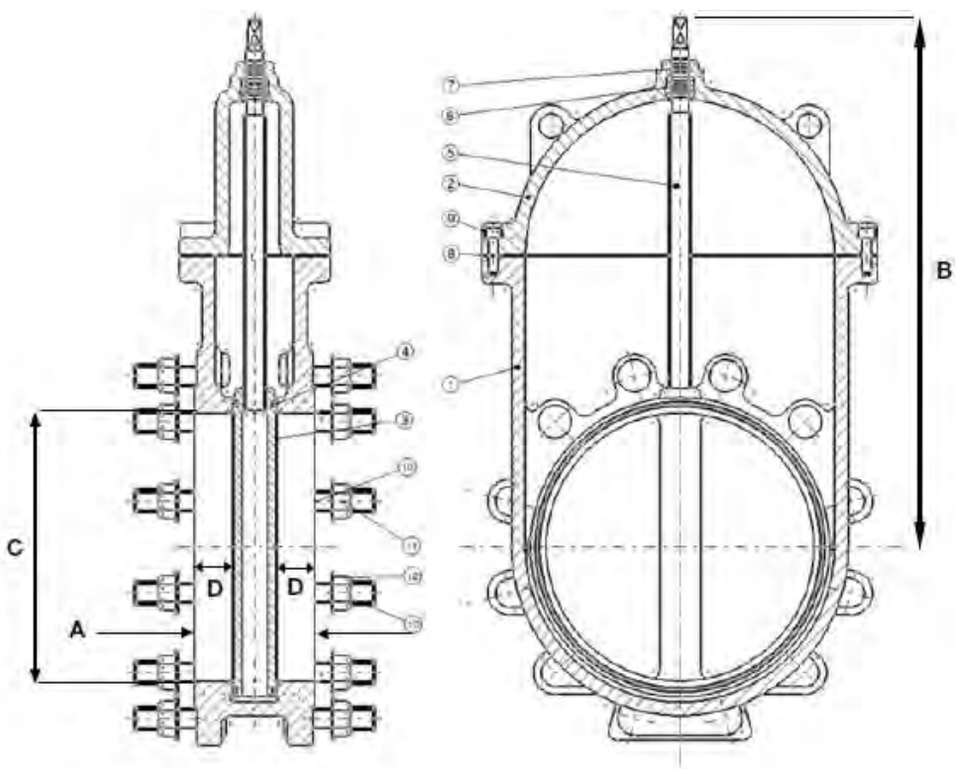
Body

Cast iron

Applicable Standards

GIS/V7 Part 1
EN 12266

AVK Ref	DN	PN	A	B	C	D	Max Running Torque	Approx Turn to closes	Weight
	mm	bar	mm				Nm		kg
158-080-04-01	80	7	90	260	85	27	8	18	13
158-100-04-01	100	7	90	288	105	27	10	22	18
158-150-04-01	150	7	120	373	155	39	14	22	33
158-200-04-01	200	7	120	450	205	39	16	28	50
158-250-04-01	250	7	140	531	255	44	20	23	88
158-300-04-01	300	7	140	613	310	44	22	28	109



AVK VALVE INSTALLATION TRACKER

Materials of Construction

No.	Description	Material
1	Body	Cast iron. EN1561 GJL 250
2	Bonnet	Cast iron. EN1561 GJL 250
3	Door	Cast iron. EN1561 GJL 250
4	Door O-ring	Nitrile rubber EN682
5	Spindle	Standard carbon steel EN10087 11SMn30 (EN1A)
6	Collars	Brass Cz132
7	Spindle O-ring	Nitrile rubber EN682
8	Body / bonnets gasket	CNAF
9	Body / bonnet cap screws	Grade 8.8 steel FZB BS EN ISO 4762
10	Studs	Carbon steel BS4190 Gr 4.6 ZP
11	Nuts	Steel ZP
12	Washer	Steel ZP
13	Threadguard	Plastic

Note: Product information is correct at time of printing

Series 158/04-002

Donkin PUR Coated Under Pressure Drilling Valve

Use

Under pressure connections to natural gas distribution systems

Features and benefits

- High integrity coating for buried service
- Substantial reduction in installation time
- 1500um minimum thickness
- Coating 100% holiday tested
- Stainless steel spindle
- Fully corrosion resistant construction
- Soft seal positive shut off
- Double O-ring stem seal
- Lightweight and easy to handle
- Clear bore
- Maintenance free
- No lubrication required
- QR code for traceability
- Supplied with long stud bolts to EN1092
- Bi-directional
- Lifting lugs on DN150 and above

Options

- Long studs both sides
- Handwheel, indicator
- Bare shaft end
- Factory fitted studs

Size

DN80 - 400mm

Pressure

PN7
*2 bar at 400mm

Temperature Range

-10°C to +60°C

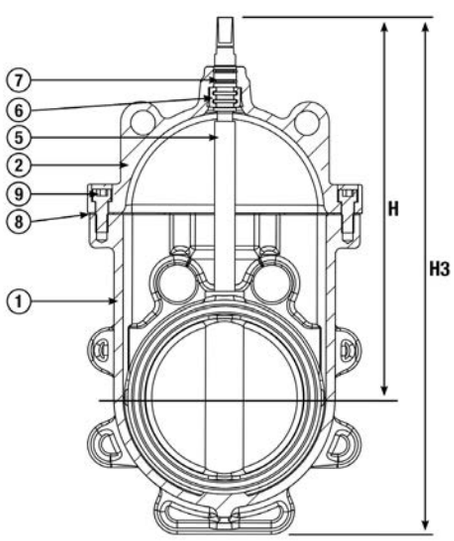
Body

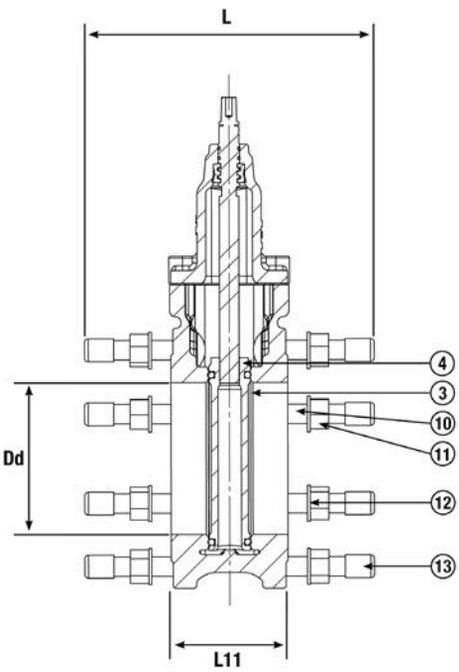
Cast iron

Applicable Standards

GIS/V7 Part 1
EN 12266
EN 10290
GIS/CW-6

AVK Ref	DN	Dd	H	H3	L	L11	Bolt Length	Turns to open	W
	mm								mm
158-080-04-010329	80	85	260	300	190	90	50	18	200
158-100-04-010329	100	105	288	391	258	90	69	22	220
158-150-04-010329	150	155	373	506	300	120	90	22	294
158-200-04-010329	200	205	450	615	300	120	90	28	340
158-250-04-010329	250	255	531	728	360	140	110	23	405
158-300-04-010329	300	310	613	836	360	140	110	28	460
158-400-04-010329	400	401.5	855.5	1142.5	385	224	80	36	634





DONKIN ASSET PROTECTION SYSTEM

Materials of Construction

No.	Description	Material
1	Body	Cast iron. EN1561 GJL 250
2	Bonnet	Cast iron. EN1561 GJL 250
3	Door	Cast iron. EN1561 GJL 250
4	Door O-ring	Nitrile rubber EN682
5	Spindle	Stainless steel 1.4305 (303)
6	Collars	Brass Cz132
7	Spindle O-ring	Nitrile rubber EN682

No.	Description	Material
8	Body / bonnets gasket	CNAF
9	Body / bonnet cap screws	Grade 8.8 steel FZB BS EN ISO 4762
10	Studs	Carbon steel BS4190 Gr 4.6 ZP
11	Nuts	Steel ZP
12	Washer	Steel ZP
13	Threadguard	Plastic
	Coating	Polyurethane to EN10290 Class B and GIS/CW-6

Note: Product information is correct at time of printing

Series 562/00-001

Donkin Outside Screw Universal Wedge Gate Valve

Use

Isolation and control of coke oven gas, flushing liquor, effluent and other aggressive liquids

Features and benefits

- Clear bore for under pressure drilling applications
- Adjustable packed gland
- Hard faced wedge seats with viton O-rings
- Asbestos free jointing
- Complies with European pressure equipment directive (PED)
- Tapped and plugged boss for Draining and cleaning

Options

- Size range 80*mm to 600mm (*80mm available upon request)
- Actuation available
- Inside screw (non rising stem) version available (561)
- Metal to metal wedge seats as option
- Embodied carbon data available upon request

Size

DN80 - 600

Pressure

PN2/7

Temperature Range

-10°C to +250°C

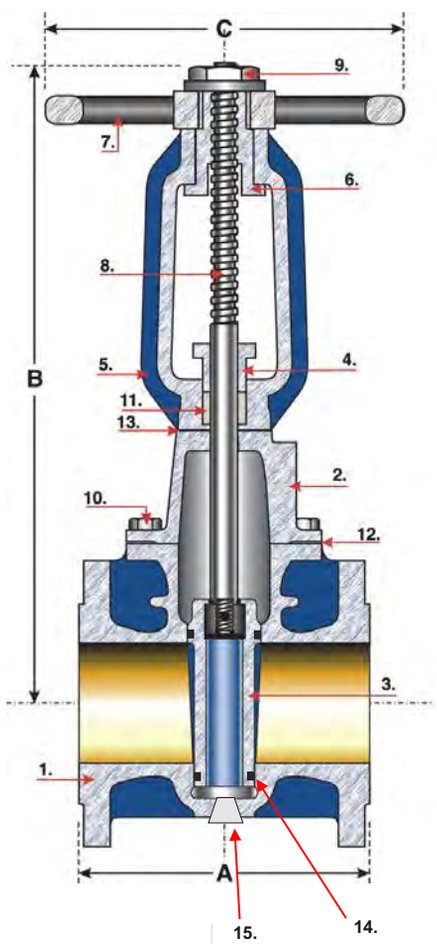
Body

Cast iron / Cast steel

Applicable Standards

EN 1171
EN 12266

AVK Ref	DN	PN	A	B		C	Weight
	mm	bar	mm	Open	Closed	mm	kg
562-150-02-07036060	150	7	267	930	752	330	72
562-200-02-01016160	200	7	292	1069	833	330	103
562-300-02-01036160	300	7	356	1468	1132	400	265
562-400-00-08016060	400	2	406	1880	1445	500	361
562-450-00-06016160	450	2	432	2068	1578	500	500
562-500-00-07036160	500	2	457	-	-	500	600
562-600-00-07036060	600	2	508	2603	1956	500	894



AVK VALVE INSTALLATION TRACKER

Materials of Construction

No.	Description	Material
1	Body	Cast iron. BS EN 1561 Grade 250
2	Bonnet	Cast iron. BS EN 1561 Grade 250
3	Wedge	Cast iron. BS EN 1561 Grade 250
4	Gland	Carbon steel EN10087 11SMn30
5	Yoke	Carbon steel EN10025 S275JR
6	Bush	Cast iron. BS EN 1561 Grade 250
7	Handwheel	Aluminum LM6 or fabricated steel
8	Spindle	Carbon steel EN10087 11SMn30 or Stainless Steel EN10088 X8CrNiS18-9

No.	Description	Material
9	Spindle nut	SG iron BS EN 1563 Grade 450/10
10	Fasteners	Grade 8.8 steel
11	Gland	Packing PTFE acrylic fibre yarn
12	Body / bonnet gasket	Asbestos free fibre
13	Bonnet / yoke joint	Exfoliated reinforced graphite or asbestos free fibre (dependent upon valve size)
14	Wedge seats	Viton
15	Drain / cleaning plug	Mild steel

Note: Product information is correct at time of printing

Series 662/00-002

Donkin Coke Oven Gas Parallel Slide Valve

Use

Isolation and control of coke oven and blast furnace gases

Features and benefits

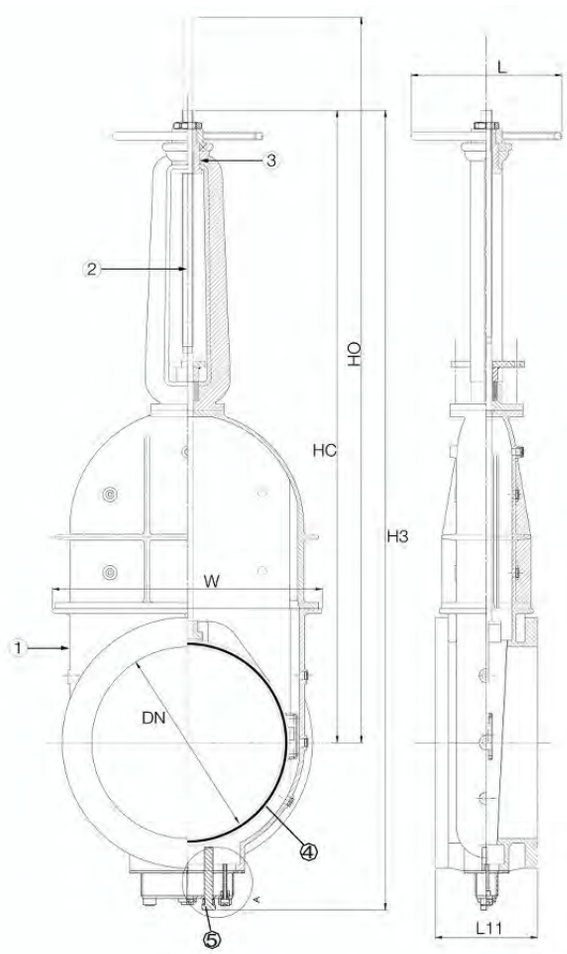
- Clear bore for under pressure drilling applications
- Adjustable packed gland
- Hard faced wedge seats with viton O-rings
- Asbestos free jointing
- Cleaning cover and draining points

Options

- Internal/external screw versions available
- Can be fitted with water sealing facility
- Sizes up to 1200mm (48") available upon request
- Additional tapping points for cleaning/ jetting

Size	DN675 - 1200
Pressure	PN0.25, PN0.35
Temperature Range	-10°C to +250°C
Body	Cast iron
Applicable Standards	BS 5150 BS EN 12266

AVK Reference	DN	PN	L11	HC	H3	Approx Turn to Open	Weight
	mm	bar	mm				kg
662-0675-00-0760	675	0.35	381	2286	2997	29	737
662-0750-00-19600191	750	0.35	406	2489	3277	32	916
662-0825-00	825	0.35	470	2756	3626	35	1218
662-0900-00-19600191	900	0.35	470	2965	3912	38	1321
662-1000-00-0362	1000	0.25	508	3315	4369	42	1901
662-1050-00	1050	0.25	527	3442	4547	44	1928
662-1200-00-19600191	1200	0.25	559	3899	5156	50	2668



Materials of Construction

No.	Description	Material
1	Body	Cast iron GJL250
2	Spindle	Steel 11SMn30 (EN1A)
3	Spindle bushing	Cast iron GJL-250
4	Door seals	Viton
5	Jacking screw	Mild steel

Note: Product information is correct at time of printing

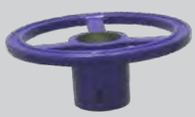
GATE VALVE ACCESSORIES

Series	Use	Size	Material
555/00-001	Donkin clip-on indicator for Series 555 & 158 valves for use above and below ground	DN50-300	Polycarbonate

AVK Ref	Valve size (DN)
500/U-002	50-200
512/UE-050	250-300

Series	Use	Size	Material
555/00-002	Donkin stem cap for Series 555	DN50-600 (28mm square UK, 25mm square for export)	Cast iron

AVK Ref	Valve size (DN)	Note
502/ZK-031	50	MK 1 steel
504/ZK-013	50-200	MK 2/3
504/ZK-023	100	Egypt
510/ZK-029	250-300	-
516/ZK-015	400-600	-



Series	Use	Size	Material
555/00-003	Donkin anti tamper device for Series 555 valves	DN50-200	Cast iron

AVK Ref	Valve size (DN)
503/US-010	50-200

Series	Use	Size	Material
555/00-004	Donkin handwheel to suit Series 555 valves	DN50-600	Cast iron

AVK Ref	Valve size	
	DN	inch
508/ZA-015	50-100	2-4"
512/ZA-005	150-200	6-8"
514/ZA-002	250-300	10-12"
524/ZA-019	350+	14-24"

Series	Use	Size	Material
555/00-005	Donkin downpipe adaptor for Series 555 valves	DN50-300	Recycled PE

AVK Ref	Valve size (DN)
500/UW/001	50-200
510/UW/001	250-300

Notes

(1) For service connection valve with stem cap or extension spindle with key adaptor # 14-22
(2) For gate valves with stem cap or extension spindle with key adaptor # 23-32

Note: Product information is correct at time of printing

BALL VALVES

Series 85/30-001

Donkin Certus Service Isolation Valve

Use

Natural gas / LPG service isolation

Features and benefits

- Double spigot length allowing for 2 electrofusion joints
- Over torque protection and replaceable top cap under live conditions
- Yellow cap for easy identification
- Valve access system
- Maintenance free design
- Anti-tamper construction
- Fully traceable components
- Corrosion resistant construction
- 50mm square drive top cap
- Valve position indicator
- Quarter-turn operation, positive operating stops
- Seat, ball and grease combination ensuring low operating torques and avoids sticking over time
- Seat compression accurately set during automated welding process

Options

- Full encirclement tee key available
- Recommended that these valves are installed using the Certus installation kit - See data sheet 85/02
- Single spigot lengths available
- Full installation kit for 32 and 63mm sizes

Size 20 - 180mm

Pressure 20/32/63 - PN5.5/10≥ 90 - PN3/10

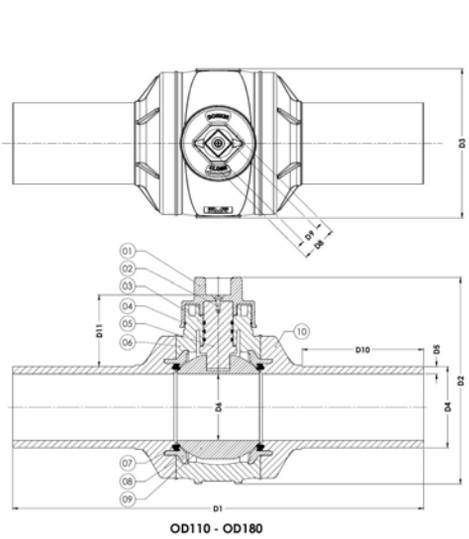
Temperature Range -20°C to +40°C

Body PE100

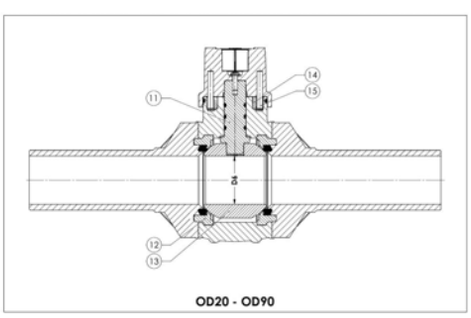
Applicable Standards GIS/V7 Part 2
EN1555-4

AVK Ref	D4	D6	D1	D2	D3	D5	D7	D8	D9	D10	D11	Wgt
	mm											Kg
85-020-3023201000	20	26	305	155	95	3.0	46	49.6	20.0	82	76	0.8
85-032-30-200010	32	26	320	155	95	3.0	46	49.6	20.0	88	70	0.8
85-063-30-200010	63	51	435	205	135	5.8	46	49.6	20.0	130	84	1.8
85-090-020101010	90	74	520	285	180	8.2	46	49.6	20.0	158	123	3.8
85-125-3011701000	125	90	585	280	205	11.4	31	49.4	20.0	182	89	5.9
85-180-3011701000	180	131	735	370	280	16.4	35	49.4	20.0	220	110	14.4

AVK VALVE INSTALLATION TRACKER



OD110 - OD180



OD20 - OD90

Series	Use	Size	Material
85/00	50mm square tee key for certus PE ball valves	750, 1000, 1500mm long	Steel

Code	Range	DN	PN	Weight
	mm	mm	Bar	Kg
96-425-00-002	750mm long	NA	NA	1.5
96-425-00-003	1,000mm long	NA	NA	2.2
96-425-00-004	1,500mm long	NA	NA	3

Series	Use	Size	Material
85/20	Donkin certus valve installation and access system	Compatible with 32 and 63mm valves	Recycled PE, PP and PVC

Code		DN	PN	Weight
		mm	Bar	Kg
85-999-090	with surface box	NA	NA	2.6
85-999-091	without surface box	NA	NA	2.3

Materials of Construction

No.	Description	Material
1	Top cap	PP GF
2	Screw	Stainless steel A4
3	O-ring	NBR
4	O-ring	NBR
5	Stem	POM
6	Body	PE 100
7	Ball seat	NBR
8	Seat retainer	PE 100

No.	Description	Material
9	Ball	POM
10	Spigot	PE 100
11	Stem	PA
12	Seat retainer	PP
13	Ball	PP
14	Ring	PA GF
15	Pin	Stainless steel A4

Note: Product information is correct at time of printing

Series 450/001-001

Donkin Ball Valve

Use	For a wide range of gasses and fluids

Features and benefits

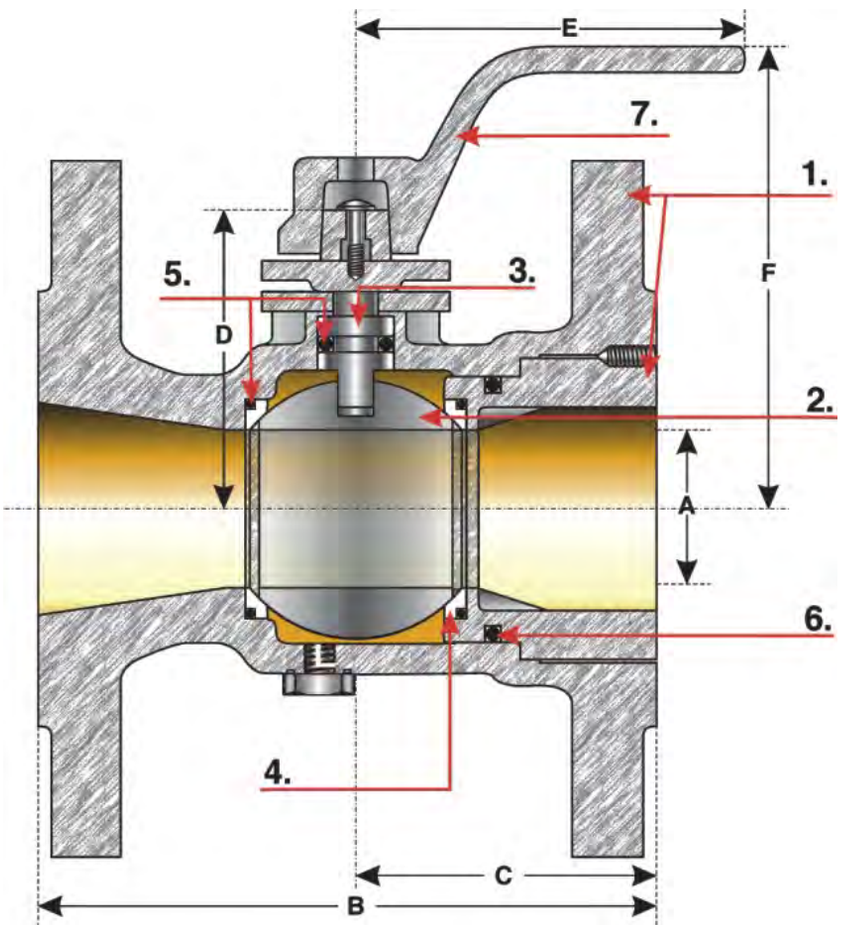
- Plugged boss with pressure plug for block and bleed
- Self indicating handle shows position of valve port
- Resilient seats compensate for wear to give trouble-free operation with minimum maintenance
- Pre-loaded PTFE seats ensure tight closure at all pressure or vacuum conditions
- With manual operation only one quarter turn from open to closed position
- Round port giving smooth, straight through flow with very low pressure drop

Options

- On certain sizes locking devices available to enable the valve to be locked in either the open or closed position
- Can be supplied with pneumatic, electric or hydraulic actuators
- Version available for coke oven gas
- High temperature version available

Size	DN50 - 150
Pressure	PN7
Temperature Range	-10 to +60 C
Body	Ductile iron body, Stainless steel ball/stem
Applicable Standards	BS 5159 EN 12266

AVK Ref	DN	PN	A	B	C	D	E	F	Weight	Max Torque	K
	mm	bar	mm						kg	Nm	m
450-050-00-0111	50	7	38	178	73	73	114	111	7.85	27	3.0
450-080-00-0111	80	7	60	203	102	117	190	133	14	55	2.5
450-100-00-0111	100	7	80	229	114	165	318	194	24	109	3.5
450-150-00-0111	150	7	115	267	133	190	318	219	44	218	6.5



Materials of Construction

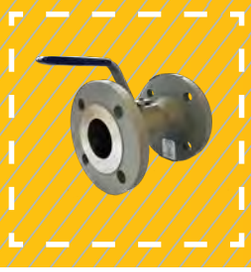
No.	Description	Material
1	Body and insert	Ductile iron. BS EN 1563 GJS 400/15
2	Ball	13% chrome stainless steel. BS EN 1027 316S21
3	Stem	13% chrome stainless steel. BS 970 GR 316
4	Seats	PTFE - 15% graphite filled

No.	Description	Material
5	Stem/ seat seal	Viton rubber. (DN50 Mk2 Nitrile Rubber)
6	Body seal	Viton rubber. (N/A on Mk2)
7	Lever	Carbon steel

Note: Product information is correct at time of printing

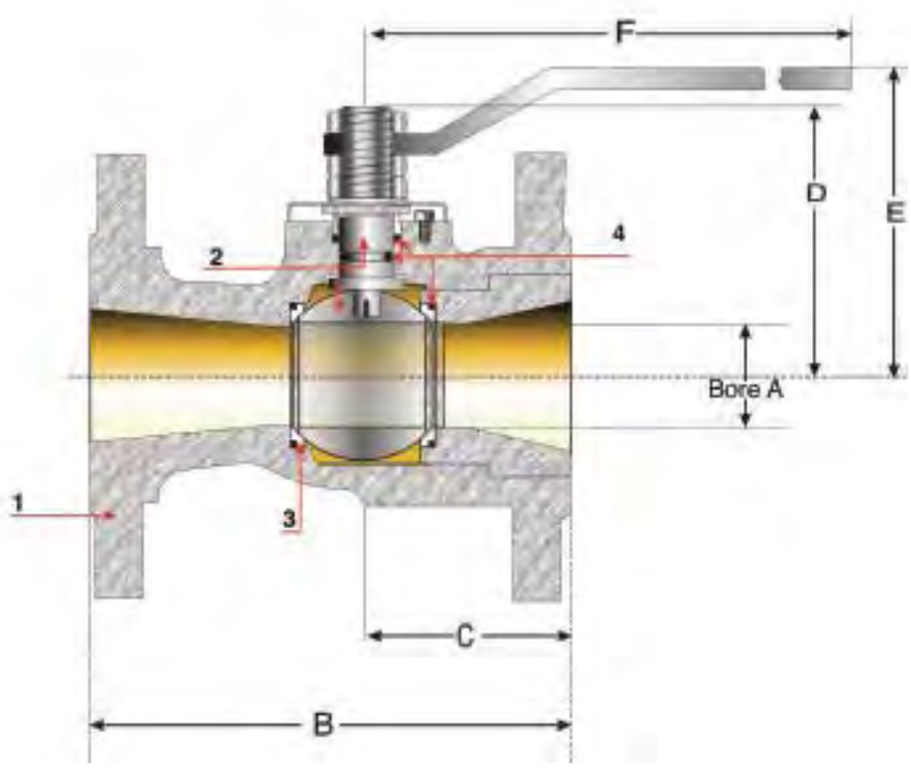
Series 460/02-001

Donkin Steel Ball Valve



Use	For a wide range of gasses and fluids
Features and benefits	• Blow-out proof stem • Maintenance free • Compact design requires minimum installation space • Preloaded seats for positive sealing at all pressures • Resilient seats compensate for wear • Quarter-turn operation • Self indicating handle • Venturi bore
Options	• False cap for underground use • Lever operated for above ground use
Size	DN20 - 50
Pressure	PN7
Temperature Range	-20°C to +60°C
Body	Carbon steel body, Stainless steel ball/stem
Applicable Standards	BS ISO 7121 EN 12266

AVK Ref	DN	PN	A	B	C	D	F/C E	Lever E	F	Weight
	mm	bar	mm							kg
460-020-02-013	20	7	14.5	117	58.5	74	127	97	160	3
460-025-02-013	25	7	14.5	127	63.5	74	127	97	160	3.5
460-050-02-013	50	7	30	178	75	100	138	108	160	9.2



Materials of Construction

No.	Description	Material
1	Body casting	Carbon steel BS1504-161-480
2	Ball and stem	13% chrome BS970-410-S21
3	Seats	PTFE
4	O-rings	Nitrile rubber. EN 682

Note: Product information is correct at time of printing

Series 451/50-001

Donkin Ball Valve with Screwed Ends

Use

Gas service isolation of natural gas and LPG

Features and benefits

- Screwed BS21 taper internal thread branch connections in ¾" to 2" sizes
- Maintenance free compact design
- Pre-loaded PTFE Seats
- High integrity, one piece SG iron body
- Corrosion resistant construction
- High torque design to prevent unauthorised operation
- 19mm square false cap as standard

Options

- Seal in false cap skirt to prevent ingress of dirt
- 25mm false cap
- Double block and bleed on 2"
- Lever operation

Size

¾" - 2"

Pressure

PN7

Temperature Range

-20°C to +60°C

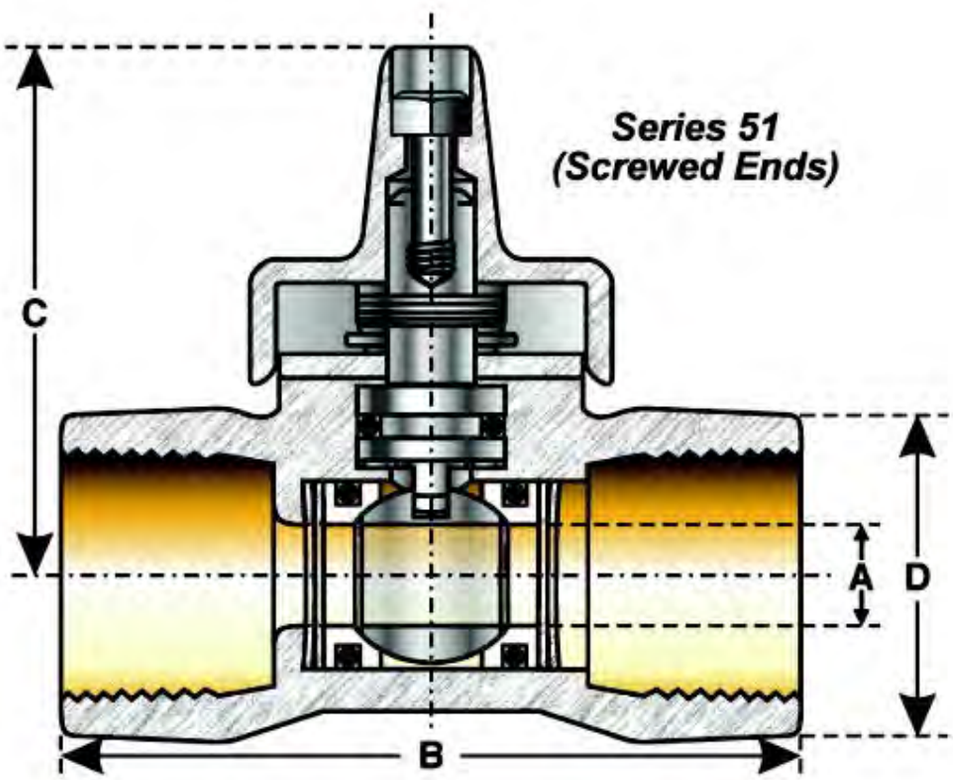
Body

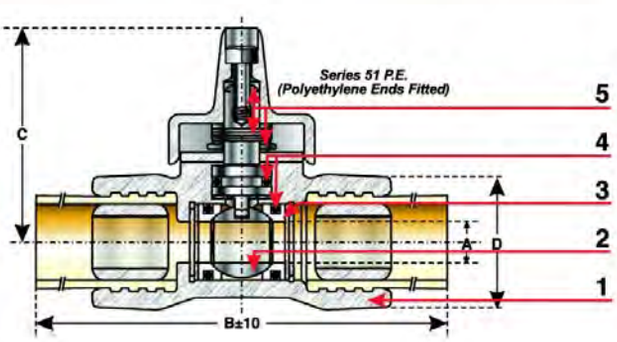
Ductile iron

Applicable Standards

GIS/V4
EN 12266

AVK Ref	DN	PN	A	B	C	D	Weight
	Inch	bar	mm				kg
451-002-05-511	¾"	7	11.5	84	56	36	0.37
451-003-05-511	1"	7	14.5	99	58	44	0.9
451-005-05-511	1½"	7	20	125	76	60	1.5
451-006-05-511	2"	7	30	146	69	77	2.2





Materials of Construction

No.	Description	Material
1	Body	SG iron EN 1563 - GJS-400 - 15
2	Ball	Stainless steel. BS EN 1072 316S31
3	Seat	15% graphite filled PTFE
4	O-rings	Nitrile rubber. EN 682
5	Washer, disc spring stem and gland	Stainless steel. BS 1449

Note: Product information is correct at time of printing

Series 451/70-001

Donkin Ball Valve with PE Tails

Use	Gas service isolation of natural gas and LPG

Features and benefits

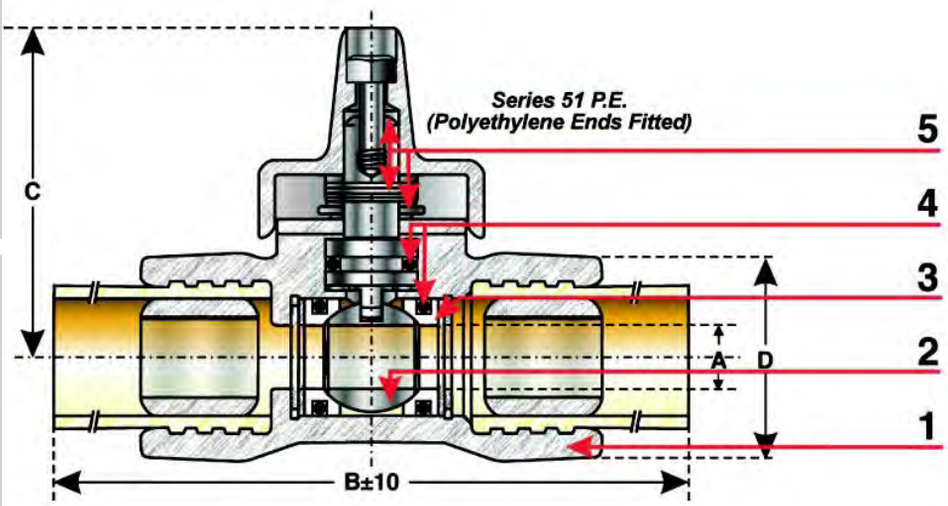
- PE80 or PE100 SDR11 tails
- Maintenance free compact design
- Pre-loaded PTFE seats
- High integrity, one piece SG iron body
- Corrosion resistant construction
- High torque design to prevent unauthorised operation
- 19mm square false cap as standard

Options

- Extra long PE tail pieces
- Seal in false cap skirt to prevent ingress of dirt
- 25mm false cap
- Double block and bleed on 2”
- Lever operation

Size	DN32-63
Pressure	PN4
Temperature Range	-20°C to +60°C
Body	Ductile iron
Applicable Standards	GIS/V4 GIS/PL3 EN12266

AVK Ref	DN	PN		A	B	C	Weight
	mm	bar		mm			kg
		PE80	PE100				
451-032-05-7213001	32	4	7	14.5	201	73	1.1
451-063-05-7213001	63	4	7	30	291	84	3.1



Materials of Construction

No.	Description	Material
1	Body	SG iron EN 1563 - GJS-400 - 15
2	Ball	Stainless steel. BS EN 1072 316S31
3	Seat	15% graphite filled PTFE
4	O-rings	Nitrile rubber. EN 682
5	Washer, disc spring stem and gland	Stainless steel. BS 1449

Note: Product information is correct at time of printing

Series 451/73

Donkin ball Valve with Screwed to PE Ends

Use	Gas service isolation of natural gas and LPG

Features and benefits

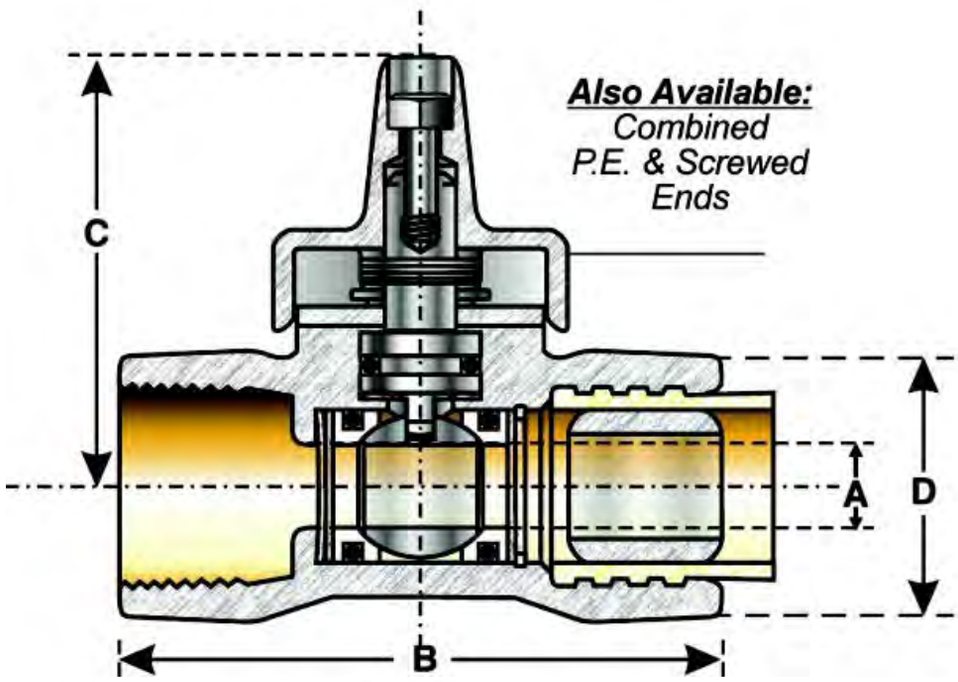
- Screwed BS21 taper internal thread branch connections to PE80 or PE100 SDR11 tails
- Maintenance free compact design
- Pre-loaded PTFE seats
- High integrity, one piece SG iron body
- Corrosion resistant construction
- High torque design to prevent unauthorised operation
- 19mm square false cap as standard

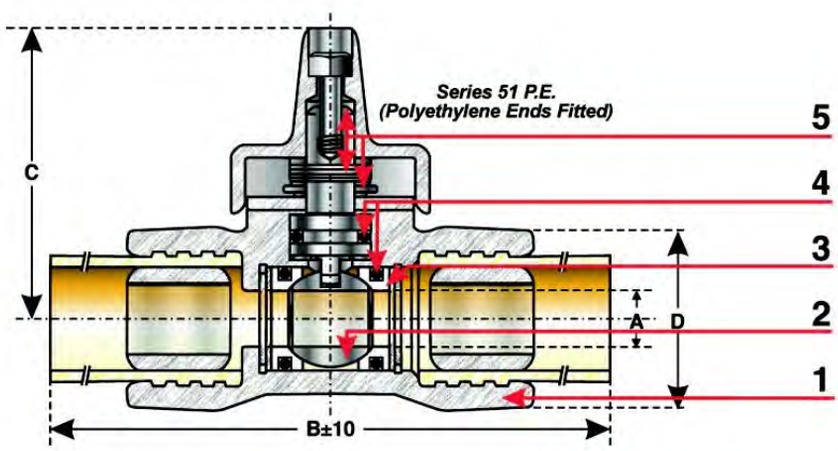
Options

- Extra long PE tail pieces
- Seal in false cap skirt to prevent ingress of dirt
- 25mm false cap
- Double block and bleed on 2"
- Lever operation

Size	¾" - 2", 25-63mm
Pressure	PN4
Temperature Range	-10°C to +40°C
Body	Ductile iron
Applicable Standards	GIS/V4 GIS/PL3 EN12266

AVK Ref	DN	PN	A	B	C	D	Weight
	mm	bar PE80	mm				kg
451-323-05-7310001	1"x32	4	14.5	201	73	43	1.3
451-323-05-7413001	1"x25	4	14.5	201	73	43	0.9
451-636-05-7311001	2"x63	4	30	291	84	71	3.7
451-636-05-7413001	2"x63	4	30	291	84	71	3.0





Materials of Construction

No.	Description	Material
1	Body	SG iron EN 1563 - GJS-400 - 15
2	Ball	Stainless steel. BS EN 1072 316S31
3	Seat	15% graphite filled PTFE
4	O-rings	Nitrile rubber. EN 682
5	Washer, disc spring stem and gland	Stainless steel. BS 1449

Note: Product information is correct at time of printing

Series 455/74-001

Donkin Purge/bypass Point Ball Valves

Use

Pressure and bypass point valves for natural gas pipelines

Features and benefits

- Maintenance free
- Pre-loaded PTFE seats
- Clear bore ensures minimum pressure drop
- Factory fitted PE tails
- Parallel false cap, spanner operated
- Totally enclosed design for buried service
- Supplied in sealed bag for protection

Options

- Separate anti rotation device (Helicopter) can be fitted just before backfilling making valve installation easier
- PE 100 (PN7) option available

Size

1" x 32mm, 2" x 63mm

Pressure

PN4

Temperature Range

-10°C to +40°C

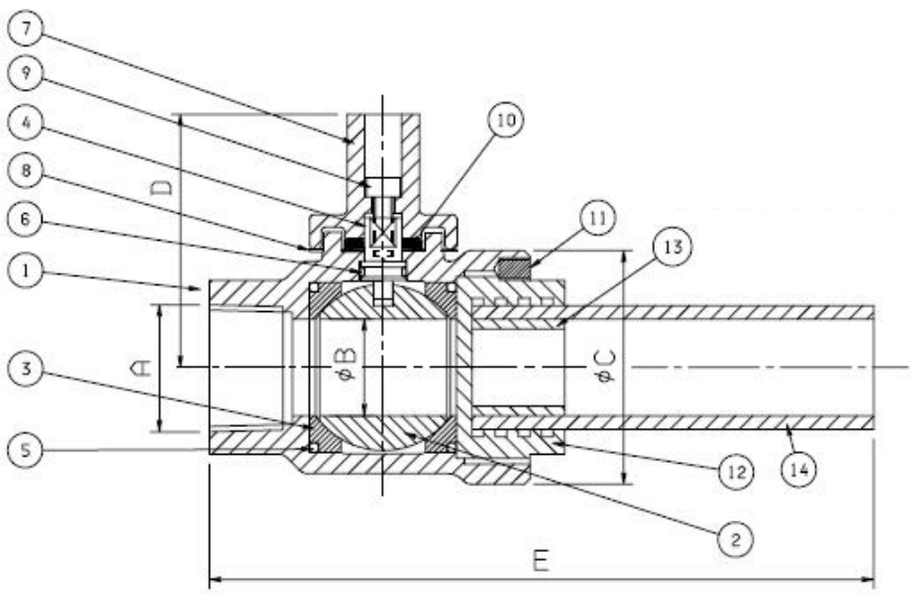
Body

Ductile iron/PE

Applicable Standards

GIS/V4
GIS/PL3
EN 12266

AVK Ref	Anti Rotation Device Reference	DN	PN	B	C	D	E	Weight
		mm	bar	mm				kg
455-323-20-7413	501/VP-701	1" x 32	5.5	25	70	66	720	1.5
455-636-20-7413	502/VP-701	2" x 63	5.5	50	108	85	760	5



Separate **anti rotation device** (Helicopter) can be fitted just before backfilling making valve installation easier.

