

Accurate Regulation of your Flow

Alfa Laval Unique RV-P Regulating Valve

2.7

Concept

Unique RV-P is a hygienic electro-pneumatic regulating valve for use in applications which require precision control of pressure, flow, temperature, level in tanks etc.

Working principle

It is remotely-controlled by an electrical signal and compressed air. The IP-converter, which is an integrated part of the actuator, converts the electrical signal to a pneumatic signal. This signal conversion is based on a highly accurate and reliable contactless AMR sensor making it insensitive to vibrations and pressure shocks. The pneumatic signal is transmitted to the integrated positioner which operates by means of the force-balance principle, ensuring that the position of the actuator piston is directly proportional to the input signal. Signal range and zero point can be adjusted individually. The actuator can be used for split-range operation by using a different measuring spring.

Standard design

The valve is built on the Unique SSV platform and consists of valve body, valve plug, lip seal, bonnet and an external actuator. The actuator with the bonnet is fitted to the valve body by means of a clamp. The Kv value is flexible as lower element can be exchanged.



TECHNICAL DATA

Valves

Max. product pressure: 1000 kPa (10 bar).

Min. product pressure: Full vacuum.

Temperature range: 10°C to 140°C (EPDM).

Flow range Kv ($\Delta P = 1\text{bar}$): . . . 0.5 to 110 m³/h.

Max. pressure drop: 500 kPa (5 bar).

Actuator

Air quality

Air connection: 6/4 air tube with air fitting R1/8" (BSP)

Max. pressure: 600 kPa (6 bar).

Working pressure: 400 kPa (4 bar).

Max. size of particles: 0.01 mm.

Max. oil content: 0.08 ppm.

Dew point: 10°C below ambient temp. or lower.

Max. water content: 7.5 g/kg.

I/P converter

Signal range: 4 - 20 mA (standard).

Input resistance: 200

Inductivity/capacitance: Negligible.

PHYSICAL DATA

Materials, Valves

Product wetted steel parts: . . . 1.4404 (316L).

Other steel parts: 1.4301(304).

Product wetted seals: EPDM.

External finish: Semi-bright (blasted).

Internal finish: Bright (polished) RA<0.8 μm .

Materials, Actuator

Actuator cases: Aluminium with plastic coating.

Diaphragms: NBR with reinforced fabric insert.

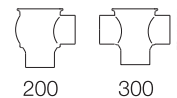
Springs: Stainless steel uncovered/spring steel epoxy resin coated.

Actuator stem: Polyamide.

Screws, nuts: Stainless steel, polyamide.

Other parts: Stainless steel.

Valve body combinations



Accuracy

Deviation: ≤1.5%
 Hysteresis: ≤0.5%.
 Sensitivity: <0.1%.
 Influence of air supply pressure: ≤0.1% between 1.4 and 6 bar.
 Air consumption at steady state condition: With 0.6 bar signal pressure and supply pressures up to 6 bar ≤100 l/h.
 Ambient temperature: -25°C to +70°C.
 Protection class: IP 66

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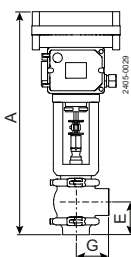
Flow sizes/tube connections

Kv	Seat diam. (mm)	Tube connections (mm)		Actuator (type no.)	
		ISO	DIN/DN	NO	NC
0.5 E	6	38	40	3277-5	3277-5
1.0 E	10	38	40	3277-5	3277-5
2 E	12	38	40	3277-5	3277-5
4 E	14	38	40	3277-5	3277-5
8 E	23	38	40	3277-5	3277-5
16 E	29	38	40	3277-5	3277-5
32 E	48.5	51	50	3277-5	3277-5
64 L	51	63.5	65	3277-5	3277-5
75 L	51	76.1	80	3277-5	3277-5
110 L	72	101.6	100	3277-5	3277

Options

- A. Male parts or clamp liners in accordance with required standard.
- B. Lip seal of HNBR or Fluorinated rubber (FPM).
- C. Profibus communication
- D. Aseptic configuration Max 8 bar

Dimensions (mm)

