Installation & Operating Manual



ART 250A
Variable Orifice Double Regulating Valve

Albion Valves (UK) Ltd
www.albionvalvesuk.com
Email: sales@albionvalvesuk.com
Tel: 01226 729900

ART 250A Rev 1

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1. Introduction

- Albion Valves (UK) Ltd ART 250A is a Variable Orifice Double Regulating Valve (VODRV) used to regulate and measure the flow of media passing through it.
- The ART 250A has been classified in accordance with PED 2014/68/EU.

2. Technical Data

Valve Type	Size Range	Connection Type	Temperature Rating	Pressure Rating (Max)
ART 250A	DN50 – DN300	BS EN 1092 PN16	-20°C – 120°C	16 bar

Flow Coefficient

The flow rate can be calculated using the Kv value and a measured signal.

$Kv = Q*36 / \sqrt{\Delta P}$ $Kvs = Q*36 / \sqrt{\Delta Ps}$

Where Kv & Kvs = flow coefficient (m3/hr at 1 bar differential)
Q - Flow rate (l/s)
ΔP - Headloss attributable to valve (kPa)
ΔPs - Differential pressure across tappings (signal) (kPa)

Kv Values

Size	50	65	80	100	125	150	200	250	300
Kv	68.6	80.8	112.0	232.2	396.1	468.9	721.2	1009	1731

Sizing

Once the required flow rate has been calculated, the size of the Variable Orifice Double Regulating Valve can be determined based on the following:

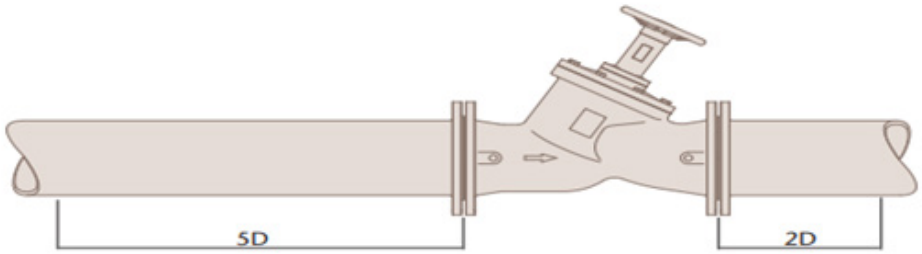
With the valve fully open, a minimum signal at the design flow rate of 1 kPa. The maximum signal is normally less than 5 kPa but can be up to 10 kPa. For sizing the flow velocity should not exceed 3 m/s at the design flow rate.

3. Valve Features

- The ART 250A VODRV is manufactured in accordance with BS 7350.
- Test points are supplied with the ART 250A FODRV.

4. Valve Installation

- The valve should be sited to ensure ease of access.
- It is the responsibility of the installer to ensure the valve is suitable for service conditions e.g., temperature, pressure, and service media.
- Where fitted, remove flange protectors / dust caps and all other packaging material.
- Care should be taken to ensure the surface finish of the valve is protected during installation.
- The valves may be installed in horizontal or vertical pipework.
- The valve is uni-directional and should only be used for flow in the direction shown on the valve.
- Suitable gaskets / sealing material should be used during installation.
- ART 250A VODRV should be installed with a minimum of 5 pipe diameters upstream and 2 pipe diameters downstream, this is to ensure flow accuracy is maintained during the commissioning stage.
- The memory stop can be set once the valve is at the correct design flow rate. This can be done by removing the black handwheel cap and rotating the cross head screw in a clockwise direction until resistance is met.



5. Approvals Classification

- The valve is classified in accordance with PED 2014/68/EU as Sound Engineering Practice (SEP).
- This valve is WRAS approved