Materials of Construction

No.	Description	Material
1	Body	Ductile iron
2	Ball	Stainless steel
3	Seats	PTFE
4	Stem	Stainless steel
5	Seal O-rings	Nitrile
6	Stem O-ring	Nitrile
7	Falsecap	Ductile iron

No.	Description	Material
8	Dust shield	Stainless steel
9	Cap screw	High tensile steel
10	Disc spring	Steel
11	Grub screw	High tensile steel
12	Body end	Mild steel/ zinc plated (63mm cast iron)
13	Insert	Mild steel/ zinc plated
14	PE pipe	PE 80 SDR11

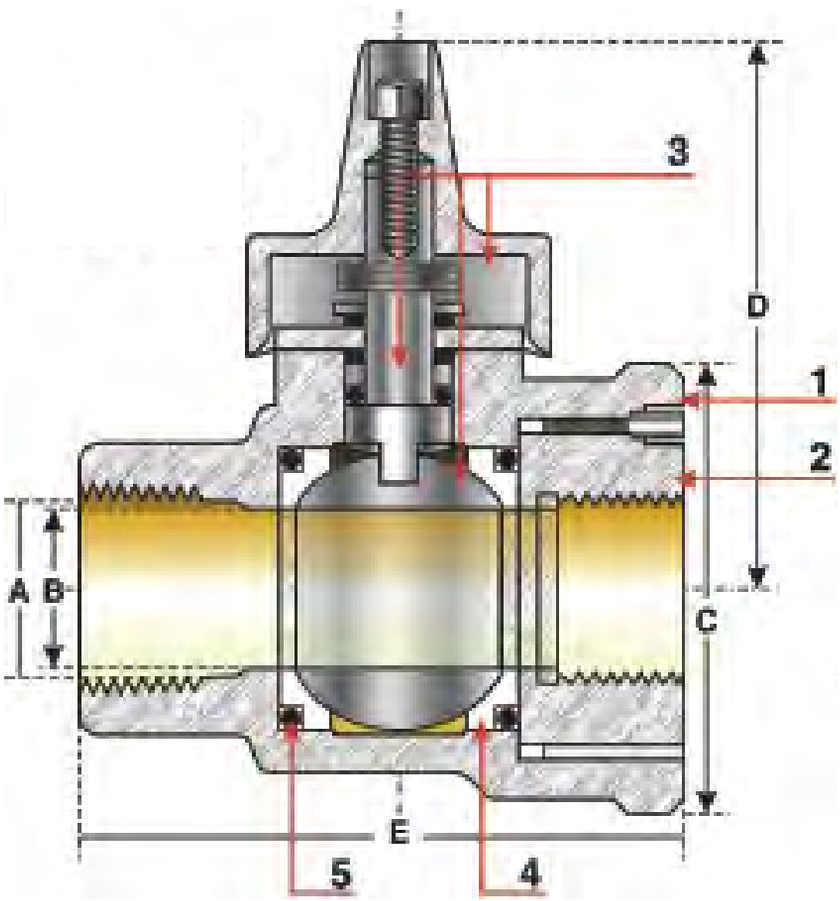
Note: Product information is correct at time of printing

Series 455/51-001

Donkin Ball Valve

Use	Isolation and under pressure drilling into natural gas pipelines
Features and benefits	• Maintenance free compact design • Pre-loaded PTFE seats • One piece body • High torque design to prevent unauthorised operation • One size false cap fits all sizes • Totally enclosed design for buried service • Design ensures minimum pressure drop • Full clear bore for under pressure drilling
Options	• LD (limited dimension) version overall dimension in accordance with GIS/F2 • Available with PE tails for use as purge or bypass point valves, see 455-74
Size	DN¾", 1" & 2"
Pressure	PN7
Temperature Range	-10°C to +50°C
Body	Ductile iron
Applicable Standards	GIS/E1 GIS/V4 EN 12266

AVK Ref	A (DN)	PN	B	C	D	E	Weight
	Inch	bar	mm				kg
455-00-22-0511	¾"	7	20	58	61	90	0.8
455-00-32-0511	1"	7	25	70	66	98	1.2
455-00-62-0511	2"	7	50	108	85	150	4.1



Materials of Construction

No.	Description	Material
1	Body	Ductile iron, EN 1563 - GJS - 400 - 15
2	Body end	Carbon steel, BS 970 070M20
3	Ball, stem and gland	Stainless steel, BS 970 GR 316 (326)
4	Seat 1	5% graphic filled PTFE

No.	Description	Material
5	O-ring	Nitrile rubber, EN 682 455-21
6	Back nut	SG iron, EN 1563 - GJS - 450 - 10
7	Collar	SG iron, EN 1563 - GJS - 450 - 10
8	Seal	Nitrile rubber EN 682

Note: Product information is correct at time of printing

Series 455/57-001

Donkin Limited Dimension Ball Valve

Use

Isolation and under pressure drilling into natural gas pipelines

Features and benefits

- Maintenance free compact design
- Pre-loaded PTFE seats
- One piece body
- High torque design to prevent unauthorised operation
- One size false cap fits all sizes
- Totally enclosed design for buried service
- Design ensures minimum pressure drop
- Full clear bore for under pressure drilling
- LD (limited dimension) version overall dimension in accordance with GIS/F2

Options

- Available with PE tails for use as purge or bypass point valves, see 455-74

Size

DN¾", 1"

Pressure

PN7

Temperature Range

-10°C to +50°C

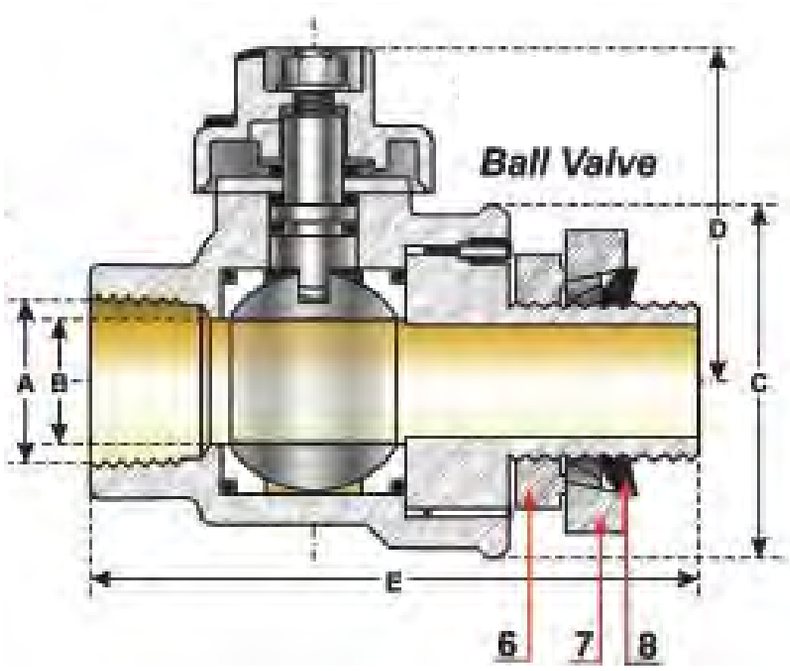
Body

Ductile iron

Applicable Standards

GIS/E1
GIS/V4
EN 12266

AVK Ref	A (DN)	PN	B	C	D	E	Weight
	Inch	bar	mm				kg
455-00-22-1571	¾"	7	18	58	61	120	0.9
455-00-32-1571	1"	7	23	70	66	124	1.6



Materials of Construction

No.	Description	Material
1	Body	Ductile iron, EN 1563 - GJS - 400 - 15
2	Body end	Carbon steel, BS 970 070M20
3	Ball, stem and gland	Stainless steel, BS 970 GR 316 (326)
4	Seat 1	5% graphic filled PTFE

No.	Description	Material
5	O-ring	Nitrile rubber, EN 682 455-21
6	Back nut	SG iron, EN 1563 - GJS - 450 - 10
7	Collar	SG iron, EN 1563 - GJS - 450 - 10
8	Seal	Nitrile rubber EN 682

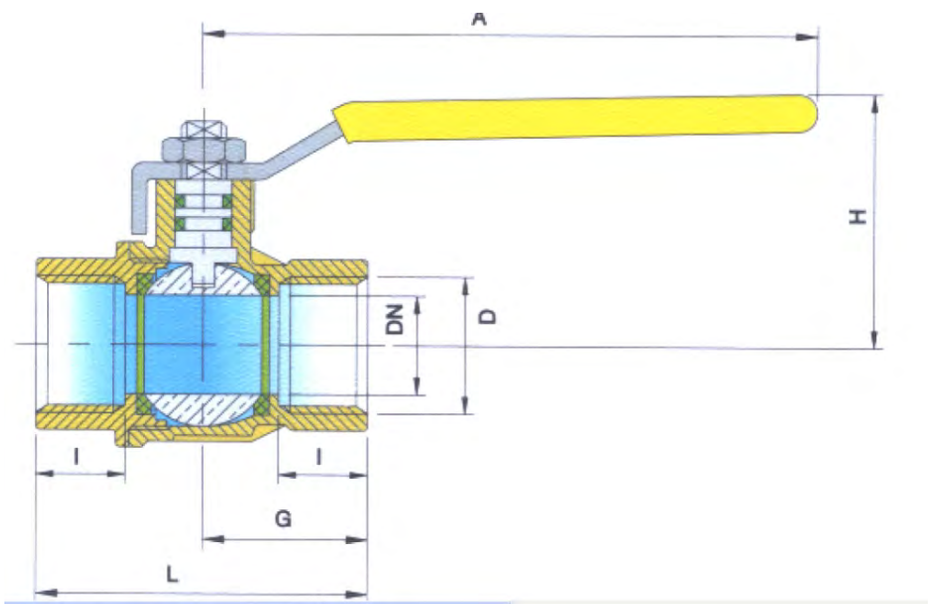
Note: Product information is correct at time of printing

Series 84/GBA

Donkin Full Bore Brass Ball Valve

Use	For use with natural gas and LPG
Features and benefits	• Blow-out proof stem • Hard Chromium plated ball • Virgin PTFE seats and Viton stem seals • Bi-directional flow for ease of installation • Threaded BS 21 taper • Dacrotized steel handle with yellow PVC sleeve
Options	• 'T' Handle available for valves from ¼" to 1"
Size	DN8 - 100
Pressure	PN7
Temperature Range	-20°C to +170°C
Body	MS58 brass (nickel plated)
Applicable Standards	EN 331

AVK Ref	D	DN	I	L	G	A	H
	Inch	mm	mm				
84/GBA/008	¼"	8	12	45	22.5	82	38
84/GBA/010	⅜"	10	12	45	22.5	82	38
84/GBA/015	½"	15	15.5	59	29.5	100	43
84/GBA/020	¾"	20	17	64	32	120	50
84/GBA/025	1"	25	21	81	40.5	120	54
84/GBA/030	1¼"	32	23	93	46.5	158	73
84/GBA/040	1½"	40	23	102	51	158	79
84/GBA/050	2"	50	26.5	121	60.5	158	86
84/GBA/060	2½"	65	32	156	78	255	132
84/GBA/070	3"	80	35	177	88.5	255	140
84/GBA/080	4"	100	41.5	216	108	255	154



Materials of Construction

No.	Description	Material
1	Body	MS58 brass (nickel plated)
2	Seat	PTFE
3	Stem	OT58 brass (nickel plated)

No.	Description	Material
4	Ball	MS58 brass (chrome plated)
5	Stem seal	Viton O-rings (x2)

Note: Product information is correct at time of printing

Series 666/80

AVK Brass Security Valve for Gas Riser Systems

Use

For use with natural gas

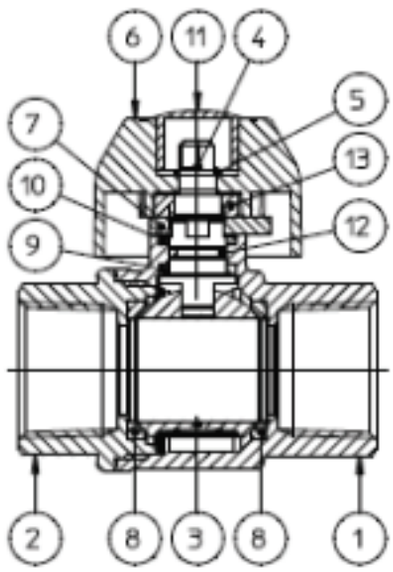
Features and benefits

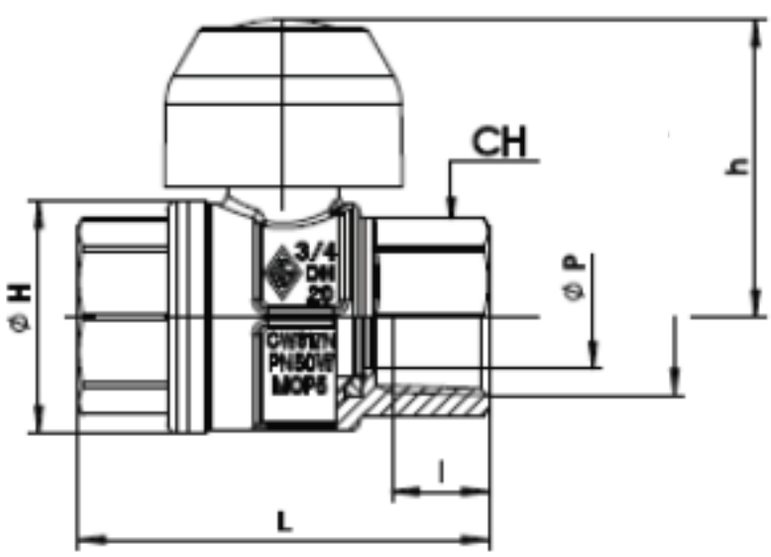
- Brass body nickel plated for added corrosion protection
- Full bore design
- End connections threaded to BS21
- Fully fire safe design to GIS/V7:Part 3 requirements
- Yellow spinning sheath to BS4800 10E53
- Can only be operated with the re-set key
- NBR seals
- PTFE seats
- Chrome plated ball
- **Only security valve approved to GIS/V7:Part 3**

Options

- Re-set key for valve operation from closed to open
- 1" - 2" sizes available wilth handle

AVK Ref	DN	ØP	l	L	Øh	CH	h	Weight
	Inch	mm						Kg
970060101500011	¾"	17.5	16.3	69	39	31	50	0.35





Size DN¾"

Pressure PN5

Temperature Range -10 to +40°c

Body Brass

Applicable Standards GIS/V7:Part 3

Materials of Construction

No.	Description	Material
1	Body	Brass CW 617N
2	End connection	Brass CW 617N
3	Ball	Brass CW 617N
4	Stem	Brass CW 617N
5	Circlip washer	Steel
6	Cap	Aluminium EN-AC 46100
7	90° stop	Steel AVP

No.	Description	Material
8	Ball seat	PTFE
9	Thrust washer	PTFE
10	Thrust washer	Graphite
11	Cap	PA6.6
12	O-ring	Nitrile
13	Nut	Steel CL04

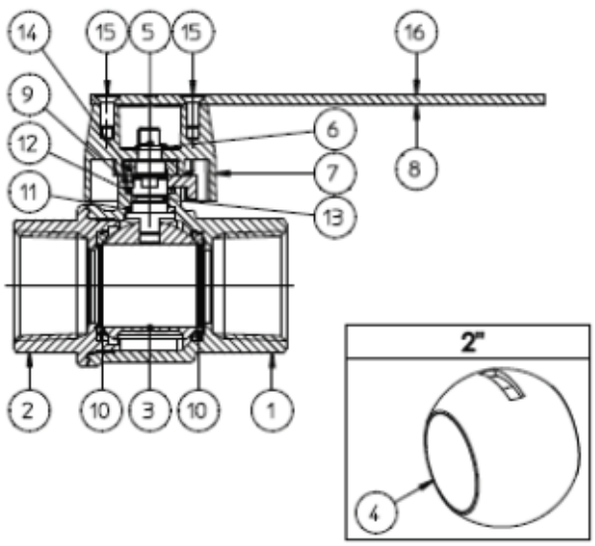
Note: Product information is correct at time of printing

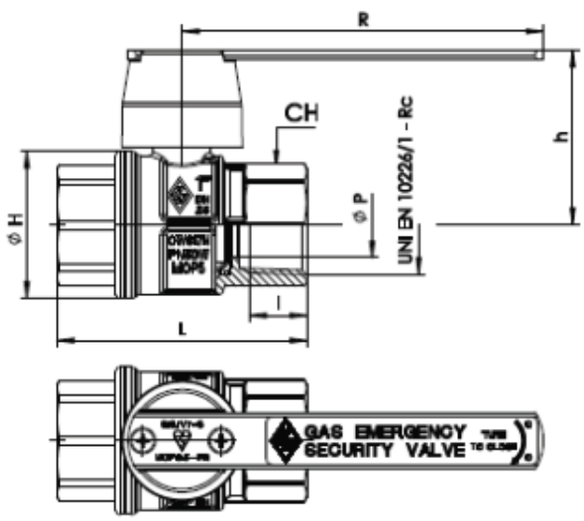
Series 666/90

AVK Brass Security Valve for Gas Riser Systems Lever Operated

Use	For use with natural gas
Features and benefits	• Brass body nickel plated for added corrosion protection • Full bore design • End connections threaded to BS21 • Fully fire safe design to GIS/V7:Part 3 requirements • Yellow Lever to BS4800 10E53 • Once closed with the lever can only be re-opened with the re-set key • NBR seals • PTFE Seats • Chrome plated ball • **Only security valve approved to GIS/V7:Part 3**
Options	• Re-set key for valve operation from closed to open • ¾" available with spinning sheath
Size	DN1"-2"
Pressure	PN5
Temperature Range	-10 to +40°c
Body	Brass
Applicable Standards	GIS/V7:Part 3

AVK Ref	DN	ØP	l	L	Øh	CH	R	h	Weight
	Inch	mm							Kg
970060101500008	1"	22	19.1	83	49	38	120	58	0.6
970060101500009	1½"	37	21.4	108	73	54	160	78.5	1.62
970060101500010	2"	46.7	25.7	127.5	87	67	160	89	2.19





Materials of Construction

No.	Description	Material
1	Body	Brass CW 617N
2	End connection	Brass CW 617N
3	Ball	Brass CW 617N
4	Ball	Brass CW 617N
5	Stem	Brass CW 617N
6	Circlip washer	Steel
7	Cap	Aluminium EN-AC 461100
8	Lever	Steel DD11

No.	Description	Material
9	90° stop	Steel AVP
10	Ball seat	PTFE
11	Thrust washer	PTFE
12	Thrust washer	Graphite
13	O-ring	Nitrile
14	Nut	Steel CL04
15	Screw	Steel
16	Label	PVC

Note: Product information is correct at time of printing

BUTTERFLY VALVES

Series 75/41-001

AVK Centric Full Lug Butterfly Valve

Use

Biogas/LPG and natural gas

Features and benefits

- Bonded vulcanized liner of NBR with an excellent compression set
- Streamlined disc with minimum flow resistance
- Profiled disc edge requires minimal deformation of the liner to achieve tight sealing, and results in less wear of the liner
- Disc, shaft and conical pin of martensitic stainless steel
- Shaft bearings of PTFE coated steel
- Low torques as a result of the profiled disc edge and fixed liner design

Options

- Lever operation
- Gearbox for above ground duty with handwheel
- Electric and pneumatic actuation
- Various coating disc and stem options
- Full range of flange adaptors and dismantling joints

Size

DN50 - 350

Pressure

PN10/16

Temperature Range

-30°C to + 110°C

Body

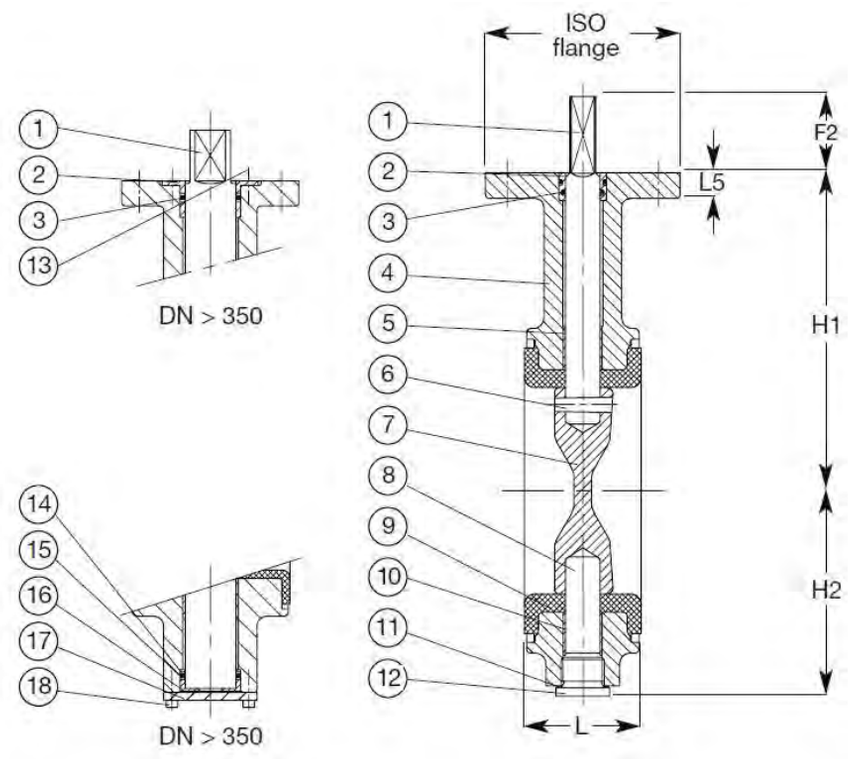
Ductile iron

Applicable Standards

T/SP/M/9: Part 1 and 2
T/SP/PRS/38

AVK Ref	DN	Flange drilling	L	H1	H2	F2	L5	ISO	Wgt
	mm		mm					Flange	Kg
75-0050-41-211002600008	50	PN10/16	43	118	63	34	12	90	8
75-0065-41-211002600008	65	PN10/16	46	126	71	34	12	90	9
75-0080-41-211002600008	80	PN10/16	46	133	78	34	12	90	10
75-0100-41-211002600008	100	PN10/16	52	147	98	34	12	90	12
75-0125-41-211002600008	125	PN10/16	56	160	109	34	12	90	16
75-0150-41211002600008	150	PN10/16	56	180	133	34	14	90	20
75-0200-41-211002600008	200	PN16	60	204	158	34	14	90	25
75-0250-41-211002600008	250	PN16	68	245	194	45	15	125	28
75-0300-41-211002600008	300	PN16	78	270	219	45	15	125	36
75-0350-41-211002600008	350	PN16	78	315	256	45	15	125	50

*Gearbox operated.



Materials of Construction

No.	Description	Material
1	Shaft	Stainless steel 1.4057-431529
2	Bushing	Bronze
3	O-ring	NBR rubber JS1030/GJS-400-15
4	Body	Ductile iron, EN-GJS-400-15 (GGG-40)
5	Bearing	PTFE coated steel
6	Conical pin	Stainless steel 1.4057-431529
7	Disc	Stainless steel
8	Shaft	Stainless steel 1.4057-431529
9	Lining	NBR rubber JS1030/GJS-400-15

No.	Description	Material
10	Bearing	PTFE coated steel
11	Sealing ring	Copper
12	Plug	Glavanised steel
13	Screw	Galvanized steel
14	Ring	Alubronze
15	O-ring	NBR rubber JS1030/GJS-400-15
16	Axial bearing	Alubronze
17	Cover plate	Galvanized steel
18	Screw	Galvanized steel

Note: Product information is correct at time of printing

MAINS TO METER

Series 216/00-001, 002 & 003

Donkin Meter Box Adaptor

Use

To connect PE 80 service pipe to the emergency control valve (ECV) in the gas meter box

Features and benefits

- Fully corrosion protected
- Extra corrosion protection on version for semi-concealed meter boxes
- GRP cover pipe slides onto special taper to locate in correct place to ensure PE pipe and crimp is always covered
- Crimp connection to PE pipe
- BSPT thread to connect on to the Emergency control valve
- Kitemark approved
- Embodied carbon data available upon request

Options

- Delta seal coated body for underground duty
- 3 versions available

Size DN20 - 32

Pressure PN4

Temperature Range -20°C to +40°C

Body Steel

Approvals GIS/PL3

216/00-001 (Galvanised)

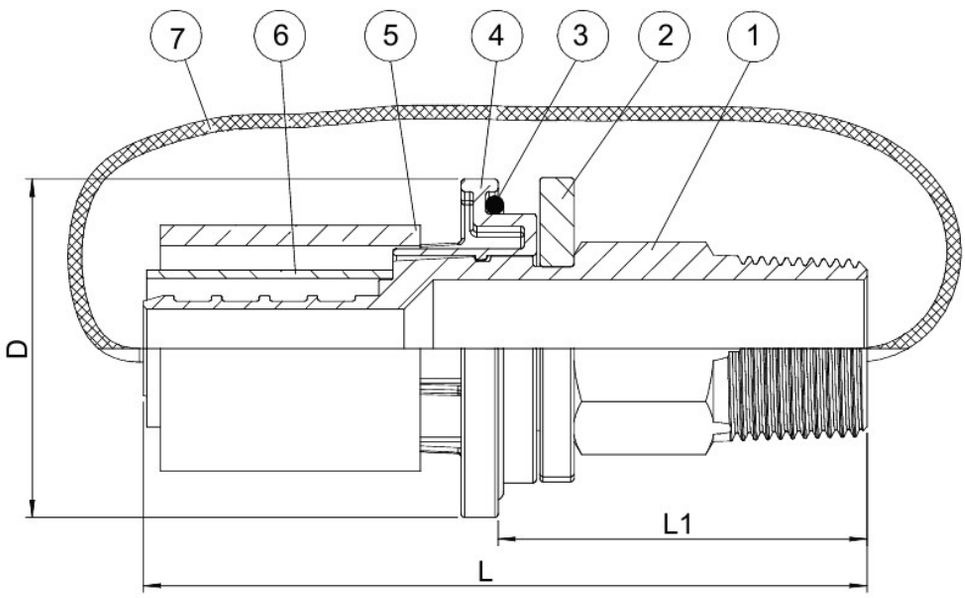
AVK Ref	DN	Size Range	D	L	L1	Weight
	mm					Kg
216-020-00-21	20	20mm SDR9 x R¾"	49.5	106	54	0.2
216-025-00-21	25	25mm SDR11 x R¾"	49.5	106	54	0.2
216-032-00-21	32	32mm SDR11 x R¾"	49.5	106	54	0.2

216/00-002 (Delta seal coated)

AVK Ref	DN	Size Range	D	L	L1	Weight
	mm					Kg
216-020-00-22	20	20mm SDR9 x R¾"	49.5	106	54	0.2
216-025-00-22	25	25mm SDR11 x R¾"	49.5	106	54	0.2
216-032-00-22	32	32mm SDR11 x R¾"	49.5	106	54	0.2

216/00-003 (Zinc coated)

AVK Ref	DN	Size Range	D	L	L1	Weight
	mm					Kg
216-020-00-23	20	20mm SDR9 x R¾"	49.5	106	54	0.2
216-025-00-23	25	25mm SDR11 x R¾"	49.5	106	54	0.2
216-032-00-23	32	32mm SDR11 x R¾"	49.5	106	54	0.2
216-032-00-33	32	32mm SDR11 x R1"	49.5	106	54	0.2



Materials of Construction

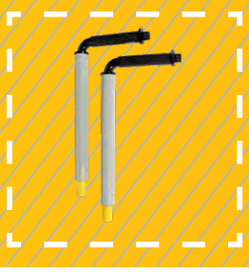
No.	Description	Material
1	Body	Zinc plated steel (st 37.2) or delta seal
2	C clip	PA6 B116 MS 8289
3	O-ring	NBR, EN 682
4	Disc	PA6 B116 MS 8289

No.	Description	Material
5	GRP sleeve	PVC (polyvinylclorid)*
6	Crimp tube	Copper alloy T2 GB/T1527-1997
7	Packing wire	PE-LD (Polyethylene)

Note: Product information is correct at time of printing

Series 217/31-001 & 002

Donkin Above Ground Factory Entry Elbow



Use

Connects PE service pipes to a 90° steel elbow enabling natural gas to be conveyed through the wall cavity in a building and connect on to an internal gas meter or interior pipe-work

Features and benefits

- Maintenance free
- Factory fitted PE tails
- GRP sleeve supplied
- 1M or 2M PE lengths available
- Different through wall lengths
- Internal positioning ring
- Fully pressure tested in the factory
- Embodied carbon data available upon request

Note:
- 001 = Screwed end 1½" and 2"
- 002 = Plain end 3" and above

Options

- Split flange on > 63mm removes the need for welding on site (see 217/31-003)
- PE100 pipe if required

Size DN40 - 180

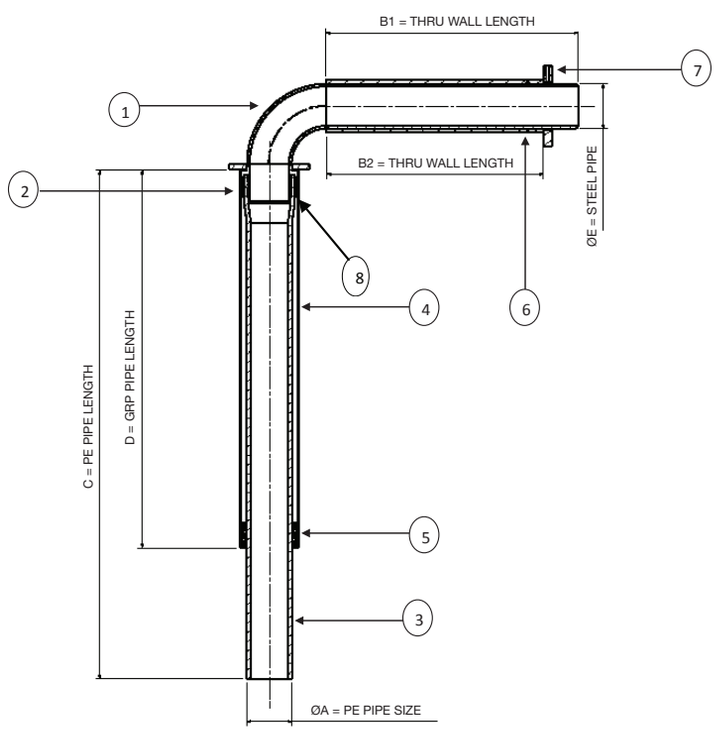
Pressure PN5.5

Temperature Range -20°C to +40°C

Body Steel / PE

Approvals GIS/PL3

AVK Ref	PE	SDR	B1 (Through Wall)	C (PE80 Length)	D (GRP Length)	E (Steel Pipe)	B2 (Through Wall) Pe Pipe DN	Wgt
	mm		mm	M	mm			Kg
217-0401-345-10-090	40	11	345	1	0.9	48.1	63	6
217-0401-500-10-090	40	11	500	1	0.9	48.1	63	7
217-0632-150-10-090	63	11	150	1	0.9	60.3	75	7
217-0632-345-10-090	63	11	345	1	0.9	60.3	75	9
217-0632-500-10-090	63	11	500	1	0.9	60.3	75	10
217-0632-500-20-090	63	11	500	2	1.9	60.3	75	13
217-0632-610-10-090	63	11	610	1	0.9	60.3	75	11
217-0903-345-10-075	90	11	345	1	0.75	88.9	110	14
217-0903-500-20-150	90	11	500	2	1.5	88.9	110	21
217-0903-610-20-150	90	11	610	2	1.5	88.9	110	22
217-0903-610-10-075	90	11	610	1	0.75	88.9	110	19
217-1254-345-10-075	125	11	345	1	0.75	114.3	125	24
217-1254-610-10-075	125	11	610	1	0.75	114.3	125	30
217-1254-610-20-150	125	11	610	2	1.5	114.3	125	38.5
217-1806-345-10-075-2	180	17	345	1	0.75	168.3	200	35
217-1806-610-20-150	180	11	610	1	1.5	168.3	200	63
217-1806-610-20-150-2	180	17	610	2	1.5	168.3	200	55



Materials of Construction

No.	Description	Material
1	Body	Mild steel (Zinc coated/black FBE)
2	Sleeve	Mild steel
3	Vertical pipe	PE pipe (size 40 - 125mm SDR11, Size 180mm SDR17)
4	Vertical protection sleeve	GRP pipe
5	Vertical protection sleeve retainer	Foam
6	Through wall protection pipe	PE pipe
7	Securing ring C/W screw	Mild steel (Black FBE coating)
8	Shrink sleeve	Plastic

Note: Product information is correct at time of printing

Series 217/31-003

Donkin Above Ground Factory Entry Elbow with Split Flange Ring

Use

Connects PE service pipes to a 90° steel elbow enabling natural gas to be conveyed through the wall cavity in a building and connect on to an internal gas meter or interior pipe-work

Features and benefits

- Maintenance free
- Factory fitted PE tails
- GRP sleeve supplied
- 1M or 2M PE lengths available
- Different through wall lengths
- Fully pressure tested in the factory
- No welder needed on site
- Split flange ring for internal connection
- Supplied with wall plugs
- Embodied carbon data available upon request

AVK Ref	PE	SDR	D	DN	A (GRP Length)	B (Length)	C (Through Wall Length)	Wgt
	mm		mm					Kg
217-0903-345-10-07501	90	11	132	80	750	1000	345	16
217-0903-345-20-15001	90	11	132	80	1500	2000	345	16
217-0903-500-20-15001	90	11	132	80	1500	2000	500	23
217-0903-610-10-07501	90	11	132	80	750	1000	610	21
217-0903-610-20-15001	90	11	132	80	1500	2000	610	24
217-1254-345-10-07501	125	11	156	100	750	1000	345	26.5
217-1254-610-10-07501	125	11	156	100	750	1000	610	32.5
217-1254-610-20-15001	125	11	156	100	1500	2000	610	41
217-1806-345-10-07521	180	17	211	150	750	1000	345	38.8
217-1806-610-10-07521	180	17	211	150	750	1000	610	46
217-1806-610-20-15021	180	17	211	150	1500	2000	610	59

Options

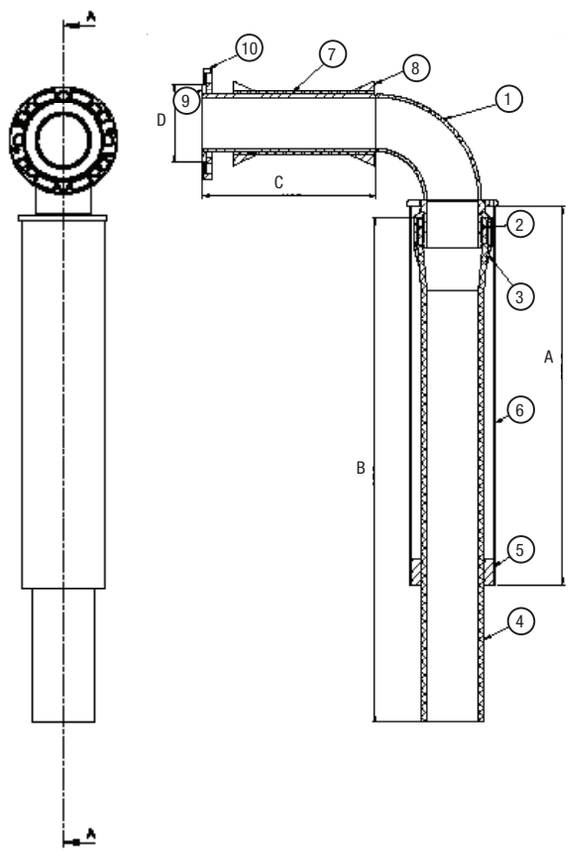
Size DN90 - 180

Pressure PN5.5

Temperature Range -20°C to +40°C

Body Steel / PE

Approvals GIS/PL3



Materials of Construction

No.	Description	Material
1	Body	Mild steel (Black FBE)
2	Sleeve	Mild steel
3	Shrink sleeve	Rubber
4	Vertical pipe	PE pipe
5	Vertical protection sleeve retainer	Foam

No.	Description	Material
6	Vertical protection sleeve	GRP pipe
7	Through wall protection pipe	PE pipe
8	Wall bung	Silicone rubber
9	Raised face	Mild steel
10	Spilt flange	Ductile iron

Note: Product information is correct at time of printing

Series 218/31-001 & 002

Donkin Below Ground Entry Fitting

Use

Connects PE service pipes into the interior of a building via an underground entry, for natural gas

Features and benefits

- PE 80 SDR11 pipe
- Screwed connection from ¾" to 2"
- Plain ended from 3" to 6"
- Range of body lengths and PE pipe lengths
- Epoxy coated
- Embodied carbon data available upon request

Options

- Extra PE lengths at customer request
- PE 80/ PE100
- Split flange version available 218/31-003

Size DN25 - 180

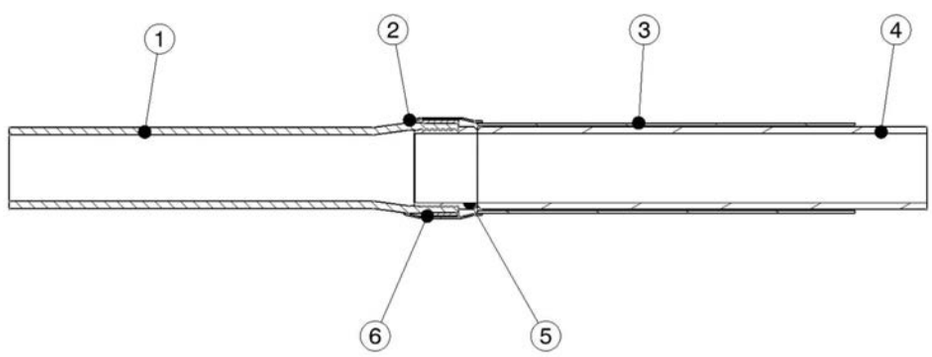
Pressure PN5.5

Temperature Range -20°C to + 40°C

Body Steel / PE

Approvals GIS/PL3

AVK Ref	Range	Spigot Type	Diameter of Through Wall PE	Weight
	mm		DN	Kg
218-0250-050-05-0-1	25mm SDR11 x R¾"	0.5M x 0.5M PE80	40	5
218-0321-050-05-0-1	32mm SDR11 x R1"	0.5M x 0.5M PE80	50	7
218-0632-050-05-0-1	63mm SDR11 x R2"	0.5M x 0.5M PE80	75	13
218-0903-050-05	90mm SDR11 x 3" Plain	0.5M x 0.5M PE80	110	15
218-0903-075-12	90mm SDR11 x 3" Plain	0.75M x 1.25M PE 80	110	17
218-1254-050-10	125mm SDR11 x 4" Plain	0.5M X 1.0M PE80	125	24
218-1254-075-12	125mm SDR11 x 4" Plain	0.75M x 1.25M PE80	125	27
218-1254-100-15	125mm SDR11 x 4" Plain	1.0M x 1.5M PE80	125	30
218-1806-050-10-2	180mm SDR17 x 6" Plain	0.5M x 1.0M PE80	200	32
218-1806-075-12-2	180mm SDR17 x 6" Plain	0.75M x 1.25M PE80	200	42
218-1806-100-15-2	180mm SDR17x 6" Plain	1.0M x 1.5M PE80	200	52
218-1806-120-15-2	180mm SDR17x 6"Plain	1.2M x 1.5M PE80	200	59



Materials of Construction

No.	Description	Material
1	PE pipe	PE 80
2	Shrink sleeve	Polyolefin
3	Through wall protection pipe	PE

No.	Description	Material
4	Through wall pipe	Mild steel
5	Spigot	Mild steel
6	Sleeve	Mild steel

Note: Product information is correct at time of printing

Series 218/31-003

Donkin Below Ground Entry Fitting

Use

Connects PE service pipes into the interior of a building via an underground entry, for natural gas

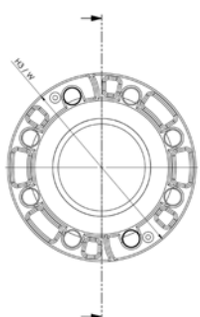
Features and benefits

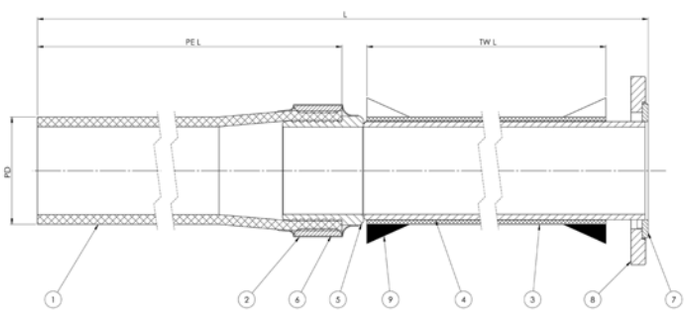
- Split flange backing ring negates the need for a welder on site
- Designed to fit through standard wall thicknesses
- Fusion bonded epoxy coating
- Complete with silicone bungs to help centralise the fitting in the drilled hole
- Range of body lengths and PE pipe lengths
- PE 80 pipe to GIS/PL2: Part 1
- Flange to EN1092-2 PN16
- Embodied carbon data available upon request

AVK Ref	Connection DN	H3	L	Pipe Dia	PE Length	SDR	L Through Wall	W	Weight
	mm								Kg
218-0903-050-05-02	80	200	1027	90	500	11	450	200	14
218-0903-075-10-02	80	200	1777	90	1000	11	700	200	19
218-1254-050-10-02	100	220	1075	125	1000	11	450	220	21
218-1254-075-12-02	100	220	2025	125	1250	11	700	220	27
218-1254-100-15-02	100	220	2525	125	1500	11	950	220	33
218-1806-050-10-22	150	285	1528	180	1000	17	0.45	285	33
218-1806-075-12-22	150	285	2028	180	1250	17	700	285	43
218-1806-100-15-22	150	285	2528	180	1500	17	950	285	53
218-1806-120-15-22	150	285	2728	180	1500	17	1150	285	60

Options

- Extra pipe lengths to suit customer requirements
- Other flange drillings on request
- PE100 pipe





Size DN90 - 180

Pressure PN5.5

Temperature Range -20°C to + 40°C

Body Steel / PE

Approvals GIS/PL3

Materials of Construction

No.	Description	Material
1	PE pipe	PE 80
2	Shrink sleeve	Polyolefin
3	Through wall protection pipe	PE
4	Through wall pipe	Mild steel
5	Spigot	Mild steel
6	Sleeve	Mild steel
7	Raised face	Mild steel
8	Split flange	Ductile iron
9	Wall bung	Silicone rubber

Note: Product information is correct at time of printing

Series 218/41-001

Donkin Meter Module Riser Fitting

Use

Connects the underground PE pipework to the emergency control valve at the inlet of a meter module, for natural gas

Features and benefits

- 63mm x 2" - Mild steel with BS21 male screwed connection
- ≥ 63mm x DN50 EN1092-2 PN16 Flange - Mild steel with a loose flange ring
- PE 80 pipe to GIS/PL2: Part 1
- Positioning plate to secure the fitting to the concrete pad
- GIS/PL3 approved joint connecting PE pipe to steel body
- Steel body, fusion bonded epoxy coated
- Split flange ring for easy connection to valve flange which negates the need for welder on site
- Embodied carbon data available upon request

Options

- Other flange drillings on request
- PE100 pipe

Size

DN25 - 250

Pressure

PN5.5 PE 80 / PN7 PE 100

Temperature Range

-20°C to + 40°C

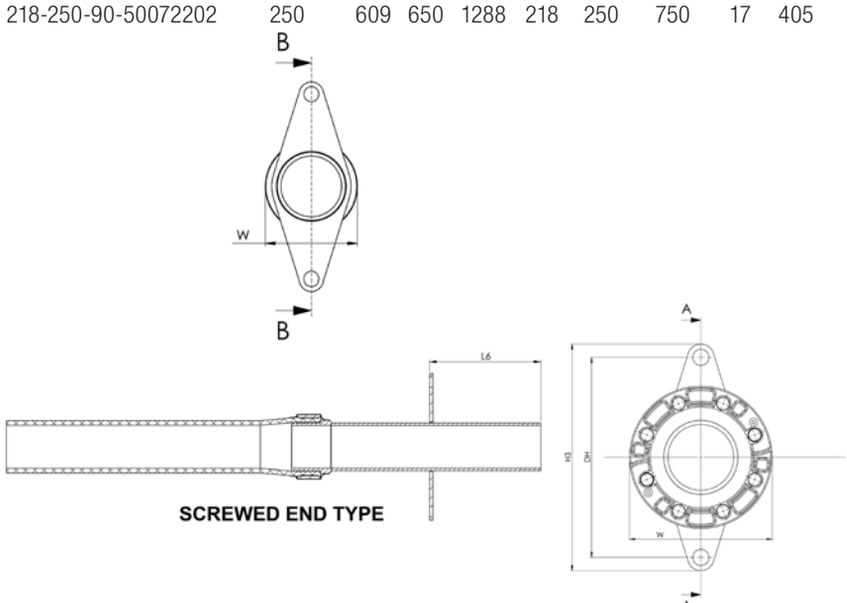
Body

Steel / PE

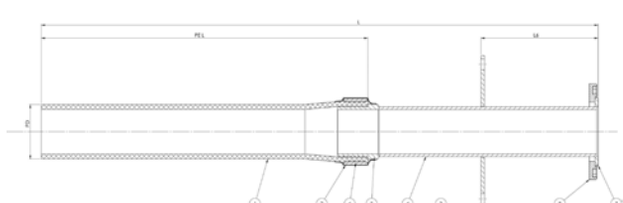
Approvals

GIS/PL3
Fully meets the requirements of SER8 specification

AVK Ref	Connection	Dh	H3	L	L6	Pipe Dia	PE Length	SDR	W	Wgt
	mm									Kg
218-025-00-50070102	R¾	164	200	1276	170	25	750	11	46	1.5
218-032-10-50070102	R1	164	200	1276	170	32	750	11	52	3.6
218-063-20-50070102	R2	214	250	1276	170	63	750	11	68	5.0
218-063-20-50070202	50	214	250	1276	170	63	750	11	165	5.4
218-090-30-50070202	80	269	310	1277	295	90	750	11	200	11
218-090-40-50070202	100	309	350	1277	269	90	750	11	220	11
218-125-40-50070202	100	309	350	1275	269	125	750	11	220	21
218-125-60-50070202	150	409	450	1275	231	125	750	11	285	22
218-180-60-50072202	150	409	450	1278	231	180	750	17	285	32
218-180-80-50072202	200	509	550	1278	256	180	750	17	340	33
218-250-80-50072202	200	509	550	1288	256	250	750	17	340	45
218-250-90-50072202	250	609	650	1288	218	250	750	17	405	46



SCREWED END TYPE



SPLIT FLANGE TYPE

Materials of Construction

No.	Description	Material
1	Pipe	PE
2	Shrink sleeve	Polyolefin
3	Bracket	Mild steel
4	Body	Mild steel

No.	Description	Material
5	Spigot	Mild steel
6	Sleeve	Mild steel
7	Raised face	Mild steel
8	Split flange	Ductile iron

Note: Product information is correct at time of printing

Series 218/41-002

Donkin Governor Module Riser Fitting

Use

Connects the underground PE pipework to the inlet of a governor module, for natural gas.