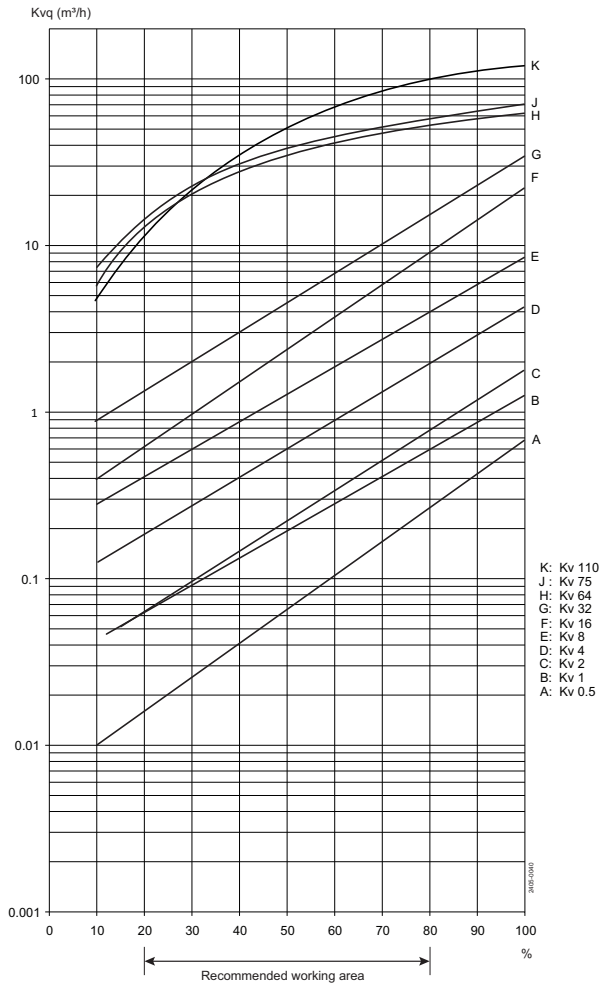


Size	38		51		63.5		76.1		101.6		DN40	DN50	DN65	DN80	DN100	
	NO/NC	NO/NC	NO/NC	NO/NC	NO	NC	NO/NC	NO/NC	NO	NC	NO/NC	NO/NC	NO/NC	NO/NC	NO	NC
A- std	410	423	405	439	463	481	412	425	411	447	465	483				
A- aseptic	411	426	412	446	470	488	414	427	418	454	472	490				
E	56	63	67	85	96	96	57	64	70	89	98	98				
G	49.5	61	81	86	119	119	49.5	62	78	87	120	120				
H	168	168	168	168	168	280	168	168	168	168	168	280				
OD	38	51	63.5	76.1	101.6	101.6	41	53	70	85	104	104				
ID	34.8	47.8	60.3	72.9	97.6	97.6	38	50	66	81	100	100				
t	1.6	1.6	1.6	1.6	2	2	1.5	1.5	2	2	2	2				
M/ISO clamp	21	21	21	21	21	21	-	-	-	-	-	-				
M/DIN clamp	-	-	-	-	-	-	21	21	28	28	28	28				
M/DIN male	-	-	-	-	-	-	22	23	25	25	30	30				
M/SMS male	20	20	24	24	35	35	-	-	-	-	-	-				
Weight kg	8.2	9.3	9.7	11.2	15.4	24.9	8.2	9.3	9.7	11.2	15.4	24.9				

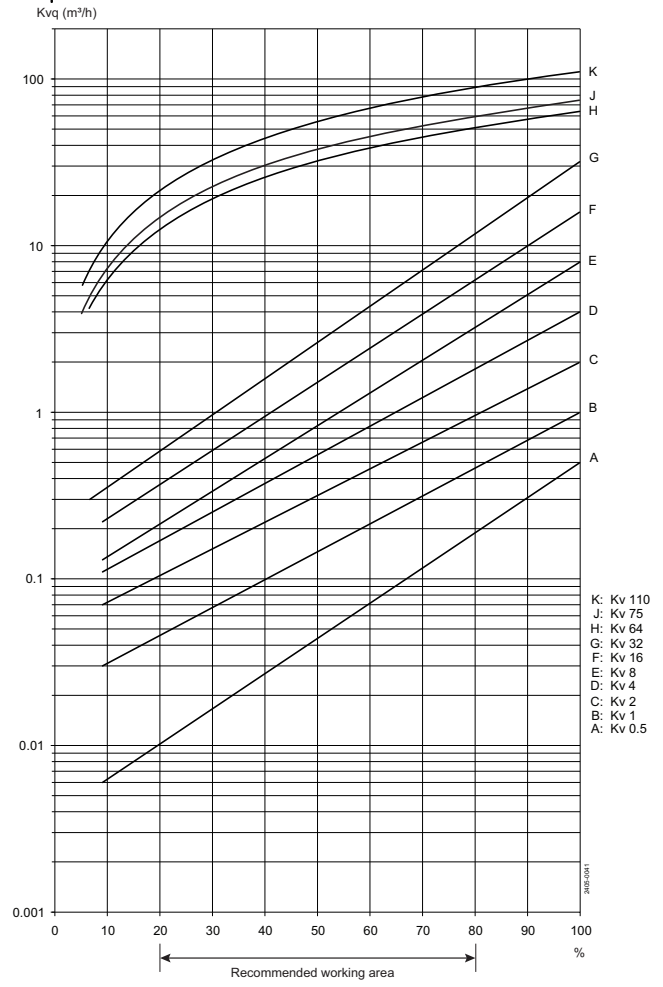
Capacity diagram

For $\Delta P = 100 \text{ kPa}$ (1bar).