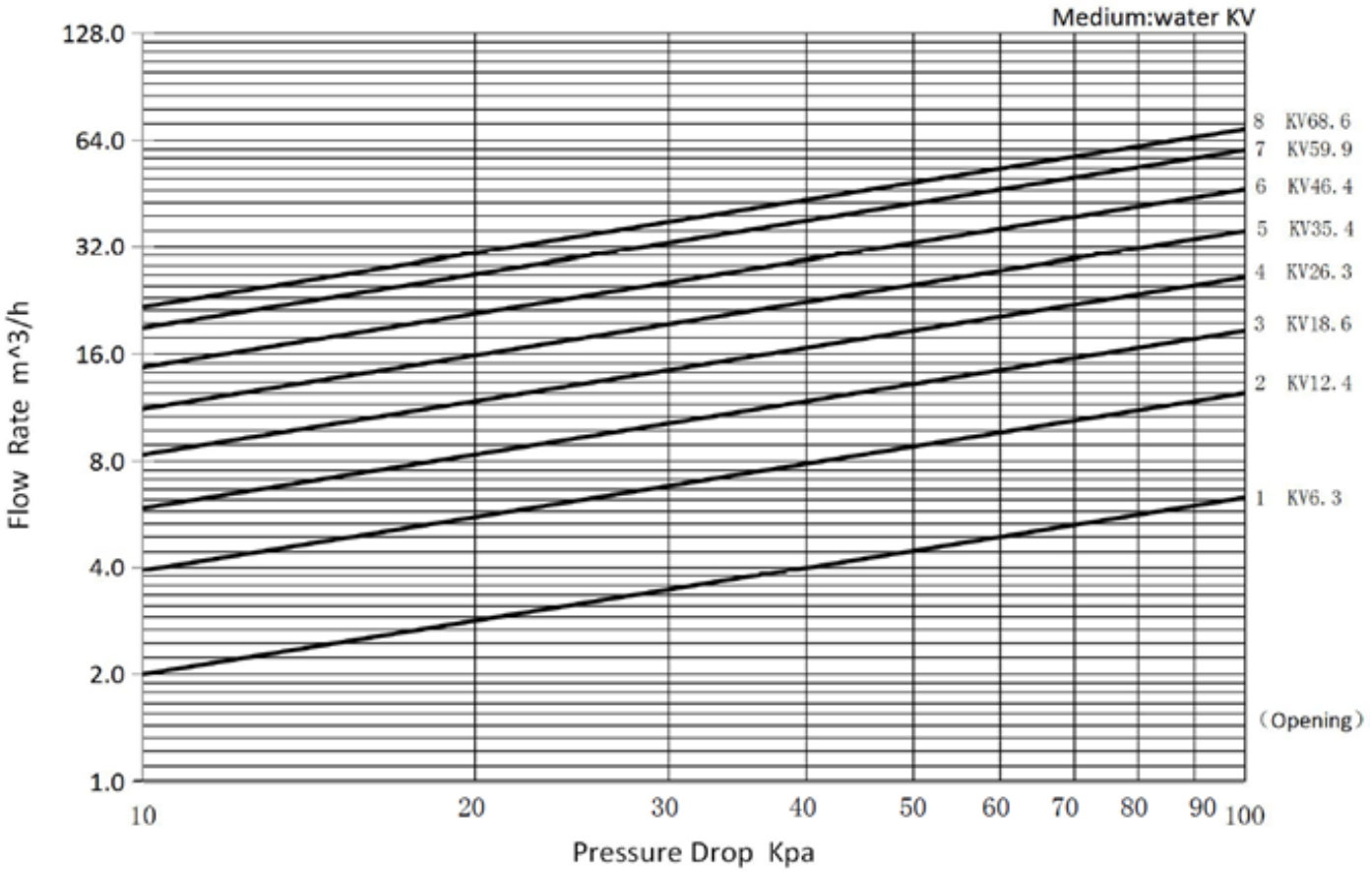
6. Troubleshooting

- If any maintenance is to be undertaken on the valve it is the responsibility of the installer to ensure the system is adequately drained and depressurised.
- A full risk assessment should be undertaken prior to any works taking place.

7. Warranty

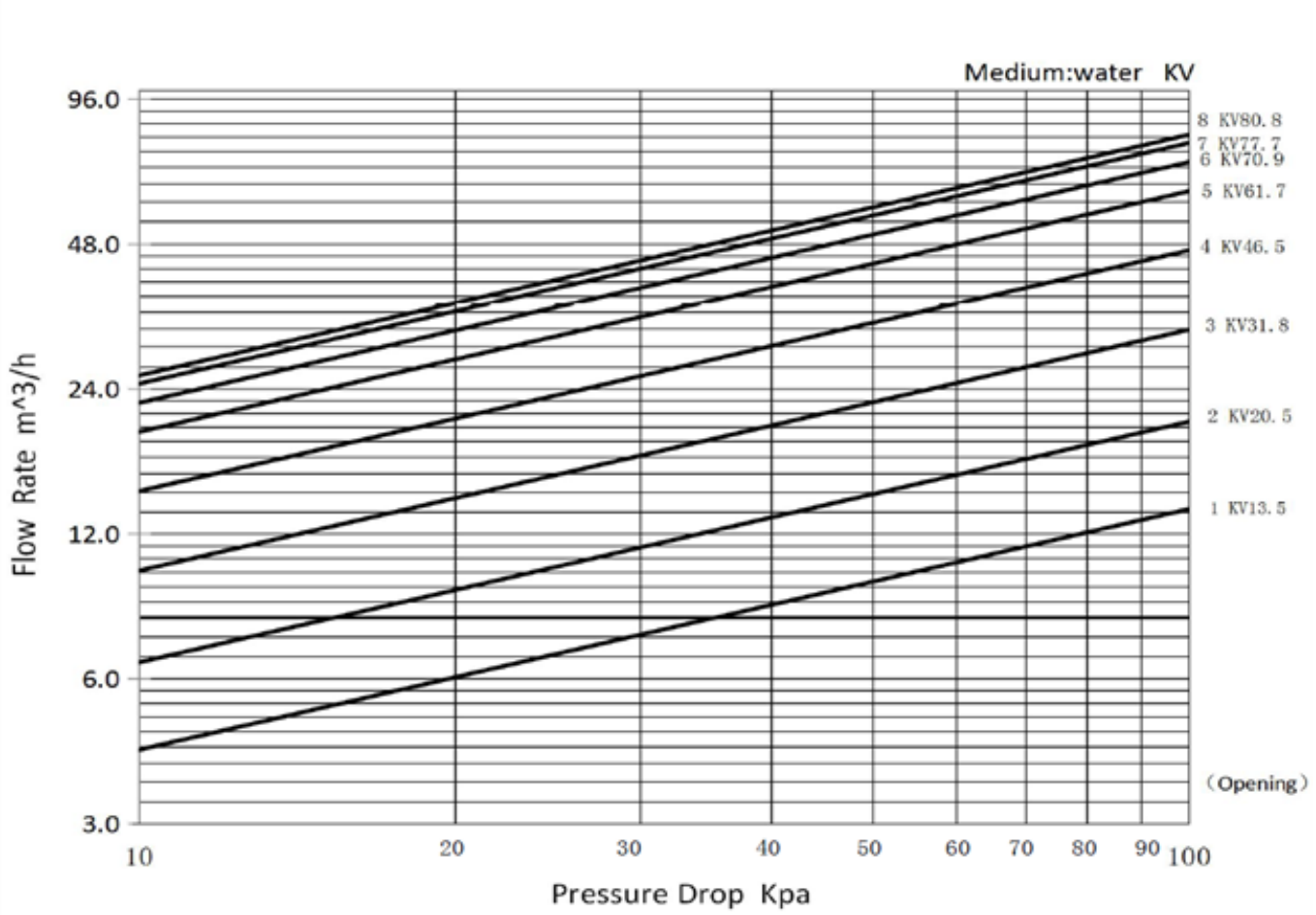
- For further details of Albion Valves (UK) Ltd warranty period, please refer to Albion Valves (UK) Ltd ‘Conditions of Sale’ available on our website.