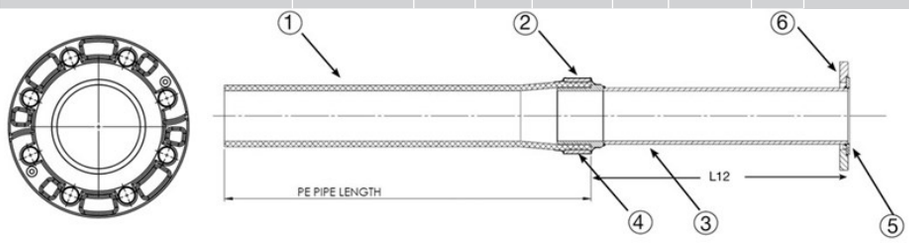
Features and benefits

- 63mm x 2" - Mild steel with BS21 male screwed connection
- ≥ 63mm x DN50 EN1092-2 PN16 Flange - Mild steel with a loose flange ring
- PE 80 pipe to GIS/PL2: Part 1
- Positioning plate to secure the fitting to the concrete pad
- GIS/PL3 approved joint connecting PE pipe to steel body
- Steel body, fusion bonded epoxy coated
- Split flange ring for easy connection to valve flange which negates the need for welder on site
- Embodied carbon data available upon request

Options

- Other flange drillings on request
- PE100 pipe

AVK Ref	Connection	L	Pipe Dia	PE Length	SDR	Steel Length	W	Weight
	mm							Kg
218-0632-050-05-0107	R2	1026	63	750	11	500	68	5.0
218-0632-050-07-0207	50	1276	63	750	11	500	165	5.8
218-0632-050-07-1207	50	1276	63	750	11	500	165	5.8
218-0903-050-07-0207	80	1277	90	750	11	500	200	13
218-1254-050-07-0207	100	1275	125	750	11	500	220	18
218-1254-050-07-1207	100	1275	125	750	11	500	220	17
218-1806-050-07-1207	150	1278	180	750	11	500	285	28
218-1806-050-07-2207	150	1278	180	750	17	500	285	30
218-1808-050-07-2207	200	1278	180	750	17	500	340	33
218-2508-050-07-1207	200	1288	250	750	11	500	340	27
218-2508-050-07-2207	200	1288	250	750	17	500	340	46
218-2509-050-07-1207	250	1288	250	750	11	500	405	48
218-2509-050-07-2207	250	1288	250	750	17	500	405	47



Size

DN50 - 250

Pressure

PN5.5 PE 80 / PN7 PE 100

Temperature Range

-20°C to + 40°C

Body

Steel / PE

Approvals

GIS/PL3

Materials of Construction

No.	Description	Material
1	Pipe	PE
2	Shrink sleeve	Polyolefin
3	Bracket	Mild steel
4	Body	Mild steel

No.	Description	Material
5	Spigot	Mild steel
6	Sleeve	Mild steel
7	Raised face	Mild steel
8	Split flange	Ductile iron

Note: Product information is correct at time of printing

Series 219/31-001

Donkin Building Entry Tee

Use

Connects PE service pipe through the wall of a building for onward connection to the internal pipework, for natural gas

Features and benefits

- Integral sealing plug to “shut off” gas supply
- Zinc plated and epoxy coating for extra corrosion protection
- Domed top cap to prevent water retention
- Specially designed wall plate to prevent water ingress
- GRP cover pipe slides onto special taper to locate in correct place to ensure PE pipe and crimp is always covered
- Crimp connection to small diameter pipes
- 100% pressure tested before despatch
- Compatible with existing tooling
- Embodied carbon data available upon request

AVK Ref	DN	Through Wall	L	H7	L1	DØ	G Thread	PE Length	GRP Length	Weight
	mm									Kg
219-200-00	20	150	183	70	36	32	R¾	-	-	0.7
219-200-01	20	345	378	70	36	32	R¾	-	-	1.1
219-200-02	20	500	533	70	36	32	R¾	-	-	1.5
219-250-00	25	150	183	70	36	32	R¾	-	-	0.8
219-250-01	25	345	378	70	36	32	R¾	-	-	1.1
219-250-02	25	500	533	70	36	32	R¾	-	-	1.5
219-321-00	32	150	189	86	36	40	R1	-	-	1.2
219-321-01	32	345	384	86	36	40	R1	-	-	1.6
219-321-02	32	500	533	86	36	40	R1	-	-	2.1
219-321-03	32	610	649	86	36	40	R1	-	-	2.5
219-632-00-001	63	150	196	125	50	75	R2	1000	900	4
219-632-01-001	63	345	391	125	50	75	R2	1000	900	5.4
219-632-02-001	63	500	546	125	50	75	R2	1000	900	6.8
219-632-03-001	63	610	646	125	50	75	R2	1000	900	7.8

Options

- Special through wall lengths on request

Size

DN20 - 63

Pressure

PN5.5

Temperature Range

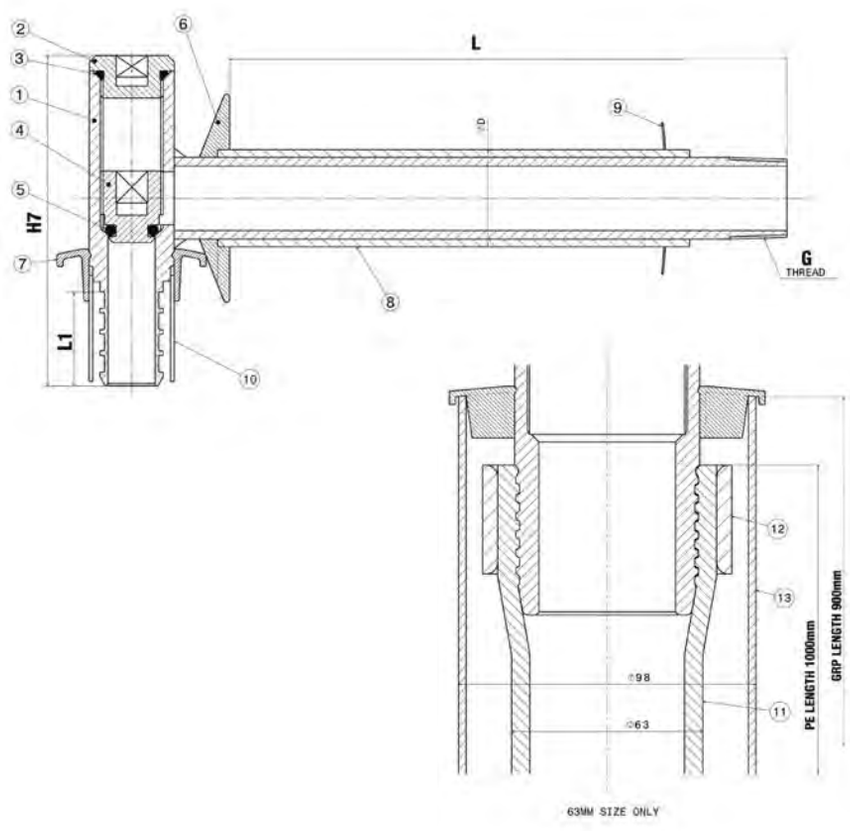
-20°C to +40°C

Body

Steel / PE

Approvals

GIS/PL3



Materials of Construction

No.	Description	Material
1	Body	Steel zinc plated & epoxy coated
2	Anti tamper top cap	Steel zinc plated & epoxy coated
3	O-ring	NBR rubber
4	Internal plug	Glass filled acetal
5	O-ring	NBR rubber
6	Wall plate	Rubber
7	GRP retention washer	UV stable polymer

No.	Description	Material
8	Through wall sleeve	Black PE 80 SDR11
9	Spring washer	Spring steel
10	Crimp sleeve < 63mm	Copper
11	PE pipe	PE80 SDR11 yellow
12	Sleeve	Steel
13	GRP pipe	(63mm only)

Note: Product information is correct at time of printing

Series 456/58-001

Donkin Crimp Tool Set

Use	Crimping of metal fittings to PE Pipes

Features and benefits

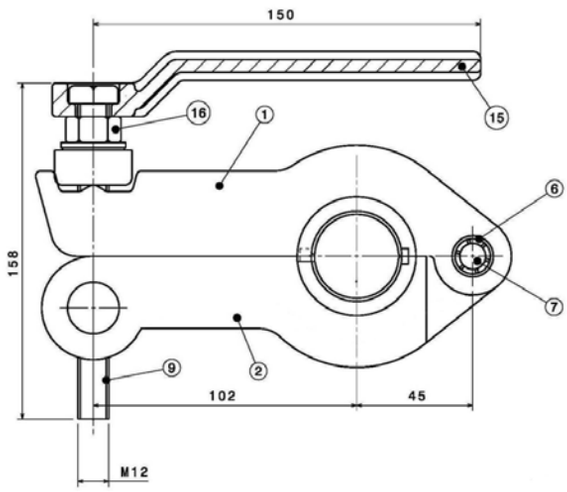
- Covers all service PE pipe sizes in one kit
- Robust and hard wearing
- Works with other manufacturers products
- Replaceable parts
- Magnetic shells for 25mm, 20mm and 16mm
- Supplied in hard plastic case
- Hexagon drive for use with ratchet spanner or power tools

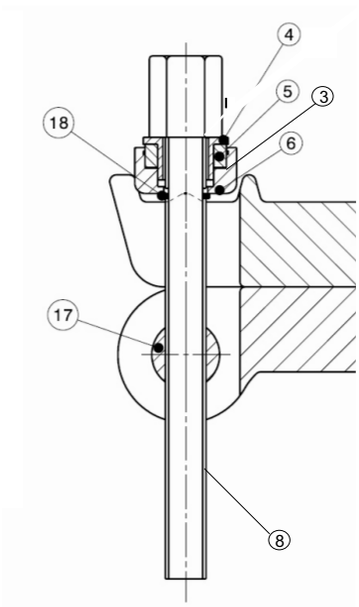
Options

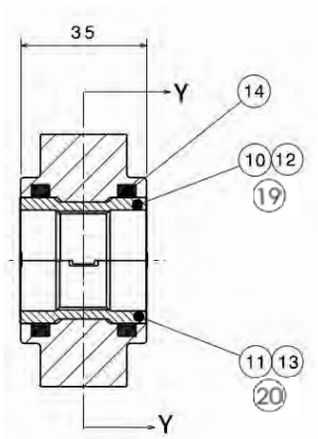
- Setting gauge available for calibration
- 16mm shells
- Ratchet spanner
- 32/25mm only

Size	16, 20, 25, 32
Pressure	N/A
Temperature Range	N/A
Body	Ductile iron/steel
Applicable Standards	N/A

AVK Ref	DN
	mm
456-000-00-5812	16, 20, 25 and 32







Materials of Construction

No.	Description	Material
1	Top body	Ductile iron
2	Lower body	Ductile iron
3	Springclip	Steel
4	Top hat bearing	Stainless steel
5	PTFE bush	PTFE
6	Bearing housing	Stainless steel
7	Pivot pin	Stainless steel
8	M12 X 120LG HEX HD setscrew	Grade 8.8
9	M12 X 150LG HEX HD setscrew	Grade 8.8
10	25mm male half shell	Steel

No.	Description	Material
11	25mm female half shell	Steel
12	20mm male half shell	Steel
13	20mm female half shell	Steel
14	Disc magnets	
15	Lever	Ductile iron
16	M12 nut	Grade 8
17	Threaded pivot	Bronze
18	Springclip	Steel
19	16mm male half shell	Steel
20	16mm female half shell	Steel

Note: Product information is correct at time of printing

Series 310/061

Donkin Flow Limitor (EFV) (310 T)

Use	Automatic emergency shut off valve for natural gas and LPG services

Features and benefits

- Lip type for direct insertion into the outlet of a standard full bore 32mm tapping tee
- Tamper proof
- Maintenance free
- Direction of gas flow indicator permanently moulded into the valve to ensure correct installation
- Automatic self-acting operation
- Can be installed at any angle
- Units available in ex-stock
- Proven in service, many thousands installed
- All units individually tested
- Bleed-by design provides automatic reset

AVK Ref	DN	PN	Weight
	mm	Bar	Kg
310-032-00-6101	32	2	0.03

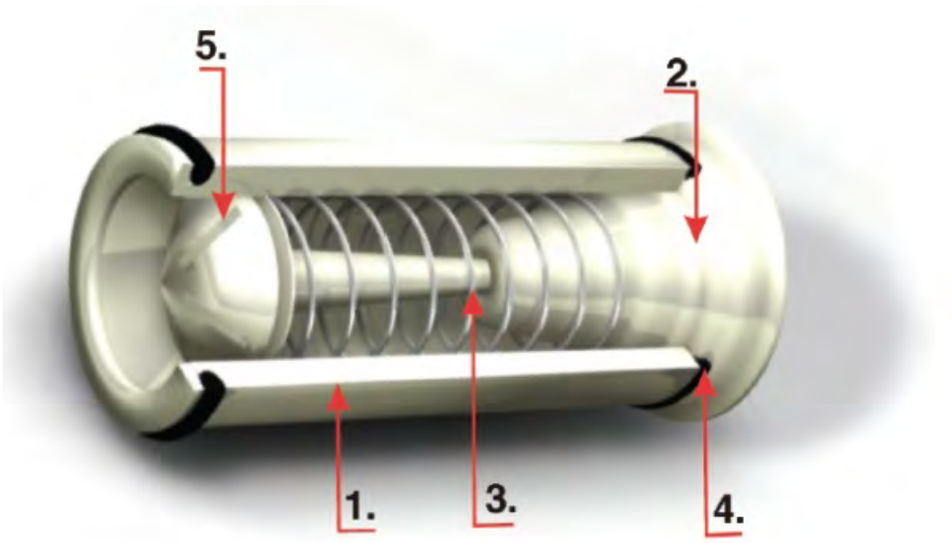
Capacities

Inlet Pressure		Flow prior to trip		Max Bleed-by Flow After Trip	
P.S.I.G	Bar	S.C.F.H	M^3/Hr	S.C.F.H	M^3/Hr
1.09	0.075	842.96	23.87	4.24	0.12
1.45	0.100	854.26	24.19	5.30	0.15
2.18	0.150	876.86	24.83	7.06	0.20
5.08	0.350	942.90	26.70	11.30	0.32
29.00	2.000	1447.90	41.00	23.31	0.66
72.50	5.000	2027.42	57.41	-	-

Notes Figures based on gas 0.6SG nominal.

Options

Size	32mm
Pressure	PN0.075 to PN5
Temperature Range	-20°C to +40°C
Body	HDPE
Applicable Standards	GIS/EFV1



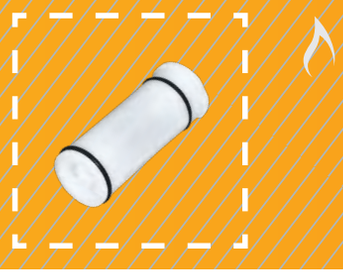
Materials of Construction

No.	Description	Material
1	Body	HDPE
2	Diffuser sleeve	HDPE
3	Spring	Stainless steel
4	O-ring	Nitrile
5	Float	HDPE

Note: Product information is correct at time of printing

Series 310/063

Donkin Flow Limitor (EFV) (310 sl)



Use	Automatic emergency shut off valve for natural gas and LPG services

Features and benefits

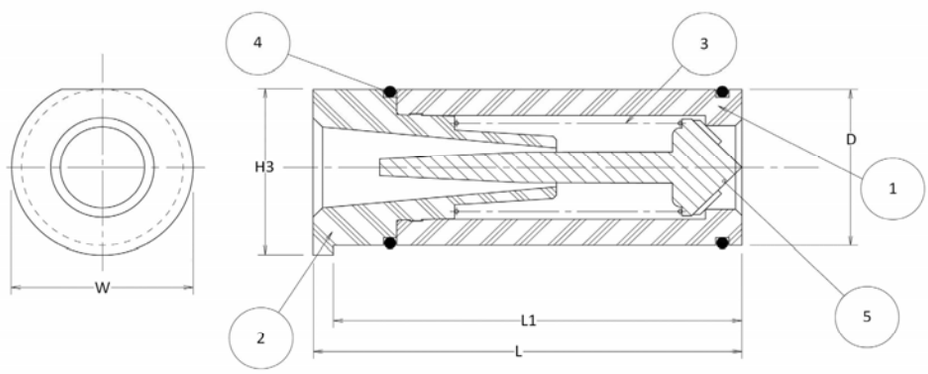
- Lip type for direct insertion into the outlet of a standard full bore 32mm tapping tee
- Tamper proof
- Maintenance free
- Direction of gas flow indicator permanently moulded into the valve to ensure correct installation
- Automatic self acting operation
- Can be installed at any angle
- Units available ex-stock
- Proven in service
- All units individually tested
- Bleed-by design provides automatic reset

Size	32mm
Pressure	PN0.69 to PN6.90
Temperature Range	-20°C to +40°C
Body	Acetal
Applicable Standards	MSS SP-115

AVK Ref	DN	D	H3	L	L1	W	Weight
	mm						Kg
310-032-00-6103	32	25.4	26.35	66.5	63.5	28.3	0.03

Capacities					
Inlet Pressure		Flow prior to trip		Max Bleed-by Flow After Trip	
P.S.I.G	Bar	S.C.F.H	M^3/Hr	S.C.F.H	M^3/Hr
10	0.69	725	25.64	20	0.57
20	1.38	909	25.75	25	0.71
30	2.07	1025	29.04	28	0.79
40	2.76	1122	31.78	32	0.91
60	4.14	1354	38.36	37	1.05
80	5.52	1548	43.83	41	1.16
100	6.90	1715	48.58	50	1.42

Notes Figures based on gas 0.6SG nominal.



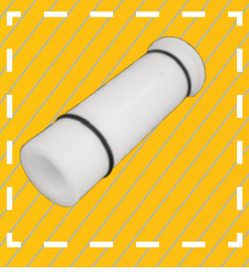
Materials of Construction

No.	Description	Material
1	Body	Acetal
2	Diffuser Sleeve	Acetal
3	Spring	Stainless steel
4	O-ring	Nitrile
5	Float	POM

Note: Product information is correct at time of printing

Series 310/066

Donkin Flow Limitor (EFV)



Use

Automatic emergency shut off valve for natural gas and LPG services

Features and benefits

- Lip type for direct insertion into the service pipe
- Tamper proof
- Maintenance free
- Direction of gas flow indicator permanently moulded into the valve to ensure correct installation
- Can be installed at any angle
- Units available ex-stock
- Proven in service
- Bleed-by design provides automatic reset

AVK Ref	DN	PN	Weight
	mm	Bar	Kg
310-025-00-6106	25	4	0.03

Capacities

Inlet Pressure	Flow prior to trip		Max Bleed-by Flow After Trip	
Bar	S.C.F.H	M^3/Hr	S.C.F.H	M^3/Hr
0.5	318	9	10	0.3
0.7	530	15	20	0.57
4	1095	31	36	1.03

Notes

Figures based on gas 0.6SG nominal.

Options

Size

25mm

Pressure

PN0.5 to PN4

Temperature Range

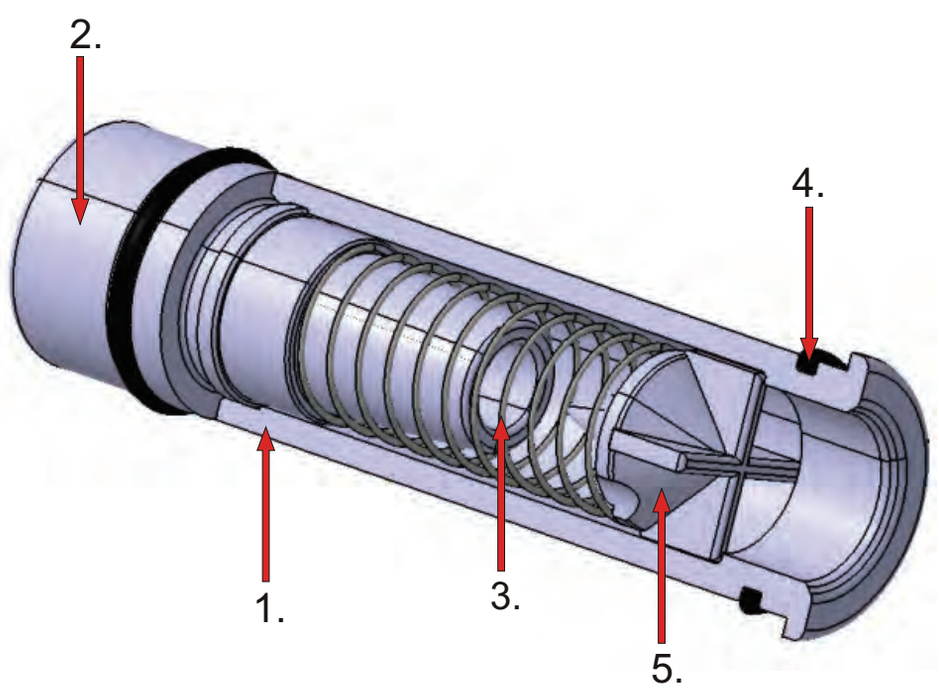
-20°C to +40°C

Body

Acetal

Applicable Standards

BGE/S/V/5
MSS SP-115



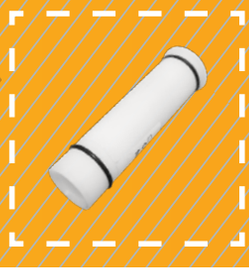
Materials of Construction

No.	Description	Material
1	Body	Acetal
2	Diffuser sleeve	Acetal
3	Spring	Stainless steel
4	O-ring	Nitrile
5	Float	Acetal

Note: Product information is correct at time of printing

Series 310/067

Donkin Flow Limitor (EFV) (High Capacity)



Use

Automatic emergency shut off valve for natural gas and LPG services

Features and benefits

- Lip type for direct insertion into the service pipe
- Tamper proof
- Maintenance free
- Direction of gas flow indicator permanently moulded into the valve to ensure correct installation
- Automatic self acting operation Can be installed at any angle
- Units available ex-stock
- Proven in service
- All units individually tested
- Bleed-by design provides automatic reset

AVK Ref	DN	PN	Weight
	mm	Bar	Kg
310-032-00-6107	32	4	0.03

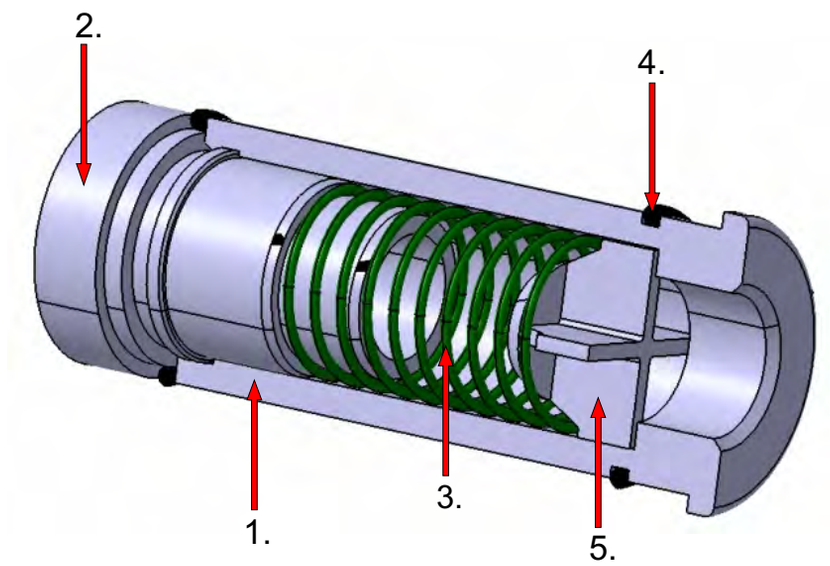
Capacities

Inlet Pressure	Flow prior to trip		Max Bleed-by Flow After Trip	
Bar	S.C.F.H	M³/Hr	S.C.F.H	M³/Hr
0.5	1766	50	-	-
4	4767	135	40.6	1.15

Notes

Figures based on gas 0.6SG nominal.

Options



Size

32mm

Pressure

PN0.5 to PN4

Temperature Range

-20°C to +40°C

Body

Acetal

Applicable Standards

MSS SP-115

Materials of Construction

No.	Description	Material
1	Body	Acetal
2	Diffuser sleeve	Acetal
3	Spring	Stainless steel

No.	Description	Material
4	O-ring	Nitrile
5	Float	Acetal

Note: Product information is correct at time of printing

Series 310/080

Donkin Integral Flow Limitor (EFV)

Use	Automatic emergency shut off valve for natural gas and LPG services
Features and benefits	• Integral fitting in electrofusion coupler or reducer • Tamper proof • Maintenance free • Automatic self-acting operation • Can be installed at any angle • Units available ex-stock • All units individually tested • Bleed-by design provides automatic reset
Options	
Size	32mm, 32x20, 32x25
Pressure	PN4/7 (Depends on carrier fitting)
Temperature Range	-20°C to +40°C
Body	Acetal
Applicable Standards	MSS SP-115

AVK Ref	DN	PN	Weight
	mm	Bar	Kg
310-032-00-8100	32	7	0.07
310-032-00-8200	32x20	7	0.07
310-032-00-8000	32x25	7	0.07

Capacities

Inlet Pressure		Flow prior to trip	Max Bleed-by Flow After Trip
Bar	P.S.I.G	M^3/Hr	M^3/Hr
0.5	7.3	20.00	0.90
0.7	10.2	21.16	0.88
1	14.5	21.93	0.52
2	29.0	28.38	0.58
3	43.5	29.67	0.45
4	58.0	36.12	0.45
5	72.5	41.28	0.45
6	87.5	43.86	0.59
7	101.5	46.44	0.61

Notes Figures based on gas 0.6SG nominal.

Materials of Construction

No.	Description	Material	No.	Description	Material
1	Body	Acetal	3	O-ring	Nitrile
2	Spring	Stainless steel	4	Float	Acetal

Note: Product information is correct at time of printing

END CAPS AND TRANSITION FITTINGS

Series 248/32-001

Donkin Universal End Cap

Use

Suitable for blanking off the ends of unused ferrous pipes and pipelines which are subjected to low pressures, for natural gas

Features and benefits

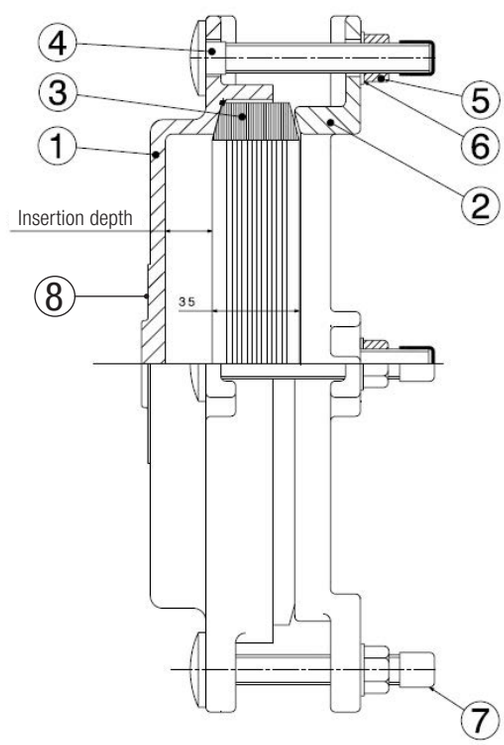
- Epoxy coated
- Lightweight
- Simple to use
- Corrosion resistant construction
- Universal sealing range up to 300mm
- Approved to GIS/F13
- No end restraint required for pressures up to 75 mbar on sizes up to and including DN200
- Increased insertion depth
- Cast for AB cast iron to 600mm
- Embodied carbon data available upon request

Options

- Also available as a fabricated version for pipe above 12" to 48" for ductile iron, cast iron CD and steel pipes.

Size	DN80 - 600
Pressure	2 Bar
Temperature Range	-10°C to +70°C
Body	Ductile iron
Approvals	GIS/F13

AVK Ref	Nominal Pipe Size	Insertion depth	Sealing Range	Weight
	Inch	mm		kg
24832003012	3"	80	31	88-99	3.2
24832004012	4"	100	33	113-124	3.8
24832005012	5"	125	35	138-152	4.7
24832006012	6"	150	37	167-179	5.5
24832007012	7"	175	39	192-207	6.8
24832008012	8"	200	41	217-234	7.8
24832009012	9"	225	43	242-261	8.9
24832010012	10"	250	45	270-288	10.3
24832012012	12"	300	49	320-336	12.6
24832013012	14" CI AB	350	70	382-389	19.2
24832014012	15" CI AB	380	72	408-415	22.3
24832015012	16" CI AB	400	74	434-441	24.4
24832016012	18" CI AB	450	76	487-494	34
24832020012	24" CI AB	600	89	645-652	38



Materials of Construction

No.	Description	Material
1	End cover	SG iron BS EN 1563 GJS 450/10
2	Gland ring	SG iron BS EN 1563 GJS 450/10
3	Sealing ring	Nitrile
4	Boltcup head square shank	Grade 8.8 zinc plated and passivated
5	Nuts	Grade 8.0 zinc plated and passivated

No.	Description	Material
6	Washer	Mild steel zinc plated and passivated
7	Thread guard	Plastic
8	Label	Plastic
	Coating	Fusion bonded epoxy powder coating

Note: Product information is correct at time of printing

Series 39/50-001

Donkin PE100 Flange Adaptor

Use

Transition fitting from metallic flanges to PE pipes and fittings, for natural gas

Features and benefits

- Corrosion resistant construction
- Short lead times
- Fusion bonded epoxy coating
- PN16 flange drillings
- Standard PE100 orange pipe
- Supplied with bolt kit and gasket
- Embodied carbon data available upon request

Options

- Other flange drillings available on request
- PE80 yellow pipe
- PE100 black pipe

Size DN80 - 400

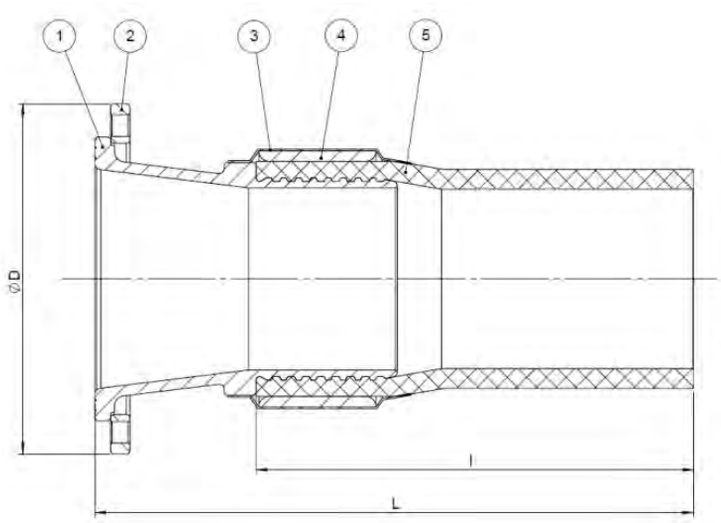
Pressure PN7

Temperature Range -20°C to +40°C

Body Steel / PE

Approvals GIS/PL3

AVK Ref	DN	PE Pipe Size	D	df	L	l	Weight
	mm						Kg
39-063-50-001203001	50	63	165	35	636	500	5
39-090-50-011203001	80	90	200	35	636	500	9
39-090-50-021203001	100	90	220	35	641	500	10
39-125-50-021203001	100	125	220	35	637	500	12
39-125-50-031203001	150	125	285	36	651	500	18
39-180-50-031203001	150	180	285	36	657	500	20
39-180-50-041203001	200	180	340	37	663	500	25
39-250-50-041203101	200	250	340	37	657	500	46
39-250-50-051203101	250	250	400	40	685	500	52
39-315-50-051203101	250	315	400	40	685	500	64
39-315-50-061203101	300	315	455	42.5	692	500	75
39-315-50-071203101	350	315	505	44.5	696	500	82
39-355-50-061203101	300	355	455	42.5	692	500	84
39-355-50-071203101	350	355	505	44.5	696	500	93
39-355-50-081203101	400	355	565	47	718	500	108



Materials of Construction

No.	Description	Material	No.	Description	Material
1	Spigot	Ductile iron GGG 40/50, DIN 1693	5	PE-pipe	PE100
2	Flange	Ductile iron EN 1563; EN - GJS -500-7		Bolts, and nuts	Sheraplex coated grade 8.8
3	Shrink hose	PE low/ medium density		Gasket	Nitrile
4	Sleeve	Steel EN 10025; S355J2G3 (St 52.3)			
(DN400 size only)					
1	Spigot	Mild steel S355 JH2	2	Flange	Mild steel S235

Note: Product information is correct at time of printing

Series 39/60

Donkin PE Flange Adaptor with 2 Flanged Bosses

Use

Connects to a gate valve and terminates with PE100 polyethylene pipe to connect to the gas pipeline. 2 flanged bosses for bypass and purge points, for natural gas

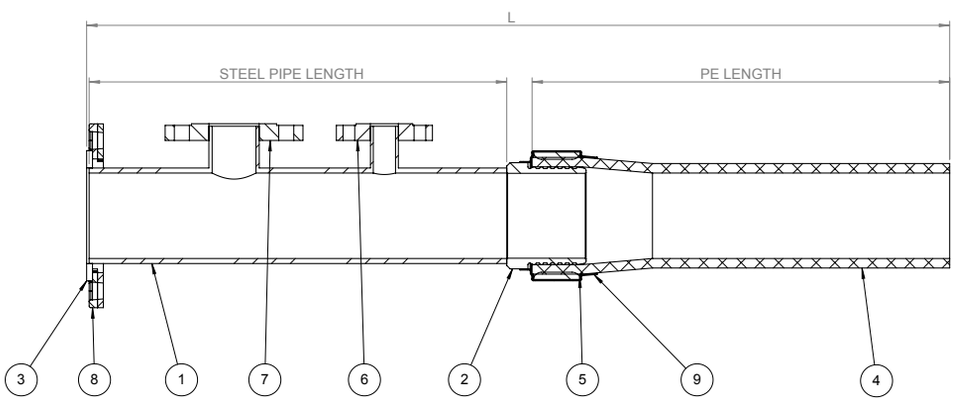
Features and benefits

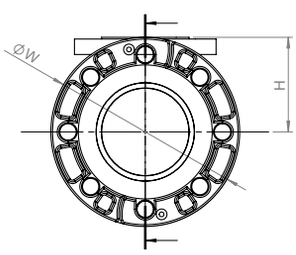
- Flange – PN16 standard
- Connection is a loose flange ring incorporating the Donkin split flange ring
- Purge and bypass points, 1 x DN50 and 1 x DN25 as standard (63mm is 2 x 1" as standard)
- Standard is PE100 SDR11 orange pipe
- EN1555-1 for Ireland and Middle East (black pipe with orange stripe)
- PE spigot options – 0.5M and 1M long
- Embodied carbon data available upon request

Options

- ASA 150 flange drilling
- Alternative bypass and purge point options available
- Bolt and gasket kits

AVK Ref	DN	L	W	H	L12	Pipe Diam.	PE Length	Weight
	mm							Kg
39-063-60-00-1203001	50	1.34	165	83	0.5	63	500	9.51
39-090-60-01-12030	80	1.35	200	97.5	0.5	90	500	20
39-125-60-02-12030	100	1.35	220	110	0.5	125	500	20
39-180-60-03-12030	150	1.40	285	137	0.5	180	500	31
39-250-60-04-12031	200	2.01	340	162.5	0.5	250	1000	57.24
39-250-60-05-12031	250	2.01	405	162.5	0.5	250	1000	57.24
39-315-60-05-12031	250	2.02	405	189.5	0.5	315	1000	90.24
39-315-60-06-12031	300	2.02	460	189.5	0.5	315	1000	110.12
39-355-60-06-12031	300	2.12	460	215	0.5	355	1000	124.62





Size DN 50 - 300

Pressure PN7

Temperature Range -20°C to +40°C

Body Steel / PE

Approvals GIS/PL3
GIS/PL2-8

Materials of Construction

No.	Description	Material
1	Pipe	Mild steel
2	Spigot	Mild steel
3	Raised face	Mild steel
4	Pipe	PE
5	Sleeve	Mild steel

No.	Description	Material
6	DN25 PN16 RF flange	Mild steel
7	DN50 PN16 RF flange	Mild steel
8	Split flange	Ductile iron
9	Shrink sleeve	Polyoefin

Note: Product information is correct at time of printing

Series 604/1-001

Donkin Universal Transition Coupler

Use

Transition fitting to join metallic and PE gas pipes, for natural gas

Features and benefits

- Fusion bonded epoxy coating
- Low torque
- Universal fitting range
- PE 80 SDR17 pipe
- Embodied carbon data available upon request

Options

Size DN 90 - 355

Pressure PN2

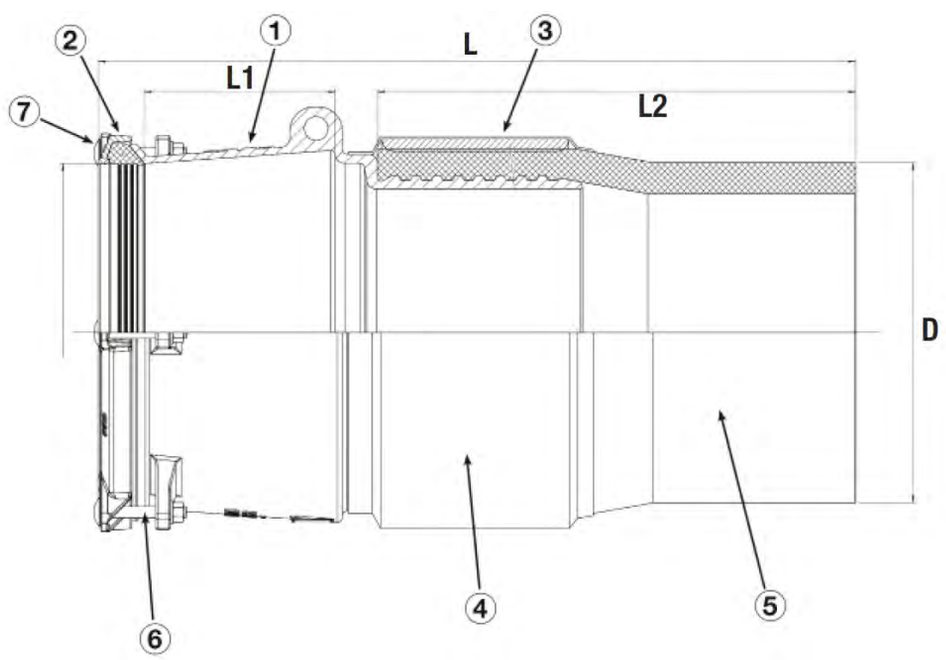
Temperature Range -20°C to +40°C

Body Ductile iron GGG 40/50, EN1563

Approvals GIS/PL3

AVK Ref	D (Size Range)	Range	L	L1	L2	Weight
		mm				Kg
604-106-090-1661000	90mm SDR17x3"	84-106	734	161	500	7
604-133-090-1661000	90mm SDR17x4"	109-133	739	164	500	9
604-133-125-1661000	125mm SDR17x4"	109-133	743	164	500	11
604-183-125-1661000	125mm SDR17x6"	157-183	754	170	500	16
604-183-180-1661000	180mm SDR17x6"	157-183	735.5	170	500	20
604-242-250-1661000	250mm SDR17x8"	218-242	770	180	500	43
604-292-250-1661000	250mm SDR17x10"	266-292	783	190	500	47
604-292-315-1661000	315mm SDR17x10"	266-292	775	190	500	59
604-327-315-1661000	315mm SDR17x12"	301-327	787	195	500	62
604-350-315-1661000	315mm SDR17x12"	301-327	792	200	500	64
604-327-355-1661000	355mm SDR17x12"	324-350	787	195	500	80
604-350-355-1661000	355mm SDR17x12"	301-327	792	200	500	62

Notes * For steel pipe



Materials of Construction

No.	Description	Material
1	Body / spigot	Ductile iron GGG 40/50, EN1563
2	Gland ring	Ductile iron GGG 40/50, EN1563
3	Shrink hose	PE low/ medium density
4	Sleeve	Steel EN 10025; S355J2G3 (St 52.3)
5	PE-pipe	PE80
6	Bolts, nuts and washers	STST Grade A2 70
7	Gasket	Nitrile NBR

Note: Product information is correct at time of printing

REPAIR COLLARS, CLAMPS AND TEES

Series 202/31-001

AVK Multi Band Stainless Steel Repair Clamp

Use

Suitable for all ferrous pipes, PVC and AC, for natural gas

Features and benefits

- Versatile design tolerance
- Corrosion resistant construction
- Lightweight
- Available for metallic pipes sizes up to 48"
- Any length available in multiples of 150mm up to 1200mm
- Fittings have 20mm pipe diameter tolerance up to size 558mm (2 sectors) and 26mm (3 sectors) for larger pipe sizes
- Approved to GIS/LC8 Part 4
- Bitumen coated lugs
- Embodied carbon data available upon request

Options

- Double or triple band option
- Threaded bosses ½" – 2" BSP
- Bitumen coated lugs
- Manufactured to suit any ØD
- **Can be supplied on an emergency service 0800 202 8228**

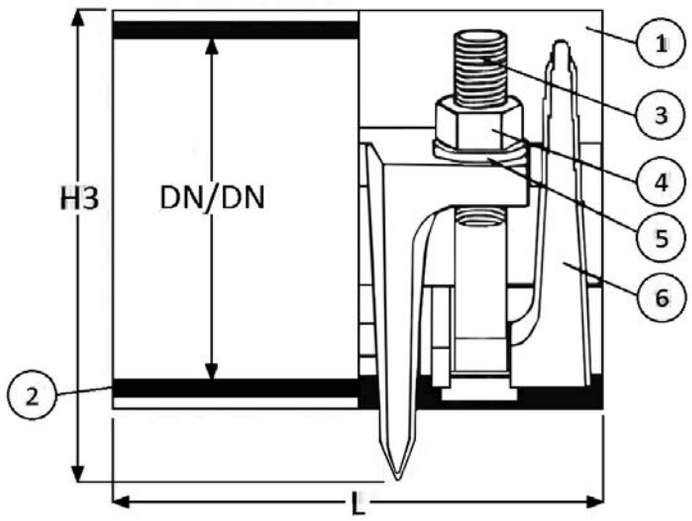
AVK Ref	Sealing Range* (mm)	AVK Ref	Sealing Range* (mm)
202-31-0086-XXY1	86 – 106	202-31-0422-XXY1	422 – 442
202-31-0111-XXY1	111 – 131	202-31-0449-XXY1	449 – 469
202-31-0138-XXY1	138 – 158	202-31-0474-XXY1	474 – 494
202-31-0164-XXY1	164 – 184	202-31-0485-XXY1	485 – 505
202-31-0190-XXY1	190 – 210	202-31-0503-XXY1	503 – 523
202-31-0200-XXY1	200 – 220	202-31-0526-XXY1	526 – 546
202-31-0215-XXY1	215 – 235	202-31-0533-XXY1	533 – 553
202-31-0232-XXY1	232 – 252	202-31-0558-XXY1	558 – 578
202-31-0240-XXY1	240 – 260	202-31-0580-XXY1	580 – 606
202-31-0255-XXY1	255 – 275	202-31-0600-XXY1	600 – 626
202-31-0268-XXY1	268 – 288	202-31-0629-XXY1	629 – 655
202-31-0280-XXY1	280 – 300	202-31-0640-XXY1	640 – 666
202-31-0319-XXY1	319 – 339	202-31-0801-XXY1	801 – 827
202-31-0341-XXY1	341 – 361	202-31-0903-XXY1	903 – 929
202-31-0374-XXY1	374 – 394	202-31-0953-XXY1	953 – 979
202-31-0395-XXY1	395 – 415	202-31-1255-XXY1	1255 – 1281
202-31-0410-XXY1	410 – 430	202-31-1285-XXY1	1285 – 1311

* For clamps up to size 558mm there is a +20mm pipe size tolerance, in larger sizes the pipe tolerance is +26mm. Clamps for alternative sealing ranges may be available on request.

