



# Alfa Laval Unique RV-P Regulating Valve

Accurate Regulation of your Flow

## 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 m<sup>3</sup>/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  $\Omega$   
 Inductivity/capacitance: . . . . . Negligible.

## PHYSICAL DATA

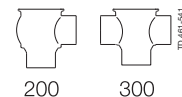
### Materials, Valves

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  $\mu\text{m}$ .

### 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

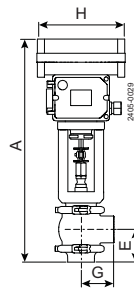
### Flow sizes/tube connections

Kv	Seat diam.	Tube connections (mm)		Actuator (type no.)	
	(mm)	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	66	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)

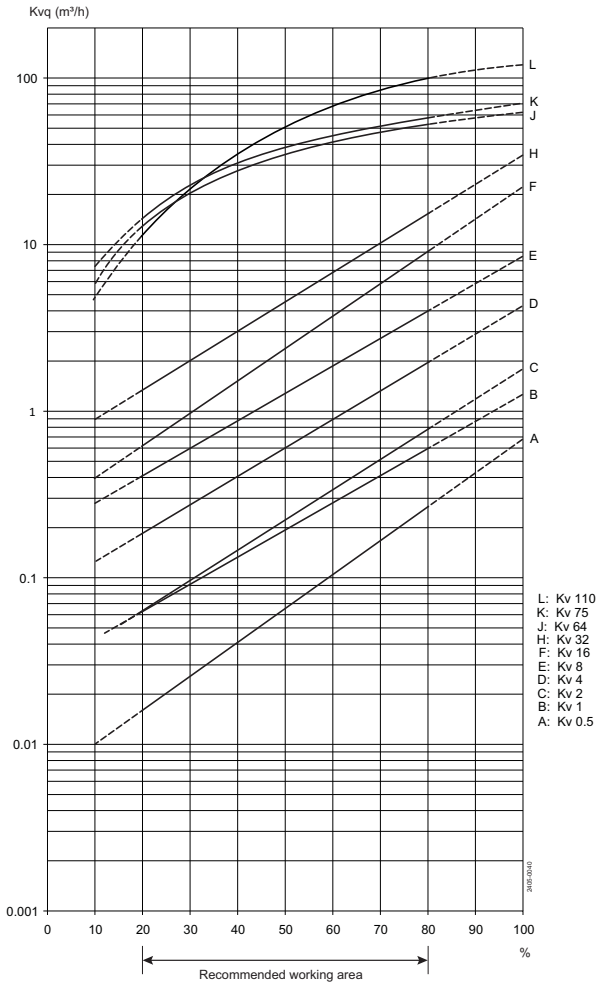


Size	38	51	63.5	76.1	101.6		DN40	DN50	DN65	DN80	DN100	
	NO/NC	NO/NC	NO/NC	NO/NC	NO	NC	NO/NC	NO/NC	NO/NC	NO/NC	NO	NC
A- std	410	423	405	439	463	481	412	425	411	447	465	483
A- aseptic	411	426	412	446	470	488	414	427	418	454	472	490
E	56	63	67	85	96	96	57	64	70	89	98	98
G	49.5	61	81	86	119	119	49.5	62	78	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

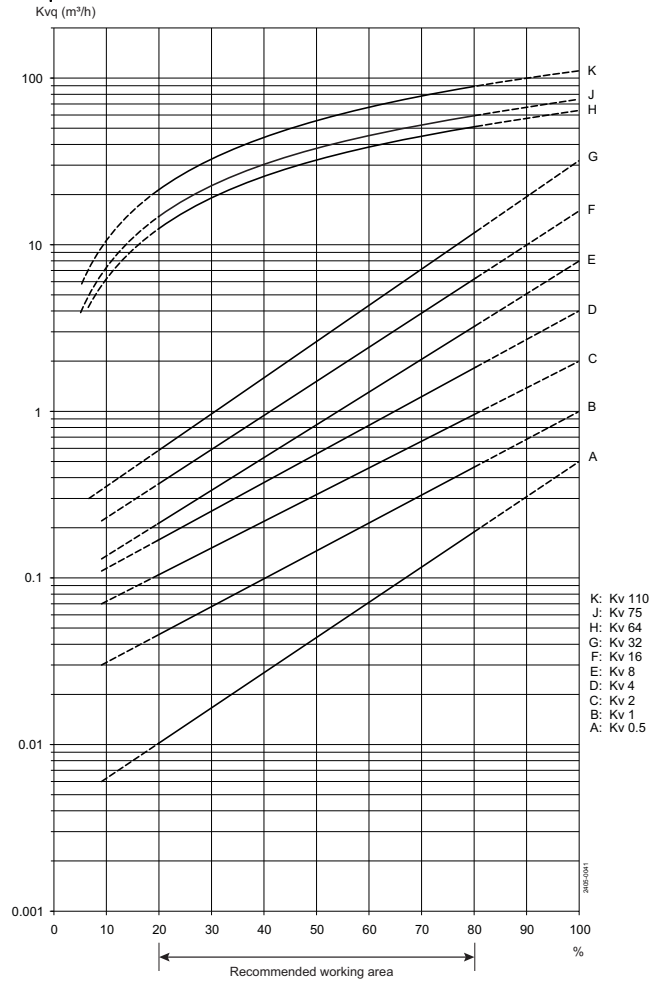
### Capacity diagram

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

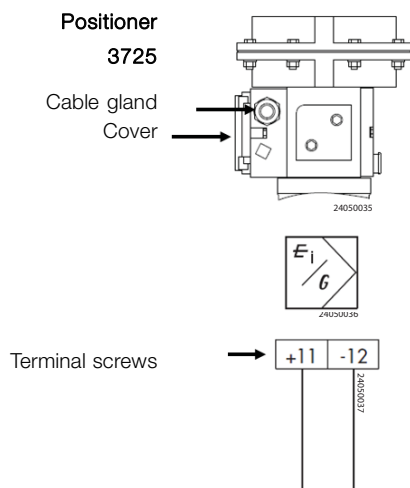
The Kv designation is the flow rate in  $\text{m}^3/\text{h}$  at a pressure drop of 1 bar when the valve is fully open (water at 20°C or similar liquids). To select the Kv value it is necessary to calculate the  $Kv_q$  value using the following formula:

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

Where:

- $Kv_q$  = Kv value at specific flow and specific pressure drop.
- $Q$  = Flow rate ( $\text{m}^3/\text{h}$ ).
- $\Delta P$  = Pressure drop over valve (bar).

### Electrical connection - Analog 4-20 mA

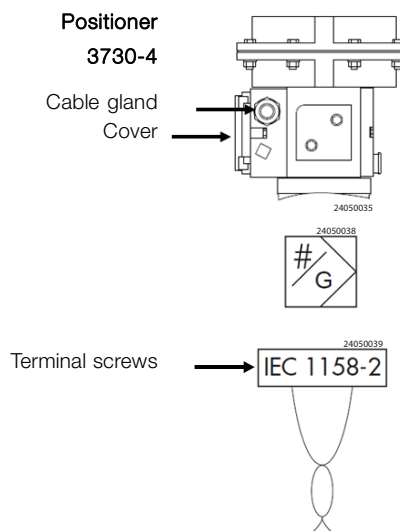


#### 4-20 mA control signal

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

Alfa Laval reserves the right to change specifications without prior notification.

#### How to contact Alfa Laval

Contact details for all countries are continually updated on our website. Please visit [www.alfalaval.com](http://www.alfalaval.com) to access the information direct.