



Alfa Laval Unique RV-ST

Regulating valves

Introduction

The Alfa Laval Unique RV-ST Regulating Valve is the third generation of the Alfa Laval single-seat regulating valve designed to meet the highest process demands of hygiene and safety. Built on a well-proven platform from an installed base of more than a million valves, it is ideal for high-volume, hygienic liquid processing applications that require precision control of flow rate or pressure.

Application

This pneumatic single-seat regulating valve is ideal for use as a hygienic product valve in the dairy, food, beverage, chemical, pharmaceutical and many other industries.

Benefits

- Reliable, automated performance
- Versatile, modular design
- Outstanding precision flow
- Easy to maintain
- Large operating range

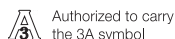
Standard design

The Alfa Laval Unique RV-ST Regulating Valve with positioner consists of valve body, valve stem, EPDM plug seal, actuator with advanced electro-pneumatic process controller, and stem bushings threaded to the actuator shaft. The control unit comes in two versions: with or without display.

Working principle

The Alfa Laval Unique RV-ST Regulating Valve is controlled from a remote location by means of a digital electro-pneumatic process controller. Few straightforward moveable parts ensure reliable operation.

Certificates



TECHNICAL DATA

Pressure	
Max. product pressure:	10 bar (1000 kPa)
Min. product pressure:	Full vacuum
Air pressure:	5 - 7 bar (500 to 700 kPa)

Temperature	
Temperature range:	-10°C to +140°C (EPDM)

Positioner data	
Supply voltage:	24 VDC +/- 10%
Working temperature:	0 to 55 °C
Push-in fittings:	ø6mm or 1/4"
Protection class:	IP65 and IP67
Position detection module:	Contact-free, wear-free
Communication:	Analog

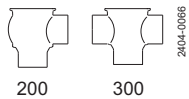
8692 Positioner – Top control with display	
Setpoint setting:	0/4 to 20mA and 0 to 5 5/10V
Output resistance:	0/4 to 20 mA: 180Ω 0 to 5/10V: 19Ω
Power consumption:	< 5W
Cable gland:	2xM16x1,5 (cable-ø10mm)
Max. wire diameter:	1.5 mm ²

8694 Positioner – Basic control without display	
Setpoint setting:	0/4 to 20mA
Output resistance:	180Ω
Power consumption:	< 3,5W
Cable gland:	2xM16x1,5 (cable-ø10mm)
Max. wire diameter:	1.5 mm ²

PHYSICAL DATA

Materials	
Material:	PPS, stainless steel
Cover:	PC
Seals:	EPDM
Product wetted steel parts:	1.4404 (316L)
External finish:	Semi-bright (blasted)
Internal finish:	Bright (polished), internal Ra < 0.8 µm
Other steel parts:	1.4301 (304)
Plug seal:	EPDM
Other product wetted seals:	EPDM (standard)
Other seals:	NBR

Valve Body Combinations



Other valves in the same basic design

- Unique Single Seat
- Standard valve
- Reverse acting valve
- Long stroke valve
- Manually operated valve
- Aseptic valve

Options

- a. Male parts or clamp liners in accordance with required standard
- b. Product wetted seals in HNBR or FPM
- c. Maintainable actuator
- d. External surface finish blasted
- e. Optional plug seal: HNBR or FPM

Note!

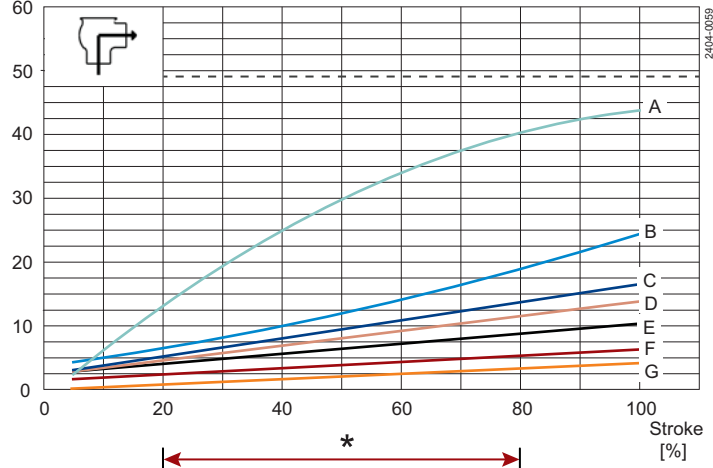
For further details, see instruction ESE02127