XX	06	12	18	24	30	36	42	48
Length (mm)	150	300	450	600	750	900	1050	1200

Y	0	1	2	3	4	5	8	9
Boss (BSP)	none	½" F	¾" F	1" F	1½" F	2" F	1" M	2" M

Size	DN80 - 1450
Pressure	PN7 ≤ 300mm
Temperature Range	-10°C to+70°C
Body	Stainless Steel AISI 316
Approvals	GIS/LC8 Part 4



Materials of Construction

No.	Description	Material
1	Boss (Optional)	Carbon steel to BS EN10025: 1990, grade FE430 B or to BS1503.221.430
2	Body	Stainless steel AISI 316
3	Gasket	Nitrile rubber to EN 682
4	Bolts	Grade 8.8, zinc plated and passivated
5	Nuts	Grade 8.8, zinc plated and passivated
6	Lugs	Ductile Iron, BS EN 1563 EN-GJS-450-10
	Coating (Lugs)	Bitumen coated

Note: Product information is correct at time of printing

Series 203/31-001

AVK Pipe Saver Repair Clamp

Use

Suitable for all service pipes, for natural gas

Features and benefits

- Corrosion resistant design
- Quick and simple to use
- Lightweight
- Embodied carbon data available upon request

Note: Small size fitted with wingnut, all other larger sizes fitted with regular hex nut.

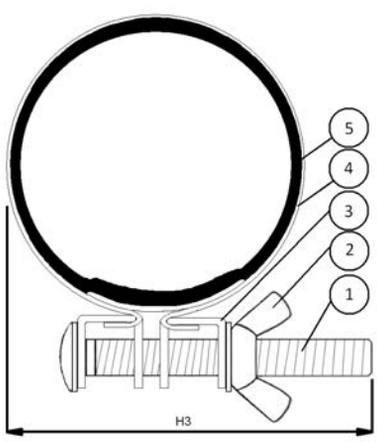
AVK Ref	DN/DN	H3	L	W	Weight
	mm				Kg
203-31-015-06	15 - 22	79	60	68	0.1
203-31-024-06	24 - 30	24	60	70	0.2
203-31-024-10	24 - 30	24	100	70	0.4
203-31-027-06	27 - 35	82	60	81	0.1
203-31-027-10	27 - 35	82	100	82	0.3
203-31-032-10	32 - 38	32	100	75	0.4
203-31-041-06	41 - 48	85	60	94	0.2
203-31-048-10	48 - 54	50	100	50	0.3
203-31-054-06	54 - 60	88	60	106	0.1
203-31-054-10	54 - 60	55	100	55	0.3

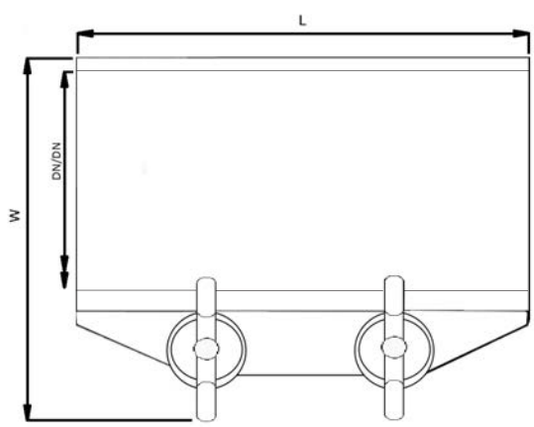
Notes

(1) Design standard according to GIS/LC8-4, 60 mm long

Options

- Fitting length 60mm (1 bolt) or 100mm (2 bolts)
- **Can be supplied on an emergency service 0800 202 8228**





Size DN15 - 60

Pressure PN2

Temperature Range -10°C to+70°C

Body Stainless steel AISI 316

Approvals GIS/LC8 Part 4

Materials of Construction

No.	Description	Material
1	Bolts	Grade 4.6 zinc, plated and passivated
2	Nuts and washers	Grade 4 zinc, plated and passivated
3	Bracket	Mild steel, zinc plated
4	Body	Stainless steel AISI 316
5	Gasket	NBR to EN 682

Note: Product information is correct at time of printing

Series 206/31-001

AVK Single Band Repair Clamp

Use	Suitable for all ferrous pipes, UPVC and AC, for natural gas

Features and benefits

- Excellent sealing characteristics
- Versatile design tolerance
- Corrosion resistant construction
- Lightweight
- Any lengths available in multiples of 150mm up to 1200mm (1200mm length only available on larger diameters), Note:
  - Up to Dia 50mm max 300mm long
  - 51 - 80mm max 450mm long
  - 81 - 100mm max 600mm long
  - 101 - 150mm max 750mm long
  - Greater than 150mm - contact AVK
- Bitumen coated lugs
- Sizes available: to fit mains Ø 33
- Embodied carbon data available upon request

Options

- Can be manufactured to suit any O.D
- Threaded bosses ½" – 2" BSP
- **Can be supplied on an emergency service 0800 202 8228**

Size	DN150 - 1200
Pressure	PN2 up to 50mm PN7 60 - 290mm PN6 319 - 329mm
Temperature Range	-10°C to+70°C
Body	Stainless steel AISI 316
Approvals	GIS/LC8 Part 4

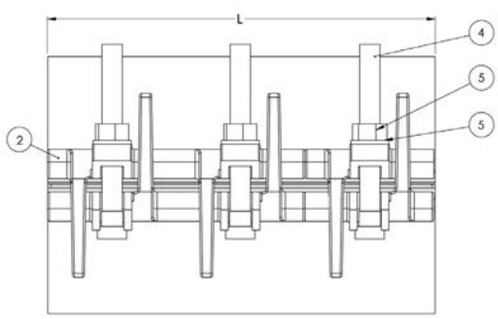
AVK Ref	Sealing Range* (mm)	AVK Ref	Sealing Range* (mm)
206-31-0033-XXY1	33 - 36	206-31-0070-XXY1	70 - 77
206-31-0041-XXY1	41 - 44	206-31-0079-XXY1	79 - 86
206-31-0047-XXY1	47 - 50	206-31-0086-XXY1	86 - 93
206-31-0055-XXY1	55 - 58	206-31-0092-XXY1	92 - 99
206-31-0058-XXY1	58 - 65	206-31-0111-XXY1	111 - 121
206-31-0060-XXY1	60 - 67	206-31-0118-XXY1	118 - 128
206-31-0066-XXY1	66 - 73		

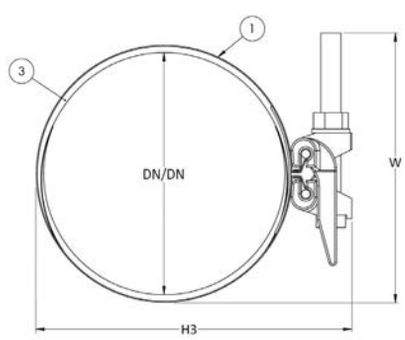
* Clamps for alternative sealing ranges may be available on request. For larger pipe diameters, see Series 202/31-001.

XX	06	12	18	24	30	36	42	48
Length (mm)	150	300	450	600	750	900	1050	1200

Y	0	1	2	3	4	5	D	A
Boss (BSP)	none	½" F	¾" F	1" F	1½" F	2" F	1" M	2" M

Other boss sizes may be available on request





Materials of Construction

No.	Description	Material
1	Bolts	Grade 8.8 zinc, plated and passivated
2	Gasket	Nitrile rubber to EN 682
3	Body	Stainless steel AISI 316
4	Nuts	Grade 8, zinc plated and passivated
5	Lugs	Ductile iron, BS EN 1563 EN-GJS-450-10
	Coating (Lugs)	Bitumen coated

Note: Product information is correct at time of printing

Series 253/31-001

AVK Universal Repair Clamp

Use

Suitable for all ferrous pipes, for natural gas

Features and benefits

- Universal across all pipe types
- Large tolerance range
- Fusion bonded epoxy coating
- Can support realigned laterally displaced pipe ends
- Embodied carbon data available upon request

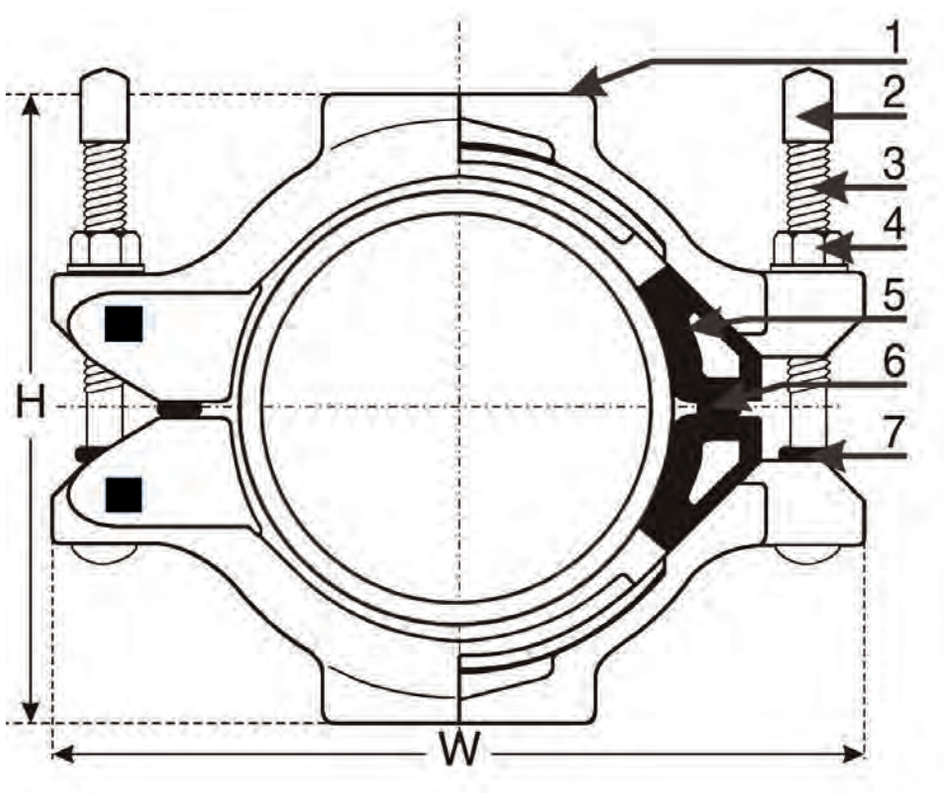
AVK Ref	Nom. Size	Bolts	H	L	W	O.D Sealing Range	Wgt
	Inch		mm				kg
253-31-003-01	3	4	156	157	204	85.4 - 103.0	7.8
253-31-004-01	4	4	186	167	238	111.8 - 129.4	17
253-31-006-01	6	4	250	216	312	165.2 - 184.8	18
253-31-008-01	8	4	300	220	374	215.9 - 239.7	24
253-31-010-01	10	4	360	220	434	269.2 - 293.5	16
253-31-012-01	12	4	420	270	500	319.9 - 341.3	49

Notes

Example 253-31-003-Y(Z)
Y= 0 for plain boss, 1 for BSP ½", 2 for BSP ¾", 3 for BSP 1", 4 for BSP 1½" or 5 for BSP 2".
Bolts: Z = NONE/1 for sheraplex

Options

- Drilled and tapped boss ½" to 2" BSP
- **Can be supplied on an emergency service 0800 202 8228**



Size

DN80 - 300

Pressure

PN7

Temperature Range

-10°C to+70°C

Body

Ductile iron

Approvals

GIS/LC8 Part 4

Materials of Construction

No.	Description	Material
1	Clamp halves	Ductile iron BS EN 1563 EN-GJS-450-10.
2	Domed cap	Black plastic.
3	Bolts	Grade 8.8. (sheraplex)
4	Nuts	Hexagon, grade 8. (Sheraplex)

No.	Description	Material
5	Wedge	Ductile iron BS EN 1563 EN-GJS-400-15.
6	Rubber Seals	Nitrile to EN 682.
7	O-ring Coating	Nitrile.
	Coating	Fusion bonded epoxy-powder coated.

Note: Product information is correct at time of printing

Series 213/31-001

AVK Hot Tap Mild Steel Weld on Tee

Use

Suitable for steel pipes, for natural gas

Features and benefits

- Can be fabricated in any size, with any branch size and any flange drilling
- Red oxide primed
- Uncoated welding strips for easy positioning on pipe
- Two-part body
- Embodied carbon data available upon request

Options

- BS EN 1092-2, BS 10 or ANSI drillings
- Branch sizes DN50–600
- Fixed or loose backing
- **Can be supplied on an emergency service 0800 202 8228**

AVK Ref	DN (Pipe)	DN2 (Branch)	L	H1	H2	Weight
	mm		mm			Kg
213-31-0089-031	100	80	185	177	110	18
213-31-0114-041	100	100	225	177	110	20
213-31-0168-041	150	100	275	207	110	34
213-31-0168-061	150	150	325	217	140	36
213-31-0219-061	200	150	325	243	140	52
213-31-0219-081	200	200	425	243	140	55
213-31-0273-081	250	200	425	270	140	85
213-31-0273-101	250	250	525	290	140	90
213-31-0324-101	300	250	525	295	140	120
213-31-0324-121	300	300	625	315	190	125
213-31-0355-121	350	300	625	332	190	175
213-31-0406-121	400	350	725	377	190	222
213-31-0406-161	400	300	825	387	190	230
213-31-0457-181	450	450	925	432	190	280
213-31-0609-241	600	600	1225	550	190	455

Size

DN50 - 600

Pressure

PN7

Temperature Range

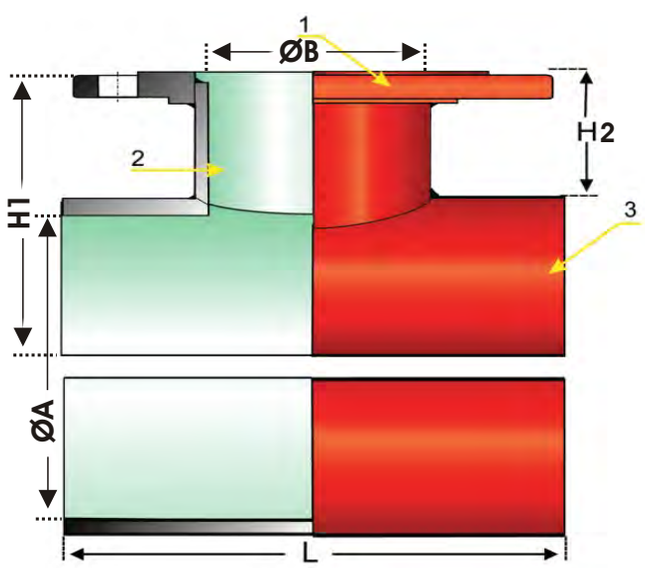
-10°C to+70°C

Body

Mild steel
to BS EN 10025 FE430B

Approvals

ANSI B31.8
Not approved to TS/SP/F/4



Materials of Construction

No.	Description	Material
1	Flange	Mild steel to BS EN 10025 FE430B
2	Branch	Mild steel to BS EN 10025 FE430B
3	Body	Mild steel to BS EN 10025 FE430B

Note: Product information is correct at time of printing

Series 214/31-001

AVK Fabricated Bolt on Flowstop Tee

Use

Suitable for all types of flowstopping, normal hot tap connections on all types of metallic pipes, for natural gas

Features and benefits

- Maintenance free
- Robust design
- Full circumferential mat seal and secondary neck seal both nitrile rubber
- Suitable for flowstopping
- Manufactured to size
- Range: 14"-36" pipe diameters,
- Embodied carbon data available upon request

Options

- Branch size DN80-600
- Other flange drillings on request

Pipe Size	Steel (mm)	Ductile Iron (mm)	Cast Iron (mm)	Standard Branch PN16	AVK Ref
14”	356			DN300	214-31-0356-3051
		378			214-31-0378-3051
			387		214-31-0387-3051
15”			413		214-31-0413-3051
16”	406				214-31-0406-3051
		429			214-31-0429-3051
			439		214-31-0439-3051
18”	457				214-31-0457-3051
		480			214-31-0480-3051
			492		214-31-0492-3051
24”	610			DN400	214-31-0610-4051
		635			214-31-0635-4051
			650		214-31-0650-4051
36”	914			DN600	214-31-0914-6051
		945			214-31-0945-6051
			964		214-31-0964-6051

Manufactured to a specific calipered pipe size, other size and branch configurations are available on request.

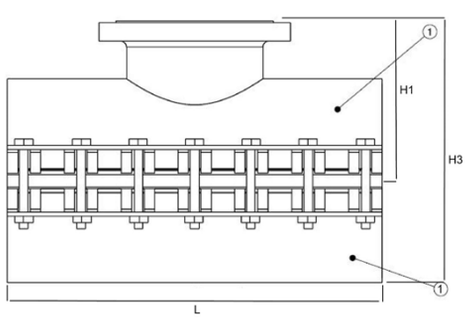
Size DN350 - 900

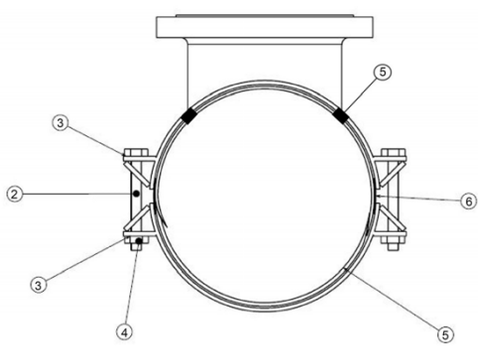
Pressure PN7

Temperature Range -10°C to+70°C

Body Mild steel

Approvals GIS/LC8 Part 4





Materials of Construction

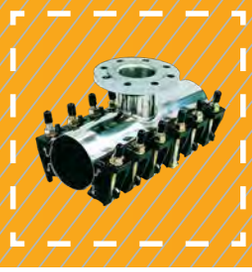
No.	Description	Material
1	Body	Mild steel
2	Bolt	Mild steel, Sheraplex® coated
3	Washer	Mild steel, Sheraplex® coated

No.	Description	Material
4	Nuts	Mild steel, Sheraplex® coated
5	Seal	NBR rubber
6	Bridge plate	Stainless steel 304

Note: Product information is correct at time of printing

Series 215/31-001

Donkin Stainless Steel Bolt on Under Pressure Tee



Use

Suitable for under pressure branch connections on all ferrous pipes, PVC and AC, for natural gas

Features and benefits

- Excellent sealing characteristics
- Versatile design tolerance
- Corrosion resistant construction
- Lightweight
- Any lengths available in multiples of 150mm up to 1200mm, Note:
  - Up to Dia 50mm max 300mm long
  - 51 to Dia 80mm max 450mm long
  - 81 to Dia 100mm max 600mm long
  - 101 to Dia 150mm max 750mm long
- Bitumen coated lugs
- To fit mains from Ø70-1265mm
- Branches DN50-DN600
- Embodied carbon data available upon request

AVK Ref	Sealing Range* (mm)	AVK Ref	Sealing Range* (mm)
215-31-0086-XXYY1	86 – 106	215-31-0422-XXYY1	422 – 442
215-31-0111-XXYY1	111 – 131	215-31-0449-XXYY1	449 – 469
215-31-0138-XXYY1	138 – 158	215-31-0474-XXYY1	474 – 494
215-31-0164-XXYY1	164 – 184	215-31-0485-XXYY1	485 – 505
215-31-0190-XXYY1	190 – 210	215-31-0503-XXYY1	503 – 523
215-31-0200-XXYY1	200 – 220	215-31-0526-XXYY1	526 – 546
215-31-0215-XXYY1	215 – 235	215-31-0533-XXYY1	533 – 553
215-31-0232-XXYY1	232 – 252	215-31-0558-XXYY1	558 – 578
215-31-0240-XXYY1	240 – 260	215-31-0580-XXYY1	580 – 606
215-31-0255-XXYY1	255 – 275	215-31-0600-XXYY1	600 – 626
215-31-0268-XXYY1	268 – 288	215-31-0629-XXYY1	629 – 655
215-31-0280-XXYY1	280 – 300	215-31-0640-XXYY1	640 – 666
215-31-0319-XXYY1	319 – 339	215-31-0801-XXYY1	801 – 827
215-31-0341-XXYY1	341 – 361	215-31-0903-XXYY1	903 – 929
215-31-0374-XXYY1	374 – 394	215-31-0953-XXYY1	953 – 979
215-31-0395-XXYY1	395 – 415	215-31-1255-XXYY1	1255 – 1281
215-31-0410-XXYY1	410 – 430	215-31-1285-XXYY1	1285 – 1311

* For clamps up to size 558mm there is a +20mm pipe size tolerance, in larger sizes the pipe tolerance is +26mm. Clamps for alternative sealing ranges may be available on request.

Options

- Can be fabricated up to DN1200mm
- Any lengths available in multiples of 150mm up to 1200mm
- Fast service available

XX	02	03	04	06	08	10	12	16	18	20	24
Branch Flange	DN50	DN80	DDN100	DN150	DN200	DN250	DN300	DN400	DN450	DN500	DN600

YY	06	12	18	24	30	36	42	48
Length (mm)	150	300	450	600	750	900	1050	1200

Other clamp lengths are possible, but standard recommended clamp length for each branch size as follows:

DN PN16	DN50	DN80	DN100	DN150	DN200	DN250	DN300	DN400	DN450	DN500	DN600
Std Clamp Length (mm)	300	300	300	450	450	600	750	900	900	1050	1200

Size

DN80 – 1200

Pressure

PN7 < 300mm

Temperature Range

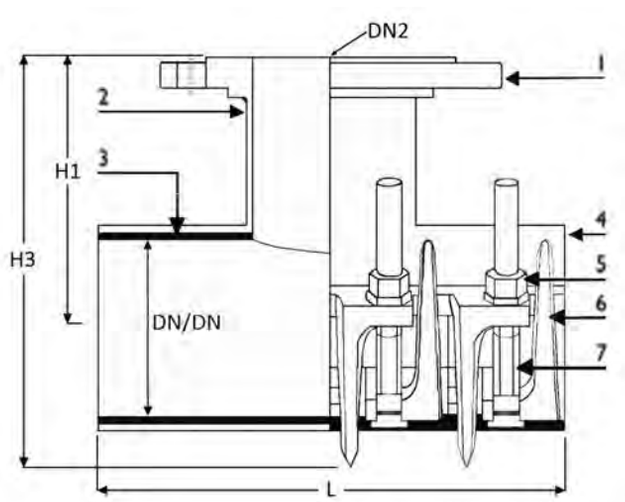
-10°C to +70°C

Body

Stainless Steel AISI 316

Approvals

GIS/LC8 Part 4



Materials of Construction

No.	Description	Material
1	Flange	Carbon steel to BS EN 10025:1990, Grade FE 430 B or to BS 1503.221.430
2	Neck	Stainless steel AISI 304 min (or 316)
3	Gasket mat	EPDM
4	Body	Stainless steel AISI 304 min (or 316)
5	Nuts and washers	Grade 8, zinc plated and passivated
6	Lugs	Ductile iron, BS EN 1563 EN-GJS-450-10; Bitumen coated
7	Bolts with domed caps	Grade 8.8, zinc plated and passivated with plastic caps

Note: Product information is correct at time of printing

Series 257/31-001

AVK Universal Under Pressure Tee

Use	Suitable for all ferrous pipes, for natural gas

Features and benefits

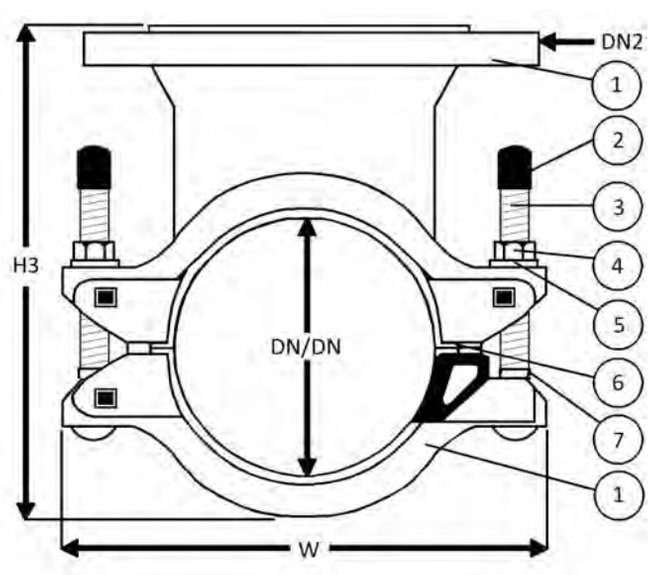
- Suitable for all ferrous pipe types
- Extremely versatile - large tolerance range
- Allows for a total angular deflection of +/- 4 degrees
- Slotted branch flange
- Corrosion resistant construction
- Fusion bonded epoxy coating
- Suitable for stoppling
- Maximum Working Pressure: 7 Bar
- Embodied carbon data available upon request

Options

- BS EN 1092-2, BS10 or ANSI flange drillings
- Branch sizes DN80-300

Size	DN100 - 300
Pressure	PN7
Temperature Range	-10°C to +70°C
Body	Ductile iron
Approvals	GIS/LC8 Part 4

AVK Ref	DN/DN	DN2	H3	L	W	Weight
	mm					kg
257-31-04-081	111.8 - 129.4	80	241	216	238	14
257-31-04-101	111.8 - 129.4	100	241	216	238	16
257-31-06-081	165.2 - 184.8	80	315	220	312	21
257-31-06-101	165.2 - 184.8	100	315	220	312	22
257-31-06-151	165.2 - 184.8	150	302	285	312	26
257-31-08-081	215.9 - 239.7	80	370	220	374	28
257-31-08-101	215.9 - 239.7	100	370	220	374	26
257-31-08-151	215.9 - 239.7	150	363	320	374	38
257-31-08-201	215.9 - 239.7	200	363	340	374	39
257-31-10-081	269.2 - 293.5	80	440	220	434	36
257-31-10-101	269.2 - 293.5	100	440	220	434	45
257-31-10-151	269.2 - 293.5	150	431	370	434	65
257-31-10-201	269.2 - 293.5	200	431	370	434	64
257-31-10-251	269.2 - 293.5	250	431	370	434	72
257-31-12-081	319.9 - 341.3	80	505	270	500	50
257-31-12-101	319.9 - 341.3	100	505	270	500	51
257-31-12-151	319.9 - 341.3	150	505	285	500	68
257-31-12-201	319.9 - 341.3	200	494	420	500	75
257-31-12-251	319.9 - 341.3	250	494	420	500	93
257-31-12-301	319.9 - 341.3	300	494	455	500	85



Materials of Construction

No.	Description	Material
1	Body	Ductile iron, min. GJS-450-10
2	Domed cap	Plastic
3	Bolt	Grade 8.8, zinc plated and passivated
4	Nut	Grade 8.8, zinc plated and passivated

No.	Description	Material
5	Washer	Grade 8.8, zinc plated and passivated
6	Seal	Nitrile rubber
7	O-ring	Nitrile rubber

Note: Product information is correct at time of printing

Series 207/31-001

AVK Live Transfer Fitting

Use

Suitable for all ferrous pipes, for natural gas

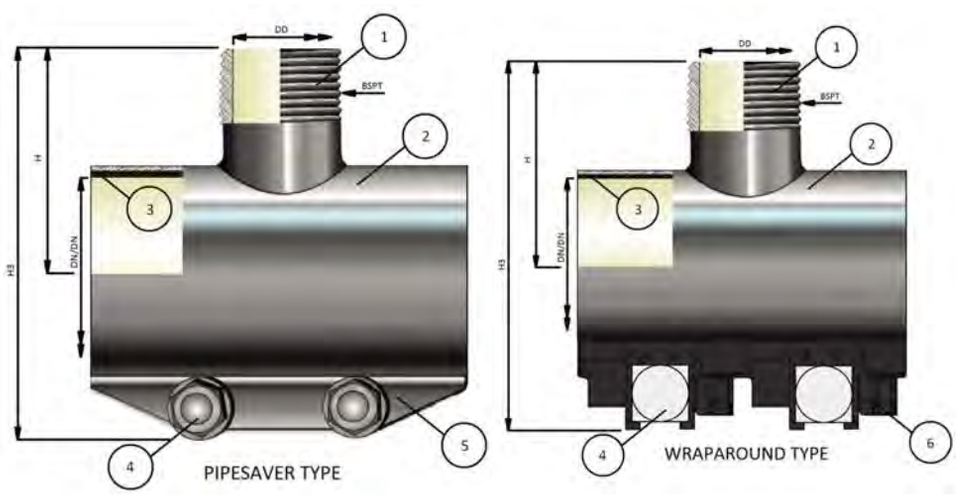
Features and benefits

- Outlet sizes ¾" to 2" BSPT which can be combined with larger body size as required
- Threaded outlet for direct tapping into service pipes
- Quick and simple to install
- No special tools required
- Lightweight and easy to handle
- Corrosion resistant design, all Stainless Steel body
- Embodied carbon data available upon request

AVK Ref	DN	DN	DN/DN	BSPT Thread	Dd	H	H3	L	Connection	Wgt
	Inch	mm		Inch	mm					kg
207-31-0034-04071	1"	33.4	32.5 - 35.5	3/4" F	20.5	47	84	100	PIPESAVER	0.4
207-31-0042-04101	1¼"	42.2	41.0 - 44.0	1" F	25.7	58	100	100	PIPESAVER	0.4
207-31-0048-06121	1½"	48.3	47.0 - 51.0	1 1/4" F	34.4	66	143	150	WRAPAROUND	3.4
207-31-0048-06131	1½"	48	47 - 51	1 1/4" M	48	74	150	150	WRAPAROUND	2.8
207-31-0048-06151	1½"	48.3	47.0 - 51.0	1 1/2" F	40.3	75	152	150	WRAPAROUND	2.7
207-31-0048-06161	1½"	48	47 - 51	1 1/2" M	48	79	155	150	WRAPAROUND	2.8
207-31-0060-06201	2"	60.3	59.0 - 63.0	2" F	51.3	91	147	150	WRAPAROUND	2.5

Options

- Stainless steel outlet



Size

DN1" - 2"

Pressure

PN2

Temperature Range

-10°C to +70°C

Body

Stainless steel, AISI 316

Approvals

GIS/LC8 Part 4

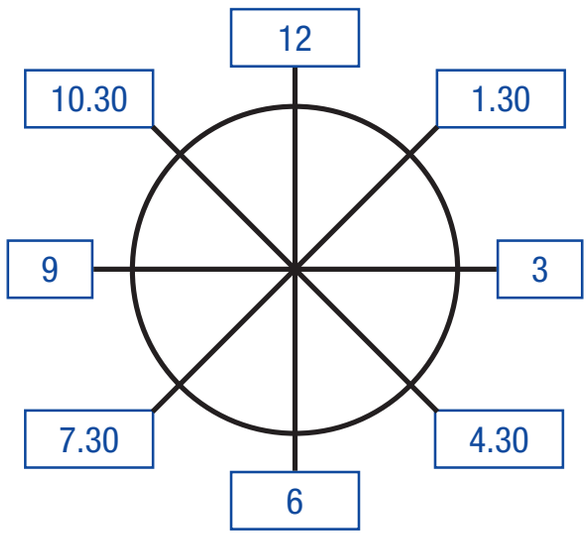
Materials of Construction

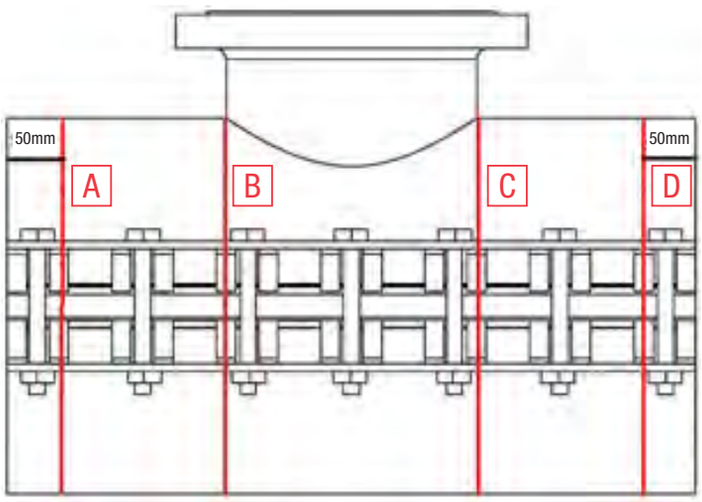
No.	Description	Material
1	Outlet	Zinc painted steel
2	Body	Stainless steel
3	Gasket	NBR
4	Bolt/Nut/Washer	Zinc plated steel
5	Lug	Zinc plated steel
6	Lug	Ductile Iron

Note: Product information is correct at time of printing

PIPE CALIPERING FORM
FOR UNDER PRESSURE TEES

Customer		Email	
Contact		AVK Reference	
Mobile		Date	





It is important that calipering of the pipe diameter is done accurately and consistently to ensure that products supplied will fit correctly. Please use the following guidance to record and inform AVK UK of the measurements. *If a dimension cannot be measured accurately in the position defined below please mark the cell X in the table blank.*

Prior to calipering, ensure the pipe surface is thoroughly cleaned. Caliper the pipe diameter in 4 positions around the circumference and in four positions longitudinally according to the diagrams adjacent. Then measure the circumference in the same positions using a Pi tape. Record the information below and send to the appropriate AVK UK address detailed below.

Note: A tee length is typically a minimum of 3 times the branch diameter. Please check our website for accurate dimensions.

www.avkuk.co.uk

POSITION	A	B	C	D
12-6				
1.30-7.30				
3-9				
4.30-10.30				
Circumference				

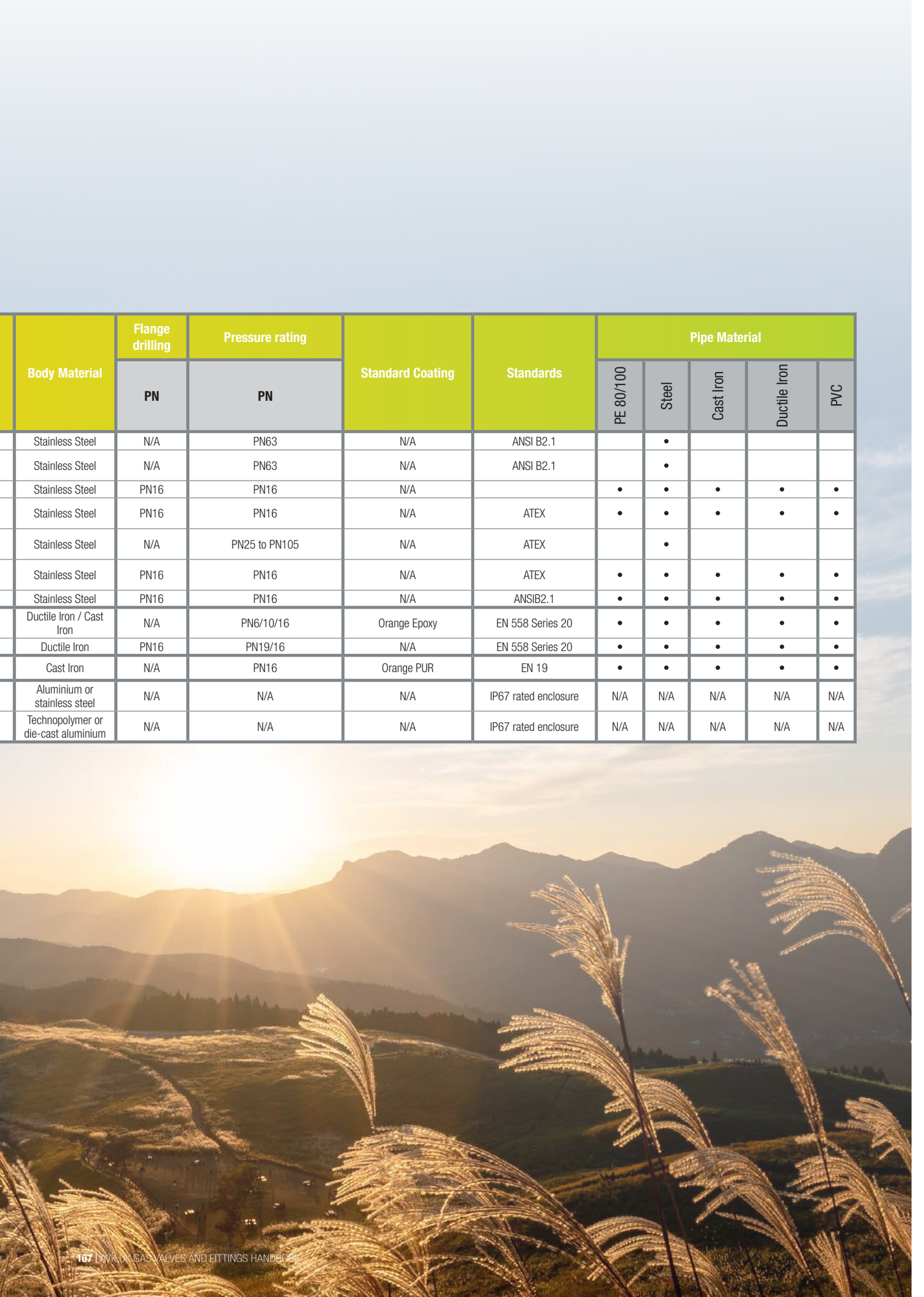
Note: From issue 'C' of calipering form

RENEWABLE GAS SECTION

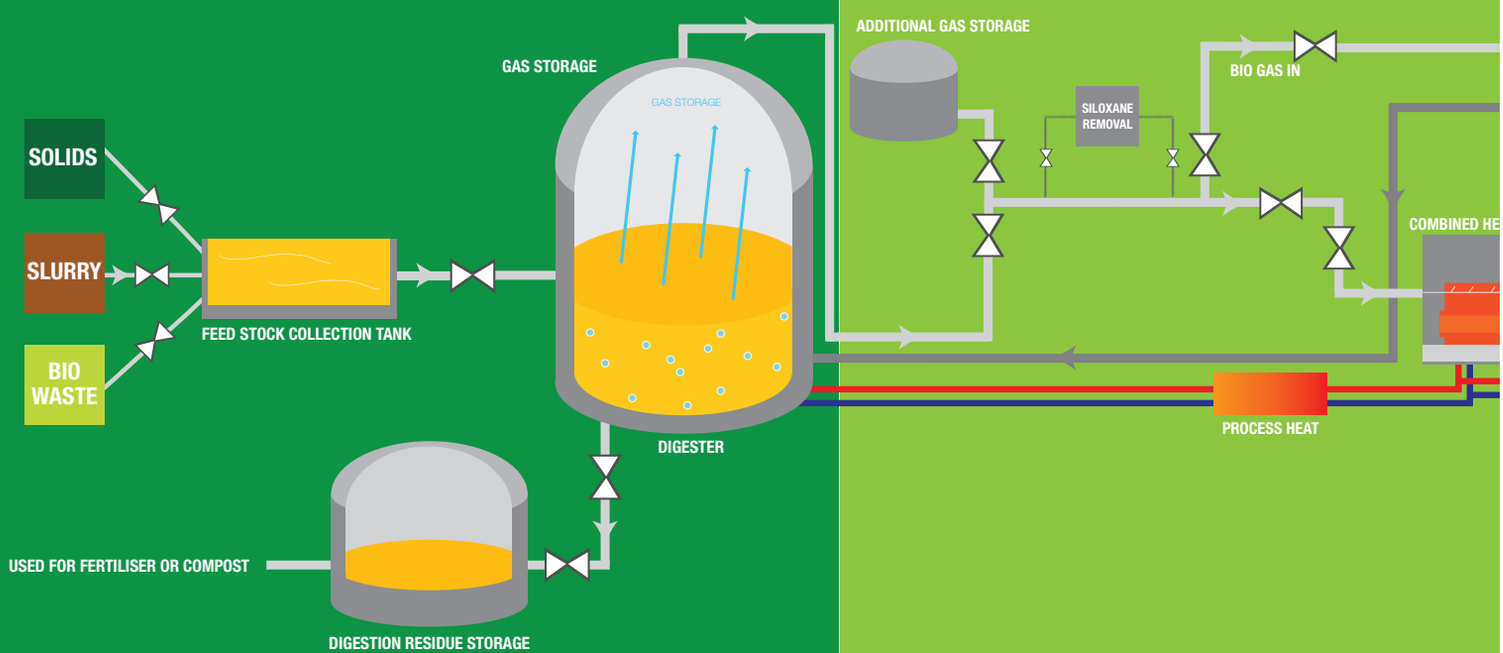
DONKIN RENEWABLE GAS PRODUCT SELECTOR

	Product	Description	Series	Range DN	Page Number	Connection
RENEWABLE GAS PRODUCTS	Balll valves	2-piece bsp screwed ball valve	331/10	8-100	**115**	Screwed ends
		3-piece bsp screwed stainless steel ball valve	331/20	8-100	**116**	Screwed ends
		2-piece flanged ball valve	331/30	15-100	**117**	Flanged
		2-piece full bore split body ball valve	331/40	15-300	**118**	Flanged
		2-piece bsp screwed full bore ball valve	331/50	6-100	**119**	Screwed ends
		3-piece bsp screwed full bore ball valve	331/60	15-200	**120**	Flanged
		3 way diverter ball valve	331/80	15-150	**121**	Flanged
		Wafer concentric butterfly valve	75/10-033	40-1400	**123**	Flat face
		Lugged type butterfly valve	600205	40-600	**124**	Lugged
	Non-return valve	Check valve	642	50-600	**126**	Flat faced
	Actuators	Pheumatic	-	-	**128**	ISO5211 mounting platform
		Electric	-	-	**129**	ISO5211 mounting platform

Body Material	Flange drilling	Pressure rating	Standard Coating	Standards	Pipe Material				
	PN	PN			PE 80/100	Steel	Cast Iron	Ductile Iron	PVC
Stainless Steel	N/A	PN63	N/A	ANSI B2.1		•			
Stainless Steel	N/A	PN63	N/A	ANSI B2.1		•			
Stainless Steel	PN16	PN16	N/A		•	•	•	•	•
Stainless Steel	PN16	PN16	N/A	ATEX	•	•	•	•	•
Stainless Steel	N/A	PN25 to PN105	N/A	ATEX		•			
Stainless Steel	PN16	PN16	N/A	ATEX	•	•	•	•	•
Stainless Steel	PN16	PN16	N/A	ANSIB2.1	•	•	•	•	•
Ductile Iron / Cast Iron	N/A	PN6/10/16	Orange Epoxy	EN 558 Series 20	•	•	•	•	•
Ductile Iron	PN16	PN19/16	N/A	EN 558 Series 20	•	•	•	•	•
Cast Iron	N/A	PN16	Orange PUR	EN 19	•	•	•	•	•
Aluminium or stainless steel	N/A	N/A	N/A	IP67 rated enclosure	N/A	N/A	N/A	N/A	N/A
Technopolymer or die-cast aluminium	N/A	N/A	N/A	IP67 rated enclosure	N/A	N/A	N/A	N/A	N/A



GENERIC BIOMETHANE PLANT SCHEMATIC



FEEDSTOCK AND DIGESTER SECTION

The material that is used in anaerobic digestion is called feedstock. What goes into a digester determines what comes out, so careful choice of feedstocks is essential.