DN50 ART 250A Variable Orifice Double Regulating Valve



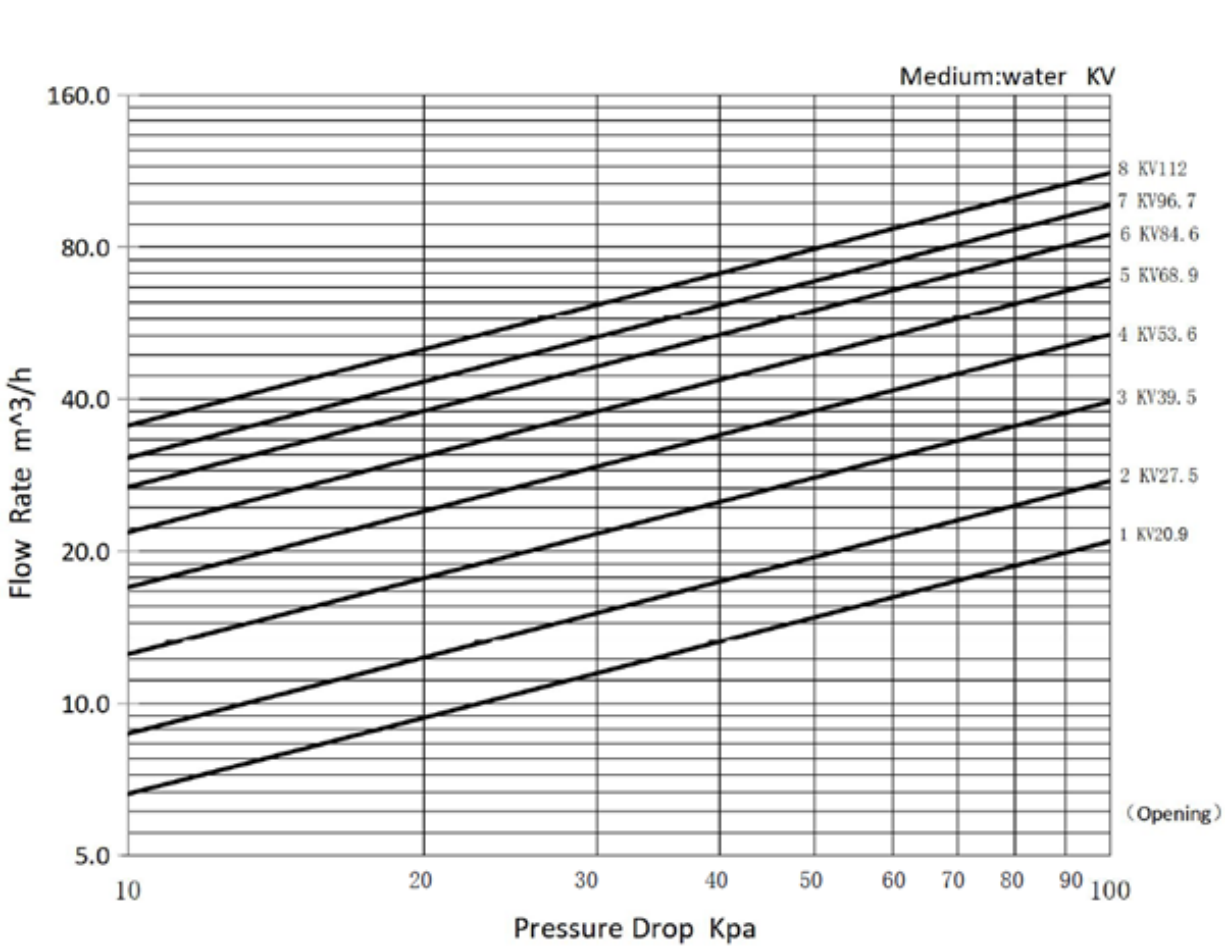
KV (Flow Rate in m3/hr @ 1 Bar pressure drop)										
Full Turns	**Tenths of a Turn**									
	0.0	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**
0				1.89	2.52	3.15	3.78	4.41	5.04	5.67
Position 1 (KV 6.3)	6.3	6.91	7.52	8.13	8.74	9.35	9.96	10.57	11.18	11.79
Position 2 (KV 12.4)	12.4	13.02	13.64	14.26	14.88	15.50	16.12	16.74	17.36	17.98
Position 3 (KV 18.6)	18.6	19.37	20.14	20.91	21.68	22.45	23.22	23.99	24.76	25.53
Position 4 (KV 26.3)	26.3	27.21	28.12	29.03	29.94	30.85	31.76	32.67	33.58	34.49
Position 5 (KV 35.4)	35.4	36.50	37.60	38.70	39.80	40.90	42.00	43.10	44.20	45.30
Position 6 (KV 46.4)	46.4	47.75	49.10	50.45	51.80	53.15	54.50	55.85	57.20	58.55
Position 7 (KV 59.9)	59.9	60.77	61.64	62.51	63.38	64.25	65.12	65.99	66.86	67.73
Position 8 (KV 68.6)	68.6									

DN65 ART 250A Variable Orifice Double Regulating Valve



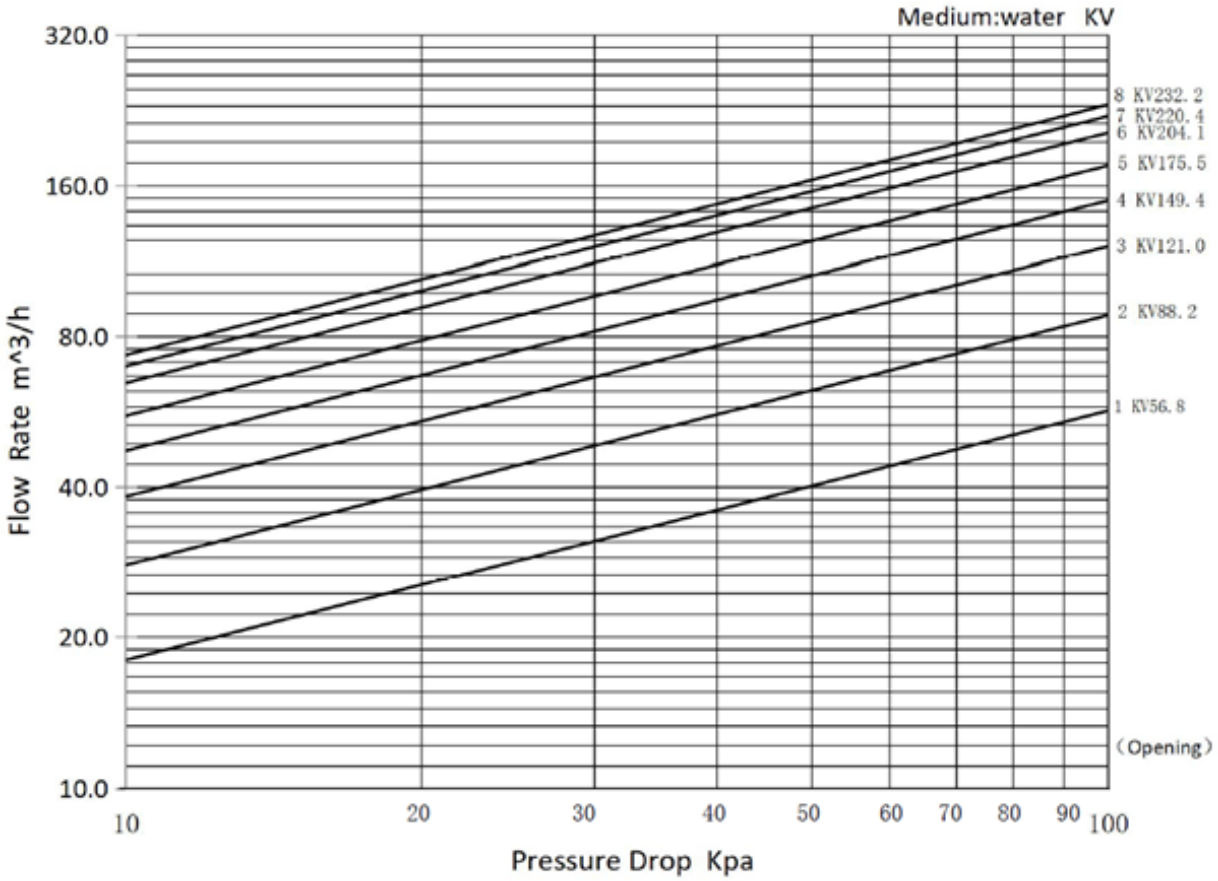
KV (Flow Rate in m3/hr @ 1 Bar pressure drop)										
Full Turns	**Tenths of a Turn**									
	0.0	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**
0				4.05	5.4	6.75	8.1	9.45	10.8	12.15
Position 1 (KV 13.5)	13.5	14.20	14.90	15.60	16.30	17.00	17.70	18.40	19.10	19.80
Position 2 (KV 20.5)	20.5	21.68	22.86	24.04	25.22	26.40	27.58	28.76	29.94	31.12
Position 3 (KV 31.8)	31.8	33.27	34.74	36.21	37.68	39.15	40.62	42.09	43.56	45.03
Position 4 (KV 46.5)	46.5	48.02	49.54	51.06	52.58	54.10	55.62	57.14	58.66	60.18
Position 5 (KV 61.7)	61.7	62.62	63.54	64.46	65.38	66.30	67.22	68.14	69.06	69.98
Position 6 (KV 70.9)	70.9	71.60	72.30	73.00	73.70	74.40	75.10	75.80	76.50	77.20
Position 7 (KV 77.9)	77.9	78.19	78.48	78.77	79.06	79.35	79.64	79.93	80.22	80.51
Position 8 (KV 80.8)	80.8									