Pressure drop/capacity diagrams

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

Valve size 1.5"

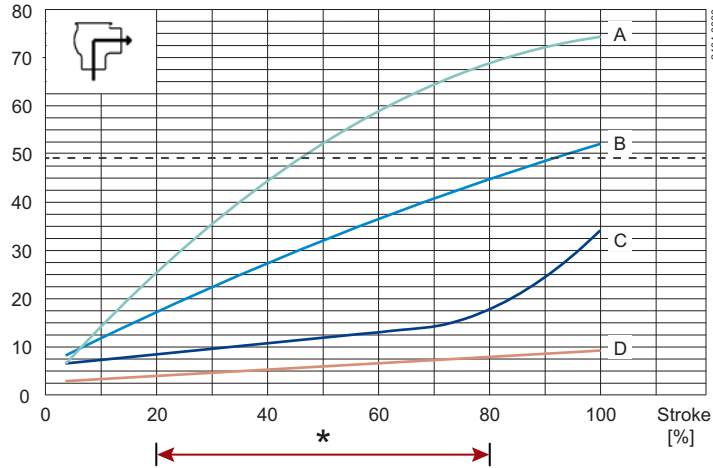
Kvq [m³/h]



A = Kv 44 C = Kv 16 E = Kv 10 G = Kv 4
 B = Kv 25 D = Kv 14 F = Kv 6

Valve size 2"

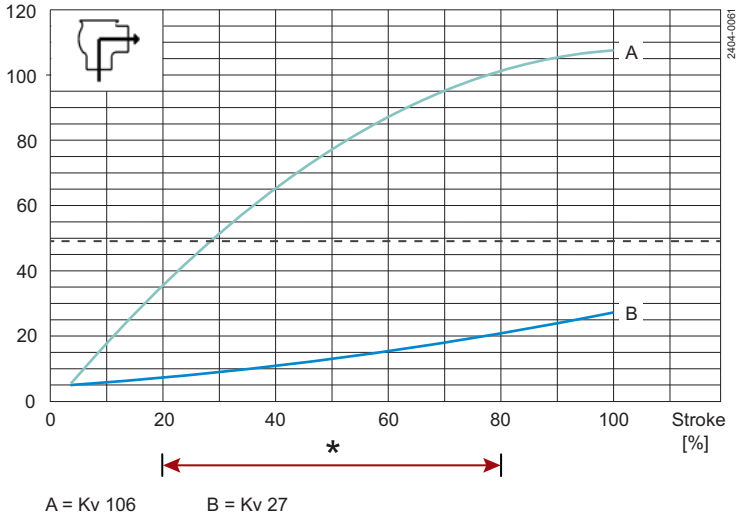
Kvq [m³/h]



A = Kv 75 C = Kv 34
 B = Kv 52 D = Kv 9

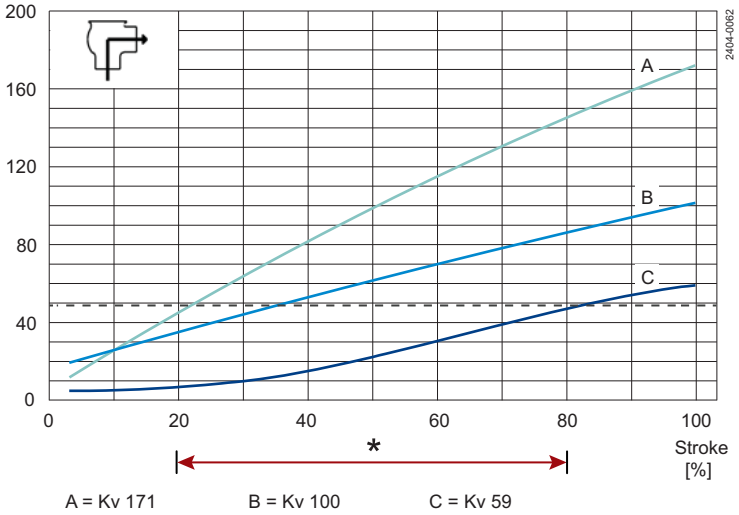
Valve size 2,5"