Common feedstock streams include:

- Food and Drink Waste
- Processing Residues
- Agricultural Residues
- Crops
- Sewage Sludge

Once you know the type of feedstock choosing the right type of valve is even easier.

BIOGAS SECTION

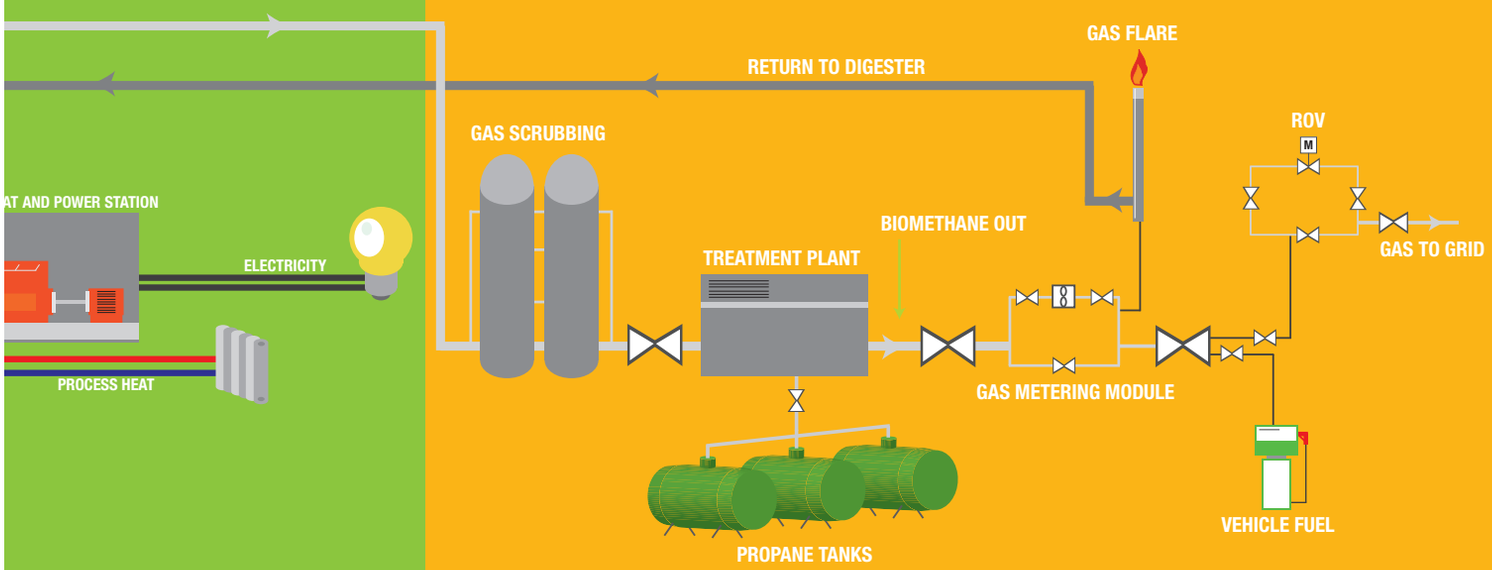
Here the gas is used for different processes including:

- Heat only
- Electricity only
- Combined heat and power (CHP)

It can also go through a process to have the siloxane removed before going onto the Biomethane section

It is important when choosing valves and fittings for use on a biogas plant that the correct products are chosen for each particular section of the process. Overall in the connecting pipeline assemblies you could have a requirement for knife gate, wedge gate, resilient seated, butterfly, ball and non-return valves depending on the process. To select the correct valve for the application the following general points should be taken into consideration:

Note: Product information is correct at time of printing



BIOMETHANE SECTION

At this stage of the process the gas is refined and treated to be sent to different locations including

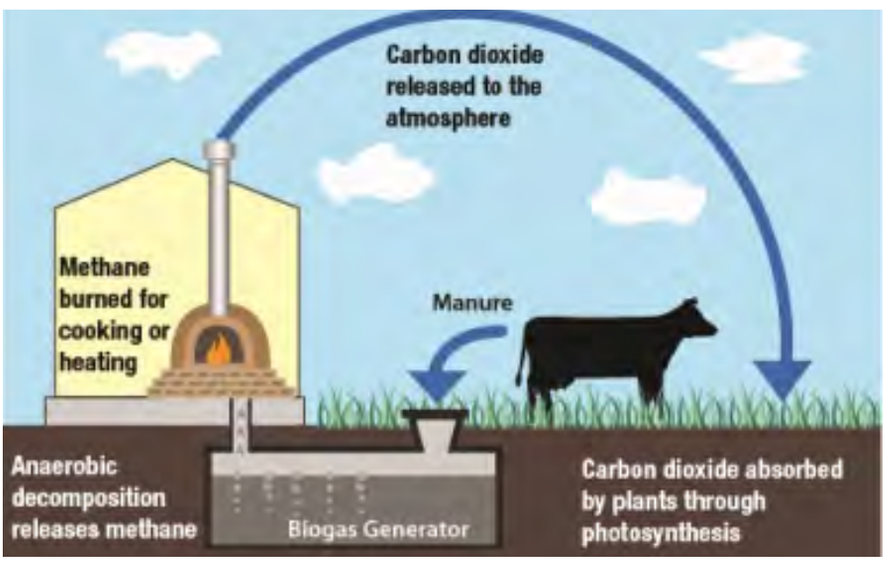
- Vehicle fuel
- Gas to grid
- Combined heat and power (CHP)

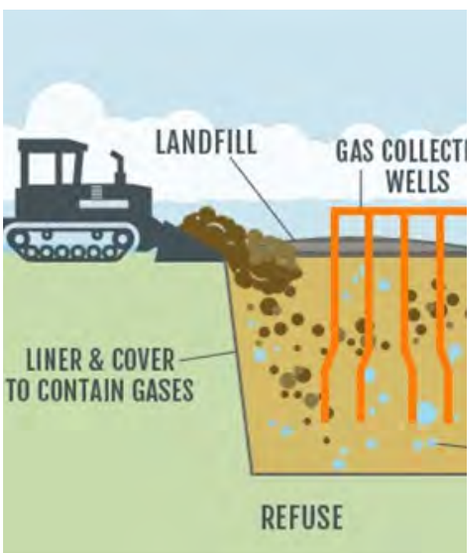
- Carbon steel should not be used on biogas due to the H_2S, content. It is recommended for these applications that stainless steel be used for valve internals and the valve bodies be either cast/ductile iron or stainless steel.
- Consider the level of H_2S when choosing valve sealing materials. Viton is recommended over nitrile if the H_2S content is above 200 ppm.
- Consider the pressure drop through the valve. Use clear bore wherever possible. Consider that butterfly valves have line restriction.
- Knife gates are recommended if the feedstock is more than 10% solids.
-

AVK manufacture a vast range of valves including the types detailed above. To find our recommendation for the correct product for your application use the colour coding in this schematic and the following product section. (see also the main gas section for additional products.)

Note: Product information is correct at time of printing

RENEWABLE GAS
THE DIFFERENT TYPES





Biogas
Biogas is a combustible gas consisting of methane, carbon dioxide, small amounts of other gases and trace elements and is produced as a by-product of the anaerobic digestion of organic matter by micro-organisms. On a commercial level, various types of this organic matter known as feedstock can be used for the production of biogas. These include-

- Animal manure and slurry
- Agricultural residues and by-products of crop production
- Digestible organic wastes from the food production industry (vegetable and animal origin)
- The organic part of municipal waste and from catering (vegetable and animal origin)
- Sewage sludge
- Dedicated energy crops (e.g. maize, miscanthus, sorghum, clover).

Anaerobic Digestion is the microbiological process of the decomposition of organic matter, in the absence of oxygen. It is common to many natural environments and largely applied today to produce biogas in air proof reactor tanks, commonly named digesters. A wide range of micro-organisms are involved in the anaerobic process which has two main end products; biogas and digestate, the product remaining from the gas removal process. Digestion is carried out in large tanks containing the feedstock and micro-organisms and is where the gas produced is at low pressure.

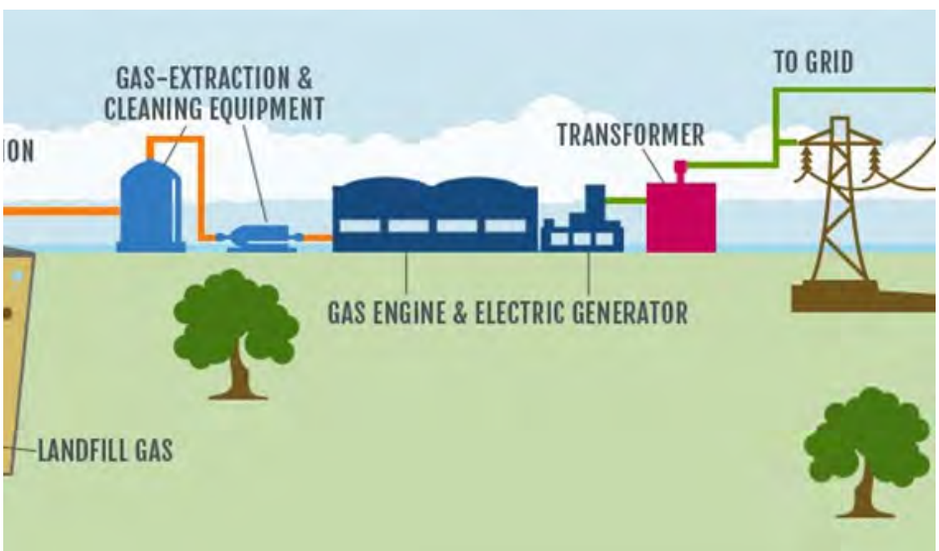
Once biogas has been “cleaned up” it can be utilised on site in a Combined Heat and Power (CHP) Plant or treated further to become pipeline quality biomethane and injected into the national gas grid. (see pages 112-113 for generic plant schematic)

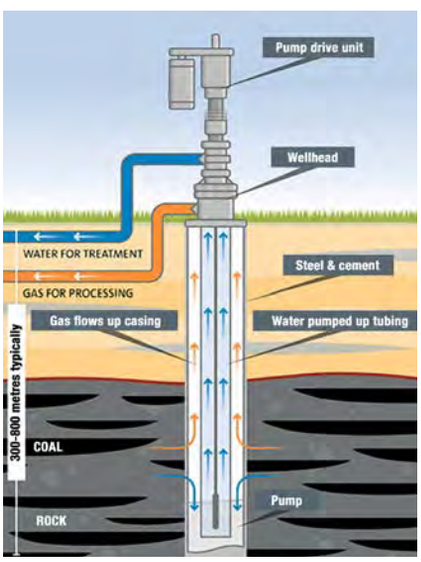
Biomethane
Biogas becomes biomethane when it is upgraded to pipeline quality gas. It is identical in property to natural gas. Biogas starts with 60 - 70% methane (CH_4) but contains some unwanted additions such as hydrogen sulphide (H_2S), carbon dioxide (CO_2), water and possibly siloxanes (synthetic silicone derivatives), dependent on the feedstock.

To meet UK gas pipeline specifications and to be injected into the national gas grid for general use, it must go through a number of processes which removes these unwanted compounds producing an almost pure (98%) methane gas.

If the calorific value of the gas falls below a minimum threshold, propane can be added to bring it up to acceptable levels. The resulting biomethane then can be injected into the gas network or compressed for use in natural gas vehicles. (see pages 8-9 for generic plant schematic)

Note: Product information is correct at time of printing





Landfill Gas

Landfill gas is produced as a by-product of the breakdown of organic matter which makes up part of the content of the waste disposed of in landfill sites. Landfill gas is approximately 40% methane, with the remainder being mostly carbon dioxide. As with other gas produced from anaerobic digestion, it also contains varying amounts of nitrogen and oxygen gas, water vapour, hydrogen sulphide, and other contaminants.

Most of these other contaminants are known as "non-methane organic compounds" or NMOCs. Some inorganic contaminants, such as mercury and radioactive tritium, can also be present in the gas of some landfills. The gases produced within a landfill can be collected or flared-off.

The raw gas can be processed into biomethane by removing the water, carbon dioxide, nitrogen, hydrogen, oxygen and any other trace contaminants (this process is identical to biogas scrubbing).

As a readily available fuel, the processed gas can provide raw heat for scrubbing procedure, be used for generating electricity on-site through the use of micro turbines, steam turbines, or fuel cells. The gas can also be sold off-site into natural gas pipelines.

The majority of this gas is used as on-site fuel to power generators creating electricity.

Town Gas (or Coal Gas)

Town gas produced through the carbonisation of coal and supplied via a piped distribution system. Prior to the development of natural gas supplies and transmission systems during 1940s and 1950s in the US and the late 1960s and 1970s in the UK, virtually all fuel and lighting gas used in both the United States and Great Britain was manufactured from coal.

In the present day town gas is manufactured mainly as a bi-product in the steel industry when manufacturing coke from coal. The gas is re-used around the plants to re-heat steel during manufacture of strip and other products etc.

Coal gas contains a variety of gases including methane, hydrogen, carbon monoxide, and volatile hydrocarbons together with small quantities of non-calorific gases such as carbon dioxide and nitrogen.

Although not as prevalent as it once was there are still parts of the world where Town Gas is still used for heating and cooking.

Coal Seam Gas

Coal Seam Gas is the name given to any naturally occurring gas trapped in underground coal seams by water and ground pressure. The most common gas found in coal seams is methane which was formed millions of years ago as part of the breakdown and compression of peat to form coal. The gas lies in the open fractures within the coal seam and surrounding areas and also inside pores within the coal. This natural gas is almost pure methane, typically over 97%.

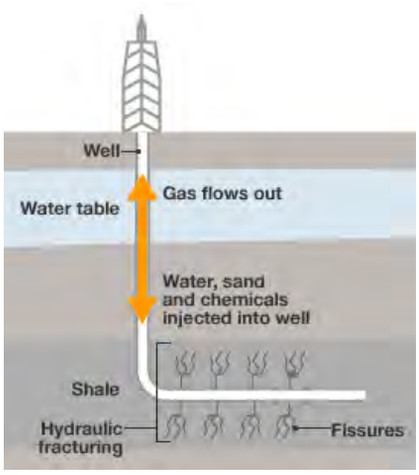
Coal seam gas is extracted by drilling a well vertically through rock strata until reaching the coal seam, at which point the well may also be drilled out horizontally to increase access to the methane gas.

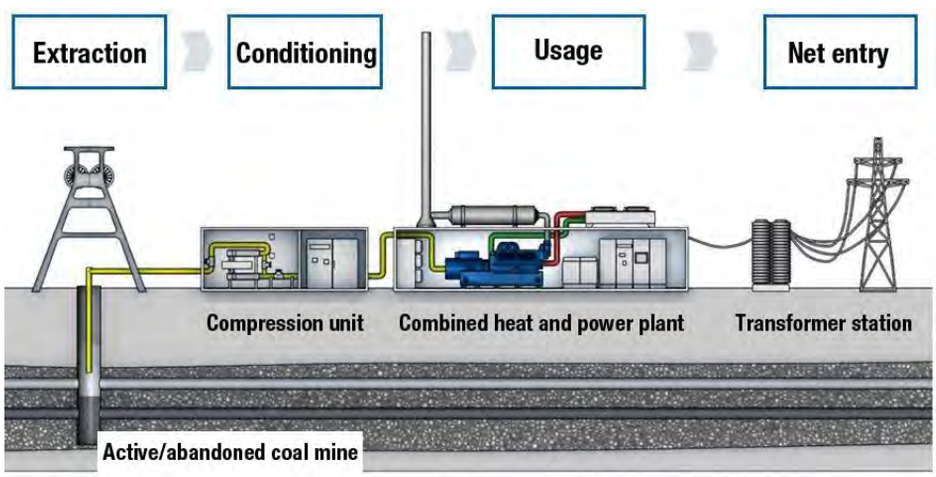
Hydraulic fracturing, more commonly known as "fracking" is used to stimulate and accelerate the flow of coal seam gas. The process involves high pressured injection of sand, water and chemicals into the coal seam gas well. The injection causes fractures in the coal seam allowing the gas to flow to the surface of the well where it can be collected.

A significant amount of water can also be liberated as part of the gas extraction process which varies in quality, can be treated and reused in a variety of ways such as irrigation or to top-up local water supplies.

Note: Product information is correct at time of printing

RENEWABLE GAS
THE DIFFERENT TYPES





Shale Gas
Shale gas is natural gas which is held in fractures, pore spaces and absorbed into the organic material of shale. Shale gas is generally liberated through the fracking technique.

This raw natural gas principally consists of methane from different sources and can have different impurities such as condensates, water, carbon dioxide and hydrogen sulphide that must be removed before the gas can be transported into pipelines and sent to market. In order to achieve this there is a requirement for a "scrubbing process" similar to that used for biomethane.

Abandoned Mines Gas
Abandoned mines methane (AMM) can be recovered from disused coal mines. AMM projects produce energy (thermal and electrical) with the added bonus of reducing atmospheric emissions of methane. Methane is a potent greenhouse gas and huge amounts of methane will escape from the mine for years to come following closure. Sealed abandoned mines offer an excellent opportunity for methane extraction, especially if recovery takes place quickly after the mines closure. AMM provides a good source of medium to high quality methane.

The main constituents of mines gas are methane (CH_4) oxygen (0_2), nitrogen (N_2), carbon dioxide (CO_2). If blasting operations are used in the mine, then carbon monoxide (CO) can occur in large quantities. In addition, hydrogen sulphide can be present. The concentration of CH_4 depends upon the quality and depth of the coal seam: in general, the higher the energy values of the coal and the deeper the coal bed, the more CH_4 occurs. The methane content can range from 60-80%.

Abandoned mines gas is generally used on the same site as the gas extraction to power a combined heat and power (CHP) plant to produce electricity which is then sent to the grid for a feed in tariff.

Oil shale Gas
Oil shale gas is a synthetic gas mixture (syngas) produced as a by-product of oil shale pyrolysis. In this process, oil shale is heated in the absence of oxygen until its kerogen decomposes into condensable shale oil vapours and non-condensable combustible oil shale gas. Oil vapours and oil shale gas are then collected and cooled, causing the shale oil to condense and be collected. Although often referred to as shale gas, oil shale gas differs from the natural gas produced from shale.

Typical components of oil shale gas are usually methane, hydrogen, carbon monoxide, carbon dioxide, nitrogen, and different hydrocarbons like ethylene. It may also consist of hydrogen sulphide and other impurities, which need to be removed again through scrubbing processes.

Note: Product information is correct at time of printing


Hyperchil
BioEnerg
BIOGAS VALVE

BALL VALVES

Series 331/10

AVK 2-Piece BSP Screwed Stainless Steel Ball Valve

Use

Isolation of Biogas

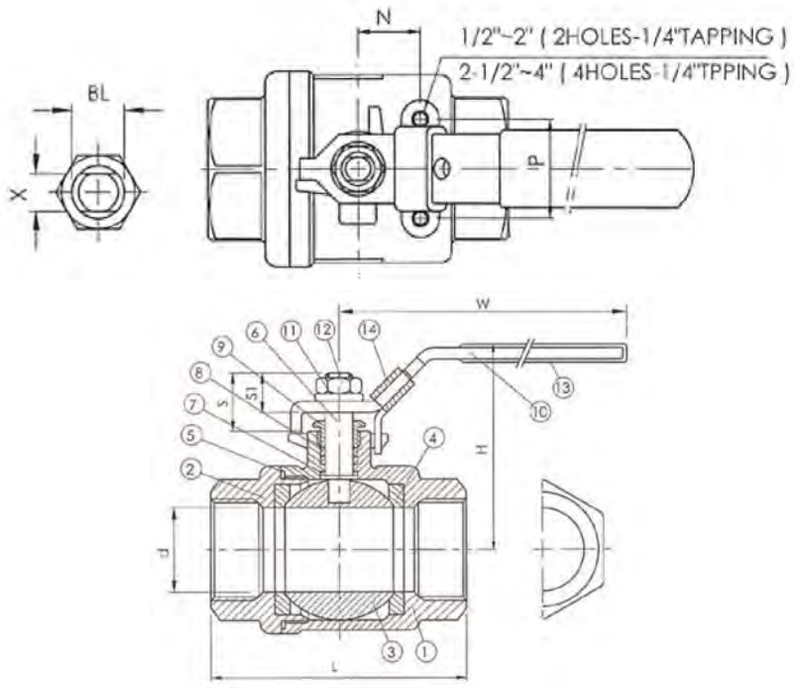
Features and benefits

- Full bore
- 2-Piece design
- End connections female/ female BSP screwed
- Blow-out proof stem/full bore
- Investment casting body and cap
- PN 63 rated
- Locking device

AVK Ref	Size	d	L	H	W	CV Factor	Torque	Weight
	Inch	mm					Kgf - cm	kg
331/10	¼"	11.6	44.5	51	95	6.6	40	0.22
331/10	⅜"	12.7	44.5	51	95	7.9	40	0.22
331/10	½"	15	57	53	95	11.2	54	0.29
331/10	¾"	20	65	59.5	110	21	74	0.42
331/10	1"	25	76	73	135	35	104	0.71
331/10	1¼"	32	87.5	79	135	57	135	1.06
331/10	1½"	38	102	90.5	165	80	180	1.68
331/10	2"	50	123	98.5	165	148	250	2.71
331/10	2½"	65	156	130.5	215	265	480	5.25
331/10	3"	80	184	142.5	215	415	750	8.6
331/10	4"	100	250	173.5	325	780	1100	19.32

Options

- NPT screwed end connections
- Socket weld connections
- Butt weld connections



Size

DN8 - 100

Pressure

PN63

Temperature Range

-10°C to +180°C

Body

Stainless steel

Approvals

ANSI B2.1
BS21
DIN 259/2999
ISO 228

Materials of Construction

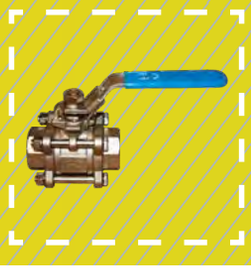
No.	Description	Material
1	Body	Stainless steel (ASTM-A351-CF8M)
2	Cap	Stainless steel (ASTM-A351-CF8M)
3	Ball	Stainless steel (ASTM-A351-CF8M)
4	Ball seat	PTFE
5	Joint gasket	PTFE
6	Stem	Stainless steel (AISI 316)
7	Thrust washer	PTFE

No.	Description	Material
8	Stem packaging	PTFE
9	Gland nut	Stainless steel (AISI 304)
10	Handle	Stainless steel (AISI 304)
11	Spring washer	Stainless steel (AISI 304)
12	Stem nut	Stainless steel (AISI 304)
13	Plastic cover	Plastic
14	Lock device	Stainless steel (AISI 304)

Note: Product information is correct at time of printing

Series 331/20

AVK 3-Piece BSP Screwed Stainless Steel Ball Valve



Use

Isolation of Biogas

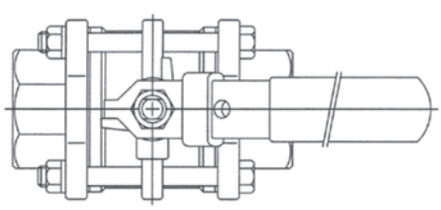
Features and benefits

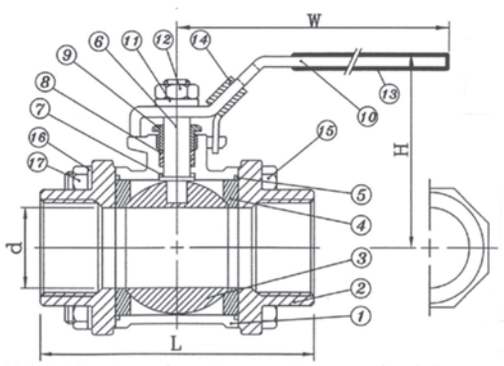
- Full bore
- 3-Piece design
- End connections female/ female BSP screwed
- Blow-out proof stem/full bore
- Investment casting body and cap
- PN63 rated
- Locking device

AVK Ref	Size	d	H	W	B	D	S	Cv Factor	Torque
	Inch	mm							kgf-cm
331/20	¼"	11.6	51	95	12.0	18.0	14.1	6.6	40
331/20	⅜"	12.7	51	95	14.0	18.0	17.6	7.9	40
331/20	½"	15.0	55	95	17.1	22.0	21.7	11.2	54
331/20	¾"	20.0	59	110	22.5	27.5	27.1	21.0	74
331/20	1"	25.0	73	135	28.0	33.5	33.8	34.0	104
331/20	1¼"	32.0	78	135	33.5	44.0	42.6	57.0	135
331/20	1½"	38.0	91	165	43.0	50.0	48.7	80.0	180
331/20	2"	50.0	99	215	53.0	61.5	61.1	148	250
331/20	2½"	65.0	130	215	65.0	76.0	76.9	265	500
331/20	3"	80.0	142	215	80.0	92.0	89.8	415	770
331/20	4"	100	174	325	100	115	115.4	780	1100

Options

- NPT screwed end connections
- Socket weld connections
- Butt weld connections
- Cavity filled seats





Size

DN8 - 100

Pressure

PN63

Temperature Range

-10°C to +180°C

Body

Stainless steel

Approvals

ANSI B2.1
BS21
DIN 259/2999
ISO 228

Materials of Construction

No.	Description	Material
1	Body	Stainless steel (ASTM-A351-CF8M)
2	Cap	Stainless steel (ASTM-A351-CF8M)
3	Ball	Stainless steel (ASTM-A351-CF8M)
4	Ball seat	PTFE
5	Joint gasket	PTFE
6	Stem	Stainless steel (AISI 316)
7	Thrust washer	PTFE
8	Stem packaging	PTFE
9	Gland nut	Stainless steel (AISI 304)

No.	Description	Material
10	Handle	Stainless steel (AISI 304)
11	Spring washer	Stainless steel (AISI 304)
12	Stem nut	Stainless steel (AISI 304)
13	Plastic cover	Plastic
14	Lock device	Stainless steel (AISI 304)
15	Bolt	Stainless steel (AISI 304)
16	Spring washer	Stainless steel (AISI 304)
17	Hex Nut	Stainless steel (AISI 304)

Note: Product information is correct at time of printing

Series 331/30

AVK 2-Piece Flanged Stainless Steel Ball Valve

Use

Isolation of Biogas

Features and benefits

- Full bore
- 2-Piece design
- End connections flanged PN16
- Blow-out proof stem/full bore
- ASTM A351 CF8M stainless steel body
- PN16 rated
- Locking device
- ISO 5211 mounting platform

Options

- Alternative flange drillings
- Carbon steel body
- Full range of pneumatic and electric actuation
- Gearbox and switch box options

Size

DN15-100

Pressure

PN16

Temperature Range

-20°C to +220°C

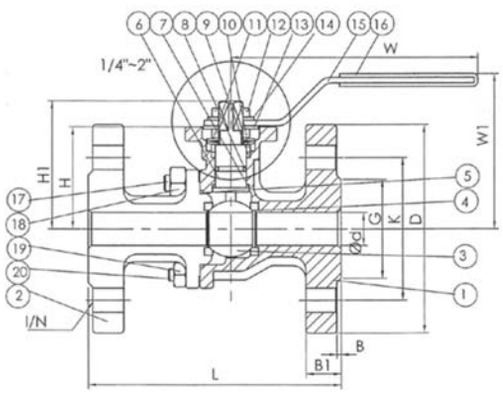
Body

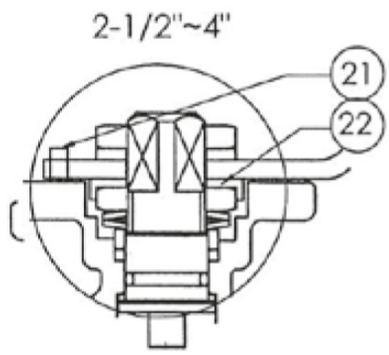
Stainless steel

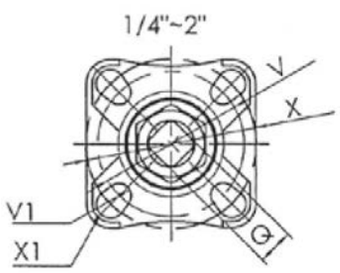
Approvals

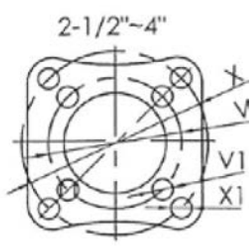
DIN 2633
DIN 3202 F4

AVK Ref	Size	PN	ØD	D	L	H1	W	Q	Kg	W1	Torque	Weight
	Inch	bar	mm								Nm	kg
331/30	½"	16	15	65	115	56	110	9	2.2	89	4-5	2.17
331/30	¾"	16	20	105	120	61	110	9	2.6	64	6-8	3.03
331/30	1"	16	25	115	125	67	136	11	3.65	65	8-10	3.79
331/30	1¼"	16	32	140	127.3	87	175	14	6.15	105.7	12-14	5.72
331/30	1½"	16	40	150	140	92	203	14	6.85	110.7	18-20	6.94
331/30	2"	16	50	165	150	99	203	14	9.65	117.7	25-30	9.38
331/30	2½"	16	65	185	170	137	277.5	17	15.2	155.5	32-36	14.84
331/30	3"	16	80	200	180	148	277.5	17	19.6	166.5	50-60	18.99
331/30	4"	16	100	220	190	163.5	377.5	17	27.35	182	85-95	26.59









Materials of Construction

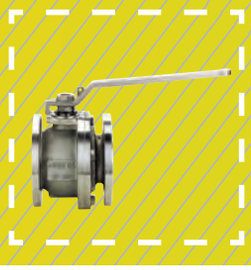
No.	Description	Material
1	Body	Stainless steel (ASTM-A351-CF8M)
2	Cap	Stainless steel (ASTM-A351-CF8M)
3	Ball	Stainless steel (ASTM-A351-CF8M)
4	Ball seat	15% R-PTFE
5	Joint gasket	PTFE
6	Stem	Stainless steel (AISI 316)
7	Thrust washer	15% R-PTFE
8	O-ring	Viton
9	Stem packing	PTFE
10	Stem ring	Stainless steel (AISI 304)
11	Belleville washer	Stainless steel (AISI 304)

No.	Description	Material
12	Stem nut	Stainless steel (AISI 304)
13	Stopper	Stainless steel (AISI 304)
14	Spring washer	Stainless steel (AISI 304)
15	Handle	Stainless steel (AISI 304)
16	Plastic cover	Plastic
17	Nut	Stainless steel (AISI 304)
18	Stud bolt	Stainless steel (AISI 304)
19	Stop pin	Stainless steel (AISI 304)
20	Lock washer	Stainless steel (AISI 304)
21	Stop pin	Stainless steel (AISI 304)
22	Lock washer	Stainless steel (AISI 304)

Note: Product information is correct at time of printing

Series 331/40

AVK 2-piece Flanged Stainless Steel Full Bore Split Body Ball Valve



Use

Isolation of Biogas

Features and benefits

- Full bore
- 2-Piece design
- End connections flanged PN16
- Blow-out proof stem/full bore
- ASTM A351 CF8M stainless steel body
- PN40 rated up to DN50
- PN16 rated up to DN300
- Locking device
- ISO 5211 mounting platform
- Certified anti-static and fire safe
- ATEX certified

Options

- Alternative flange drillings
- Carbon steel body
- Full range of pneumatic and electric actuation
- Gearbox and switch box options

Size

DN15-300

Pressure

PN40 rated up to DN50
PN16 rated up to DN300

Temperature Range

-20°C to +160°C

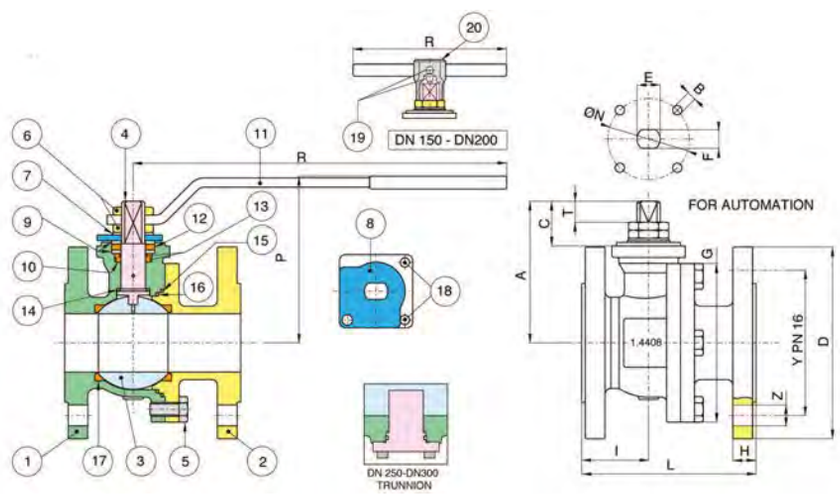
Body

Stainless steel

Approvals

ATEX

AVK Ref	Size	DN	PN	D	Y	L	P	R	A	Kv	Weight
	Inch	mm	bar	mm							kg
331/40	½"	15	40	95	65	115	88	131	52	16.3	2.5
331/40	¾"	20	40	105	75	120	93	131	56	29.5	3.2
331/40	1"	22	40	115	55	125	89	174	72.5	43	4.5
331/40	1¼"	32	40	140	100	130	93	174	76	89	5.8
331/40	1½"	40	40	150	110	140	199	250	107	230	8.1
331/40	2"	50	40	165	125	150	144	321	122	265	11.4
331/40	2½"	65	16	185	145	170	154	321	133	540	15.4
331/40	3"	80	16	200	160	180	173	381	151	873	20.5
331/40	4"	100	16	220	180	190	187	381	165	1390	26.8
331/40	5"	125	16	250	210	325	209	381	187	1707	50.2
331/40	6"	150	16	285	240	350	305	700	245	2024	75.7
331/40	8"	200	16	340	295	400	348	700	288	2720	104
331/40	10"	250	16	405	355	450	422	1200	353	-	180
331/40	12"	300	16	460	410	500	452	1200	384	-	226



Materials of Construction

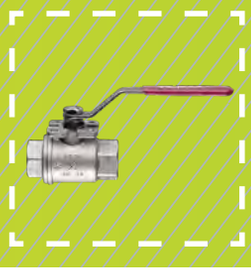
No.	Description	Material
1	Body	1.4408
2	End connection	1.4408
3	Ball	Stainless steel (A182-F316/ A351-CF8M)
4	Stem	Stainless steel (A182-F316) 14.
5	Screw	Stainless steel
6	Nut	Stainless steel
7	Spring washer	Stainless steel
8	90° stop	Stainless steel (A182-F316)
9	Packing gland	Stainless steel (A182-F316)
10	Stem seat	PTFE

No.	Description	Material
11	Handle	Stainless steel (A182-F316)
12	Stem seal	Graphoil
13	O-ring	FKM (Viton)
14	Thrust washer	PTFE
15	Body seat	Graphoil
16	Body seat	PTFE
17	Ball seat	PTFE
18	Screw	Stainless steel
19	Screw	Stainless steel
20	Body handle DN150-200	EN-GJL 250

Note: Product information is correct at time of printing

Series 331/50

AVK 2-Piece BSP Screwed Stainless Steel Full Bore Ball Valve



Use

Isolation of Biogas

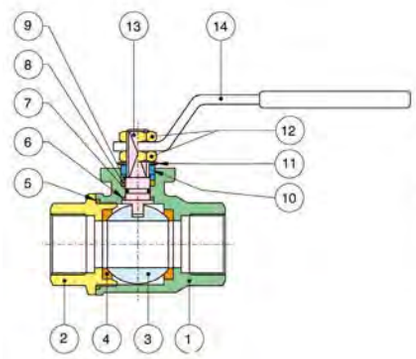
Features and benefits

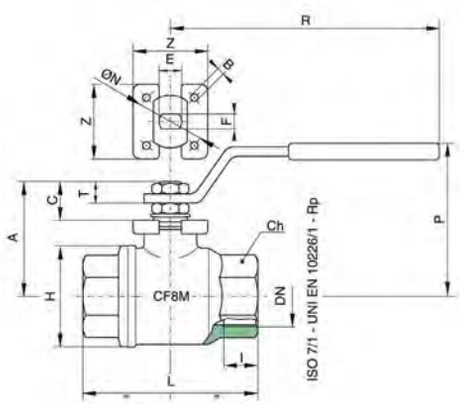
- Full bore
- 2-Piece design
- End connections female/ female BSP screwed
- Blow-out proof stem/full bore
- Investment casting body and cap
- PN140 rated up to DN15
- PN64 rated up to DN50
- PN25 rated up to DN100
- Locking device
- ISO 5211 mounting platform
- Certified anti-static and fire safe
- ATEX certified

AVK Ref	Size	DN	BOX	L	R	P	A	Z	Kv	PN	Weight
	Inch	mm	bar	mm							kg
331/50	⅛"	6	10	55	110	50	35	36	5	140	0.26
331/50	¼"	8	10	55	110	50	35	36	5.4	140	0.26
331/50	⅜"	10	10	55	110	50	35	36	6	140	0.24
331/50	½"	15	10	66	110	53	38	36	16.3	140	0.33
331/50	¾"	20	5	79	131	68	51	42	29.5	105	0.60
331/50	1"	25	6	93	174	79	60	42	43	105	1.01
331/50	1¼"	32	2	100	174	83	64.5	42	89	64	1.31
331/50	1½"	40	2	110	250	100	79	50	230	64	2.15
331/50	2"	50	2	131	250	107	86	50	265	64	3.25
331/50	2½"	65	1	159	321	126	104	64	540	25	6.81
331/50	3"	80	1	185	321	137	114	64	873	25	10.2
331/50	4"	100	1	222	381	156	137	92	1390	25	17.4

Options

- NPT screwed end connections
- Socket weld connections
- Butt weld connections
- Full range of pneumatic and electric actuation
- Gearbox and switch box options





Size

DN6-100

Pressure

PN140 rated up to DN15
PN64 rated up to DN50
PN25 rated up to DN100

Temperature Range

-20°C to +160°C

Body

Stainless steel ball

Approvals

ATEX
EN10226/1 - Rp

Materials of Construction

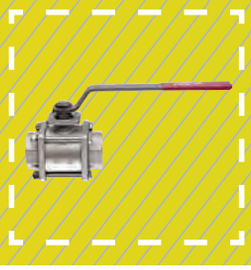
No.	Description	Material
1	Body	Stainless steel (A351-CF8M)
2	End connection	Stainless steel (A351-CF8M)
3	Ball	Stainless steel (A182-F316/A351-CF8M)
4	Ball seat	PTFE
5	Seat	PTFE
6	Thrust washer	PTFE
7	O-ring	FKM (VITON)

No.	Description	Material
8	Stem seat	PTFE
9	Packing gland	Stainless steel (INOX AISI 303 (⅛"-2")) Carbon steel (2½" - 4")
10	End stop	Stainless steel (INOX AISI 430 (⅛"-2")) Carbon steel (2½" - 4")
11	Spring washer	Carbon steel (2½"-3"-4")
12	Nut	Stainless steel (A182-F304 (⅛" -2")) Carbon steel (2½" - 4")
13	Stem	Stainless steel (A182-F316)
14	Handle	Stainless steel (INOX AISI 430 (⅛"-2")) Carbon steel (2½" - 4")

Note: Product information is correct at time of printing

Series 331/60

AVK 3-Piece BSP Screwed Stainless Steel Full Bore Ball Valve



Use

Isolation of Biogas

Features and benefits

- Full bore
- 3-Piece design
- End connections female/ female BSP screwed
- Blow-out proof stem/full bore
- Investment casting body and cap
- PN64 rated up to DN15
- PN40 rated up to DN25
- PN25 rated up to DN50
- PN16 rated up to DN100
- Locking device
- ISO 5211 mounting platform
- Certified anti-static and fire safe
- ATEX certified

Options

- NPT screwed end connections
- Socket weld connections
- Butt weld connections
- Cavity filled seats
- Full range of pneumatic and electric actuation
- Gearbox and switch box options

Size

DN8-100

Pressure

PN16 to PN64

Temperature Range

-20°C to +160°C

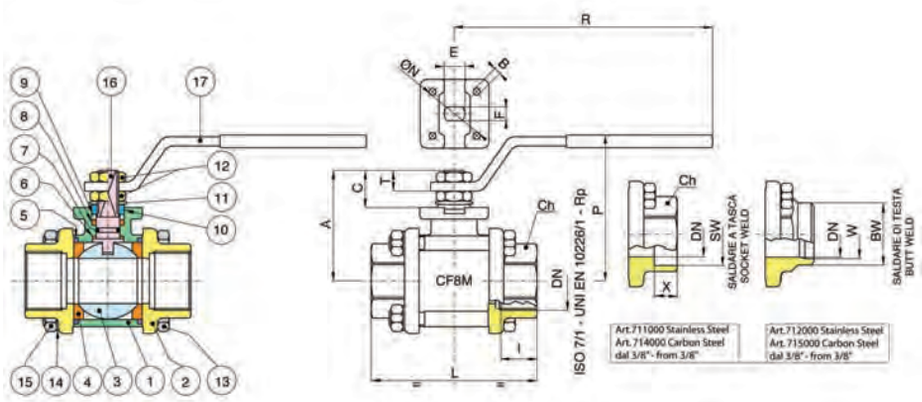
Body

Stainless steel ball

Approvals

ATEX
EN10226/1 - Rp

AVK Ref	Size	DN	BOX	SW	X	BW	W	I	L	Ch	R	P	A	C	T	E	F	N	B	Kv	PN	Wgt
	Inch	mm																				Kg
331/60	¼	8	10	-	-	-	-	11	57	OT.22	110	50	35	13.5	9	8	5	-	-	5.4	64	0.28
331/60	⅜	10	10	18.2	9.5	17.1	12.48	11.4	57	OT.22	110	50	35	13.5	9	8	5	-	-	6	64	0.27
331/60	½	15	6	22.4	9.5	21.3	15.76	15	65	OT.27	131	64	47	15	10	10	7	36	6	16.3	64	0.50
331/60	¾	20	5	27.7	11.1	26.7	20.96	16.3	76	OT.32	131	68	52	16	10	10	7	42	5.5	29.5	40	0.70
331/60	1	25	2	34.5	12.7	33.4	26.64	19.1	92	OT.41	174	79	60	19.5	12.5	12	8	42	6	43	40	1.20
331/60	1¼	32	4	43.2	14.3	42.2	35.08	21.4	106	OT.50	174	83	64	19.5	12.5	12	8	42	5.5	89	25	1.70
331/60	1½	40	2	49.5	15.9	48.3	40.94	21.4	116	OT.55	250	100	79	24	16.5	16	10	50	6.5	230	25	2.50
331/60	2	50	2	62	17.5	60.3	52.48	25.7	136	OT.70	250	107	86	24	16.5	16	10	50	6.5	265	25	3.90
331/60	2½	65	1	76.5	20	73	62.68	30.2	153	Ø90	321	126	103	28	18	20	14	70	M8	540	16	8.15
331/60	3	80	1	89.5	20	88.9	77.92	33.3	180	Ø105	321	137	114	28	18	20	14	70	M8	873	16	12.80
331/60	4	100	1	115	20	114.3	102.26	39.3	217	Ø130	381	156	137	34.5	22	24	18	102	M10	1390	16	21.50



