Simply Unique Regulating

Unique SPC-1 Regulating Valve

General Information
The Unique Series is an innovative new generation of AlfaLaval single seat valves that are designed to meet the highest process demands of hygiene and safety. They're built on a well-proven, platform from an installed base of more than one million valves.

Application
This air-operated regulating valve is ideal for high volume, sanitary liquid processing applications where precision control of flow rate or pressure is required. It's designed to be used in a wide range of metering, blending, weighing and filling system applications. Configured as a shut-off valve with two or three ports, idea applications include the dairy, beverage, brewery, food, pharmaceutical, biotechnology and personal care industries.

Working principle
The valve is remote-controlled by means of compressed air. It has few and simple moveable parts which results in a very reliable valve.

Standard design
Designed to deliver years of reliable performance, it features a broad selection of stainless steel, tapered valve stems along with the Unique actuator to ensure an outstanding degree of precise product control. Rugged and long-lasting plastic stem bushings eliminate metal-to-metal galling. The stems are threaded to the actuator shaft, eliminating the coupling between the stem and the actuator, thereby ensuring proper alignment. The plug seal is a standard seal used by the entire Unique Series. Bushings at end of the actuator cylinder support stem and ensure perfect alignment.

The Unique SPC-1 valve range comes in DN/OD 38 to 101.6

Other valves in the same basic design
Sanitary Unique Single Seat

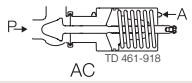
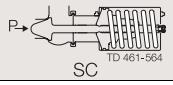
- Standard valve.
- Reverse acting valve.
- Long stroke valve.
- Manually operated valve.
- Aseptic valve.

Unique SPC-1 - Regulating Valve

Pressure data for SPC-1 - Regulating Valve

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
 AC	6	NO	7.60	9.60	5.60	7.20	4.80
 SC		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 m^3 per hour
SG =Specific gravity of product
ΔP = Pressure drop across valve in bar
(inlet pressure minus outlet pressure)

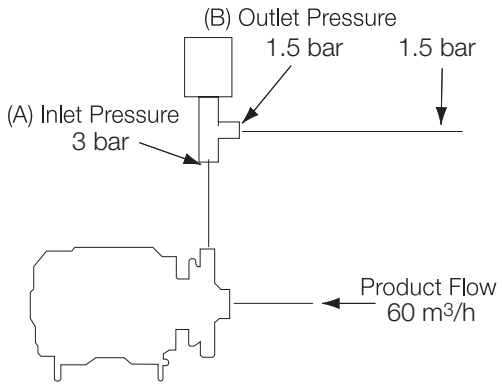
Example of Kv Calculation:
Determine the proper size valve for 60 m^3 per hour of water.

Inlet pressure of 3 bar
Outlet pressure of 1,5 bar

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

ΔP = 3 bar - 1,5 bar = 1,5 bar

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



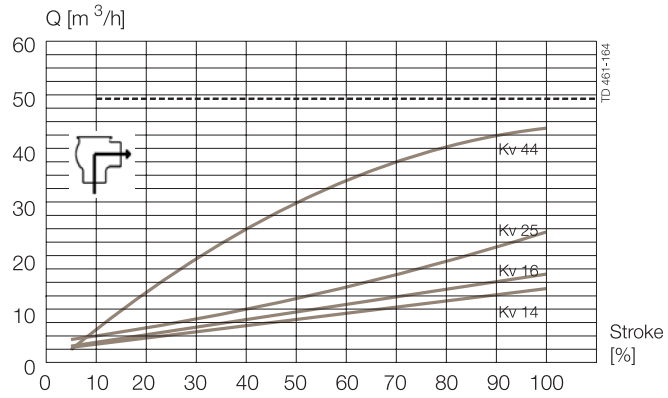
How to Use Data to Select Valve Size

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.

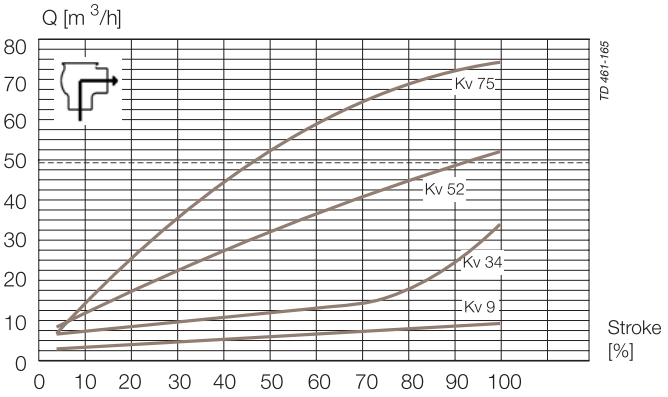
Using the above example, refer to the chart on page 3 you will find that the Kv factor (49) is marked on the chart. You will find that a 2" valve crosses 1 Kv curve, 2½" 1 curve, 3" 3 curves and 4" 3 curves. The correct valve size to use is 2" because Kv 49 crosses the curve closest to the optimum operating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