DN80 ART 250A Variable Orifice Double Regulating Valve



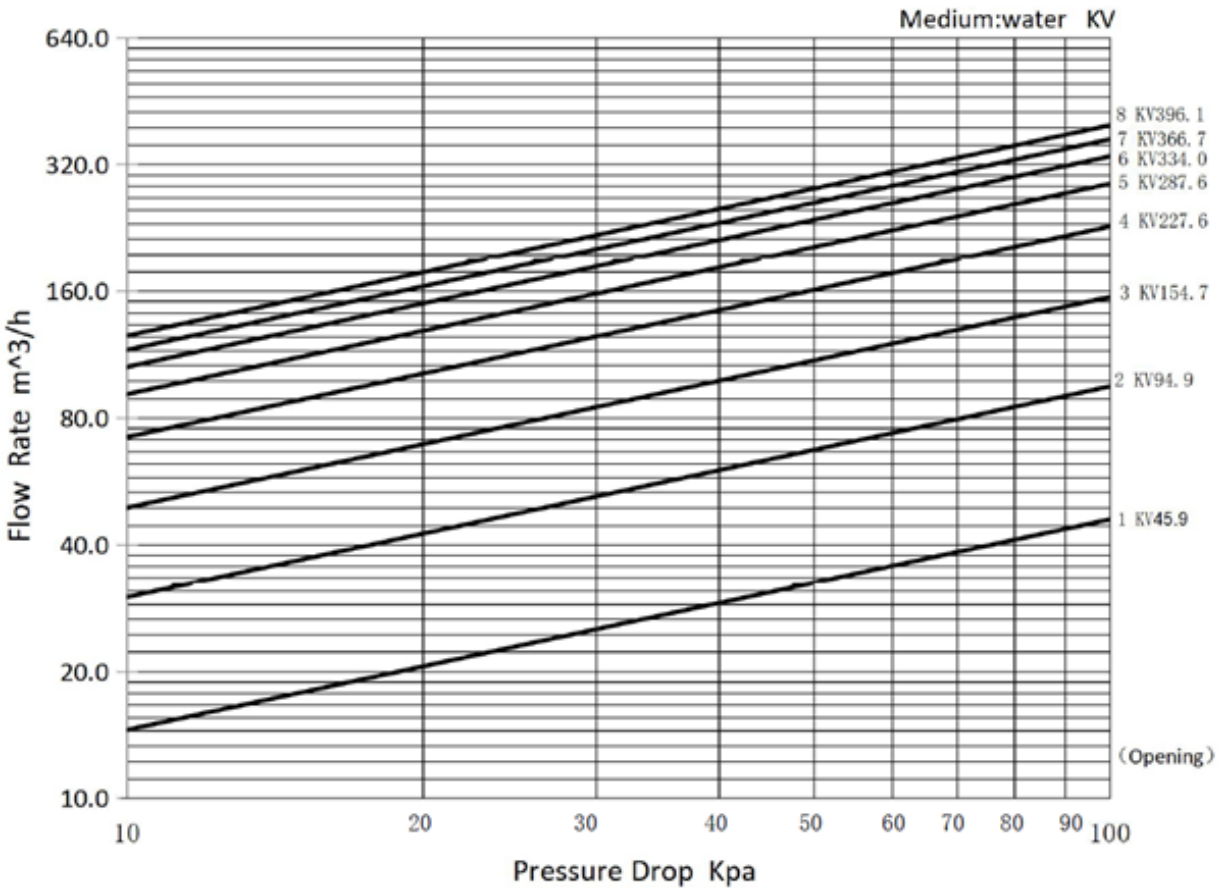
Kv (Flow Rate in m3/hr @ 1 Bar pressure drop)										
Full Turns	**Tenths of a Turn**									
	0.0	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**
0				6.27	8.36	10.45	12.54	14.63	16.72	18.81
Position 1 (KV 20.9)	20.9	21.56	22.22	22.88	23.54	24.20	24.86	25.52	26.18	26.84
Position 2 (KV 27.5)	27.5	28.70	29.90	31.10	32.30	33.50	34.70	35.90	37.10	38.30
Position 3 (KV 39.5)	39.5	40.91	42.32	43.73	45.14	46.55	47.96	49.37	50.78	52.19
Position 4 (KV 53.6)	53.6	55.13	56.66	58.19	59.72	61.25	62.78	64.31	65.84	67.37
Position 5 (KV 68.9)	68.9	70.47	72.04	73.61	75.18	76.75	78.32	79.89	81.46	83.03
Position 6 (KV 84.6)	84.6	85.91	87.22	88.53	89.84	91.15	92.46	93.77	95.08	96.39
Position 7 (KV 97.7)	97.7	99.13	100.56	101.99	103.42	104.85	106.28	107.71	109.14	110.57
Position 8 (KV 112)	112									