Standard



Aseptic



Note! For the diagram the following applies:
 Medium: Water (20°C).
 Measurement: In accordance with VDI 2173.
 Alfa Laval recommend max. flow velocity in tubing and valves to be 5 m/sec.

Pressure drop calculation

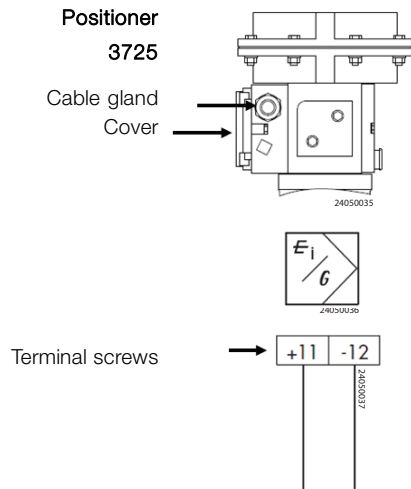
The Kv designation is the flow rate in m³/h at a pressure drop of 1 bar when the valve is fully open (water at 20°C or similar liquids). To select the Kv value it is necessary to calculate the Kv_q value using the following formula:

$$Kv_q = \frac{Q}{\sqrt{\Delta P}}$$

Where:

- Kv_q = Kv value at specific flow and specific pressure drop.
- Q = Flow rate (m³/h).
- ΔP = Pressure drop over valve (bar).

Electrical connection - Analog 4-20 mA

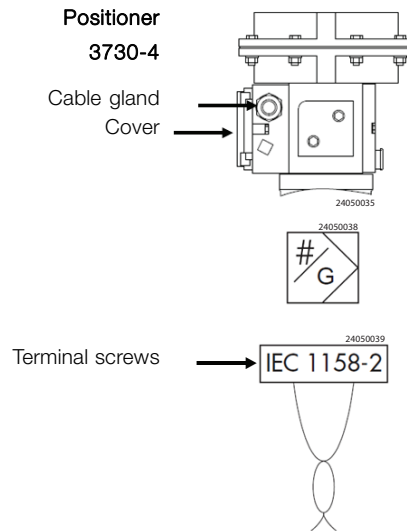


4-20 mA control signal

Route the two-wire line to the screw terminals marked "11 and 12", whereby the correct polarity has to be ensured

1. Open the cover of the positioner for electrical connection
2. Fit the cable through the cable gland and connect the cable wires to the terminal screws. (+11 and -12)
3. Tighten the cable gland and close the cover of the positioner

Electrical connection - Profibus PA



Bus control signal

Route the two-wire bus line to the screw terminals marked "IEC 1158-2", whereby no polarity has to be observed

1. Open the cover of the positioner for electrical connection
2. Fit the bus cable through the cable gland and connect the cable wires to the terminal screws. (IEC 1158-2)
3. Tighten the cable gland and close the cover of the positioner

By searching on positioner type 3730-4 you can either retrieve the GSD files for PROFIBUS PA communication directly from the World Wide Web server of Samson or the PROFIBUS User Organization

Unique RV-P Regulating Valve

Regulating valves

Product code: 5370

Material: 1.4404 (316L)
 Connection: ISO/DIN Welding ends
 Seals: EPDM
 Inside surface finish: Ra ≤ 0.8 μm
 Outside surface finish: Blasted
 Actuation: Pneumatic NC and NO