Kvq [m³/h]



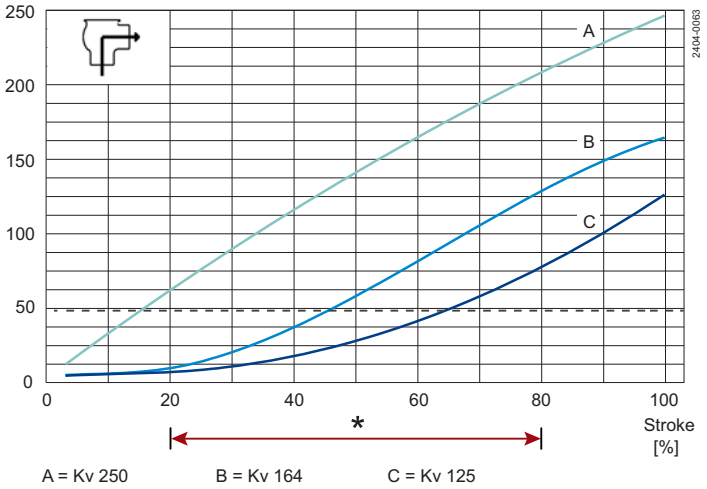
Valve size 3"

Kvq [m³/h]



Valve size 4"

Kvq [m³/h]



* Recommended working area

Note!

For the diagrams the following applies

Medium: Water (20° C)

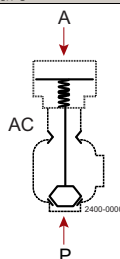
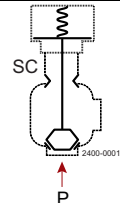
----- (dotted line) = Kv 49

Alfa Laval recommend max. flow velocity in tubing and valves to be 5 m/sec.

Pressure data

Table 1 - Shut-off valves

Max. pressure in bar without leakage at the valve seat

Actuator / Valve body combination and direction of pressure	Air pressure [bar]	Plug position	Valve size [mm]				
			DN40/38	DN50/51	DN65/63.5	DN80/76.1	DN100/101.6
	6	NO	7.60	9.60	5.60	7.20	4.80
		NC	6.29	7.20	4.20	6.40	4.20

- A = Air
- P = Product pressure
- AC = Air closes
- SC = Spring closes

Valve Sizing

Flow Coefficients (Kv)

The following formula and flow coefficient values enable you to select the correct regulating valve for your application.

Formula for water and other products with a specific gravity equal to 1.0:

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

Formula for products with a specific gravity other than to 1.0:

$$Kv = \frac{Q}{\sqrt{\Delta P / SG}}$$

Where:

- Q = Product flow rate in m³ per hour
- SG = Specific gravity of product
- Δ P = Pressure drop across valve in bar (inlet pressure minus outlet pressure)

Example of Kv Calculation:

Determine the proper size valve for 60 m³ per hour of water.

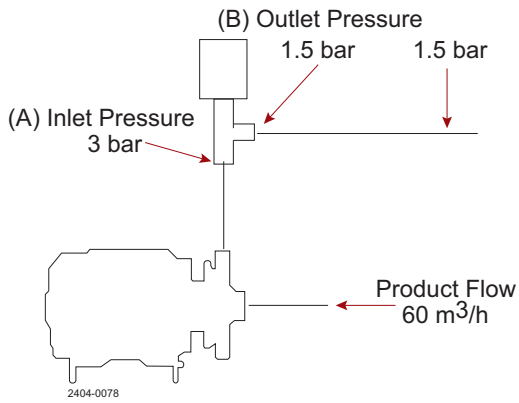
Inlet pressure of 3 bar

Outlet pressure of 1,5 bar

Solution: Inlet pressure (A) minus outlet pressure (B):