DN100 ART 250A Variable Orifice Double Regulating Valve



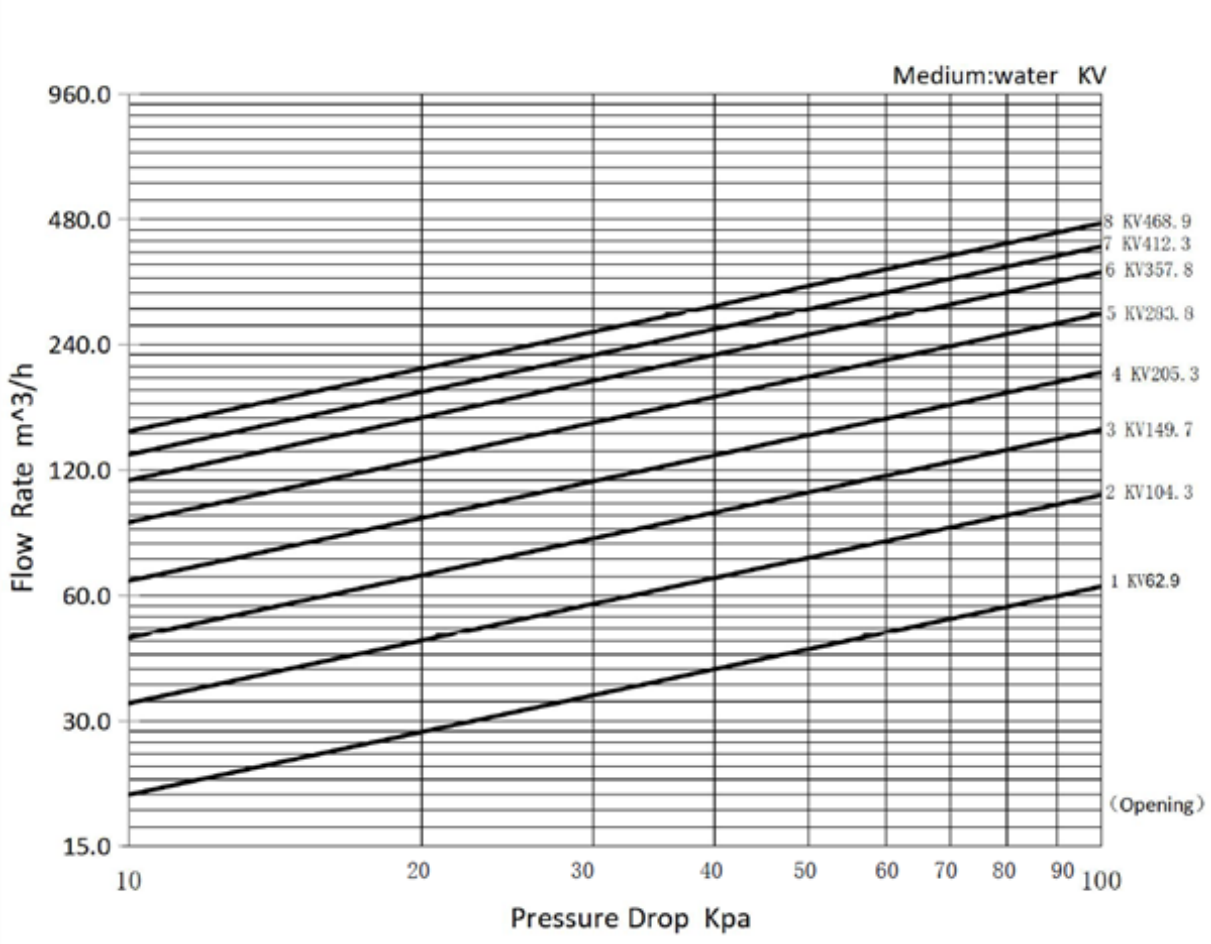
Kv (Flow Rate in m3/hr @ 1 Bar pressure drop)										
Full Turns	**Tenths of a Turn**									
	0.0	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**
0				17.04	22.72	28.4	34.08	39.76	45.44	51.12
Position 1 (KV 56.8)	56.8	59.94	63.08	66.22	69.36	72.50	75.64	78.78	81.92	85.06
Position 2 (KV 88.2)	88.2	91.48	94.76	98.04	101.32	104.60	107.88	111.16	114.44	117.72
Position 3 (KV 121)	121	123.84	126.68	129.52	132.36	135.20	138.04	140.88	143.72	146.56
Position 4 (KV 149.4)	149.4	152.01	154.62	157.23	159.84	162.45	165.06	167.67	170.28	172.89
Position 5 (KV 175.5)	175.5	178.36	181.22	184.08	186.94	189.80	192.66	195.52	198.38	201.24
Position 6 (KV 204.1)	204.1	205.73	207.36	208.99	210.62	212.25	213.88	215.51	217.14	218.77
Position 7 (KV 220.4)	220.4	221.58	222.76	223.94	225.12	226.30	227.48	228.66	229.84	231.02
Position 8 (KV 232.2)	232.2									