Pressure drop/capacity diagrams

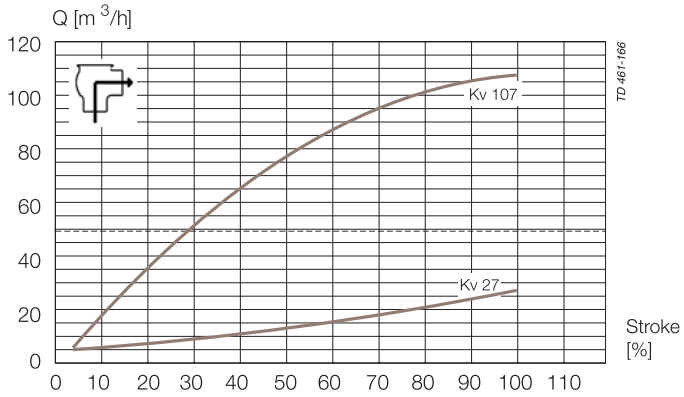
Valve Size 1.5"



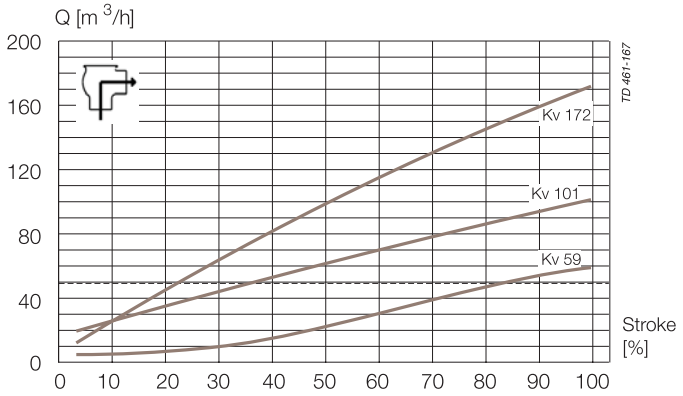
Valve Size 2"



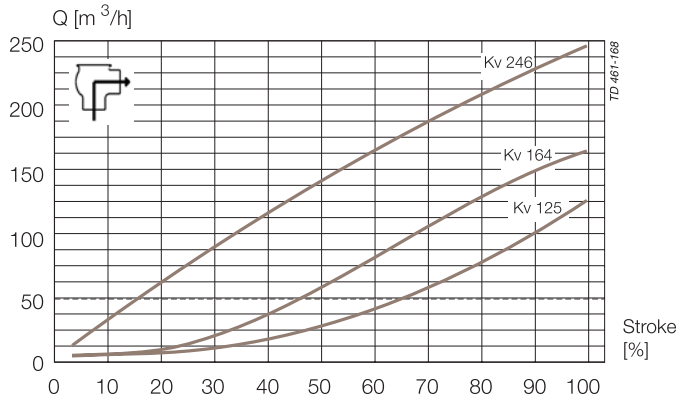
Valve Size 2.5"



Valve Size 3"



Valve Size 4"



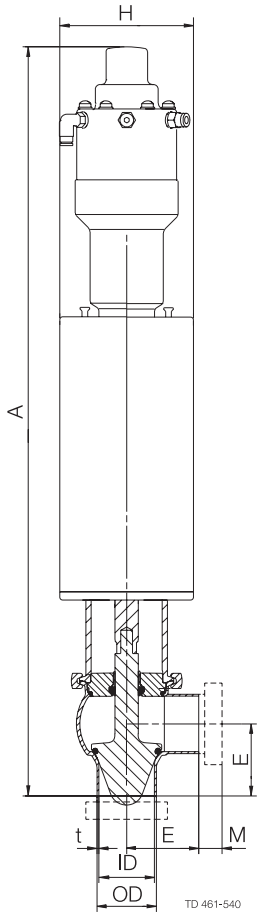
Note!
For the diagrams the following applies:
Medium: Water (20° C/68° F)

Measurement: In accordance with VDI 2173

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

Dimensions (mm)

	38 / DN40	51 / DN50	63.5 / DN65	76.1 / DN80	101.6 / DN100
A	544	594	620	653	699
OD	38	51	64	76	102
ID	35	48	60	76	98
t	2	2	2	2	2
E	50	62	82	87	120
H	85	115	115	154	154
M/ Clamp	13	13	13	13	16
Weight (kg)					
Shut-off valve	7.3	9.5	10.5	16.4	18.6



Shut-off valve

Air Connections Compressed air:

R 1/8" (BSP) internal thread for actuator. 1/4" (NPT) for positioner

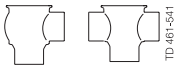
Technical data

Max. product pressure (depending on valve specifications): . . . . . .10 bar (1000 kPa (145 psi)).
Min. product pressure: . . . . . .Full vacuum.
Temperature range: . . . . . .10°C to +140°C (EPDM).
Air pressure: . . . . . .5 - 7 bar (500 to 700 kPa (72.5 to 101.5 psi)).
Positioner data: . . . . . .See manual for positioner

Actuator function

- Pneumatic downward movement, spring return (NO).
- Pneumatic upward movement, spring return (NC).

Valve Body Combinations



200 300

Materials

Product wetted steel parts: . . . . . .AISI 316L (internal Ra < 0.8 µ m.
Other steel parts: . . . . . .AISI 304.
Plug seal: . . . . . .EPDM.
Other product wetted seals: . . . . . .EPDM (standard).
Other seals: . . . . . .NBR.

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

Ordering

Please state the following when ordering:

- Size.
- Connections
- Valve body combination.
- Actuator function: NC or NO
- Kv values
- Options.

Note!

For further details, see instruction ESE00589EN.

ESE00588EN 1001

How to contact Alfa Laval
Contact details for all countries
are continually updated on our website.
Please visit www.alfalaval.com to
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