Materials of Construction

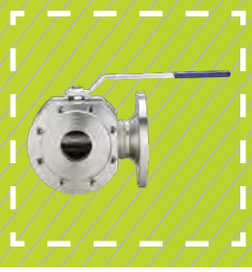
No.	Description	Material
1	Body	Stainless steel (A351-CF8M)
2	End connection	Stainless steel (A351-CF8M)
3	Ball	Stainless steel (A182-F316/A351-CF8M)
4	Ball seat	PTFE
5	Seat	PTFE
6	Thrust washer	PTFE
7	O-ring	FKM (VITON)
8	Steam seat	PTFE
9	Packing gland	Stainless steel (INOX AISI 303 (¼"-2")) Carbon steel (2 ½" -3"- 4")

No.	Description	Material
10	End stop	Stainless steel (INOX AISI 430 (¼"-2")) Carbon steel (2 ½"-3"-4")
11	Spring washer	Carbon steel (2 ½"-3"-4")
12	Nut	Stainless steel (A182-F304 (¼" -2") Carbon steel (2 ½"-3"- 4")
13	Bolt	Stainless steel (INOX AISI 304 (¼" -2")) Carbon steel (2 ½"-3"- 4")
14	Washer	Stainless steel (INOX AISI 304 (¼" -2")) Carbon steel (2 ½"-3"- 4")
15	Nut	Stainless steel (INOX AISI 304 (¼" -2")) Carbon steel (2 ½"-3"- 4")
16	Stem	Stainless steel (A182-F316)
17	Nut	Stainless steel (INOX AISI 304 (¼" -2")) Carbon steel (2 ½"-3"- 4")

Note: Product information is correct at time of printing

Series 331/80

AVK Stainless Steel 3 Way Flanged Ball Valve



Use

Isolation, diversion and mixing of Biogas

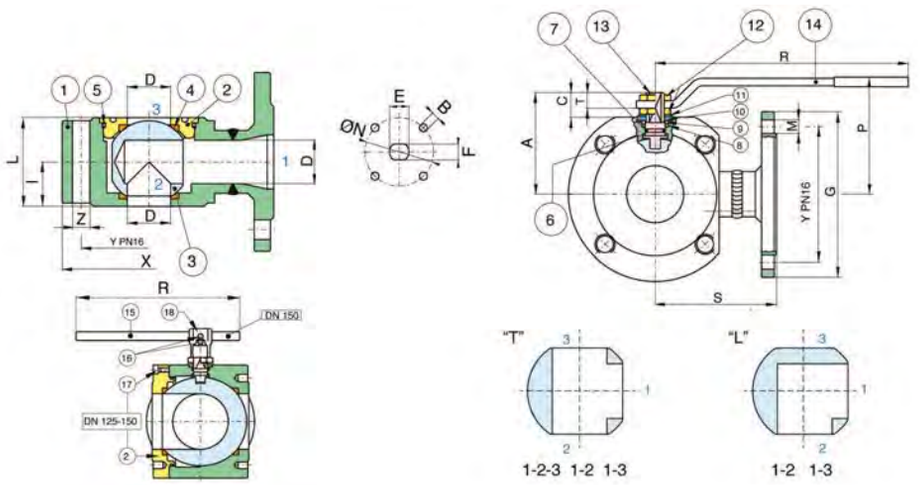
Features and benefits

- Reduced bore
- 2-Piece design
- End connections flanged PN16
- Blow-out proof stem/full bore
- ASTM A351 CF8M stainless steel body
- PN16 rated
- Locking device
- ISO 5211 mounting platform
- Compact design

AVK Ref	Size	DN	R	P	G	D	S	PN	Weight
	Inch	mm							Kg
331/80	½"	15	131.5	64.5	95	10	76	16	2.23
331/80	¾"	20	131.5	67	105	15	82	16	2.86
331/80	1"	25	174.5	79	115	20	86	16	3.89
331/80	1¼"	32	250.5	84	140	25	100	16	6.21
331/80	1½"	40	250.5	102.5	145	32	105	16	8.50
331/80	2"	50	321.5	109	165	40	115	16	12.27
331/80	2½"	65	321.5	128	185	50.2	125	16	19.10
331/80	3"	80	381.5	136.5	200	64	150	16	24.34
331/80	4"	100	381.5	155.5	220	76	159	16	38.45
331/80	5"	125	381.5	178.5	250	100	190	16	63
331/80	6"	150	700	252	284	125	210	16	108

Options

- Alternative flange drillings
- Carbon steel body
- Full range of pneumatic and electric actuation
- Gearbox and switch box options



Size

DN15 - 150

Pressure

PN16

Temperature Range

-20°C to +160°C

Body

Stainless steel

Approvals

BS21
ANSIB2.1

Materials of Construction

No.	Description	Material
1	Body	Stainless steel (A182-F316)
2	End connection	Stainless steel (A182-F316)
3	Ball	Stainless steel (A351-CF8M)
4	Ball seat	PTFE
5	O-ring	FKM (VITON)
6	Thrust washer	PTFE
7	O-ring	FKM (VITON)
8	Stem seat	PTFE
9	Packing gland	Carbon steel

No.	Description	Material
10	End stop	Stainless steel (INOX AISI 430 DN 15-5) Carbon steel (DN65-DN100)
11	Spring washer	Carbon steel
12	Nut	Carbon steel
13	Stem	Stainless steel (A182-F316)
14	Handle	Carbon steel
15	Handle DN150	Carbon steel
16	Screw	Carbon steel
17	Screw	Carbon steel
18	Body handle DN150	EN-GJL 250

Note: Product information is correct at time of printing

BUTTERFLY VALVES

Series 75/10-033

AVK Wafer Concentric Butterfly Valve

Use

Isolation of Biogas

Features and benefits

- Wafer pattern design
- Bonded vulcanised rubber lining
- Low torque operation
- Streamlined disc shape
- ISO top flange as standard
- Bi-directional shut-off seat
- Suitable for high cycling frequency
- For installation between flanges

Options

- Anti static design in accordance with EN 736/3 and API 609
- Available in varying materials to suit application type

Size

DN40 - 1400

Pressure

PN6/10/16

Temperature Range

-30°C to + 110°C

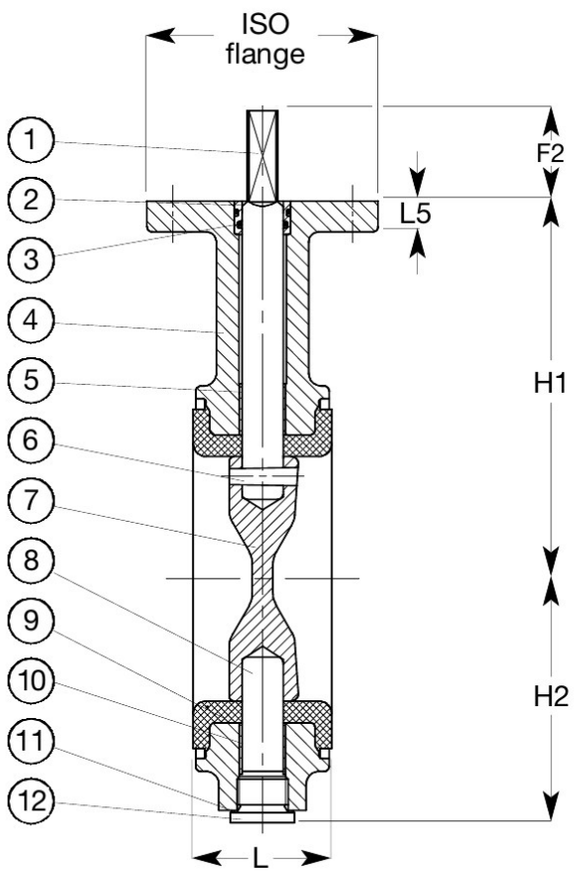
Body

Ductile iron / Cast iron

Approvals

EN 10204 - 2.2, 3.1, 3.2
EN 558 Series 20

AVK Ref	DN	PN	L	H1	H2	F2	L5	ISO Flange	Weight
	mm								Kg
75-0050-10-1010026000	50	PN16	43	118	63	34	12	90	2.6
75-0065-10-1010026000	65	PN16	46	126	71	34	12	90	3.2
75-0080-10-1010026000	80	PN16	46	133	78	34	12	90	3.5
75-0250-10-1010013000	250	PN10	68	245	194	45	14	125	22
75-0300-10-1010013000	300	PN10	78	270	219	45	15	125	32
75-0350-10-1010013000	350	PN10	78	315	256	45	15	125	40
75-0400-10-1010013000	400	PN10	102	363	308	50	25	175	75
75-0400-10-1010023000	400	PN10	102	363	308	50	25	175	75
75-0450-10-1010013000	450	PN10	114	388	334	50	25	175	90
75-0450-10-1010023000	450	PN10	114	388	334	50	25	175	90
75-0500-10-1010013000	500	PN10	127	413	360	50	25	175	120
75-0500-10-1010023000	500	PN10	127	413	360	50	25	175	120
75-0600-10-1010013000	600	PN10	154	510	426	50	25	175	180
75-0600-10-1010023000	600	PN10	154	510	426	50	25	175	180



Materials of Construction

No.	Description	Material
1	Shaft	Martensitic stainless steel 1.4057, EN 10088
2	Bush	Bronze
3	O-ring	NBR
4	Body	Cast iron JL 1040, EN 1561
5	Bearing	St. / PTFE lining
6	Conical pin	Martensitic stainless steel 1.4057, EN 10088
7	Disc	Martensitic stainless steel 1.4057, EN 10088
8	Shaft	Martensitic stainless steel 1.4057, EN 10088
9	Lining	NBR
10	Sealing ring	Cu
11	Plug	St./Zn5C

Note: Product information is correct at time of printing

Series 600205

AVK Lugged Type Butterfly Valve

Use

Isolation of Biogas

Features and benefits

- Lugged design
- Rubber lining
- Low torque operation
- Stretched streamlined disc shape
- ISO top flange as standard
- Bi-directional shut-off seat
- Suitable for high cycling frequency

Options

- Lever operation
- Gearbox for above ground duty with handwheel
- Electric and pneumatic actuation
- Full range of flange adaptors and dismantling joints
- Seat options

AVK Ref	DN	H	A	B	L	OF	OP	OR	Kv	PN	Weight
	mm										Kg
600205	40	204	112	70	162	41	145	68	68,0	16	2,78
600205	50	236,1	142,7	71,4	267	52,25	165	73,3	99,0	16	3,90
600205	65	255,2	155,4	77,8	267	64,05	185	86	169,0	16	4,72
600205	80	272,8	161,8	89	267	78,65	200	100,9	260,0	16	5,32
600205	100	302	178	102	267	104,15	220	132	516,0	16	7,94
600205	125	335,5	190,5	123	267	123,35	250	156	879,0	16	10,48
600205	150	365,2	205,2	138	267	155,85	285	185,4	1358,0	16	12,06
600205	200	439,5	237	168	358	202,55	340	235,2	2697,0	16	21,12
600205	250	509,8	268,3	207	358	250,55	405	289,4	4592,0	16	32,23
600205	300**	586,5	308,5	243,5	358	301,65	460	341,2	7095,0	16	47,05
600205	350 *	-	368	259	-	341,7	524	-	10249	16	-
600205	400*	-	400	309	-	397,5	589,5	-	14094	16	-
600205	450 *	-	422	327	-	448,4	634	-	18666	16	-
600205	500 *	-	480	361	-	499	704	-	24001	16	-
600205	600 *	-	562	459	-	600,1	830	-	37080	16	-

Notes

* Gear operator included
**Advised to use with a gear operator

Size

DN40 - 600

Pressure

PN19/16

Temperature Range

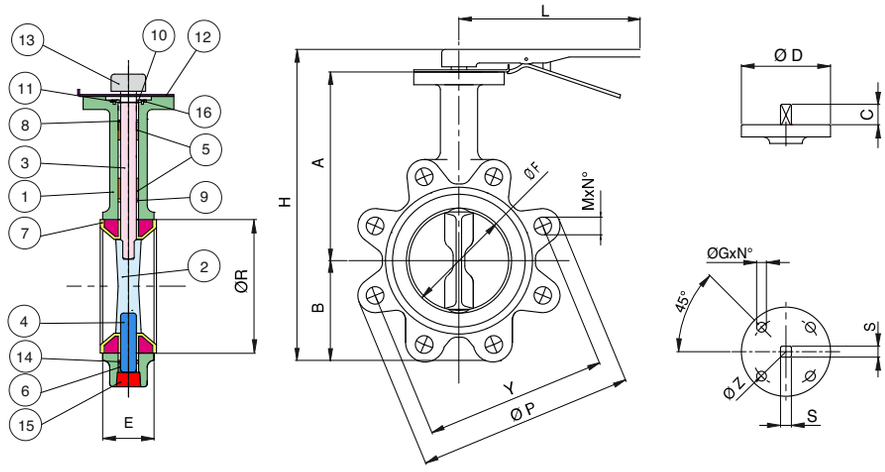
-10°C to +70°C
Seat specific

Body

Ductile iron

Approvals

BS EN 593
EN 558 Series 20



Materials of Construction

No.	Description	Material
1	Body	Ductile iron EN-GJS 400
2	Disc	Ductile iron EN-GJS 400
3	Stem	Stainless steel 416
4	Stem	Stainless steel 416
5	Stem seat	PTFE
6	Stem seat	PTFE
7	Seat	NBR
8	O-ring	NBR

No.	Description	Material
9	O-ring	NBR
10	Washer	Carbon steel
11	Circlip	Spring steel
12	Retainer	Carbon steel
13	Lever	Ductile iron EN-GJL 250
14	O-ring	NBR
15	Cap	Carbon steel
16	Screw	Carbon steel

Note: Product information is correct at time of printing

NON-RETURN VALVE

Series 642

Dual Plate Flangeless Wafer Type Check Valve

Use	Isolation of Biogas / Biomethane (Renewable Natural Gas)

Features and benefits

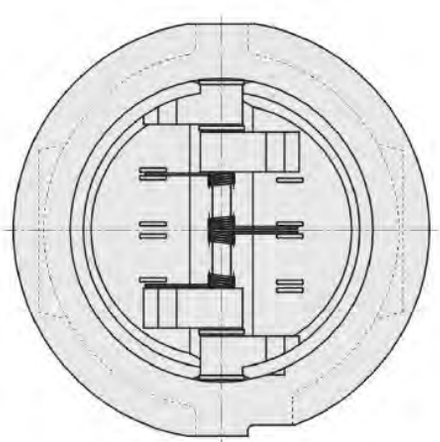
- Differential pressure to open - 0.02 bar
- Spring assisted to ensure closure
- Wafer pattern to suit multiple flange drillings
- Lifting eye for ease of installation
- Compact, robust design
- Vertical or horizontal installation
- Bonded seat

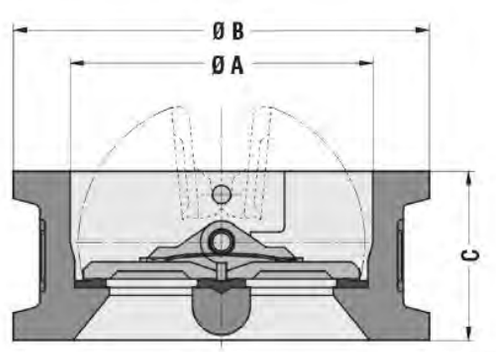
Options

- Anti static design in accordance with EN 736/3 and API 609
- Available in varying materials to suit application type

Size	DN50 - 600
Pressure	PN16
Temperature Range	-30°C to + 110°C
Body	Cast iron
Approvals	EN 19 MSS SP 25 EN10204 - 2.2, 3.1, 3.2

AVK Ref	DN	A	B	C	Weight
	mm				Kg
642-0050-6021680560000	50	67	100	43	1.3
642-0065-6021680560000	65	84	118	46	1.8
642-0080-6021680560000	80	100	140	64	3.5
642-0100-6021680560000	100	115	158	64	4.5
642-0125-6021680560000	125	135	188	70	6.5
642-0150-6021680560000	150	160	212	76	8.5
642-0200-6021680560000	200	210	268	89	13
642-0250-6021680560000	250	256	325	114	24
642-0300-6021680560000	300	306	375	114	36
642-0350-6021680560000	350	356	430	127	45
642-0400-6021680560000	400	406	475	140	60
642-0450-6021680560000	450	466	554	152	85
642-0500-6021680560000	500	486	620	152	105
642-0600-6021680560000	600	600	733	178	150





Materials of Construction

No.	Description	Material
1	Body	Cast iron JL 1040, EN 1561
2	Seat	NBR
3	Disc	Austenitic stainless steel 1.4408, EN 10213
4	Plug	Bronze
5	Sealing	NBR
6	Shaft	Martensitic stainless steel 1.4408, EN 10213

No.	Description	Material
7	Spring	Martensitic stainless steel 1.4408, EN 10213
8	Stop pin	Martensitic stainless steel 1.4408, EN 10213
9	Washer	Stainless steel A4
10	Seal	NBR
11	Plug	Stainless steel A4
12	Lifting eye bolt	St/Zn5C

Note: Product information is correct at time of printing

ACTUATORS

Pneumatic Actuators

Use	Suitable for the automation of ball and butterfly valves

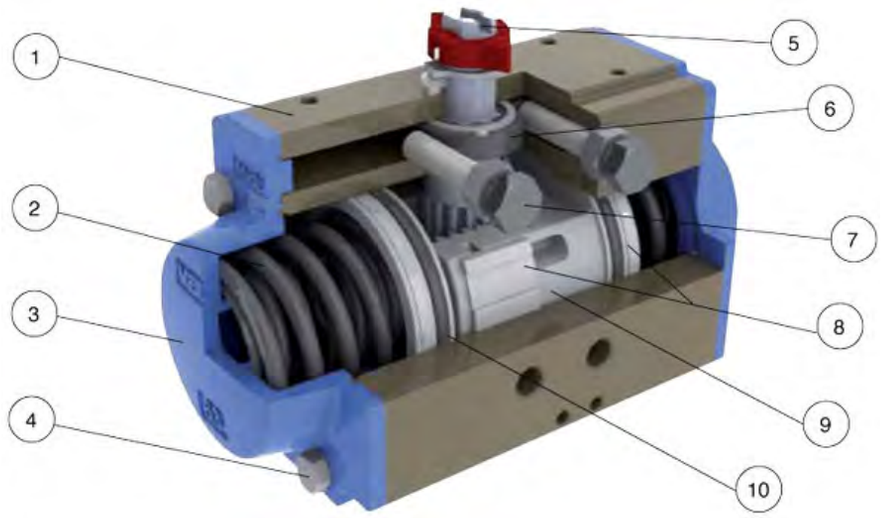
Features and benefits

- Available in spring return or double acting versions
- 0°-90° standard rotation or 0°-180° option
- Patented design
- Special finishes nickel-plating or P.T.F.E coated for corrosive environments upon request
- IP67 rated enclosure
- Namur solenoid and switchbox connections
- ISO5211 mounting platform
- NBR seals as standard
- High temperature viton option
- Low temperature silicone option
- Visible position indicator
-
- **Series 82** - aluminium with 0°-90° rotation
- **Series 83** - aluminium with 0°-180° rotation
- **Series 84** - stainless steel with 0°-90° rotation

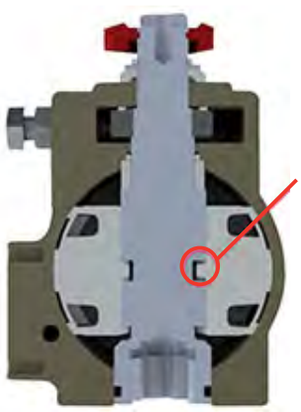
Size	Dependant on valve torque
Body	Aluminium or stainless steel
Pressure	Max 8 bar

Components

No.	Description
1	Body manufactured from extruded aluminium uni 6060
2	Concentric spring sets
3	Die cast aluminium end caps
4	Assembling screws
5	Pinion made in steel
6	Cam for limit position adjustment 0°-90°
7	0-90° adjustment screws
8	Piston guides in pom
9	Pistons made from die cast aluminium
10	Seals



ANTI-BLOWOUT SYSTEM



Piston provided with anti-blowout flat key

MOUNTING VARIATIONS

View from the top of the pinion

Closed **Open**

Counterclockwise rotation

Clockwise rotation

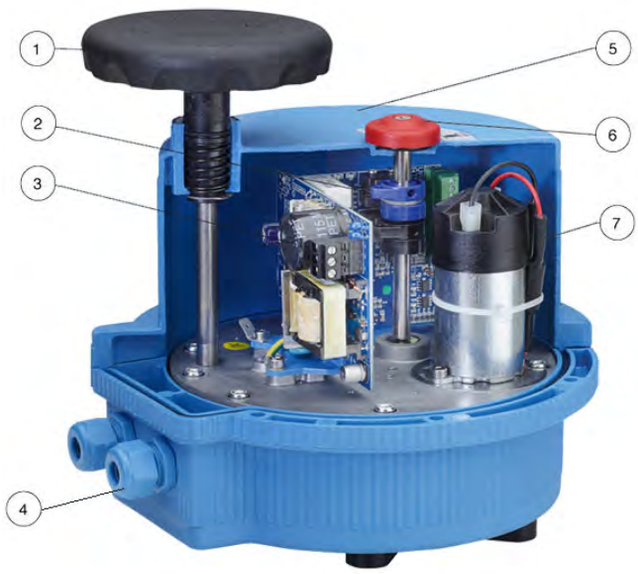
Note: Product information is correct at time of printing

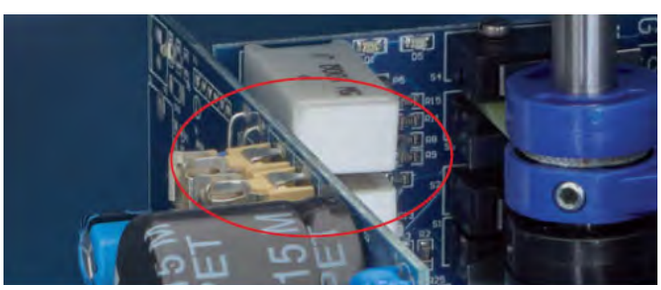
Electric Actuators

Use	Suitable for the automation of ball and butterfly valves
Features and benefits	• Available with different voltages of power supply (12/24V/100-240V) • Available with different frequency (50/60 Hz) • Electronic circuit uses latest generation components • Automatic motor speed adjustment according to load variations • Maximum torque control (torque limiter) electronic system and heater with the thermostat circuit, as standard • Actuators are equipped with a die-cast and painted aluminium plate per ISO5211-DIN3337 standard • Anti-condensation heater • IP67 rated enclosure • ATEX versions available • Manual override • **Series 85** - with a self-extinguish technopolymer enclosure • **Series 86** - with a die-cast aluminium enclosure coated with polyester powder
Size	Dependant on valve torque
Body	Technopolymer or die-cast aluminium
Approvals	CE and UL certifications

Components

No.	Description
1	Manual handwheel
2	Control board
3	Power supply board
4	PG 11 electric connections
5	Self-extinguish technology enclosure
6	Position indicator
7	DC motor





Heating resistor
Managed by the control board to guarantee the right internal temperature

Position cams

- Black cams: limit switches open and close adjustment.
- Blue cams: free limit switches open and close adjustment.

LED lights to indicate:
Power supply ON (green), actuator working conditions (yellow) and fault (red).

Note: Product information is correct at time of printing

ENGINEERING INFORMATION SECTION

CONVERSION CHARTS

Source - https://www.isa.org/

Length Units

Millimetres	Centimetres	Meters	Kilometres	Inches	Feet	Yards	Miles
mm	cm	m	km	in	ft	yd	mi
1	0.1	0.001	0.000001	0.03937	0.003281	0.001094	6.21E-07
10	1	0.01	0.00001	0.393701	0.032808	0.010936	0.000006
1000	100	1	0.001	39.37008	3.28084	1.093613	0.000621
1000000	100000	1000	1	39370.08	3280.84	1093.613	0.621371
25.4	2.54	0.0254	0.000025	1	0.083333	0.027778	0.000016
304.8	30.48	0.3048	0.000305	12	1	0.333333	0.000189
914.4	91.44	0.9144	0.000914	36	3	1	0.000568
1609344	160934.4	1609.344	1.609344	63360	5280	1760	1

Area Units

Millimetre square	Centimetre square	Meter square	Inch square	Foot square	Yard square
mm^2	cm^2	m^2	in^2	ft^2	yd^2
1	0.01	0.000001	0.00155	0.000011	0.000001
100	1	0.0001	0.155	0.001076	0.00012
1000000	10000	1	1550.003	10.76391	1.19599
645.16	6.4516	0.000645	1	0.006944	0.000772
92903	929.0304	0.092903	144	1	0.111111
836127	8361.274	0.836127	1296	9	1

Volume Units

Centimetre cube	Metre cube	Litre	Inch cube	Foot cube	US gallons	Imperial gallons	US barrel (oil)
cm^3	m^3	ltr	in^3	ft^3	US gal	Imp. gal	US brl
1	0.000001	0.001	0.061024	0.000035	0.000264	0.00022	0.000006
1000000	1	1000	61024	35	264	220	6.29
1000	0.001	1	61	0.035	0.264201	0.22	0.00629
16.4	0.000016	0.016387	1	0.000579	0.004329	0.003605	0.000103
28317	0.028317	28.31685	1728	1	7.481333	6.229712	0.178127
3785	0.003785	3.79	231	0.13	1	0.832701	0.02381
4545	0.004545	4.55	277	0.16	1.20	1	0.028593
158970	0.15897	159	9701	6	42	35	1

Mass Units

Grams	Kilograms	Metric tonnes	Short ton	Long ton	Pounds	Ounces
g	kg	tonne	shton	Lton	lb	oz
1	0.001	0.000001	0.000001	9.84E-07	0.002205	0.035273
1000	1	0.001	0.001102	0.000984	2.204586	35.27337
1000000	1000	1	1.102293	0.984252	2204.586	35273.37
907200	907.2	0.9072	1	0.892913	2000	32000
1016000	1016	1.016	1.119929	1	2239.859	35837.74
453.6	0.4536	0.000454	0.0005	0.000446	1	16
28	0.02835	0.000028	0.000031	0.000028	0.0625	1

Note: Product information is correct at time of printing

Density Units

Gram/millilitre	Kilogram/metre cube	Pound/foot cube	Pound/inch cube
g/ml	kg/m3	lb/ft3	lb/in3
1	1000	62.42197	0.036127
0.001	1	0.062422	0.000036
0.01602	16.02	1	0.000579
27.68	27680	1727.84	1

Volumetric Liquid Flow Units

Litre/second	Litre/minute	Metre cube/hour	Foot cube/minute	Foot cube/hour	US gallons/ minute	US barrels (oil)/ day
L/sec	L/min	M3/hr	ft3/min	ft3/hr	gal/min	US brl/d
1	60	3.6	2.119093	127.1197	15.85037	543.4783
0.016666	1	0.06	0.035317	2.118577	0.264162	9.057609
0.277778	16.6667	1	0.588637	35.31102	4.40288	150.9661
0.4719	28.31513	1.69884	1	60	7.479791	256.4674
0.007867	0.472015	0.02832	0.01667	1	0.124689	4.275326
0.06309	3.785551	0.227124	0.133694	8.019983	1	34.28804
0.00184	0.110404	0.006624	0.003899	0.2339	0.029165	1

Volumetric Gas Flow Units

Normal metre cube/hour	Standard cubic feet/hour	Standard cubic feet/minute
Nm3/hr	scfh	scfm
1	35.31073	0.588582
0.02832	1	0.016669
1.699	59.99294	1

Speed Units

Metre/second	Meter/minute	Kilometre/hour	Foot/second	Foot/minute	Miles/hour
m/s	m/min	km/h	ft/s	ft/min	mi/h
1	59.988	3.599712	3.28084	196.8504	2.237136
0.01667	1	0.060007	0.054692	3.281496	0.037293
0.2778	16.66467	1	0.911417	54.68504	0.621477
0.3048	18.28434	1.097192	1	60	0.681879
0.00508	0.304739	0.018287	0.016667	1	0.011365
0.447	26.81464	1.609071	1.466535	87.99213	1

Note: Product information is correct at time of printing

CONVERSION CHARTS

Source - https://www.isa.org/

High Pressure Units

Bar	Pound/square inch	Kilopascal	Megapascal	Kilogram force/ centimetre square	Millimetre of mercury	Atmospheres
bar	psi	kPa	MPa	kgf/cm2	mm Hg	atm
1	14.50326	100	0.1	1.01968	750.0188	0.987167
0.06895	1	6.895	0.006895	0.070307	51.71379	0.068065
0.01	0.1450	1	0.001	0.01020	7.5002	0.00987
10	145.03	1000	1	10.197	7500.2	9.8717
0.9807	14.22335	98.07	0.09807	1	735.5434	0.968115
0.001333	0.019337	0.13333	0.000133	0.00136	1	0.001316
1.013	14.69181	101.3	0.1013	1.032936	759.769	1
1609344	160934.4	1609.344	1.609344	63360	5280	1760

Low Pressure Units

Meter of water	Foot of water	Centimetre of mercury	Inches of mercury	Inches of water	Pascal
mH2O	ftH2O	cmHg	inHg	inH2O	Pa
1	3.280696	7.356339	2.896043	39.36572	9806
0.304813	1	2.242311	0.882753	11.9992	2989
0.135937	0.445969	1	0.39368	5.351265	1333
0.345299	1.13282	2.540135	1	13.59293	3386
0.025403	0.083339	0.186872	0.073568	1	249.1
0.000102	0.000335	0.00075	0.000295	0.004014	1

Pressure Conversion Chart

bar	psi	kPa	MPa
0.1	1.5	10	0.01
0.2	2.9	20	0.02
0.3	4.4	30	0.03
0.4	5.8	40	0.04
0.5	7.3	50	0.05
0.6	8.7	60	0.06
0.7	10.2	70	0.07
0.8	11.6	80	0.08
0.9	13.1	90	0.09
1	14.5	100	0.1
2	29	200	0.2
3	43.5	300	0.3
4	58	400	0.4
5	72.5	500	0.5
6	87	600	0.6
7	101.5	700	0.7
8	116	800	0.8
9	130.5	900	0.9
10	145	1,000	1
20	290	2,000	2

bar	psi	kPa	MPa
30	435	3,000	3
40	580	4,000	4
50	725	5,000	5
60	870	6,000	6
70	1,015	7,000	7
80	1,160	8,000	8
90	1,305	9,000	9
100	1,450	10,000	10
200	2,900	20,000	20
300	4,350	30,000	30
400	5,800	40,000	40
500	7,250	50,000	50
600	8,700	60,000	60
700	10,150	70,000	70
800	11,600	80,000	80
900	13,050	90,000	90
1,000	14,500	100,000	100
1,100	15,950	110,000	110
1,200	17,400	120,000	120
1,300	18,850	130,000	130

Torque Units

Newton metre	Kilogram force metre	Foot pound	Inch pound
Nm	kgfm	ftlb	inlb
1	0.101972	0.737561	8.850732
9.80665	1	7.233003	86.79603
1.35582	0.138255	1	12
0.112985	0.011521	0.083333	1

Temperature Conversion Formulas

Degree Celsius (°C)	(°F - 32) x 5/9
	(K - 273.15)
Degree Fahrenheit (°F)	(°C x 9/5) + 32
	(1.8 x K) - 459.67
Kelvin (K)	(°C + 273.15)
	(°F + 459.67) ÷ 1.8

Temperature Conversion Chart

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
-17.8	0	-1.1	30	15.6	60	32.2	90	48.9	120
-17.2	1	-0.6	31	16.1	61	32.8	91	49.4	121
-16.7	2	0.0	32	16.7	62	33.3	92	50.0	122
-16.1	3	0.6	33	17.2	63	33.9	93	50.6	123
-15.6	4	1.1	34	17.8	64	34.4	94	51.1	124
-15.0	5	1.7	35	18.3	65	35.0	95	51.7	125
-14.4	6	2.2	36	18.9	66	35.6	96	52.2	126
-13.9	7	2.8	37	19.4	67	36.1	97	52.8	127
-13.3	8	3.3	38	20.0	68	36.7	98	53.3	128
-12.8	9	3.9	39	20.6	69	37.2	99	53.9	129
-12.2	10	4.4	40	21.1	70	37.8	100	54.4	130
-11.7	11	5.0	41	21.7	71	38.3	101	60.0	140
-11.1	12	5.6	42	22.2	72	38.9	102	65.6	150
-10.6	13	6.1	43	22.8	73	39.4	103	71.1	160
-10.0	14	6.7	44	23.3	74	40.0	104	76.7	170
-9.4	15	7.2	45	23.9	75	40.6	105	82.2	180
-8.9	16	7.8	46	24.4	76	41.1	106	87.8	190
-8.3	17	8.3	47	25.0	77	41.7	107	93.3	200
-7.8	18	8.9	48	25.6	78	42.2	108	96.7	206
-7.2	19	9.4	49	26.1	79	42.8	109	100.0	212
-6.7	20	10.0	50	26.7	80	43.3	110	148.9	300
-6.1	21	10.6	51	27.2	81	43.9	111	176.7	350
-5.6	22	11.1	52	27.8	82	44.4	112	204.4	400
-5.0	23	11.7	53	28.3	83	45.0	113	232.2	450
-4.4	24	12.2	54	28.9	84	45.6	114	260.0	500
-3.9	25	12.8	55	29.4	85	46.1	115	315.6	600
-3.3	26	13.3	56	30.0	86	46.7	116	371.1	700
-2.8	27	13.9	57	30.6	87	47.2	117	426.7	800
-2.2	28	14.4	58	31.1	88	47.8	118	482.2	900
-1.7	29	15.0	59	31.7	89	48.3	119	537.8	1000

Note: Product information is correct at time of printing

CHEMICAL COMPATIBILITY CHART

Source - www.coleparmer.co.uk/chemical-resistance

	Material Selection						
Chemical	EPDM	NBR	FKM	PTFE	Cast / Ductile Iron	Cast Steel A216	Stainless Steel 316
Acetaldehyde	A - Excellent	D - Poor	D - Poor	A - Excellent	C - Fair	D - Poor	A - Excellent
Acetamide	A - Excellent	A - Excellent	B - Good	A - Excellent	D - Poor	N/A	A - Excellent
Acetate Solvent	A - Excellent	C - Fair	D - Poor	A - Excellent	D - Poor	D - Poor	A - Excellent
Acetic Acid	A - Excellent	C - Fair	D - Poor	A - Excellent	D - Poor	D - Poor	B - Good
Acetic Acid 20%	A - Excellent	B - Good	C - Fair	A - Excellent	D - Poor	D - Poor	A - Excellent
Acetic Acid 80%	A - Excellent	C - Fair	D - Poor	A - Excellent	D - Poor	D - Poor	B - Good
Acetic Acid, Glacial	B - Good	C - Fair	D - Poor	A - Excellent	D - Poor	D - Poor	A - Excellent
Acetic Anhydride	B - Good	D - Poor	D - Poor	A - Excellent	D - Poor	D - Poor	A - Excellent
Acetone	A - Excellent	D - Poor	D - Poor	A - Excellent	A - Excellent	B - Good	A - Excellent
Acetyl Bromide	N/A	N/A	N/A	A - Excellent	N/A	N/A	N/A
Acetyl Chloride (dry)	D - Poor	D - Poor	A - Excellent	A - Excellent	B - Good	A - Excellent	A - Excellent
Acetylene	A - Excellent	B - Good	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Acrylonitrile	D - Poor	D - Poor	D - Poor	A - Excellent	A1 - Excellent	A - Excellent	A1 - Excellent
Adipic Acid	A2 - Excellent	C - Fair	A - Excellent	A - Excellent	A - Excellent	B - Good	A2 - Excellent
Alcohols: Amyl	A - Excellent	B - Good	A - Excellent	A - Excellent	B - Good	B - Good	A - Excellent
Alcohols: Benzyl	B - Good	D - Poor	A - Excellent	A - Excellent	B - Good	B - Good	B - Good
Alcohols: Butyl	A2 - Excellent	C - Fair	A - Excellent	A - Excellent	B - Good	B - Good	A - Excellent
Alcohols: Diacetone	A - Excellent	D - Poor	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Alcohols: Ethyl	A - Excellent	C - Fair	A - Excellent	A - Excellent	B - Good	B - Good	A - Excellent
Alcohols: Hexyl	C - Fair	A - Excellent	B - Good	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Alcohols: Isobutyl	A - Excellent	B - Good	A - Excellent	A2 - Excellent	C - Fair	B - Good	A - Excellent
Alcohols: Isopropyl	A - Excellent	B - Good	A - Excellent	A2 - Excellent	A - Excellent	A - Excellent	B - Good
Alcohols: Methyl	A - Excellent	A - Excellent	C - Fair	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Alcohols: Octyl	A - Excellent	B - Good	B - Good	N/A	A - Excellent	N/A	A - Excellent
Alcohols: Propyl	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Aluminum Chloride	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	A - Excellent	B - Good
Aluminum Chloride 20%	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	N/A	C1 - Fair
Aluminum Fluoride	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	D - Poor
Aluminum Hydroxide	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	C1 - Fair
Aluminum Nitrate	A2 - Excellent	A2 - Excellent	A - Excellent	A - Excellent	N/A	D - Poor	A - Excellent
Aluminum Potassium Sulfate 10%	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	C - Fair	A - Excellent
Aluminum Potassium Sulfate 100%	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	B2 - Good
Aluminum Sulfate	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	B2 - Good
Alums	A1 - Excellent	A - Excellent	D - Poor	A - Excellent	D - Poor	N/A	A - Excellent
Amines	B - Good	D - Poor	D - Poor	A2 - Excellent	D - Poor	B - Good	A - Excellent
Ammonia 10%	A - Excellent	A - Excellent	D - Poor	A - Excellent	A - Excellent	N/A	A - Excellent
Ammonia Nitrate	A - Excellent	C - Fair	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent
Ammonia, anhydrous	A - Excellent	B - Good	D - Poor	A - Excellent	A - Excellent	B - Good	A2 - Excellent
Ammonia, liquid	A - Excellent	C - Fair	D - Poor	A - Excellent	A - Excellent	A - Excellent	A2 - Excellent
Ammonium Acetate	A - Excellent	B - Good	A - Excellent	A - Excellent	N/A	N/A	A - Excellent
Ammonium Bifluoride	A2 - Excellent	B - Good	A - Excellent	A - Excellent	D - Poor	D - Poor	B1 - Good
Ammonium Carbonate	A - Excellent	B - Good	A - Excellent	A - Excellent	B - Good	B - Good	B - Good
Ammonium Caseinate	N/A	N/A	N/A	N/A	N/A	N/A	A - Excellent
Ammonium Chloride	A - Excellent	B - Good	A - Excellent	A - Excellent	D - Poor	D - Poor	B2 - Good
Ammonium Hydroxide	A - Excellent	D - Poor	B - Good	A - Excellent	D - Poor	D - Poor	A1 - Excellent
Ammonium Nitrate	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	D - Poor	A - Excellent
Ammonium Oxalate	A - Excellent	D - Poor	N/A	N/A	D - Poor	N/A	A - Excellent
Ammonium Persulfate	B - Good	A - Excellent	A - Excellent	A1 - Excellent	D - Poor	D - Poor	B - Good
Ammonium Phosphate, Dibasic	A - Excellent	A - Excellent	A - Excellent	A2 - Excellent	D - Poor	D - Poor	C - Fair
Ammonium Phosphate, Monobasic	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	N/A	C - Fair

Note: Product information is correct at time of printing

Ratings - Chemical Effect
A - Excellent
B - Good: Minor Effect, slight corrosion, or discoloration.
C - Fair: Moderate Effect, not recommended for continuous use. Softening or loss of strength, and swelling may occur.
D - Severe Effect: Not recommended for any use.
E - Information not available.