DN125 ART 250A Variable Orifice Double Regulating Valve



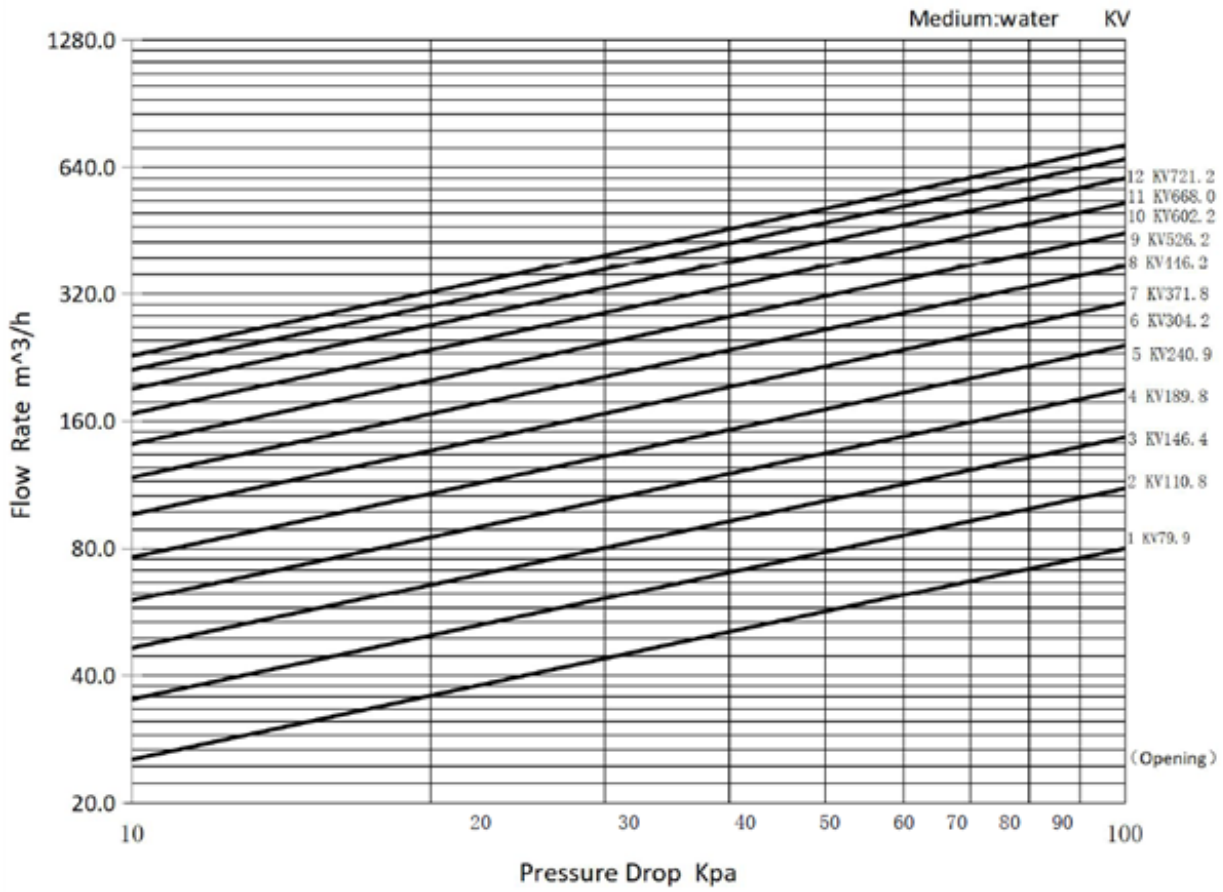
Kv (Flow Rate in m3/hr @ 1 Bar pressure drop)										
Full Turns	**Tenths of a Turn**									
	0.0	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**
0				13.77	18.36	22.95	27.54	32.13	36.72	41.31
Position 1 (KV 45.9)	45.9	50.80	55.70	60.60	65.50	70.40	75.30	80.20	85.10	90.00
Position 2 (KV 94.9)	94.9	100.88	106.86	112.84	118.82	124.80	130.78	136.76	142.74	148.72
Position 3 (KV 154.7)	154.7	161.99	169.28	176.57	183.86	191.15	198.44	205.73	213.02	220.31
Position 4 (KV 227.6)	227.6	233.60	239.60	245.60	251.60	257.60	263.60	269.60	275.60	281.60
Position 5 (KV 287.6)	287.6	292.24	296.88	301.52	306.16	310.8	315.44	320.08	324.72	329.36
Position 6 (KV 334)	334	337.27	340.54	343.81	347.08	350.35	353.62	356.89	360.16	363.43
Position 7 (KV 366.7)	366.7	369.64	372.58	375.52	378.46	381.40	384.34	387.28	390.22	393.16
Position 8 (KV 396.1)	396.1									

DN150 ART 250A Variable Orifice Double Regulating Valve



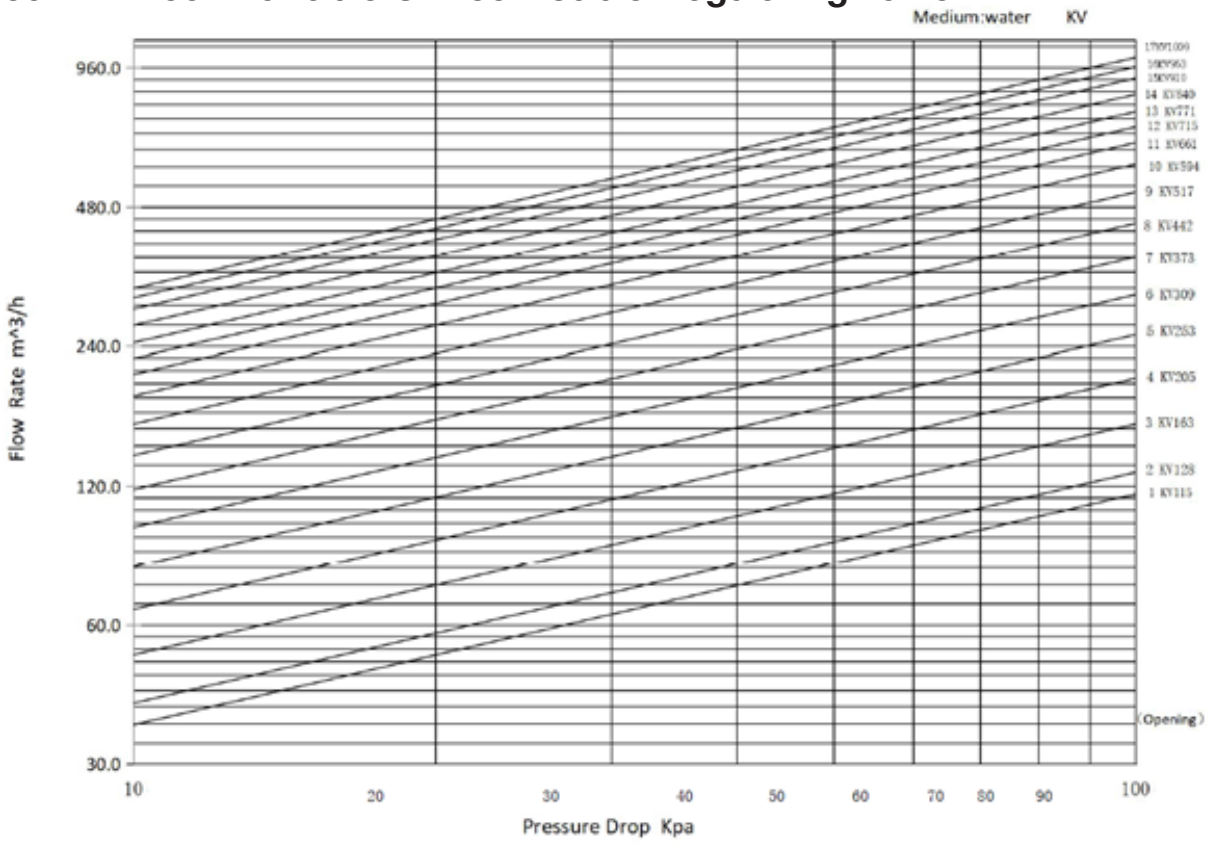
Kv (Flow Rate in m3/hr @ 1 Bar pressure drop)										
Full Turns	**Tenths of a Turn**									
	0.0	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**
0				18.87	25.16	31.45	37.74	44.03	50.32	56.61
Position 1 (KV 62.9)	62.9	67.04	71.18	75.32	79.46	83.60	87.74	91.88	96.02	100.16
Position 2 (KV 104.3)	104.3	108.84	113.38	117.92	122.46	127.00	131.54	136.08	140.62	145.16
Position 3 (KV 149.7)	149.7	155.26	160.82	166.38	171.94	177.50	183.06	188.62	194.18	199.74
Position 4 (KV 205.3)	205.3	213.15	221.00	228.85	236.70	244.55	252.40	260.25	268.10	275.95
Position 5 (KV 283.8)	283.8	291.20	298.60	306.00	313.40	320.80	328.20	335.60	343.00	350.40
Position 6 (KV 357.8)	357.8	363.25	368.70	374.15	379.60	385.05	390.50	395.95	401.40	406.85
Position 7 (KV 412.3)	412.3	417.96	423.62	429.28	434.94	440.60	446.26	451.92	457.58	463.24
Position 8 (KV 468.9)	468.9									