$$\Delta P = 3 \text{ bar} - 1,5 \text{ bar} = 1,5 \text{ bar}$$

$$Kv = \frac{60}{\sqrt{1,5}} = 49$$

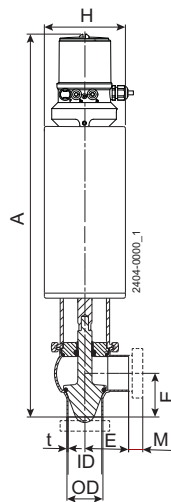


How to Use Data to Select Valve Size

After the Kv factor for a specific application has been calculated, locate the factor on the following page. Choose the curve closest to the 50% stroke.

Using the above example, refer to the chart on the previous page you will find that the Kv factor (49) is marked on the chart. You will find that a 2" valve crosses 1 Kv curve, 2½" 1 curve, 3" 3 curves and 4" 3 curves. The correct valve size to use is 2" because Kv 49 crosses the curve closest to the optimum operating point 50%. Alternatively the 4" valve is also close to the 50%.

Dimensions (mm)



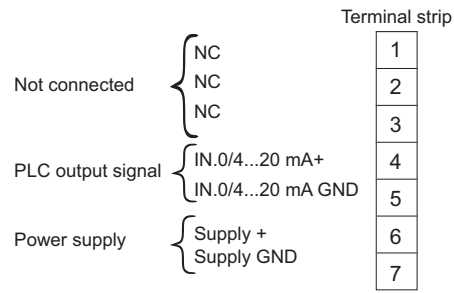
Size	38 mm	51 mm	63.5 mm	76.1 mm	101.6 mm	DN 40	DN 50	DN 65	DN 80	DN 100
A (with positioner 8694)	450	499	525	558	603	451	500	525	562	606
A (with positioner 8692)	487	536	562	595	640	488	537	562	599	643
OD	38	51	63.5	76.1	101.6	41	53	70	85	104
ID	34.8	47.8	60.3	72.9	97.6	38	50	66	81	100
t	1.6	1.6	1.6	1.6	2	1.5	1.5	2	2	2
E	49.5	61	81	86	119	49.5	61	78	86	120
H	85	115	115	157.5	157.5	85	115	115	157.5	157.5
M/ISO clamp	21	21	21	21	21					
M/DIN clamp						21	21	28	28	28
M/DIN male						22	23	25	25	30
M/SMS male	20	20	24	24	35					
Weight (kg)	7.3	9.5	10.5	16.4	18.6	7.3	9.5	10.5	16.4	18.6

Air Connections Compressed air:

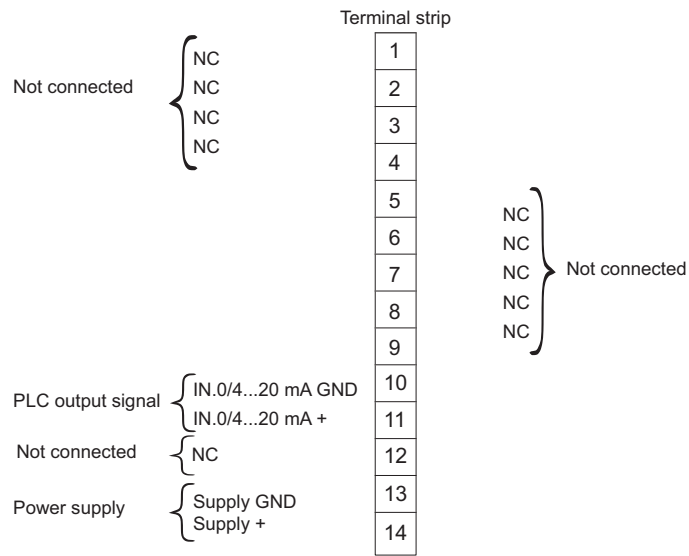
R 1/8" (BSP) internal thread for actuator.

Electrical connections

Positioner 8694
without display



Positioner 8692
without display



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 to
access the information direct.