Explanation of Footnotes
1 - Satisfactory to 72oF (22oC)
2 - Satisfactory to 120oF (48oC)

	Material Selection						
Chemical	EPDM	NBR	FKM	PTFE	Cast / Ductile Iron	Cast Steel A216	Stainless Steel 316
Ammonium Phosphate, Tribasic	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	N/A	B - Good
Ammonium Sulfate	A - Excellent	A - Excellent	D - Poor	A - Excellent	D - Poor	D - Poor	B - Good
Ammonium Sulfite	A1 - Excellent	A1 - Excellent	A - Excellent	A2 - Excellent	D - Poor	D - Poor	B - Good
Ammonium Thiosulfate	A1 - Excellent	A - Excellent	A - Excellent	N/A	D - Poor	N/A	A - Excellent
Amyl Acetate	A - Excellent	D - Poor	D - Poor	A - Excellent	C - Fair	C - Fair	A - Excellent
Amyl Alcohol	A - Excellent	B - Good	A - Excellent	A - Excellent	B - Good	B - Good	A - Excellent
Amyl Chloride	D - Poor	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A2 - Excellent
Aniline	B - Good	D - Poor	A - Excellent	A - Excellent	C - Fair	A - Excellent	B - Good
Aniline Hydrochloride	B - Good	D - Poor	B - Good	A - Excellent	D - Poor	D - Poor	D - Poor
Antifreeze	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent	N/A	A - Excellent
Antimony Trichloride	B1 - Good	B - Good	A - Excellent	A - Excellent	N/A	D - Poor	D - Poor
Aqua Regia (80% HCl, 20% HNO3)	C - Fair	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	D - Poor
Arochlor 1248	B - Good	C1 - Fair	A - Excellent	A - Excellent	B - Good	N/A	B - Good
Aromatic Hydrocarbons	D - Poor	D - Poor	A - Excellent	N/A	A - Excellent	N/A	C - Fair
Arsenic Acid	A2 - Excellent	A2 - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	A2 - Excellent
Arsenic Salts	N/A	N/A	B - Good	N/A	N/A	N/A	N/A
Asphalt	D - Poor	B - Good	A - Excellent	A1 - Excellent	A - Excellent	B - Good	A - Excellent
Barium Carbonate	A - Excellent	A2 - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	B - Good
Barium Chloride	A - Excellent	A - Excellent	A - Excellent	A - Excellent	C - Fair	C - Fair	A1 - Excellent
Barium Cyanide	A - Excellent	C - Fair	A - Excellent	A1 - Excellent	C1 - Fair	B - Good	A2 - Excellent
Barium Hydroxide	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	A - Excellent	B - Good
Barium Nitrate	A - Excellent	A2 - Excellent	A - Excellent	A1 - Excellent	A - Excellent	C - Fair	B - Good
Barium Sulfate	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	A - Excellent	B1 - Good
Barium Sulfide	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	B2 - Good
Beer	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	C - Fair	A - Excellent
Beet Sugar Liquids	A - Excellent	A - Excellent	A - Excellent	A1 - Excellent	A - Excellent	B - Good	A - Excellent
Benzaldehyde	A - Excellent	D - Poor	D - Poor	A1 - Excellent	A - Excellent	B - Good	B - Good
Benzene	D - Poor	D - Poor	D - Poor	A - Excellent	A - Excellent	A - Excellent	B - Good
Benzene Sulfonic Acid	D - Poor	D - Poor	D - Poor	A - Excellent	N/A	D - Poor	B - Good
Benzoic Acid	D - Poor	D - Poor	A - Excellent	A2 - Excellent	D - Poor	D - Poor	B - Good
Benzol	D - Poor	D - Poor	B - Good	A - Excellent	A - Excellent	B - Good	A1 - Excellent
Benzonitrile	N/A	N/A	N/A	A2 - Excellent	N/A	N/A	D - Poor
Benzyl Chloride	D - Poor	D - Poor	A - Excellent	N/A	N/A	D - Poor	B1 - Good
Bleaching Liquors	A - Excellent	D - Poor	A - Excellent	A - Excellent	N/A	N/A	N/A
Borax (Sodium Borate)	A - Excellent	B - Good	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Boric Acid	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	A1 - Excellent
Brewery Slop	N/A	A - Excellent	N/A	N/A	A - Excellent	N/A	A - Excellent
Bromine	D - Poor	D - Poor	A - Excellent	A - Excellent	N/A	D - Poor	D - Poor
Butadiene	C - Fair	D - Poor	B - Good	A2 - Excellent	N/A	A - Excellent	A1 - Excellent
Butane	D - Poor	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent	A2 - Excellent
Butanol (Butyl Alcohol)	A2 - Excellent	A - Excellent	A - Excellent	A2 - Excellent	N/A	B - Good	A1 - Excellent
Butter	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	N/A	A - Excellent
Buttermilk	A1 - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	A - Excellent
Butyl Amine	N/A	N/A	D - Poor	A2 - Excellent	N/A	A - Excellent	A - Excellent
Butyl Ether	D - Poor	B2 - Good	D - Poor	A1 - Excellent	N/A	A - Excellent	A1 - Excellent
Butyl Phthalate	B2 - Good	D - Poor	C - Fair	A2 - Excellent	N/A	D - Poor	B2 - Good
Butylacetate	B - Good	D - Poor	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Butylene	D - Poor	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent	A - Excellent
Butyric Acid	B - Good	D - Poor	B - Good	A2 - Excellent	D - Poor	D - Poor	B2 - Good
Calcium Bisulfate	A - Excellent	A - Excellent	A - Excellent	N/A	D - Poor	N/A	A - Excellent

Note: Product information is correct at time of printing

CHEMICAL COMPATIBILITY CHART

Source - www.coleparmer.co.uk/chemical-resistance

	Material Selection						
Chemical	EPDM	NBR	FKM	PTFE	Cast / Ductile Iron	Cast Steel A216	Stainless Steel 316
Calcium Bisulfide	C - Fair	A1 - Excellent	A - Excellent	A - Excellent	N/A	N/A	B - Good
Calcium Bisulfite	D - Poor	A - Excellent	A - Excellent	A - Excellent	N/A	D - Poor	A - Excellent
Calcium Carbonate	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	B - Good	B - Good
Calcium Chlorate	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	N/A	N/A
Calcium Chloride	A - Excellent	A - Excellent	A - Excellent	A - Excellent	C - Fair	N/A	B2 - Good
Calcium Hydroxide	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	B - Good
Calcium Hypochlorite	B1 - Good	C1 - Fair	A - Excellent	A - Excellent	D - Poor	D - Poor	B1 - Good
Calcium Nitrate	A2 - Excellent	A2 - Excellent	A - Excellent	A2 - Excellent	B - Good	B - Good	B2 - Good
Calcium Oxide	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	N/A	A - Excellent
Calcium Sulfate	A - Excellent	A2 - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	B - Good
Calgon	A - Excellent	A - Excellent	A - Excellent	N/A	D - Poor	N/A	A - Excellent
Cane Juice	A - Excellent	A - Excellent	N/A	A - Excellent	A - Excellent	N/A	A - Excellent
Carbolic Acid (Phenol)	B - Good	D - Poor	A - Excellent	A - Excellent	D - Poor	N/A	B - Good
Carbon Bisulfide	D - Poor	C - Fair	A - Excellent	N/A	N/A	N/A	B - Good
Carbon Dioxide (dry)	B - Good	A - Excellent	A - Excellent	A - Excellent	D - Poor	A - Excellent	A1 - Excellent
Carbon Dioxide (wet)	B - Good	A - Excellent	B - Good	A - Excellent	D - Poor	C - Fair	A1 - Excellent
Carbon Disulfide	D - Poor	D - Poor	A - Excellent	A - Excellent	A - Excellent	B - Good	B - Good
Carbon Monoxide	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Carbon Tetrachloride	D - Poor	D - Poor	A - Excellent	A - Excellent	D - Poor	N/A	B - Good
Carbon Tetrachloride (dry)	B1 - Good	C1 - Fair	A - Excellent	A - Excellent	N/A	A - Excellent	B2 - Good
Carbon Tetrachloride (wet)	D - Poor	D - Poor	N/A	A - Excellent	C - Fair	B - Good	A2 - Excellent
Carbonated Water	N/A	A - Excellent	A - Excellent	N/A	D - Poor	N/A	A - Excellent
Carbonic Acid	B - Good	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	A - Excellent
Catsup	A - Excellent	A - Excellent	A - Excellent	N/A	D - Poor	N/A	A - Excellent
Chloric Acid	N/A	N/A	N/A	A - Excellent	D - Poor	D - Poor	C1 - Fair
Chlorinated Glue	B - Good	B - Good	N/A	N/A	D - Poor	N/A	A - Excellent
Chlorine (dry)	A - Excellent	B - Good	A - Excellent	A - Excellent	D - Poor	B - Good	B - Good
Chlorine Water	C - Fair	D - Poor	D - Poor	A - Excellent	N/A	D - Poor	C - Fair
Chlorine, Anhydrous Liquid	B - Good	D - Poor	C - Fair	A - Excellent	D - Poor	D - Poor	C - Fair
Chloroacetic Acid	B - Good	D - Poor	C - Fair	A - Excellent	D - Poor	D - Poor	A1 - Excellent
Chlorobenzene (Mono)	D - Poor	D - Poor	A - Excellent	B - Good	B - Good	B - Good	B - Good
Chlorobromomethane	B - Good	D - Poor	A - Excellent	A - Excellent	B - Good	N/A	N/A
Chloroform	D - Poor	D - Poor	B - Good	A1 - Excellent	B - Good	B - Good	A - Excellent
Chlorosulfonic Acid	D - Poor	D - Poor	D - Poor	A - Excellent	D - Poor	D - Poor	B2 - Good
Chocolate Syrup	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	N/A	A - Excellent
Chromic Acid 10%	C - Fair	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	B - Good
Chromic Acid 30%	B - Good	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	B2 - Good
Chromic Acid 5%	A - Excellent	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	A - Excellent
Chromic Acid 50%	B - Good	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	B2 - Good
Chromium Salts	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cider	A - Excellent	A - Excellent	A - Excellent	N/A	D - Poor	N/A	A - Excellent
Citric Acid	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	A2 - Excellent
Citric Oils	B - Good	A - Excellent	A - Excellent	N/A	D - Poor	N/A	A - Excellent
Cloroxr (Bleach)	B - Good	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	A - Excellent
Coffee	A - Excellent	A - Excellent	A - Excellent	N/A	N/A	N/A	A - Excellent
Copper Chloride	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	N/A	D - Poor
Copper Cyanide	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	B - Good
Copper Fluoborate	N/A	B - Good	A - Excellent	N/A	D - Poor	N/A	D - Poor
Copper Nitrate	N/A	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	A2 - Excellent
Copper Sulfate >5%	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	B - Good

Note: Product information is correct at time of printing

Ratings - Chemical Effect
A - Excellent
B - Good: Minor Effect, slight corrosion, or discoloration.
C - Fair: Moderate Effect, not recommended for continuous use. Softening or loss of strength, and swelling may occur.
D - Severe Effect: Not recommended for any use.
E - Information not available.

Explanation of Footnotes
1 - Satisfactory to 72oF (22oC)
2 - Satisfactory to 120oF (48oC)

	Material Selection						
Chemical	EPDM	NBR	FKM	PTFE	Cast / Ductile Iron	Cast Steel A216	Stainless Steel 316
Copper Sulfate 5%	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	B - Good
Cream	N/A	A - Excellent	N/A	A - Excellent	D - Poor	N/A	A - Excellent
Cresols	D - Poor	D - Poor	A - Excellent	N/A	C - Fair	A - Excellent	A - Excellent
Cresylic Acid	D - Poor	D - Poor	B - Good	A - Excellent	A - Excellent	B - Good	A - Excellent
Cupric Acid	A2 - Excellent	B2 - Good	N/A	A - Excellent	N/A	N/A	B2 - Good
Cyanic Acid	N/A	C - Fair	D - Poor	A - Excellent	D - Poor	N/A	A - Excellent
Cyclohexane	D - Poor	B - Good	A - Excellent	A - Excellent	B - Good	A - Excellent	A - Excellent
Cyclohexanone	B - Good	D - Poor	D - Poor	A - Excellent	B - Good	A - Excellent	A2 - Excellent
Detergents	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent	A1 - Excellent
Diacetone Alcohol	A - Excellent	D - Poor	D - Poor	A - Excellent	N/A	A - Excellent	B - Good
Dichlorobenzene	D - Poor	D - Poor	N/A	A - Excellent	N/A	B - Good	B1 - Good
Dichloroethane	N/A	D - Poor	B - Good	A1 - Excellent	N/A	D - Poor	B - Good
Diesel Fuel	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A1 - Excellent
Diethyl Ether	D - Poor	D - Poor	D - Poor	A - Excellent	N/A	B - Good	B2 - Good
Diethylamine	B - Good	C - Fair	D - Poor	D - Poor	B - Good	D - Poor	A - Excellent
Diethylene Glycol	A2 - Excellent	A2 - Excellent	A - Excellent	A2 - Excellent	A - Excellent	A - Excellent	A - Excellent
Dimethyl Aniline	B2 - Good	D - Poor	D - Poor	A - Excellent	N/A	N/A	B2 - Good
Dimethyl Formamide	B - Good	D - Poor	D - Poor	A - Excellent	N/A	D - Poor	B - Good
Diphenyl	D - Poor	D - Poor	A - Excellent	A - Excellent	N/A	B - Good	B - Good
Diphenyl Oxide	D - Poor	A - Excellent	A - Excellent	A1 - Excellent	A - Excellent	B - Good	A - Excellent
Dyes	N/A	N/A	N/A	N/A	N/A	N/A	A - Excellent
Epsom Salts (Magnesium Sulfate)	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	B - Good
Ethane	D - Poor	A - Excellent	A - Excellent	A - Excellent	N/A	N/A	A1 - Excellent
Ethanol	A - Excellent	C - Fair	B - Good	A - Excellent	B - Good	B - Good	A - Excellent
Ethanolamine	B - Good	B - Good	D - Poor	A1 - Excellent	N/A	B - Good	A - Excellent
Ether	C - Fair	D - Poor	D - Poor	A - Excellent	C - Fair	B - Good	A - Excellent
Ethyl Acetate	B - Good	D - Poor	D - Poor	A - Excellent	A - Excellent	B - Good	B - Good
Ethyl Benzoate	N/A	D - Poor	A - Excellent	A - Excellent	N/A	N/A	N/A
Ethyl Chloride	A - Excellent	A - Excellent	A - Excellent	A - Excellent	C - Fair	D - Poor	A - Excellent
Ethyl Ether	D - Poor	D - Poor	D - Poor	A - Excellent	C - Fair	B - Good	B - Good
Ethyl Sulfate	N/A	A - Excellent	D - Poor	A - Excellent	N/A	N/A	D - Poor
Ethylene Bromide	C - Fair	D - Poor	B - Good	A - Excellent	N/A	B - Good	A - Excellent
Ethylene Chloride	D - Poor	D - Poor	B - Good	A - Excellent	N/A	D - Poor	B - Good
Ethylene Chlorohydrin	B - Good	D - Poor	A - Excellent	A - Excellent	N/A	B - Good	B - Good
Ethylene Diamine	A - Excellent	A - Excellent	D - Poor	A - Excellent	N/A	D - Poor	B - Good
Ethylene Dichloride	C - Fair	D - Poor	B - Good	A - Excellent	A - Excellent	A - Excellent	B - Good
Ethylene Glycol	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	B - Good
Ethylene Oxide	C - Fair	D - Poor	D - Poor	A - Excellent	D - Poor	C - Fair	B - Good
Fatty Acids	D - Poor	B - Good	A - Excellent	A - Excellent	C - Fair	C - Fair	A - Excellent
Ferric Chloride	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	D - Poor
Ferric Nitrate	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	D - Poor	B - Good
Ferric Sulfate	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	A - Excellent
Ferrous Chloride	N/A	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	D - Poor
Ferrous Sulfate	A - Excellent	A2 - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	B - Good
Fluoboric Acid	A2 - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	N/A	B - Good
Fluorine	A1 - Excellent	D - Poor	B - Good	D - Poor	D - Poor	D - Poor	A - Excellent
Fluosilicic Acid	A2 - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	B - Good
Formaldehyde 100%	A - Excellent	C - Fair	A - Excellent	A - Excellent	C - Fair	D - Poor	A - Excellent
Formaldehyde 40%	A - Excellent	B - Good	A - Excellent	A - Excellent	B - Good	D - Poor	A - Excellent
Formic Acid	A - Excellent	C - Fair	D - Poor	A - Excellent	D - Poor	D - Poor	A1 - Excellent

Note: Product information is correct at time of printing

CHEMICAL COMPATIBILITY CHART

Source - www.coleparmer.co.uk/chemical-resistance

	Material Selection						
Chemical	EPDM	NBR	FKM	PTFE	Cast / Ductile Iron	Cast Steel A216	Stainless Steel 316
Freon 113	D - Poor	A - Excellent	B - Good	A - Excellent	N/A	N/A	N/A
Freon 12	B - Good	A - Excellent	C - Fair	A - Excellent	A - Excellent	D - Poor	B - Good
Freon 22	A - Excellent	D - Poor	D - Poor	A - Excellent	D - Poor	D - Poor	A - Excellent
Freon TF	D - Poor	A - Excellent	B - Good	A - Excellent	A - Excellent	N/A	A - Excellent
Freonr 11	D - Poor	B - Good	D - Poor	A - Excellent	A - Excellent	D - Poor	A - Excellent
Fruit Juice	N/A	A - Excellent	A - Excellent	A - Excellent	D - Poor	N/A	A - Excellent
Fuel Oils	D - Poor	A - Excellent	A - Excellent	B - Good	A - Excellent	A - Excellent	A - Excellent
Furan Resin	C - Fair	D - Poor	D - Poor	A - Excellent	N/A	A - Excellent	A - Excellent
Furfural	D - Poor	D - Poor	D - Poor	A - Excellent	B - Good	B - Good	B - Good
Gallic Acid	B - Good	B - Good	A - Excellent	B - Good	D - Poor	D - Poor	B - Good
Gasoline (high-aromatic)	D - Poor	A - Excellent	A - Excellent	B - Good	A - Excellent	N/A	A - Excellent
Gasoline, leaded, ref.	D - Poor	A2 - Excellent	A - Excellent	A - Excellent	N/A	B - Good	A2 - Excellent
Gasoline, unleaded	D - Poor	A1 - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	A2 - Excellent
Gelatin	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	A2 - Excellent
Glucose	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	A - Excellent
Glue, P.V.A.	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A2 - Excellent
Glycerin	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Glycolic Acid	A - Excellent	A - Excellent	D - Poor	A - Excellent	N/A	D - Poor	A - Excellent
Gold Monocyanide	N/A	A - Excellent	N/A	D - Poor	D - Poor	N/A	A - Excellent
Grape Juice	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	N/A	A - Excellent
Grease	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent
Heptane	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Hexane	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Honey	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent
Hydraulic Oil (Petro)	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Hydraulic Oil (Synthetic)	A - Excellent	D - Poor	N/A	A - Excellent	N/A	A - Excellent	A - Excellent
Hydrazine	A - Excellent	B - Good	D - Poor	A - Excellent	D - Poor	D - Poor	A - Excellent
Hydrobromic Acid 100%	A - Excellent	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	D - Poor
Hydrobromic Acid 20%	A - Excellent	D - Poor	A - Excellent	N/A	D - Poor	D - Poor	D - Poor
Hydrochloric Acid 100%	D - Poor	D - Poor	B - Good	A - Excellent	D - Poor	D - Poor	D - Poor
Hydrochloric Acid 20%	A - Excellent	N/A	A - Excellent	A - Excellent	D - Poor	D - Poor	D - Poor
Hydrochloric Acid 37%	C - Fair	B - Good	A - Excellent	A - Excellent	D - Poor	D - Poor	D - Poor
Hydrochloric Acid, Dry Gas	N/A	N/A	B - Good	A - Excellent	N/A	N/A	D - Poor
Hydrocyanic Acid	B - Good	B - Good	A - Excellent	A - Excellent	D - Poor	B - Good	A - Excellent
Hydrocyanic Acid (Gas 10%)	A - Excellent	B - Good	A - Excellent	A - Excellent	N/A	N/A	N/A
Hydrofluoric Acid 100%	D - Poor	D - Poor	B - Good	A - Excellent	D - Poor	D - Poor	B1 - Good
Hydrofluoric Acid 20%	D - Poor	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	D - Poor
Hydrofluoric Acid 50%	D - Poor	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	D - Poor
Hydrofluoric Acid 75%	C - Fair	D - Poor	B - Good	A - Excellent	D - Poor	D - Poor	D - Poor
Hydrofluosilicic Acid 100%	A - Excellent	B - Good	A - Excellent	A - Excellent	D - Poor	D - Poor	D - Poor
Hydrofluosilicic Acid 20%	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	D - Poor	B1 - Good
Hydrogen Gas	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent	A - Excellent
Hydrogen Peroxide 10%	A - Excellent	D - Poor	A - Excellent	A - Excellent	C - Fair	D - Poor	B - Good
Hydrogen Peroxide 100%	D - Poor	D - Poor	A - Excellent	A - Excellent	B - Good	D - Poor	A2 - Excellent
Hydrogen Peroxide 30%	B - Good	D - Poor	A - Excellent	A - Excellent	B - Good	D - Poor	B - Good
Hydrogen Peroxide 50%	B - Good	D - Poor	A - Excellent	A - Excellent	N/A	D - Poor	A2 - Excellent
Hydrogen Sulfide (aqua)	B - Good	D - Poor	D - Poor	A - Excellent	D - Poor	D - Poor	A - Excellent
Hydrogen Sulfide (dry)	B - Good	D - Poor	D - Poor	A - Excellent	D - Poor	D - Poor	A - Excellent
Hydroquinone	D - Poor	D - Poor	B - Good	A - Excellent	N/A	N/A	B - Good
Hydroxyacetic Acid 70%	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	N/A	N/A

Note: Product information is correct at time of printing

Ratings - Chemical Effect
A - Excellent
B - Good: Minor Effect, slight corrosion, or discoloration.
C - Fair: Moderate Effect, not recommended for continuous use. Softening or loss of strength, and swelling may occur.
D - Severe Effect: Not recommended for any use.
E - Information not available.

Explanation of Footnotes
1 - Satisfactory to 72oF (22oC)
2 - Satisfactory to 120oF (48oC)

	Material Selection						
Chemical	EPDM	NBR	FKM	PTFE	Cast / Ductile Iron	Cast Steel A216	Stainless Steel 316
Ink	N/A	A - Excellent	A - Excellent	A - Excellent	D - Poor	N/A	C - Fair
Iodine	B - Good	B - Good	A - Excellent	A - Excellent	D - Poor	D - Poor	D - Poor
Iodine (in alcohol)	A - Excellent	N/A	N/A	N/A	N/A	N/A	N/A
Iodoform	A - Excellent	D - Poor	N/A	C - Fair	N/A	N/A	A - Excellent
Isooctane	D - Poor	A2 - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent	A1 - Excellent
Isopropyl Acetate	B - Good	D - Poor	D - Poor	A - Excellent	N/A	A - Excellent	A - Excellent
Isopropyl Ether	D - Poor	B - Good	D - Poor	A1 - Excellent	N/A	A - Excellent	A - Excellent
Isotane	N/A	A - Excellent	A - Excellent	N/A	N/A	N/A	N/A
Jet Fuel (JP3, JP4, JP5)	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Kerosene	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Ketones	A - Excellent	D - Poor	D - Poor	A - Excellent	N/A	B - Good	A - Excellent
Lacquer Thinners	D - Poor	D - Poor	D - Poor	A - Excellent	C - Fair	A - Excellent	A - Excellent
Lacquers	D - Poor	D - Poor	D - Poor	A - Excellent	C - Fair	A - Excellent	A - Excellent
Lactic Acid	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	B1 - Good
Lard	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Latex	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent	A2 - Excellent
Lead Acetate	A - Excellent	B - Good	A - Excellent	A - Excellent	A - Excellent	D - Poor	B1 - Good
Lead Nitrate	A2 - Excellent	A2 - Excellent	A - Excellent	A1 - Excellent	N/A	D - Poor	B1 - Good
Lead Sulfamate	A - Excellent	B - Good	A - Excellent	B - Good	N/A	C - Fair	C - Fair
Ligroin	D - Poor	A - Excellent	A - Excellent	A - Excellent	N/A	N/A	A - Excellent
Lime	D - Poor	A - Excellent	A - Excellent	A1 - Excellent	A - Excellent	N/A	A - Excellent
Linoleic Acid	D - Poor	B1 - Good	B - Good	A - Excellent	N/A	D - Poor	A - Excellent
Lithium Chloride	A1 - Excellent	A2 - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	A2 - Excellent
Lithium Hydroxide	N/A	C - Fair	C - Fair	A - Excellent	N/A	B - Good	B - Good
Lubricants	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A2 - Excellent
Lye: Ca(OH)2 Calcium Hydroxide	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	B - Good
Lye: KOH Potassium Hydroxide	A2 - Excellent	B1 - Good	B - Good	A - Excellent	B2 - Good	D - Poor	A1 - Excellent
Lye: NaOH Sodium Hydroxide	B1 - Good	A1 - Excellent	B - Good	A - Excellent	D - Poor	D - Poor	B1 - Good
Magnesium Bisulfate	N/A	B - Good	N/A	A - Excellent	N/A	N/A	A1 - Excellent
Magnesium Carbonate	A - Excellent	A2 - Excellent	A - Excellent	A1 - Excellent	N/A	N/A	B - Good
Magnesium Chloride	A - Excellent	A2 - Excellent	A - Excellent	A - Excellent	D - Poor	C - Fair	D - Poor
Magnesium Hydroxide	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A1 - Excellent
Magnesium Nitrate	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	C - Fair	B - Good
Magnesium Oxide	N/A	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent
Magnesium Sulfate (Epsom Salts)	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	B - Good
Maleic Acid	D - Poor	D - Poor	A - Excellent	A - Excellent	A - Excellent	D - Poor	B - Good
Maleic Anhydride	D - Poor	D - Poor	A - Excellent	A - Excellent	N/A	N/A	A - Excellent
Malic Acid	D - Poor	A - Excellent	A - Excellent	A - Excellent	N/A	D - Poor	A2 - Excellent
Manganese Sulfate	A2 - Excellent	A2 - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	B2 - Good
Mash	A - Excellent	A - Excellent	N/A	N/A	N/A	N/A	A - Excellent
Mayonnaise	N/A	C - Fair	A - Excellent	A - Excellent	D - Poor	N/A	A - Excellent
Melamine	A - Excellent	C - Fair	A - Excellent	A - Excellent	D - Poor	N/A	D - Poor
Mercuric Chloride (dilute)	A1 - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	D - Poor
Mercuric Cyanide	A1 - Excellent	A - Excellent	A - Excellent	B - Good	C - Fair	D - Poor	C - Fair
Mercurous Nitrate	A1 - Excellent	B1 - Good	A - Excellent	A - Excellent	N/A	B - Good	A1 - Excellent
Mercury	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	C - Fair	A - Excellent
Methane	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Methanol (Methyl Alcohol)	A - Excellent	A - Excellent	C - Fair	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Methyl Acetate	B - Good	D - Poor	D - Poor	A - Excellent	A - Excellent	B - Good	B - Good
Methyl Acetone	A1 - Excellent	D - Poor	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent

Note: Product information is correct at time of printing

CHEMICAL COMPATIBILITY CHART

Source - www.coleparmer.co.uk/chemical-resistance

	Material Selection						
Chemical	EPDM	NBR	FKM	PTFE	Cast / Ductile Iron	Cast Steel A216	Stainless Steel 316
Methyl Acrylate	B - Good	D - Poor	D - Poor	N/A	A - Excellent	N/A	N/A
Methyl Alcohol 10%	A - Excellent	A - Excellent	C - Fair	A - Excellent	A - Excellent	N/A	A - Excellent
Methyl Bromide	D - Poor	B1 - Good	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Methyl Butyl Ketone	A1 - Excellent	D - Poor	D - Poor	N/A	N/A	N/A	A - Excellent
Methyl Cellosolve	B2 - Good	A1 - Excellent	D - Poor	A - Excellent	C - Fair	A - Excellent	B - Good
Methyl Chloride	D - Poor	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	A - Excellent
Methyl Dichloride	D - Poor	D - Poor	A - Excellent	N/A	N/A	N/A	N/A
Methyl Ethyl Ketone	A2 - Excellent	D - Poor	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Methyl Ethyl Ketone Peroxide	D - Poor	D - Poor	D - Poor	N/A	N/A	N/A	N/A
Methyl Isobutyl Ketone	B1 - Good	D - Poor	D - Poor	A - Excellent	C - Fair	A - Excellent	B - Good
Methyl Isopropyl Ketone	C1 - Fair	D - Poor	D - Poor	A - Excellent	C - Fair	N/A	A - Excellent
Methyl Methacrylate	D - Poor	D - Poor	D - Poor	N/A	C - Fair	N/A	B - Good
Methylamine	A1 - Excellent	B - Good	C - Fair	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Methylene Chloride	C1 - Fair	D - Poor	B - Good	A - Excellent	B - Good	B - Good	B - Good
Milk	A - Excellent	A1 - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	A - Excellent
Mineral Spirits	D - Poor	A - Excellent	A - Excellent	A - Excellent	B - Good	A - Excellent	A - Excellent
Molasses	A1 - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	B - Good	A - Excellent
Monochloroacetic acid	C - Fair	D - Poor	B - Good	A2 - Excellent	D - Poor	D - Poor	A1 - Excellent
Monoethanolamine	B - Good	B1 - Good	D - Poor	A - Excellent	A - Excellent	B - Good	A - Excellent
Morpholine	D - Poor	D - Poor	N/A	A2 - Excellent	N/A	A - Excellent	A1 - Excellent
Motor oil	D - Poor	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent	A2 - Excellent
Mustard	A - Excellent	B - Good	A - Excellent	A - Excellent	D - Poor	D - Poor	A - Excellent
Naphtha	D - Poor	A - Excellent	A - Excellent	B - Good	B - Good	B - Good	A - Excellent
Naphthalene	D - Poor	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Natural Gas	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Nickel Chloride	A1 - Excellent	A1 - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	C - Fair
Nickel Nitrate	A2 - Excellent	A1 - Excellent	A - Excellent	A2 - Excellent	C - Fair	C - Fair	B2 - Good
Nickel Sulfate	A1 - Excellent	A1 - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	B1 - Good
Nitrating Acid (<15% HNO3)	N/A	N/A	D - Poor	A - Excellent	C - Fair	N/A	D - Poor
Nitrating Acid (>15% H2SO4)	A1 - Excellent	D - Poor	D - Poor	A - Excellent	C - Fair	N/A	C - Fair
Nitrating Acid (S1% Acid)	N/A	N/A	D - Poor	A - Excellent	N/A	N/A	A - Excellent
Nitrating Acid (S15% H2SO4)	N/A	N/A	D - Poor	A - Excellent	A - Excellent	N/A	C - Fair
Nitric Acid (20%)	A1 - Excellent	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	A - Excellent
Nitric Acid (50%)	D - Poor	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	A1 - Excellent
Nitric Acid (5-10%)	A1 - Excellent	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	A - Excellent
Nitric Acid (Concentrated)	D - Poor	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	A1 - Excellent
Nitrobenzene	B1 - Good	D - Poor	A - Excellent	A - Excellent	C - Fair	B - Good	B - Good
Nitrogen Fertilizer	N/A	N/A	N/A	A - Excellent	N/A	A - Excellent	N/A
Nitromethane	B2 - Good	D - Poor	D - Poor	A - Excellent	N/A	B - Good	A1 - Excellent
Nitrous Acid	A - Excellent	N/A	A - Excellent	A - Excellent	N/A	D - Poor	B - Good
Nitrous Oxide	A - Excellent	N/A	A - Excellent	A - Excellent	N/A	B - Good	B - Good
Oils: Aniline	B - Good	D - Poor	C - Fair	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Oils: Anise	N/A	N/A	N/A	N/A	A - Excellent	N/A	A - Excellent
Oils: Bay	N/A	N/A	A - Excellent	N/A	A - Excellent	N/A	A - Excellent
Oils: Bone	N/A	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent
Oils: Castor	B - Good	B - Good	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent
Oils: Cinnamon	N/A	N/A	N/A	A - Excellent	N/A	N/A	A - Excellent
Oils: Citric	B - Good	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	A - Excellent
Oils: Clove	N/A	A - Excellent	N/A	A - Excellent	N/A	N/A	A - Excellent
Oils: Coconut	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent

Note: Product information is correct at time of printing

Ratings - Chemical Effect
A - Excellent
B - Good: Minor Effect, slight corrosion, or discoloration.
C - Fair: Moderate Effect, not recommended for continuous use. Softening or loss of strength, and swelling may occur.
D - Severe Effect: Not recommended for any use.
E - Information not available.

Explanation of Footnotes
1 - Satisfactory to 72oF (22oC)
2 - Satisfactory to 120oF (48oC)

	Material Selection						
Chemical	EPDM	NBR	FKM	PTFE	Cast / Ductile Iron	Cast Steel A216	Stainless Steel 316
Oils: Cod Liver	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	N/A	A - Excellent
Oils: Corn	C - Fair	D - Poor	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent
Oils: Cottonseed	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	A - Excellent
Oils: Creosote	D - Poor	D - Poor	A - Excellent	A - Excellent	N/A	B - Good	B - Good
Oils: Diesel Fuel (20, 30, 40, 50)	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Oils: Fuel (1, 2, 3, 5A, 5B, 6)	D - Poor	B - Good	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Oils: Ginger	A - Excellent	A - Excellent	N/A	A - Excellent	N/A	N/A	D - Poor
Oils: Hydraulic Oil (Petro)	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Oils: Hydraulic Oil (Synthetic)	A - Excellent	D - Poor	N/A	A - Excellent	N/A	A - Excellent	A - Excellent
Oils: Lemon	D - Poor	N/A	A - Excellent	A - Excellent	N/A	N/A	A - Excellent
Oils: Linseed	D - Poor	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent	A - Excellent
Oils: Mineral	D - Poor	A - Excellent	A - Excellent	A - Excellent	N/A	B - Good	A - Excellent
Oils: Olive	D - Poor	D - Poor	A - Excellent	A1 - Excellent	N/A	N/A	A - Excellent
Oils: Orange	N/A	A - Excellent	A - Excellent	N/A	N/A	N/A	A - Excellent
Oils: Palm	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent
Oils: Peanut	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent
Oils: Peppermint	N/A	D - Poor	A - Excellent	A - Excellent	N/A	N/A	A - Excellent
Oils: Pine	D - Poor	D - Poor	A - Excellent	A - Excellent	C - Fair	N/A	A - Excellent
Oils: Rapeseed	A - Excellent	D - Poor	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent
Oils: Rosin	N/A	A - Excellent	A - Excellent	A - Excellent	N/A	C - Fair	A1 - Excellent
Oils: Sesame Seed	N/A	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent
Oils: Silicone	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Oils: Soybean	C - Fair	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	A - Excellent
Oils: Sperm (whale)	N/A	A - Excellent	N/A	A - Excellent	A - Excellent	N/A	A - Excellent
Oils: Tanning	N/A	A - Excellent	A - Excellent	N/A	N/A	N/A	A - Excellent
Oils: Transformer	D - Poor	A - Excellent	A - Excellent	A - Excellent	N/A	N/A	A - Excellent
Oils: Turbine	A - Excellent	B - Good	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent
Oleic Acid	B - Good	B - Good	A - Excellent	A - Excellent	N/A	D - Poor	A - Excellent
Oleum 100%	D - Poor	D - Poor	B - Good	A - Excellent	N/A	N/A	A - Excellent
Oleum 25%	D - Poor	D - Poor	B - Good	A - Excellent	N/A	N/A	B - Good
Oxalic Acid (cold)	A - Excellent	D - Poor	A - Excellent	A1 - Excellent	C - Fair	D - Poor	A - Excellent
Ozone	A - Excellent	D - Poor	A - Excellent	A - Excellent	N/A	C - Fair	A - Excellent
Palmitic Acid	B1 - Good	A2 - Excellent	A - Excellent	A2 - Excellent	N/A	D - Poor	A1 - Excellent
Paraffin	D - Poor	B - Good	A - Excellent	A - Excellent	N/A	A - Excellent	A - Excellent
Pentane	D - Poor	A - Excellent	A - Excellent	A - Excellent	N/A	C - Fair	C - Fair
Perchloric Acid	B - Good	D - Poor	A - Excellent	A - Excellent	N/A	D - Poor	C - Fair
Perchloroethylene	D - Poor	C - Fair	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A1 - Excellent
Petrolatum	A - Excellent	A - Excellent	A - Excellent	C - Fair	N/A	D - Poor	A - Excellent
Petroleum	D - Poor	A2 - Excellent	A - Excellent	A2 - Excellent	N/A	C - Fair	A1 - Excellent
Phenol (10%)	B - Good	D - Poor	A - Excellent	A - Excellent	D - Poor	N/A	B - Good
Phenol (Carbolic Acid)	B - Good	D - Poor	A - Excellent	A - Excellent	D - Poor	N/A	B - Good
Phosphoric Acid (>40%)	B - Good	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	D - Poor
Phosphoric Acid (crude)	B - Good	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	B - Good
Phosphoric Acid (molten)	N/A	N/A	D - Poor	N/A	N/A	D - Poor	C - Fair
Phosphoric Acid (S40%)	B - Good	D - Poor	D - Poor	A - Excellent	D - Poor	D - Poor	C - Fair
Phosphoric Acid Anhydride	N/A	D - Poor	D - Poor	N/A	N/A	D - Poor	N/A
Phosphorus	N/A	N/A	N/A	A2 - Excellent	N/A	A - Excellent	A2 - Excellent
Phosphorus Trichloride	A1 - Excellent	D - Poor	A - Excellent	A2 - Excellent	N/A	A - Excellent	A2 - Excellent
Photographic Developer	B - Good	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	A - Excellent
Photographic Solutions	A1 - Excellent	B - Good	A - Excellent	A2 - Excellent	N/A	D - Poor	N/A

Note: Product information is correct at time of printing

CHEMICAL COMPATIBILITY CHART

Source - www.coleparmer.co.uk/chemical-resistance

	Material Selection						
Chemical	EPDM	NBR	FKM	PTFE	Cast / Ductile Iron	Cast Steel A216	Stainless Steel 316
Phthalic Acid	A1 - Excellent	D - Poor	A - Excellent	A2 - Excellent	N/A	A - Excellent	A - Excellent
Phthalic Anhydride	A - Excellent	D - Poor	A - Excellent	A - Excellent	N/A	A - Excellent	A - Excellent
Picric Acid	B - Good	C - Fair	A - Excellent	A - Excellent	A - Excellent	C - Fair	B - Good
Plating Solutions, Antimony Plating 130°F	N/A	A - Excellent	N/A	A - Excellent	A - Excellent	N/A	A - Excellent
Plating Solutions, Arsenic Plating 110°F	N/A	A - Excellent	N/A	A - Excellent	A - Excellent	N/A	A - Excellent
Plating Solutions, Brass Plating: High-Speed Brass Bath 110°F	N/A	A - Excellent	N/A	A - Excellent	A - Excellent	N/A	A - Excellent
Plating Solutions, Brass Plating: Regular Brass Bath 100°F	N/A	A - Excellent	N/A	A - Excellent	A - Excellent	N/A	A - Excellent
Plating Solutions, Bronze Plating: Cu-Cd Bronze Bath R.T.	A - Excellent	A - Excellent	N/A	A - Excellent	A - Excellent	N/A	A - Excellent
Plating Solutions, Bronze Plating: Cu-Sn Bronze Bath 160°F	A - Excellent	A - Excellent	N/A	A - Excellent	A - Excellent	N/A	A - Excellent
Plating Solutions, Bronze Plating: Cu-Zn Bronze Bath 100°F	N/A	A - Excellent	N/A	A - Excellent	A - Excellent	N/A	A - Excellent
Plating Solutions, Cadmium Plating: Cyanide Bath 90°F	N/A	A - Excellent	N/A	A - Excellent	A - Excellent	N/A	A - Excellent
Plating Solutions, Cadmium Plating: Fluoborate Bath 100°F	N/A	B - Good	N/A	A - Excellent	D - Poor	N/A	A - Excellent
Plating Solutions, Chromium Plating: Barrel Chrome Bath 95°F	N/A	D - Poor	N/A	A - Excellent	C - Fair	N/A	D - Poor
Plating Solutions, Chromium Plating: Black Chrome Bath 115°F	N/A	C - Fair	N/A	A - Excellent	A - Excellent	N/A	C - Fair
Plating Solutions, Chromium Plating: Chromic-Sulfuric Bath 130°F	N/A	D - Poor	N/A	A - Excellent	A - Excellent	N/A	C - Fair
Plating Solutions, Chromium Plating: Fluoride Bath 130°F	N/A	D - Poor	N/A	A - Excellent	C - Fair	N/A	D - Poor
Plating Solutions, Chromium Plating: Fluosilicate Bath 95°F	N/A	D - Poor	N/A	A - Excellent	C - Fair	N/A	C - Fair
Plating Solutions, Copper Plating (Acid): Copper Fluoborate Bath 120°F	N/A	B - Good	N/A	A - Excellent	D - Poor	N/A	D - Poor
Plating Solutions, Copper Plating (Acid): Copper Sulfate Bath R.T.	N/A	A - Excellent	N/A	A - Excellent	A - Excellent	N/A	D - Poor
Plating Solutions, Copper Plating (Cyanide): Copper Strike Bath 120°F	N/A	A - Excellent	N/A	A - Excellent	A - Excellent	N/A	A - Excellent
Plating Solutions, Copper Plating (Cyanide): High-Speed Bath 180°F	N/A	A - Excellent	N/A	A - Excellent	A - Excellent	N/A	A - Excellent
Plating Solutions, Copper Plating (Cyanide): Rochelle Salt Bath 150°F	N/A	A - Excellent	N/A	A - Excellent	A - Excellent	N/A	A - Excellent
Plating Solutions, Copper Plating (Misc): Copper (Electroless)	N/A	D - Poor	N/A	A - Excellent	N/A	N/A	N/A
Plating Solutions, Copper Plating (Misc): Copper Pyrophosphate	N/A	A - Excellent	N/A	A - Excellent	A - Excellent	N/A	A - Excellent
Plating Solutions, Gold Plating: Acid 75°F	N/A	A - Excellent	N/A	A - Excellent	N/A	N/A	C - Fair
Plating Solutions, Gold Plating: Cyanide 150°F	N/A	A - Excellent	N/A	A - Excellent	N/A	N/A	A - Excellent
Plating Solutions, Gold Plating: Neutral 75°F	N/A	A - Excellent	N/A	A - Excellent	N/A	N/A	C - Fair
Plating Solutions, Indium Sulfamate Plating R.T.	N/A	A - Excellent	N/A	A - Excellent	N/A	N/A	C - Fair
Plating Solutions, Iron Plating: Ferrous Am Sulfate Bath 150°F	N/A	A - Excellent	N/A	A - Excellent	N/A	N/A	C - Fair
Plating Solutions, Iron Plating: Ferrous Chloride Bath 190°F	N/A	B - Good	N/A	A - Excellent	N/A	N/A	D - Poor

Note: Product information is correct at time of printing

Ratings - Chemical Effect
A - Excellent
B - Good: Minor Effect, slight corrosion, or discoloration.
C - Fair: Moderate Effect, not recommended for continuous use. Softening or loss of strength, and swelling may occur.
D - Severe Effect: Not recommended for any use.
E - Information not available.