DN200 ART 250A Variable Orifice Double Regulating Valve



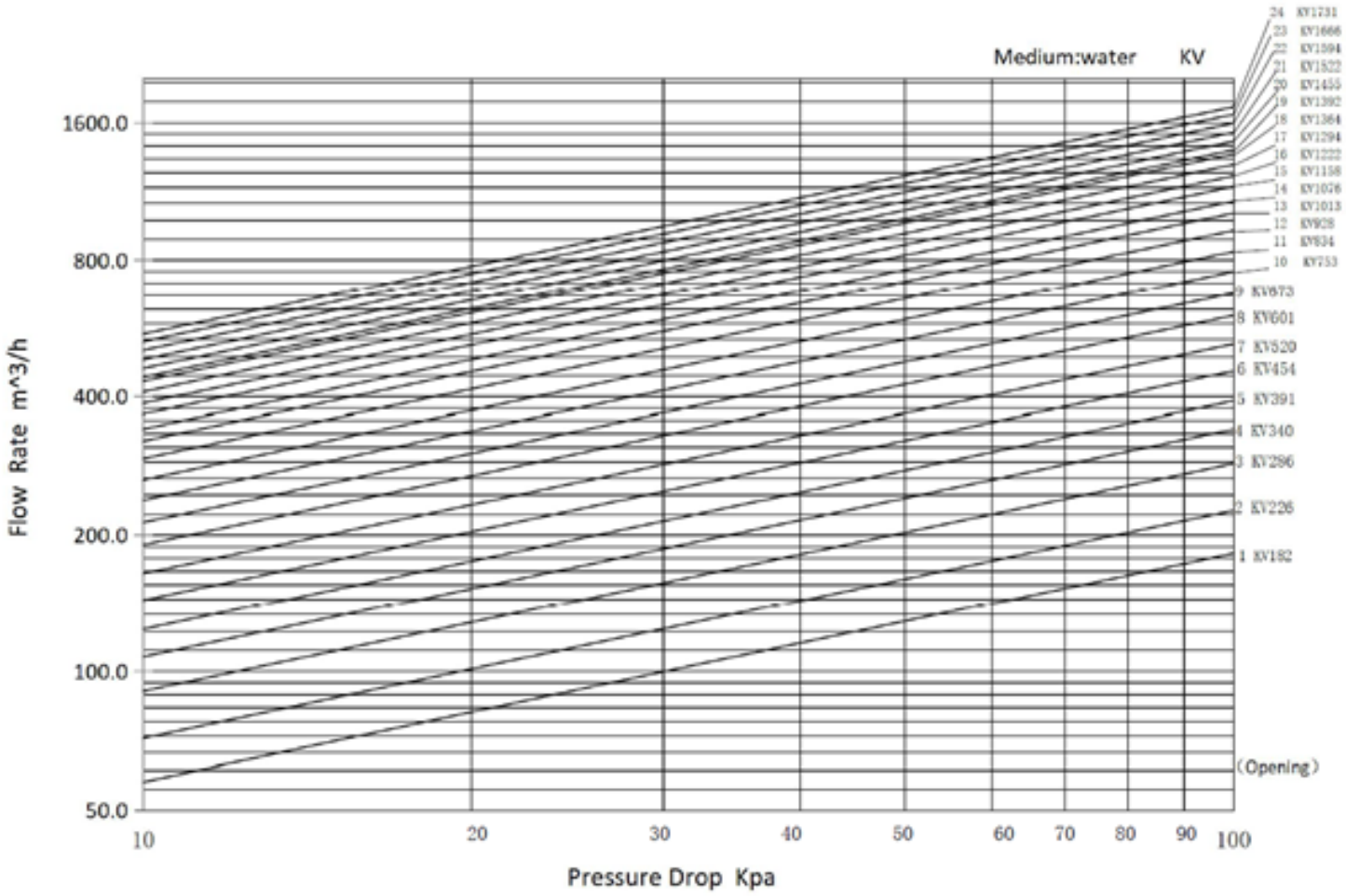
Kv (Flow Rate in m3/hr @ 1 Bar pressure drop)										
Full Turns	**Tenths of a Turn**									
	0.0	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**
0				23.97	31.96	39.95	47.94	55.93	63.92	71.91
Position 1 (KV 79.9)	79.9	82.99	86.08	89.17	92.26	95.35	98.44	101.53	104.62	107.71
Position 2 (KV 110.8)	110.8	114.36	117.92	121.48	125.04	128.60	132.16	135.72	139.28	142.84
Position 3 (KV 146.4)	146.4	150.74	155.08	159.42	163.76	168.10	172.44	176.78	181.12	185.46
Position 4 (KV 189.8)	189.8	194.91	200.02	205.13	210.24	215.35	220.46	225.57	230.68	235.79
Position 5 (KV 240.9)	240.9	247.23	253.56	259.89	266.22	272.55	278.88	285.21	291.54	297.87
Position 6 (KV 304.2)	304.2	310.96	317.72	324.48	331.24	338.00	344.76	351.52	358.28	365.04
Position 7 (KV 371.8)	371.8	379.24	386.68	394.12	401.56	409.00	416.44	423.88	431.32	438.76
Position 8 (KV 446.2)	446.2	454.20	462.20	470.20	478.20	486.20	494.20	502.20	510.20	518.20
Position 9 (KV 526.2)	526.2	533.80	541.40	549.00	556.60	564.20	571.80	579.40	587.00	594.60
Position 10 (KV 602.2)	602.2	608.78	615.36	621.94	628.52	635.10	641.68	648.26	654.84	661.42
Position 11 (KV 668)	668	673.32	678.64	683.96	689.28	694.60	699.92	705.24	710.56	715.88
Position 12 (KV 721.2)	721.2									