Standard

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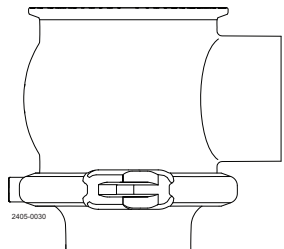
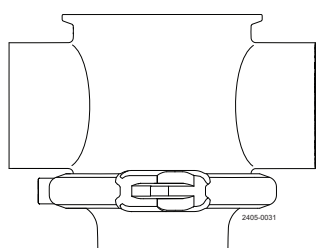
Item No.	PPL EUR	Item No. DIN Tube	PPL EUR	Size		Plug Type (*)	Flow Kv (m3/h)	Dimension (mm)			Dimension (mm)				
				Inch	DN			A -Inch	E	G	A -DIN	E	G		
Normally Closed															
9615223111	5169	9615223211	5169	38	40	E	0.5	410	56	49.5	412	57	49.5		
9615223112	5169	9615223212	5169	38	40	E	1	410	56	49.5	412	57	49.5		
9615223113	5169	9615223213	5169	38	40	E	2	410	56	49.5	412	57	49.5		
9615223114	5169	9615223214	5169	38	40	E	4	410	56	49.5	412	57	49.5		
9615223115	5169	9615223215	5169	38	40	E	8	410	56	49.5	412	57	49.5		
9615223116	5169	9615223216	5169	38	40	E	16	410	56	49.5	412	57	49.5		
9615223117	5439	9615223217	5439	51	50	E	32	423	63	61	425	64	61		
9615223118	5994	9615223218	5994	63.5	65	L	64	405	57	81	411	60	78		
9615223119	6455	9615223219	6455	76.1	80	L	75	439	85	86	447	89	86		
9615223120	7825	9615223220	7825	101.6	100	L	110	481	96	119	465	98	120		
Normally open															
9615223101	5169	9615223201	5169	38	40	E	0.5	410	56	49.5	412	57	49.5		
9615223102	5169	9615223202	5169	38	40	E	1	410	56	49.5	412	57	49.5		
9615223103	5169	9615223203	5169	38	40	E	2	410	56	49.5	412	57	49.5		
9615223104	5169	9615223204	5169	38	40	E	4	410	56	49.5	412	57	49.5		
9615223105	5169	9615223205	5169	38	40	E	8	410	56	49.5	412	57	49.5		
9615223106	5169	9615223206	5169	38	40	E	16	410	56	49.5	412	57	49.5		
9615223107	5439	9615223207	5438	51	50	E	32	423	63	61	425	64	61		
9615223108	5994	9615223208	5994	63.5	65	L	64	405	57	81	411	60	78		
9615223109	6455	9615223209	6455	76.1	80	L	75	439	85	86	447	89	86		
9615223110	7825	9615223210	7825	101.6	100	L	110	463	96	119	465	98	120		

(*) E = equal percentage, L=linear

For further information - please see PD-sheet.

The regulating valves not mentioned in the code number sheet, should be ordered as below:

Options

Item No.	PPL EUR	Size			Male parts
		Inch	DN		
	61 75 111 128 254	38 51 63.5 76.1 101.6	40 50 65 80 100	Male part standards (included in the price) SMS, ISO/IDF, DS, BS, DIN, ISO clamp.	 <p>Please state which type of male part you want and to which outlet it should be connected.</p>
Type 300 Valve body					
	61 75 81 104 119	38 51 63.5 76.1 101.6	40 50 65 80 100		
Seals					
	0 56			Replacement to seals of HNBR Replacement to seals of Fluorinated rubber (FPM)	
Positioner					
	1391			Profibus Type 3730-4	

Unique RV-P-A Regulating Valve

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 Seals: EPDM
 Inside surface finish: Ra ≤ 0.8 µm
 Outside surface finish: Blasted
 Actuation: Pneumatic NC and NC

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Item No.	PPL	Item No.	PPL	Size		Plug Type	Flow Kv	Dimension (mm)			Dimension (mm)			
				Inch	DN			A	E	G	-DIN	E	G	
Normally Closed														
9615223311	6232	9615223411	6232	38	40	E	0.5	411	56	49.5	414	57	49.5	
9615223312	6232	9615223412	6232	38	40	E	1	411	56	49.5	414	57	49.5	
9615223313	6232	9615223413	6232	38	40	E	2	411	56	49.5	414	57	49.5	
9615223314	6232	9615223414	6232	38	40	E	4	411	56	49.5	414	57	49.5	
9615223315	6232	9615223415	6232	38	40	E	8	411	56	49.5	414	57	49.5	
9615223316	6232	9615223416	6232	38	40	E	16	411	56	49.5	414	57	49.5	
9615223317	6502	9615223417	6502	51	50	E	32	426	63	61	427	64	61	
9615223318	7123	9615223418	7123	63.5	65	L	64	412	57	81	418	60	78	
9615223319	7651	9615223419	7651	76.1	80	L	75	446	85	86	454	89	86	
9615223320	9155	9615223420	9155	101.6	100	L	110	470	96	119	472	98	120	
Normally open														
9615223301	6232	9615223401	6232	38	40	E	0.5	411	56	49.5	414	57	49.5	
9615223302	6232	9615223402	6232	38	40	E	1	411	56	49.5	414	57	49.5	
9615223303	6232	9615223403	6232	38	40	E	2	411	56	49.5	414	57	49.5	
9615223304	6232	9615223404	6232	38	40	E	4	411	56	49.5	414	57	49.5	
9615223305	6232	9615223405	6232	38	40	E	8	411	56	49.5	414	57	49.5	
9615223306	6232	9615223406	6232	38	40	E	16	411	56	49.5	414	57	49.5	
9615223307	6502	9615223407	6502	51	50	E	32	426	63	61	427	64	61	
9615223308	7123	9615223408	7123	63.5	65	L	64	412	57	81	418	60	78	
9615223309	7651	9615223409	7651	76.1	80	L	75	446	85	86	454	89	86	
9615223310	9155	9615223410	9155	101.6	100	L	110	470	96	119	472	98	120	

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