Explanation of Footnotes
1 - Satisfactory to 72oF (22oC)
2 - Satisfactory to 120oF (48oC)

	Material Selection						
Chemical	EPDM	NBR	FKM	PTFE	Cast / Ductile Iron	Cast Steel A216	Stainless Steel 316
Plating Solutions, Iron Plating: Ferrous Sulfate Bath 150°F	N/A	A - Excellent	N/A	A - Excellent	N/A	N/A	C - Fair
Plating Solutions, Iron Plating: Fluoborate Bath 145°F	N/A	B - Good	N/A	A - Excellent	N/A	N/A	D - Poor
Plating Solutions, Iron Plating: Sulfamate 140°F	N/A	A - Excellent	N/A	A - Excellent	N/A	N/A	D - Poor
Plating Solutions, Iron Plating: Sulfate-Chloride Bath 160°F	N/A	B - Good	N/A	A - Excellent	N/A	N/A	D - Poor
Plating Solutions, Lead Fluoborate Plating	N/A	B - Good	N/A	A - Excellent	N/A	N/A	C - Fair
Plating Solutions, Nickel Plating: Electroless 200°F	N/A	D - Poor	N/A	A - Excellent	N/A	N/A	N/A
Plating Solutions, Nickel Plating: Fluoborate 100-170°F	N/A	B - Good	N/A	A - Excellent	N/A	N/A	C - Fair
Plating Solutions, Nickel Plating: High-Chloride 130-160°F	N/A	A - Excellent	N/A	A - Excellent	N/A	N/A	C - Fair
Plating Solutions, Nickel Plating: Sulfamate 100-140°F	N/A	A - Excellent	N/A	A - Excellent	N/A	N/A	C - Fair
Plating Solutions, Nickel Plating: Watts Type 115-160°F	N/A	A - Excellent	N/A	A - Excellent	N/A	N/A	C - Fair
Plating Solutions, Rhodium Plating 120°F	A - Excellent	A - Excellent	N/A	A - Excellent	N/A	N/A	D - Poor
Plating Solutions, Silver Plating 80-120°F	A - Excellent	A - Excellent	N/A	A - Excellent	N/A	N/A	A - Excellent
Plating Solutions, Tin-Fluoborate Plating 100°F	N/A	B - Good	N/A	A - Excellent	N/A	N/A	C - Fair
Plating Solutions, Tin-Lead Plating 100°F	N/A	B - Good	N/A	A - Excellent	N/A	N/A	C - Fair
Plating Solutions, Zinc Plating: Acid Chloride 140°F	N/A	A - Excellent	N/A	A - Excellent	N/A	N/A	D - Poor
Plating Solutions, Zinc Plating: Acid Fluoborate Bath R.T.	N/A	B - Good	N/A	A - Excellent	N/A	N/A	C - Fair
Plating Solutions, Zinc Plating: Acid Sulfate Bath 150°F	N/A	A - Excellent	N/A	A - Excellent	N/A	N/A	C - Fair
Plating Solutions, Zinc Plating: Alkaline Cyanide Bath R.T.	N/A	A - Excellent	N/A	A - Excellent	N/A	N/A	A - Excellent
Potash (Potassium Carbonate)	A1 - Excellent	A - Excellent	A - Excellent	N/A	C - Fair	B - Good	B - Good
Potassium Bicarbonate	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	B - Good
Potassium Bromide	A1 - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	N/A	B - Good
Potassium Chlorate	A1 - Excellent	A1 - Excellent	A - Excellent	A - Excellent	C - Fair	N/A	B - Good
Potassium Chloride	A1 - Excellent	A1 - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	A1 - Excellent
Potassium Chromate	A2 - Excellent	A1 - Excellent	A - Excellent	A1 - Excellent	A - Excellent	B - Good	B1 - Good
Potassium Cyanide Solutions	A1 - Excellent	A1 - Excellent	A - Excellent	A - Excellent	B - Good	B - Good	B1 - Good
Potassium Dichromate	A1 - Excellent	A1 - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	B1 - Good
Potassium Ferricyanide	A - Excellent	D - Poor	A - Excellent	A2 - Excellent	C - Fair	D - Poor	B1 - Good
Potassium Ferrocyanide	A - Excellent	D - Poor	A - Excellent	A - Excellent	C - Fair	D - Poor	B - Good
Potassium Hydroxide (Caustic Potash)	A2 - Excellent	B1 - Good	B - Good	A - Excellent	B2 - Good	C - Fair	A1 - Excellent
Potassium Hypochlorite	A1 - Excellent	A1 - Excellent	D - Poor	A2 - Excellent	A - Excellent	D - Poor	B - Good
Potassium Iodide	A - Excellent	A1 - Excellent	A - Excellent	A2 - Excellent	A - Excellent	N/A	A1 - Excellent
Potassium Nitrate	A - Excellent	A2 - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	B - Good
Potassium Oxalate	N/A	N/A	N/A	A2 - Excellent	A - Excellent	N/A	B1 - Good
Potassium Permanganate	A - Excellent	C - Fair	A - Excellent	A - Excellent	A - Excellent	B - Good	B - Good
Potassium Sulfate	A1 - Excellent	A2 - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	A - Excellent
Potassium Sulfide	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	C - Fair	B - Good
Propane (liquefied)	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	A - Excellent
Propylene	D - Poor	D - Poor	A - Excellent	A2 - Excellent	A - Excellent	A - Excellent	A1 - Excellent

Note: Product information is correct at time of printing

CHEMICAL COMPATIBILITY CHART

Source - www.coleparmer.co.uk/chemical-resistance

	Material Selection						
Chemical	EPDM	NBR	FKM	PTFE	Cast / Ductile Iron	Cast Steel A216	Stainless Steel 316
Propylene Glycol	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	B - Good
Pyridine	B - Good	D - Poor	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Pyrogallic Acid	B - Good	N/A	A - Excellent	A - Excellent	D - Poor	B - Good	B - Good
Resorcinal	B1 - Good	N/A	A - Excellent	A2 - Excellent	N/A	N/A	N/A
Rosins	N/A	A2 - Excellent	A - Excellent	A - Excellent	D - Poor	C - Fair	A1 - Excellent
Rum	A - Excellent	A - Excellent	A - Excellent	N/A	N/A	N/A	A - Excellent
Rust Inhibitors	N/A	A - Excellent	A - Excellent	N/A	C - Fair	N/A	A - Excellent
Salad Dressings	N/A	A - Excellent	N/A	N/A	D - Poor	N/A	A - Excellent
Salicylic Acid	A - Excellent	B - Good	A - Excellent	A2 - Excellent	A - Excellent	D - Poor	B2 - Good
Salt Brine (NaCl saturated)	A - Excellent	A - Excellent	A - Excellent	A2 - Excellent	D - Poor	D - Poor	A2 - Excellent
Sea Water	A2 - Excellent	A2 - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	C - Fair
Shellac (Bleached)	A2 - Excellent	A2 - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Shellac (Orange)	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Silicone	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Silver Bromide	N/A	N/A	N/A	A - Excellent	D - Poor	D - Poor	D - Poor
Silver Nitrate	A - Excellent	B - Good	A - Excellent	A - Excellent	C - Fair	D - Poor	B - Good
Soap Solutions	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A1 - Excellent
Soda Ash (see Sodium Carbonate)	A2 - Excellent	A1 - Excellent	A - Excellent	A - Excellent	B - Good	B - Good	A - Excellent
Sodium Acetate	A - Excellent	B - Good	D - Poor	A - Excellent	B - Good	D - Poor	B1 - Good
Sodium Aluminate	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Sodium Benzoate	A - Excellent	B - Good	A - Excellent	A2 - Excellent	N/A	N/A	N/A
Sodium Bicarbonate	A2 - Excellent	A1 - Excellent	A - Excellent	A - Excellent	C - Fair	C - Fair	A1 - Excellent
Sodium Bisulfate	A2 - Excellent	B2 - Good	A - Excellent	A - Excellent	D - Poor	C - Fair	C - Fair
Sodium Bisulfite	A2 - Excellent	A2 - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	B1 - Good
Sodium Borate (Borax)	A - Excellent	A1 - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent	B - Good
Sodium Bromide	A - Excellent	N/A	A - Excellent	A2 - Excellent	C - Fair	D - Poor	C - Fair
Sodium Carbonate	A2 - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	B - Good	A - Excellent
Sodium Chlorate	A - Excellent	B - Good	A - Excellent	A - Excellent	N/A	N/A	B1 - Good
Sodium Chloride	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	B - Good
Sodium Chromate	N/A	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	B - Good
Sodium Cyanide	A2 - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	B1 - Good
Sodium Ferrocyanide	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	N/A	B - Good
Sodium Fluoride	A - Excellent	A1 - Excellent	A - Excellent	A1 - Excellent	C - Fair	D - Poor	D - Poor
Sodium Hydrosulfite	B - Good	C - Fair	B - Good	A - Excellent	N/A	N/A	N/A
Sodium Hydroxide (20%)	B - Good	A - Excellent	D - Poor	A - Excellent	A2 - Excellent	D - Poor	B2 - Good
Sodium Hydroxide (50%)	B1 - Good	A1 - Excellent	D - Poor	A - Excellent	D - Poor	D - Poor	B1 - Good
Sodium Hydroxide (80%)	B1 - Good	D - Poor	D - Poor	A1 - Excellent	D - Poor	D - Poor	B1 - Good
Sodium Hypochlorite (<20%)	B - Good	B - Good	A - Excellent	A - Excellent	D - Poor	D - Poor	C - Fair
Sodium Hypochlorite (100%)	B1 - Good	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	D - Poor
Sodium Hyposulfate	N/A	N/A	N/A	A - Excellent	D - Poor	N/A	A - Excellent
Sodium Metaphosphate	A - Excellent	A - Excellent	A - Excellent	A - Excellent	C - Fair	D - Poor	A - Excellent
Sodium Metasilicate	A1 - Excellent	A - Excellent	A - Excellent	A - Excellent	A1 - Excellent	B - Good	A - Excellent
Sodium Nitrate	A - Excellent	A1 - Excellent	A - Excellent	A - Excellent	B - Good	B - Good	B1 - Good
Sodium Perborate	A - Excellent	B - Good	A - Excellent	A - Excellent	C - Fair	C - Fair	B - Good
Sodium Peroxide	A - Excellent	B - Good	A - Excellent	A - Excellent	C - Fair	C - Fair	A - Excellent
Sodium Polyphosphate	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	C - Fair	B - Good
Sodium Silicate	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	A - Excellent	B - Good
Sodium Sulfate	A - Excellent	A - Excellent	A - Excellent	A - Excellent	B - Good	B - Good	B1 - Good
Sodium Sulfide	A2 - Excellent	A - Excellent	A - Excellent	A - Excellent	C - Fair	B - Good	D - Poor
Sodium Sulfite	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A1 - Excellent	C - Fair	A - Excellent

Note: Product information is correct at time of printing

Ratings - Chemical Effect
A - Excellent
B - Good: Minor Effect, slight corrosion, or discoloration.
C - Fair: Moderate Effect, not recommended for continuous use. Softening or loss of strength, and swelling may occur.
D - Severe Effect: Not recommended for any use.
E - Information not available.

Explanation of Footnotes
1 - Satisfactory to 72oF (22oC)
2 - Satisfactory to 120oF (48oC)

	Material Selection						
Chemical	EPDM	NBR	FKM	PTFE	Cast / Ductile Iron	Cast Steel A216	Stainless Steel 316
Sodium Tetraborate	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent	A - Excellent
Sodium Thiosulfate (hypo)	A2 - Excellent	B - Good	N/A	A - Excellent	C - Fair	D - Poor	B - Good
Sorghum	N/A	A - Excellent	A - Excellent	N/A	A - Excellent	N/A	A - Excellent
Soy Sauce	N/A	A - Excellent	A - Excellent	N/A	D - Poor	N/A	A - Excellent
Stannic Chloride	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	D - Poor
Stannic Fluoborate	N/A	A - Excellent	A - Excellent	N/A	D - Poor	N/A	A - Excellent
Stannous Chloride	C - Fair	A - Excellent	A - Excellent	A - Excellent	N/A	D - Poor	A2 - Excellent
Starch	A - Excellent	A - Excellent	A - Excellent	A - Excellent	C - Fair	A - Excellent	A - Excellent
Stearic Acid	B - Good	B - Good	A - Excellent	A - Excellent	C - Fair	D - Poor	A - Excellent
Stoddard Solvent	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Styrene	D - Poor	D - Poor	B - Good	A - Excellent	A - Excellent	C - Fair	A - Excellent
Sugar (Liquids)	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent	A - Excellent
Sulfate (Liquors)	A - Excellent	A2 - Excellent	A - Excellent	A - Excellent	C - Fair	D - Poor	B - Good
Sulfur Chloride	D - Poor	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	D - Poor
Sulfur Dioxide	A2 - Excellent	D - Poor	A - Excellent	A - Excellent	N/A	D - Poor	A1 - Excellent
Sulfur Dioxide (dry)	A2 - Excellent	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Sulfur Hexafluoride	B - Good	B - Good	D - Poor	N/A	N/A	N/A	N/A
Sulfur Trioxide	C2 - Fair	D - Poor	A - Excellent	A - Excellent	B - Good	C - Fair	C - Fair
Sulfur Trioxide (dry)	C1 - Fair	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Sulfuric Acid (<10%)	A - Excellent	A1 - Excellent	A - Excellent	A - Excellent	C - Fair	D - Poor	B - Good
Sulfuric Acid (10-75%)	B2 - Good	B1 - Good	A - Excellent	A - Excellent	D - Poor	D - Poor	D - Poor
Sulfuric Acid (75-100%)	B1 - Good	C - Fair	A - Excellent	A - Excellent	D - Poor	D - Poor	D - Poor
Sulfuric Acid (cold concentrated)	C - Fair	D - Poor	A - Excellent	A - Excellent	D - Poor	D - Poor	B - Good
Sulfuric Acid (hot concentrated)	D - Poor	D - Poor	D - Poor	A - Excellent	D - Poor	D - Poor	C - Fair
Sulfurous Acid	B - Good	B1 - Good	A - Excellent	A - Excellent	D - Poor	D - Poor	B - Good
Sulfuryl Chloride	N/A	N/A	N/A	A - Excellent	N/A	N/A	N/A
Tallow	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	C - Fair	A - Excellent
Tannic Acid	A - Excellent	A - Excellent	B - Good	A - Excellent	C - Fair	D - Poor	A - Excellent
Tanning Liquors	B - Good	B1 - Good	A - Excellent	A - Excellent	N/A	N/A	A2 - Excellent
Tartaric Acid	B - Good	A - Excellent	A - Excellent	A - Excellent	C - Fair	D - Poor	C2 - Fair
Tetrachloroethane	D - Poor	D - Poor	A - Excellent	A - Excellent	A - Excellent	B - Good	A - Excellent
Tetrachloroethylene	D - Poor	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Tetrahydrofuran	D - Poor	D - Poor	D - Poor	A - Excellent	N/A	A - Excellent	A - Excellent
Tin Salts	B - Good	A - Excellent	A - Excellent	A - Excellent	N/A	N/A	D - Poor
Toluene (Toluol)	D - Poor	D - Poor	A - Excellent	A - Excellent	A - Excellent	A - Excellent	A - Excellent
Tomato Juice	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	D - Poor	A - Excellent
Trichloroacetic Acid	B - Good	N/A	D - Poor	A - Excellent	D - Poor	D - Poor	C - Fair
Trichloroethane	D - Poor	D - Poor	A - Excellent	A - Excellent	B - Good	B - Good	B - Good
Trichloroethylene	D - Poor	D - Poor	D - Poor	A - Excellent	C - Fair	B - Good	B - Good
Trichloropropane	N/A	D - Poor	A - Excellent	A1 - Excellent	A - Excellent	A - Excellent	A - Excellent
Tricresylphosphate	A - Excellent	D - Poor	A - Excellent	A - Excellent	B - Good	A - Excellent	B - Good
Triethylamine	A - Excellent	C - Fair	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent
Trisodium Phosphate	A - Excellent	A - Excellent	A - Excellent	A - Excellent	N/A	A - Excellent	B - Good
Turpentine	D - Poor	N/A	A - Excellent	A - Excellent	N/A	B - Good	A - Excellent
Urea	A - Excellent	B - Good	A - Excellent	A - Excellent	N/A	B - Good	B - Good
Uric Acid	N/A	N/A	N/A	A - Excellent	D - Poor	N/A	B - Good
Urine	A1 - Excellent	A1 - Excellent	A - Excellent	A1 - Excellent	A - Excellent	B - Good	A - Excellent
Varnish	D - Poor	B - Good	A - Excellent	A - Excellent	C - Fair	C - Fair	A - Excellent
Vegetable Juice	A - Excellent	A2 - Excellent	A - Excellent	A - Excellent	D - Poor	B - Good	A - Excellent
Vinegar	A - Excellent	B - Good	A - Excellent	A - Excellent	D - Poor	C - Fair	A - Excellent

Note: Product information is correct at time of printing

CHEMICAL COMPATIBILITY CHART

Source - www.coleparmer.co.uk/chemical-resistance

Ratings - Chemical Effect
A - Excellent
B - Good: Minor Effect, slight corrosion, or discoloration.
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E - Information not available.

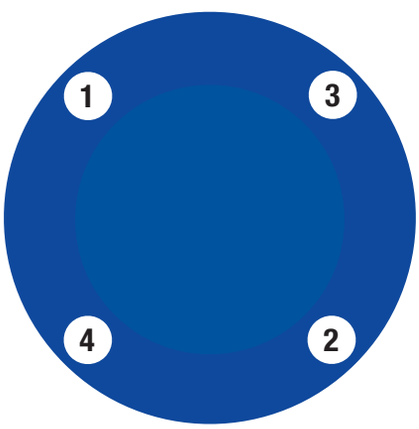
Explanation of Footnotes
1 - Satisfactory to 72oF (22oC)
2 - Satisfactory to 120oF (48oC)

	Material Selection						
Chemical	EPDM	NBR	FKM	PTFE	Cast / Ductile Iron	Cast Steel A216	Stainless Steel 316
Vinyl Acetate	B2 - Good	D - Poor	A - Excellent	A2 - Excellent	B - Good	C - Fair	B - Good
Vinyl Chloride	C - Fair	D - Poor	N/A	A2 - Excellent	B - Good	A - Excellent	A1 - Excellent
Water, Acid, Mine	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	B - Good
Water, Deionized	A1 - Excellent	A1 - Excellent	A - Excellent	A2 - Excellent	D - Poor	A - Excellent	A2 - Excellent
Water, Distilled	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	A - Excellent
Water, Fresh	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	A - Excellent
Water, Salt	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	B - Good
Weed Killers	N/A	A - Excellent	N/A	N/A	N/A	N/A	A - Excellent
Whey	N/A	A - Excellent	N/A	A - Excellent	N/A	N/A	A - Excellent
Whiskey & Wines	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	A - Excellent
White Liquor (Pulp Mill)	N/A	A - Excellent	A - Excellent	A - Excellent	C - Fair	C - Fair	A - Excellent
White Water (Paper Mill)	N/A	N/A	N/A	N/A	A - Excellent	N/A	A - Excellent
Xylene	D - Poor	D - Poor	A - Excellent	A - Excellent	B - Good	A - Excellent	B - Good
Zinc Chloride	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	B - Good
Zinc Hydrosulfite	A - Excellent	A - Excellent	N/A	A - Excellent	D - Poor	N/A	A - Excellent
Zinc Sulfate	A - Excellent	A - Excellent	A - Excellent	A - Excellent	D - Poor	D - Poor	A - Excellent

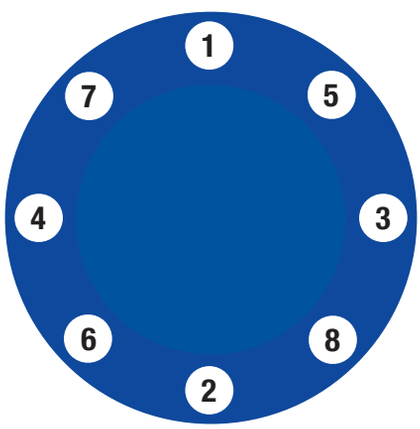
Note: Product information is correct at time of printing

FLANGE AND BONNET
TIGHTENING SEQUENCE

4 Bolt Flange



8 Bolt Flange



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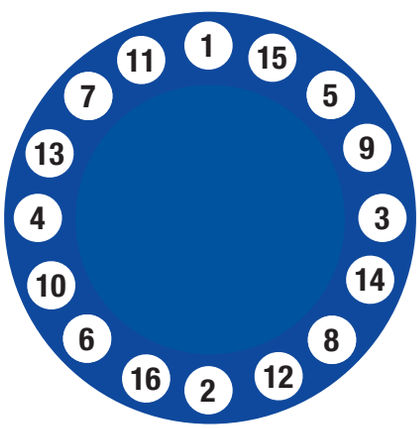
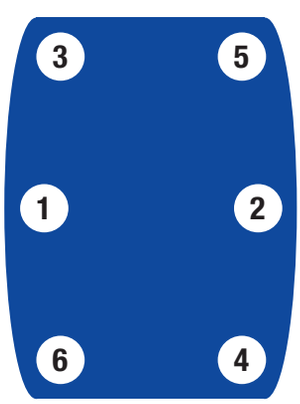


6 Bolt Bonnet



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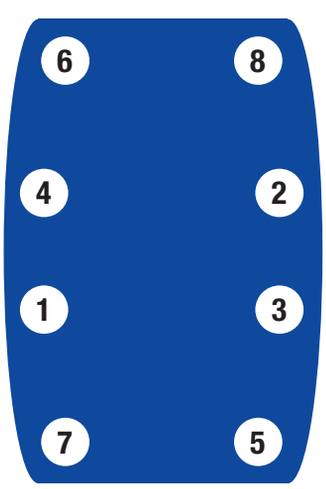
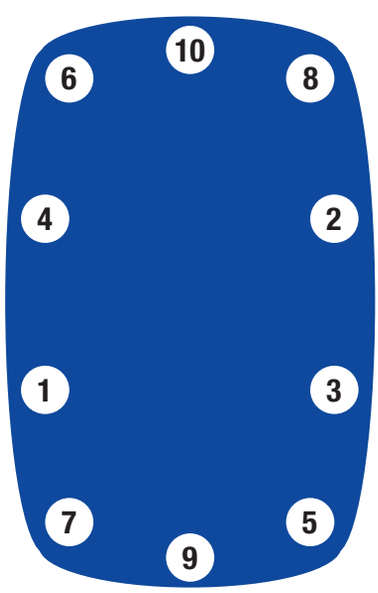


10 Bolt Bonnet



Note: Product information is correct at time of printing

VALVE SPECIFICATIONS

Formal standards

BS 21 Specification for pipe threads for tubes and fittings where pressure-tight joints are made on the threads (metric dimensions).

BS 4504 Circular flanges for pipes, valves and fittings (PN designated).

BS EN 19 Industrial valves - Marking of metallic valves.

BS EN 682 Elastomeric seals - Materials requirements for seals used in pipes and fittings carrying gas and hydrocarbon fluids.

BS EN 1562 Specification for malleable cast iron.

BS EN 1092-1 Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated - Steel flanges.

BS EN 1092-2 Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated— Cast iron flanges.

BS EN 10028-1 Specification for flat products made of steels for pressure purposes - Part 1:

General requirements.

BS EN 10028-2 Specification for flat products made of steels for pressure purposes - Part 2: Non-alloy and alloy steels with specified elevated temperature properties.

BS EN 10028-3 Specification for flat products made of steels for pressure purposes - Part 3: Weldable fine grain steels, normalized.

BS EN 10029 Specification for tolerances on dimensions, shape and mass for hot rolled steel plates 3 mm thick or above.

BS EN 10213-1 Technical delivery conditions for steel castings for pressure purposes - Part 1: General.

BS EN 10213-2 Technical delivery conditions for steel castings for pressure purposes - Part 2: Steel grades for use at room temperature and at elevated temperature.

BS EN 10213-3 Technical delivery conditions for steel castings for pressure purposes -Part 3: Steels for use at low temperatures.

BS EN 10213-4 Technical delivery conditions for steel castings for pressure purposes - Part 4: Austenitic and austenitic-ferritic steel grades.

BS EN 10222-1 Steel forgings for pressure purposes - Part 1: General requirements for open die forgings.

BS EN 10224 Non-alloy steel tubes and fittings for the conveyance of aqueous liquids including water for human consumption - Technical delivery conditions.

BS EN 10226-1 Pipe threads where pressure tight joints are made on the threads - Taper external threads and parallel internal threads - Part 1: Dimensions, tolerances and designation.

BS EN 12266-1:2003 Industrial valves - Testing of valves - Pressure tests, test procedures and acceptance criteria - Part 1: Mandatory requirements.

BS EN 12266-2:2002 Industrial valves - Testing of valves - Tests, test procedures and acceptance criteria - Part 2: Supplementary requirements.

Gas Industry Standards

GIS/C5 Specification for distribution pipe fittings cast in grey cast iron for use up to 7 bar maximum operating pressure.

GIS/PL2-1 Specification for polyethylene pipes and fittings for natural gas and suitable manufactured gas - Part 1: Pipes for use at pressures up to 5.5 bar.

GIS/PL2-8 Specification for polyethylene pipes and fittings for natural gas and suitable manufactured gas - Part 8: Pipes for use at pressures up to 7 bar.

GIS/V7-1 Distribution valves
Part 1: Metal-bodied line valves for use at pressures up to 16 bar and construction valves for use at pressures up to 7 bar

National Grid standards

T/SP/DAT 33 Range and typical composition of natural gas being delivered via the gas transportation system.

T/SP/DAT 45 Specification for spheroidal graphite or nodular graphite castings to BS 2789.

T/SP/PI6 Notes for guidance on the dimensions and applications of standard weld end preparations for steel pipe, fittings and valves.

T/SP/V6-1 Technical specification for steel valves for use with natural gas at normal operating pressures above 7 bar - Part 1: 100 mm nominal size and above.

T/SP/V6-2 Technical specification for steel valves for use with natural gas at normal operating pressures above 7 bar - Part 2: 80 mm nominal size and below.

Note: Product information is correct at time of printing

British Standards Institute
BSI 1414 Steel wedge gate valves (flanged and butt welding ends) for the petroleum, petrochemical, and allied industries
BSI 1868 Steel check valves (flanged and butt welding ends) for the petroleum, petrochemical, and allied industries
BSI 1873 Steel globe and globe stop and check valves (flanged and butt welding ends) for the petroleum, petrochemical, and allied industries
BSI 5352 Steel wedge gate, globe and check valves 50 mm and smaller for the petroleum, petrochemical, and allied industries
International Organization for Standardization

ISO 9001/9002 Quality system - Model for Quality Assurance

National Association of Corrosion Engineers
NACE MR0175 Standard material requirements for sulfide stress cracking resistant metallic materials for oil field equipment.

American Petroleum Institute
API Q1 Specification for quality programs
API 6D Specification for pipeline valves
API 6FA Fire test for valves
API 598 Valve inspection and testing
API 600 Steel gate valves, flanged and buttwelding ends, bolted and pressure seal bonnets
API 602 Compact steel gate valves - flanged, threaded, welding, and extended body ends
API 607 Fire test for soft seated quarter turn valves
API 608 Metal ball valves - flanged and butt welding ends

American Society of Mechanical Engineers/ American National Standards Institute
ASME/ANSI B16.34 Valves - flanged, threaded and welding end
ASME/ANSI B16.5 Pipe flanges and flanged fittings
ASME/ANSI B16.10 Face-to-face and end-to-end dimensions of valves
ASME/ANSI B16.11 Forged fittings, socket-welding and threaded
ASME/ANSI B16.25 Buttwelding ends
ASME/ANSI B16.47 Large diameter steel flanges
Note: This specification for flanges larger than 24" replaces MSS SP-44 and API 605 with the designations of Series A (MSS SP-44) and Series B (API 605).
ASME B31.3 Chemical plant and petroleum refinery piping
ANSI B31.4 Liquid petroleum transportation piping system
ANSI B31.8 Gas transmission and distribution piping system

Manufacturers Standardization Society of the Valves and Fittings Industry
MSS SP-25 Standard marking system for valves, fittings, flanges and unions
MSS SP-55 Quality standard for steel castings for valves, flanges, and fittings, and other piping components - visual method
MSS SP-70 Cast iron gate valves, flanged and threaded ends
MSS SP-71 Cast iron swing check valves, flanged and threaded ends
MSS SP-79 Socket-welding reducer inserts
MSS SP-80 Bronze gate, globe, angle and check valves
MSS SP-83 Class 3000 steel pipe unions, socket-welding and threaded
MSS SP-85 Cast iron globe and angle valves, flanged and threaded ends

GLOSSARY OF TERMS

Actuator - Device used to operate a valve using electric, pneumatic or hydraulic means. Often used for remote control or sequencing of valve operations.

Alloy steel - A steel consisting primarily of iron with some percentage of one or more other elements such as chromium, nickel, manganese, or vanadium deliberately added to enhance its properties.

Ambient temperature - The prevailing temperature of the environment immediately surrounding an object - generally considered to be -20° F to +100° F.

Austenitic stainless steel - The common stainless steel, where the primary microstructure is austenite and the composition primarily iron but also includes both chromium and nickel. The steels are designated as 300 Series such as 304, 316, CF8M, etc.

Bevel gear operator - Device facilitating operation of a gate or globe valve by means of a set of bevel gears having the axis of the pinion gear at right angles to that of the larger ring gear. The reduction ratio of this gear set determines the multiplication of torque achieved.

Back seat - A shoulder on the stem of a gate or globe valve which seals against a mating surface inside the bonnet to prevent leakage of media through the bonnet stuffing box when the valve is fully opened.

Ball - The closure element of a ball valve.

Ball valve - A valve using a spherical closure element which is rotated through 90° to open and close the valve.

Body - The principle pressure containing part of a valve in which the closure element and seats are located.

Bolted bonnet - A bonnet which is connected to a valve body with bolts or studs and nuts.

Bolted construction - Describes a valve construction in which the pressure shell elements (such as body and closures of a trunnion ball valve) are bolted together and so can be taken apart and repaired in the field.

Bonnet - The top part of a valve, attached to the body, which contains the packing gland, guides the stem, and adapts to extensions or operators.

Bore (or port) - The inside diameter of the smallest opening through a valve, e.g., inside diameter of a seat ring, diameter of hole through ball in a ball valve.

Butt weld end - The end connection of a valve suitably prepared for butt welding to a connecting pipe.

Carbon steel - Iron containing carbon in the form of carbides, about 0.1 to 0.3 percent carbon with no other alloying elements other than the sulfur, phosphorus, and other elements present in almost all steels.

Cast iron - The common term for cast gray iron or iron containing flake carbon in the range of _% to 2 _%. Cast iron is brittle, exhibiting very little ductility before fracturing.

Casting - A product or the act of producing a product made by pouring molten metal into a mold and allowing it to solidify, thus taking the shape of the mold.

Charpy test - A destructive mechanical test conducted on a precisely machined coupon of steel to be tested. The coupon is clamped in a special machine and subjected to lateral hammer blow. The test provides a relative measure of the toughness of the steel or its resistance to shock or impact loads and is usually required for material used in low temperature applications.

Check valve - A one-directional valve which is opened by the fluid flow in one direction and closed automatically when the flow stops or is reversed.

Clapper - The hinged closure element of a swing check valve.

Class - A pressure rating expressed as a dimensionless number. The class rating charts give actual pounds per square inch maximum allowable pressure at a given temperature.

Closure - The ends of a bolted construction ball valve, bolted to the body, which often contain the seat rings.

Closure - element The moving part of a valve, positioned in the flow stream, which controls the flow through the valve, e.g., wedge, plug, clapper, ball.

Cv - Flow coefficient expressed as the number of gallons of water that would flow through an opening, such as a valve port, in 1 minute under a differential pressure of 1 psi.

CWP Cold working pressure - the maximum allowable pressure under non- shock conditions at ambient temperature (-20° F to +100° F).

Dezincification - A form of pitting corrosion which attacks certain zinc bearing copper-based alloys, often called "yellow brasses", when in contact with sea water or fresh water that is high in oxygen and carbon dioxide. (ASTM B61 and B62 are "red brasses" and not susceptible to dezincification.)

Double block and bleed - The capability of a valve under pressure to obtain a seal across both the upstream and downstream seat rings and to have its body cavity bled down to atmospheric pressure.

Drain plug - A fitting at the bottom of a valve, the removal of which permits draining and flushing the body cavity.

Elastomer - A natural or synthetic elastic material, often used for O-ring seals. Typical materials are viton, buna-n, EPDM (ethylene propylene dimonomer), etc.

Emergency seat seal - A fitting on the valve body through which sealant can be injected to effect a seat seal in an emergency situation.

End connection - The type of connection supplied on the ends of a valve which allows it to be connected to piping - may be weld end, flanged end, threaded or socketweld.

Face to face - The overall dimension from the inlet face of a valve to the outlet face of a valve (one end to another) allowing valves of the same size and pressure class to be mutually interchangeable, regardless of manufacturer.

Facing - The finish of the gasket contact surface of a flange.

Fitting - Any component, other than valves, used with pipe as part of the pressure system and normally referring to items covered by a national standard.

Flat Face (FF) - A flange surface in which the gasket sealing area is the entire surface from the ID to the outside edge. Usually used for class 125 cast iron valves.

Fire safe - A valve design that is capable of passing a fire test with specified limits on leakage to the atmosphere and downstream after being closed subsequent to fire exposure.

Floating ball - A ball valve design in which the ball is not rigidly held on its rotational axis and so is free to float between the seat rings.

Forging - A metalworking process that involves hammering or squeezing, with or without a die, at hot working temperatures to form a specific shape.

Full bore (full opening) - Describes a valve in which the bore (port) is nominally equal to the bore of the connecting pipe.

Full penetration weld - Describes the type of weld wherein the weld metal extends through the complete thickness of the parts being joined.

Gasket - A component whose purpose is to seal a joint between two larger components, softer than the surfaces of the joint being sealed and usually squeezed by means of bolting to effect the seal.

Gate - The closure element of a gate valve (sometimes called wedge or disc)

Gate valve - A straight through pattern valve in which closure element is a wedge situated between two fixed seating surfaces, with means to move it in or out of the flow stream in a direction perpendicular to the pipeline axis. Used as a block valve, or on-off valve.

Gland or gland bushing - The part of the valve which retains or compresses the stem packing in a stuffing box.

Gland follower or gland flange - The component used to hold down or retain the gland in the stuffing box.

Globe valve - A valve whose closure element is a flat disc or conical plug sealing on a seat which is usually parallel to the flow axis. Can be used for throttling services.

Graphite Flexible - carbon material used to make gaskets and packing. The gaskets may be flat graphite sheet or have metal inserts for added strength. The packing is a combination of lattice braided rings used as anti-extrusion or wiper rings and die-formed rings which are compressed to effect the seal.

Grease fitting - A device which permits injection of grease into a bearing surface.

Handwheel - A wheel-shaped valve operating device intended to be grasped with one or both hands which allows turning the valve stem or operator shaft to which it is attached.

Hardfacing - A surface preparation in which an alloy is deposited on a metal surface usually by weld overlay to increase resistance to abrasion and or corrosion.

Heat analysis - A chemical analysis conducted by a foundry immediately prior to pouring which measures the exact chemical composition of a particular batch of molten metal.

Heat treatment - Describes any process or procedure by which the internal structure of steel is altered by heating to produce desired physical and mechanical characteristics.

Hot tap - A connection made to a pipeline while the line is under pressure or in service. A special procedure is required to make an opening in the pipe without leaking any of the line contents.

Hot tears - A defect occurring in castings caused where partially solidified or weak, newly solidified sections are subjected to a pull resulting from the contraction of thinner parts that have solidified earlier. A hot tear is an intergranular failure.

Huey test - A corrosion resistance test for stainless steel, most useful for predicting resistance to intergranular corrosion.

Hydrostatic test - A pressure test in which a valve is tested with water to detect leaks - may be a shell test or a seat closure test.

IBBM Iron body, bronze mounted - common term for valves with cast iron body and bonnet and bronze trim (seating surfaces, stem, bushings).

ID - The measurement of the inside diameter of a circular part.

ISRS - Inside screw, rising stem - common term for any valve design in which the stem threads are exposed to the fluid below the packing and the stem rises up through the packing when the valve is opened.

Lever - An operating device for quarter-turn valves.

Liquid penetrant inspection - A nondestructive method of detecting the presence of surface cracks and imperfections through use of a special red dye. Abbreviated as LPI or PT.

Locking device - Any valve attachment whose purpose is to prevent the operation of the valve by unauthorized persons.

Magnetic particle inspection - A nondestructive method of detecting the presence of surface cracks and imperfections through use of fine iron particles in an electrical field. Abbreviated as MPI or MT.

Material Test Reports - Certificates provided by the steel manufacturer indicating the chemical analysis and mechanical properties of a specific batch of steel traced by sequentially assigned heat numbers or codes.

Mold - A hollow cavity, frequently in packed sand, for giving a desired shape to a material in a molten or plastic shape.

NPS - Nominal pipe size - dimensionless number used to indicate sizes of pressure pipe and valves - used interchangeably with valve size in inches.

NPT - National Pipe Thread - standard tapered thread for pressure pipe and components. Requirements defined in ASME B1.20.1.

NRS - Non-rising stem - A gate valve having its stem threaded into the gate. As the stem turns the gate moves but the stem does not rise. Stem threads are exposed to the line fluid.

GLOSSARY OF TERMS

OD - The measurement of the outside diameter of a circular part.

O-ring - An elastomeric or synthetic seal ring of circular cross section.

OS&Y Outside Screw & Yoke - A valve design in which the stem threads are above the packing gland or outside the valve body and there is a yoke to support the top or outer end of the stem.

Packing - The deformable sealing material inserted into a valve stuffing box which when compressed by the gland provides a tight seal about the stem.

Pattern - A duplicate made of wood or metal of a part to be cast. Used to form the mold into which the molten metal is poured.

Pinhole - Numerous small gas holes at the surface or just below the surface of castings, generally occurring in the thicker parts of the casting as a reduction in the solubility of gases in the metal as the metal cools.

Pinion shaft - The external input shaft of certain gear operators which drive the internal reduction gearing.

Plastics - A broad classification covering a variety of non-metallic, synthetic or organic materials capable of being molded or formed into desired shapes.Typical materials include nylons and tetrafluoroethylenes such as DuPont's Teflon" .

PMI Positive material identification - a method for cross checking the identity of a piece of material, often using a portable spectrometer, usually with x-rays (TN 9266, nuclear analyzer) or a welding arc (Arc Met 900, optical spectrometer).

Pneumatic test - A test in which a valve is tested with air - usually a seat closure test.

Porosity - A defect found in castings or welds consisting of gas bubbles or voids in the solidified metal.

Position indicator - Any external device which visually indicates the open and closed position of valve.

Pressure-Temperature Ratings - The maximum allowable working pressures at specified temperatures. For steel valves, the ratings are defined by "classes" and found in ASME B16.34. For iron and bronze valves, the ratings are defined in the applicable MSS specifications.

Product Analysis - The chemical analysis of a material done on a finished component to show compliance with the material specifications. Usually has tolerances defined for each element to allow for differences in the completed product compared to the molten metal.

PSI - Pounds per square inch - the force per unit area exerted against a resisting body.

Ra - Abbreviation for "arithmetic average roughness height" - the measure of the roughness of a surface expressed in microinches. The higher the number, the rougher the surface. Used to designate the desired surface finish for end flange raised faces.

Radiographic inspection - A nondestructive inspection method using x-rays to locate internal flaws in castings, fabricated parts and welds. Abbreviated as RT.

Raised faced (RF) - The raised area of a flange face which is the gasket sealing surface between mating flanges. Defined in ASME B16.5. Class 150 and 300 valves have 0.06" RF and Class 600 and up have a 0.25" RF.

Reduced port - A valve port opening that is smaller than the line size or the valve end connection size.

Ring type joint (RTJ) - A flange connection using a specially shaped soft metal ring as a gasket. Generally used on high pressure valves. May be the body and bonnet connection and/or the end flange connection.

Resilient seat - A valve seat containing a soft seal such as an O-ring or plastic to assure tight shut-off.

Rim pull - The force required at the edge of the handwheel to generate the required torque at the center of the handwheel.

RS Rising stem - A valve stem with threads arranged so that as the stem turns, the threads engage a stationary threaded area and lift the stem along with the closure element attached to it.

Schedule - A system for indicating the wall thickness of pipe. The higher the schedule number, the thicker the wall for a certain pipe size.

Seal weld - A weld that does not contribute anything to the mechanical integrity of an assembly, but is made purely to seal or prevent leakage from, for instance, a threaded joint.

Seat - The part of a valve against which the closure element effects a tight shut-off.

Self-relieving - The process by which excessive internal body cavity pressure is automatically relieved either into the upstream or downstream line - generally found in ball valves

Shrinkage - Internal defect in castings that are internal voids, irregular in shape, caused by volume contraction during solidification. Can be caused by not maintaining a fluid channel to the riser during solidification.

Socketweld end (SW) - The end connection of a valve suitably prepared for Socket welding to a connecting pipe.

Sour gas - Natural gas containing significant amounts of hydrogen sulfide (H2S). Requires special material treatments to avoid valve failures from sulfide corrosion cracking.

Specification - A document that defines the requirements that a finished product must conform to - may include chemical and mechanical properties, tolerances, marking, shipping, etc.

Spur gear - The simplest of gears - in a gear set, the pinion and ring gear are aligned on parallel shafts. Can be added to another gear operator to further increase the mechanical advantage afforded by the gear.

Square operating nut - A nut, usually 2" x 2", which is attached to a valve stem or the pinion shaft of a gear operator allowing use of wrenches to quickly operate the valve.

Stainless steel - Any of a number of types of iron alloy with chrome, nickel, or other elements that does not oxidize in free air.

Stem - The rod or shaft transmitting motion from an operator (handwheel or gear operator) to the closure element of the valve.

Stem nut (yoke nut) - The threaded nut that surrounds a reciprocating valve stem and causes the stem to move when the nut is rotated.

Stud - A bolt, threaded on both ends, often used in bolting together bodies and bonnets or bodies and closures.

Stuffing box - The annular chamber provided around a valve stem in a sealing system into which deformable packing is placed. Sometimes called packing chamber.

Swing check valve - A check valve in which the closure element is a hinged clapper which swings or rotates about a supporting shaft.

Tensile strength - The highest tensile stress that a material can withstand before failure or rupture occurs - the force being applied in a direction tending to elongate the material.

Tensile test - A destructive test performed on a specially machined specimen taken from material in its delivered condition to determine mechanical properties, such as tensile strength, yield strength, and percent elongation.

Throttling - The intentional restriction of flow by partially closing or opening a valve.

Thrust - The net force applied to a part in a particular direction - e.g., on the end of a valve stem

Torque - The rotational force imposed on or through a shaft, usually expressed in foot-pounds.

Trim - Commonly refers to the valve's working parts and to their materials. Usually includes seat ring sealing surfaces, closure element sealing surfaces, stems, and back seats. Trim numbers which specify the materials are defined in API 600 and API 602.

Trunnion - The part of a ball valve which holds the ball on a fixed vertical axis and about which the ball turns.

Turns to operate - The number of complete revolutions of a handwheel or the pinion shaft of a gear operator required to stroke a valve from fully open to fully closed or vice versa.

Ultrasonic inspection - An inspection procedure using high frequency sound waves to detect wall thickness or flaws throughout the thickness of metal parts. Abbreviated as UT.

Union bonnet - A type of valve construction in which the bonnet is held on by a union nut with threads on the body.

Valve - A device used to control the flow of fluid contained in a pipe line.

WOG Water-oil-gas - a rating designation generally used for small valves chiefly in low ratings. Indicates maximum working pressure at ambient + 32° F to +100° F. Also called Nonshock Rating.

Working pressure - The pressure (pounds per square inch) at which a valve is designed to operate.

Wall thickness - The thickness of the wall of the pressure vessel or valve. For steel valves, minimum thickness requirements are defined in ASME B16.34, API 600, and API 602.

Worm gears - A gear set in which the input shaft is offset from and perpendicular to the output shaft, and driving gear is very small and perpendicular to the driven gear. Worm gear operators are used on ball valves.

Yield strength - The limiting stress beyond which a material will sustain permanent deformation.

Yoke - The part of gate or globe valve which acts as a bracket to support the top or outer end of the stem and stem bearing.

WHO WE ARE

Fusion Group Limited was founded in 1971 and pioneered polyethylene pipe jointing in the UK and across the globe. Fusion became a member of the AVK Group of Companies in 2017. This partnership has resulted in a broader product and service offer and has strengthened our manufacturing base.

WHAT WE DO

Products and Innovations
Fusion designs and manufactures electrofusion fittings, creates polyethylene fabrications, and distributes electrofusion boxes and automatic butt fusion machines and tooling. Fusion also offers an extensive range of spigot fittings. Our products are used in a wide range of applications worldwide, from gas and water infrastructure, to mining, energy and agricultural projects. Our people are valued for their knowledge and experience of polyethylene and their passion to deliver innovation.

World Class Manufacturing
Fusion has extensive manufacturing, test and inspection facilities and have integrated lean principles of continuous improvement within its manufacturing culture.

Fusion is much more than just manufacturing, it has world class facilities which give confidence to an end product which is fully traceable: right down to the core components.

High Standards
With ISO9001 certification and multi-national approvals, both Fusion and AVK believe in much more than just passing the finished product on to the consumer, but to give them the quality assurance they need on all the products supplied to the utilities industry, with relevant AVK companies complying with TS standards.

Our products meet and often exceed, the highest standards of safety and durability as well as being regularly audited by various institutions such as Bureau Veritas, AMI, KIWA, BSI, DVGW, INSTA-CERT and others.

Fusions's product range includes an extensive range of:

- PE ball valves
- PE butterfly valves
- Electrofusion fittings
- Spigot fittings
- Transition fittings
- Flow Limitors
- Equipment and ancillaries
- Access systems

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A dedicated member of the AVK Group

Note: Product information is correct at time of printing

FUSION
PRODUCT RANGE OVERVIEW*

For the full range visit www.fusiongroup.com

SERIES 85/30
Donkin Certus™ PE
Service Isolation Valve
PE100-RC
EN 1555-4
GIS/V7 Part 2
d25-180

SERIES 89/BFV
HDPE Fusible End
Butterfly Valve
SDR 11 IPS (Standard)
PE 100
Stainless Steel Disc,
NBR Seat
d63-315

COUPLER
PE100
Water PN16
Gas 10 Bar
DN20-400

REDUCER
PE100
Water PN16
Gas 10 Bar
DN25-180

90º ELBOW
PE100
Water PN16
Gas 10 Bar
DN20-180

REDUCING TEE
PE100
Water PN16
Gas 10 Bar
d20x32 - 180x125

90º ELBOW
PE100
SDR 11 - Water PN16 /
Gas 10 Bar
SDR17 - Water PN10 /
Gas 6 Bar
SDR 7.4 - Water PN25
SDR 9 - Water PN20
d20-500

EQUAL TEE
PE100
SDR 11 - Water PN16 /
Gas 10 Bar
SDR17 - Water PN10 /
Gas 6 Bar
SDR 7.4 - Water PN25
SDR 9 - Water PN20
d20-630

STUB FLANGE ADAPTOR
PE100
SDR 11 - Water PN16 /
Gas 10 Bar
SDR17 - Water PN10 /
Gas 6 Bar
SDR 7.4 - Water PN25
SDR9 - Water PN20
d20-1200

MALE TRANSITION COUPLER
PE100
Water PN16
Gas 10 Bar
DN25x¾" - 63x2"

TRANSITION ADAPTOR STAINLESS STEEL - MALE
PE100
SDR11
Water PN16
Gas 10 Bar
d20x½" - 63x2"

SERIES 604
Donkin Transition Coupler
PN2
GIS/PL3
Ductile Iron
DN90x3" to 355x12'

SERIES 310/080
Electrofusion Integral Flow
Limitor
(Fits into Electrofusion
Coupler or Reducer)
PN0.69 - 7
MSS SP-115
32, 32x20. 32x25mm

GATOR - AUTOMATIC BUTT FUSION
Gator 180, 250, 315
and 400

SBOX MAX – ELECTROFUSION
Welds Fusamatic fittings
from d20 – 630

250 MAINS SQUEEZE TOOL
For flow stopping 180-
250mm pipe

SERIES 80/32-200
Fixed height surface box
for service connection
valves
Square top
Cast iron lid
PA+ body

SERIES 8054/5211
AVK PENTOBOX Water
Meter Boundary Box
Grade B version
BS 5834-1:2017
PN16
Square PP frame
d20-32, ¾" BSP, ½" HG

*Products available from approved distributors

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