DN250 ART 250A Variable Orifice Double Regulating Valve



Kv (Flow Rate in m3/hr @ 1 Bar pressure drop)										
Full Turns	**Tenths of a Turn**									
	0.0	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**
0				34.5	46	57.5	69	80.5	92	103.5
Position 1 (KV 115)	115	116.30	117.60	118.90	120.20	121.50	122.80	124.10	125.40	126.70
Position 2 (KV 128)	128	131.50	135.00	138.50	142.00	145.50	149.00	152.50	156.00	159.50
Position 3 (KV 163)	163	167.20	171.40	175.60	179.80	184.00	188.20	192.40	196.60	200.80
Position 4 (KV 205)	205	209.80	214.60	219.40	224.20	229.00	233.80	238.60	243.40	248.20
Position 5 (KV 253)	253	258.60	264.20	269.80	275.40	281.00	286.60	292.20	297.80	303.40
Position 6 (KV 309)	309	315.40	321.80	328.20	334.60	341.00	347.40	353.80	360.20	366.60
Position 7 (KV 373)	373	379.90	386.80	393.70	400.60	407.50	414.40	421.30	428.20	435.10
Position 8 (KV 442)	442	449.50	457.00	464.50	472.00	479.50	487.00	494.50	502.00	509.50
Position 9 (KV 517)	517	524.70	532.40	540.10	547.80	555.50	563.20	570.90	578.60	586.30
Position 10 (KV 594)	594	600.70	607.40	614.10	620.80	627.50	634.20	640.90	647.60	654.30
Position 11 (KV 661)	661	666.40	671.80	677.20	682.60	688.00	693.40	698.80	704.20	709.60
Position 12 (KV 715)	715	720.60	726.20	731.80	737.40	743.00	748.60	754.20	759.80	765.40
Position 13 (KV 771)	771	777.90	784.80	791.70	798.60	805.50	812.40	819.30	826.20	833.10
Position 14 (KV 840)	840	847.00	854.00	861.00	868.00	875.00	882.00	889.00	896.00	903.00
Position 15 (KV 910)	910	915.30	920.60	925.90	931.20	936.50	941.80	947.10	952.40	957.70
Position 16 (KV 963)	963	967.60	972.20	976.80	981.40	986.00	990.60	995.20	999.80	1004.40
Position 17 (KV 1009)	1009									

DN300 ART 250A Variable Orifice Double Regulating Valve



DN300 ART 250A Kv (Flow Rate in m3/hr @ 1 Bar pressure drop)										
Full Turns	**Tenths of a Turn**									
	0.0	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**
0				54.6	72.8	91	109.2	127.4	145.6	163.8
Position 1 (KV 182)	182	186.40	190.80	195.20	199.60	204.00	208.40	212.80	217.20	221.60
Position 2 (KV 226)	226	232.00	238.00	244.00	250.00	256.00	262.00	268.00	274.00	280.00
Position 3 (KV 286)	286	291.40	296.80	302.20	307.60	313.00	318.40	323.80	329.20	334.60
Position 4 (KV 340)	340	345.10	350.20	355.30	360.40	365.50	370.60	375.70	380.80	385.90
Position 5 (KV 391)	391	397.30	403.60	409.90	416.20	422.50	428.80	435.10	441.40	447.70
Position 6 (KV 454)	454	397.30	403.60	409.90	416.20	422.50	428.80	435.10	441.40	447.70
Position 7 (KV 520)	520	528.10	536.20	544.30	552.40	560.50	568.60	576.70	584.80	592.90
Position 8 (KV 601)	601	608.20	615.40	622.60	629.80	637.00	644.20	651.40	658.60	665.80
Position 9 (KV 673)	673	681.00	689.00	697.00	705.00	713.00	721.00	729.00	737.00	745.00
Position 10 (KV 753)	753	761.10	769.20	777.30	785.40	793.50	801.60	809.70	817.80	825.90
Position 11 (KV 834)	834	843.40	852.80	862.20	871.60	881.00	890.40	899.80	909.20	918.60
Position 12 (KV 928)	928	936.50	945.00	953.50	962.00	970.50	979.00	987.50	996.00	1004.50
Position 13 (KV 1013)	1013	1019.30	1025.60	1031.90	1038.20	1044.50	1050.80	1057.10	1063.40	1069.70
Position 14 (KV 1076)	1076	1084.20	1092.40	1100.60	1108.80	1117.00	1125.20	1133.40	1141.60	1149.80
Position 15 (KV 1158)	1158	1164.40	1170.80	1177.20	1183.60	1190.00	1196.40	1202.80	1209.20	1215.60
Position 16 (KV 1222)	1222	1229.20	1236.40	1243.60	1250.80	1258.00	1265.20	1272.40	1279.60	1286.80
Position 17 (KV 1294)	1294	1301.00	1308.00	1315.00	1322.00	1329.00	1336.00	1343.00	1350.00	1357.00
Position 18 (KV 1364)	1364	1366.80	1369.60	1372.40	1375.20	1378.00	1380.80	1383.60	1386.40	1389.20
Position 19 (KV 1392)	1392	1398.30	1404.60	1410.90	1417.20	1423.50	1429.80	1436.10	1442.40	1448.70
Position 20 (KV 1455)	1455	1461.70	1468.40	1475.10	1481.80	1488.50	1495.20	1501.90	1508.60	1515.30
Position 21 (KV 1522)	1522	1529.20	1536.40	1543.60	1550.80	1558.00	1565.20	1572.40	1579.60	1586.80
Position 22 (KV 1594)	1594	1601.20	1608.40	1615.60	1622.80	1630.00	1637.20	1644.40	1651.60	1658.80
Position 23 (KV 1666)	1666	1672.50	1679.00	1685.50	1692.00	1698.50	1705.00	1711.50	1718.00	1724.50
Position 24 (KV 1731)	1731									

About Albion Valves (UK) Limited

Albion Valves (UK) Limited has been in the industrial heating and valve market for over 40 years, with this comes a wealth of knowledge and expertise that allows us to support our network of independent distributors and their customers.

Albion aims to supply a readily available, complete, quality valve solution alongside excellent cradle-to-grave support and service.

That is why we say, ‘It’s all at Albion’.

Quality

Whatever you need, you can rest assured that if it comes from Albion it has been designed and manufactured to deliver optimum performance and is accredited with the necessary approvals. Our in-house quality and technical departments are always on hand too!

Service

Our cradle-to-grave approach means you will never be on your own. Whether you need assistance with your system designs, an industry-leading turnaround time on your quote, or some help with commissioning after installation, we have a team to help!

Delivery

We know that time is money, and when a priority project depends on a part, you can trust Albion to deliver. We deliver 95% of products the next day with 99.98% accuracy!

Choice

We may have started with a single brass ball valve, but our range has grown substantially since and we can now offer a full building services valve solution, alongside a comprehensive range of valves for the industrial and process markets.

It is becoming more and more apparent to the industry, that it really is, all at Albion.