# Control your flow

## Unique 7711Regulating Valve with electro pneumatic positioner

### Concept

Unique 7711 regulating valve is the third generation of Alfa Laval single seat regulating valves designed to meet the highest process demands of hygiene and safety. Built on a well-proven, platform from an installed base of more than one million valves, it is ideal for high volume, sanitary liquid processing applications where precision control of flow rate or pressure is required.

### Working principle

The valve is remote-controlled by a digital electro-pneumatic process controller. It has few and simple moveable parts which results in a very reliable valve.

### TECHNICAL DATA

Max. product pressure (depending on valve specifications): . . . 145 psi.
Min. product pressure: . . . . . Full vacuum.
Temperature range: . . . . . 14°F to +284°F (EPDM).
Air pressure: . . . . . 72.5 to 101.5 psi.

### Positioner data

Material: . . . . . PPS, stainless steel
Cover: . . . . . PC
Seals: . . . . . EPDM
Supply voltage: . . . . . 24 VDC +/- 10%
Working temperature . . . . . 32 to 131 °F
Pilot air ports . . . . . Push-in connector (external Ø6mm or 1/4") or threaded ports G1/8
Protection class: . . . . . IP65 and IP67
Position detection module: . . . Contact-free, wear-free
Communication: . . . . . Analog

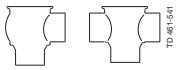
### 8692 Positioner – Top control with display

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), terminal screws (1.61 ft$^2$)
Max. wire diameter . . . . . 0.06 in$^2$

### PHYSICAL DATA

Product wetted steel parts: . . . 1.4404 (316L)
External finish . . . . . Semi-bright (blasted)
Internal finish . . . . . Bright (polished), internal Ra < 32 µ inch
Other steel parts: . . . . . 1.4301 (304)
Plug seal: . . . . . EPDM
Other product wetted seals: . . EPDM (standard)
Other seals: . . . . . NBR

### Valve Body Combinations




200 300

### 8694 Positioner – Basic control without display

Setpoint setting: . . . . . 0/4 to 20mA
Output resistance: . . . . . 180Ω
Power consumption: . . . . . < 3,5W
Cable gland . . . . . 2xM16x1,5 (cable-ø510mm), terminal screws (1.61 ft$^2$)
Max. wire diameter . . . . . 0.06 in$^2$

Authorized to carry the 3A symbol

## 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 for the entire Unique Series. Bushings at the end of the actuator cylinder support the stem and ensure perfect alignment.

## Other valves in the same basic design

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

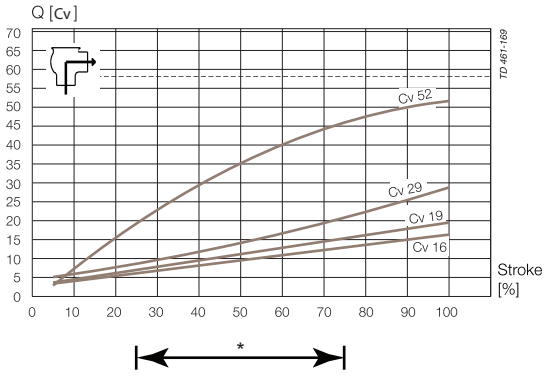
## Options

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

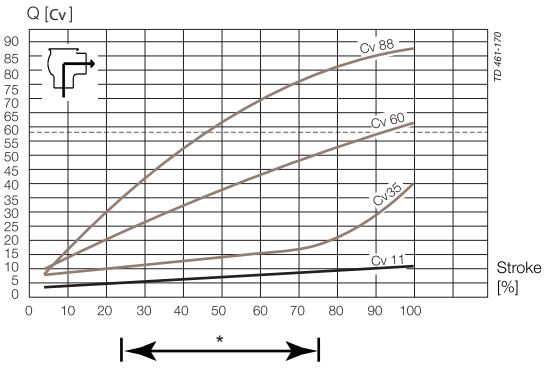
**Note!**
For further details, see instruction ESE02127

## Pressure drop/capacity diagrams

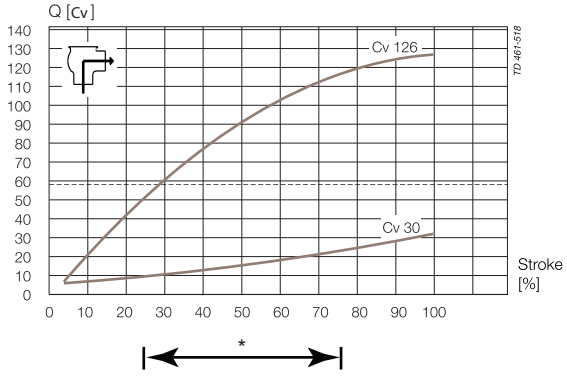
### Valve Size 1.5"



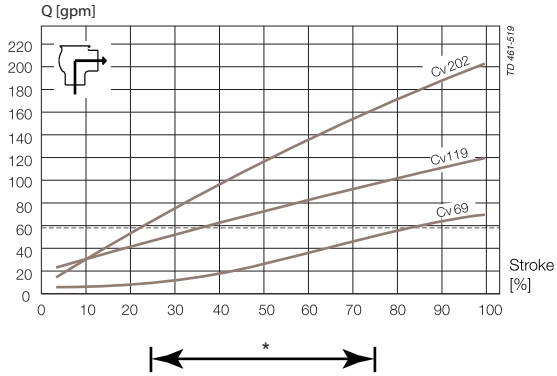

### Valve Size 2"



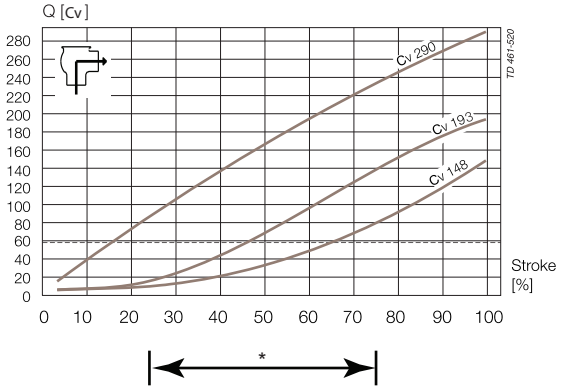

### Valve Size 2.5"




### Valve Size 3"




### Valve Size 4"




**Note!**
For the diagrams the following applies:
Medium: Water (68° F)

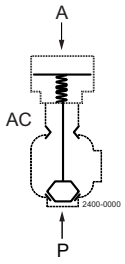
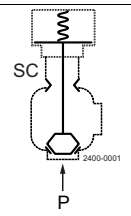
Measurement: In accordance with VDI 2173
-------- (dotted line) = Cv 58.3

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 [PSI] | Plug position | Valve size [mm] | | | | |
|---|---|---|---|---|---|---|---|
| | | | DN40/38 | DN50/51 | DN65/63.5 | DN80/76.1 | DN100/101.6 |
|  | 87 | NO | 110.23 | 139.24 | 81.22 | 104.43 | 69.62 |
|  | | NC | 91.23 | 104.43 | 60.92 | 63.82 | 60.92 |

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
Δ P = Pressure drop across valve in bar
(inlet pressure minus outlet pressure)

Example of Cv Calculation:

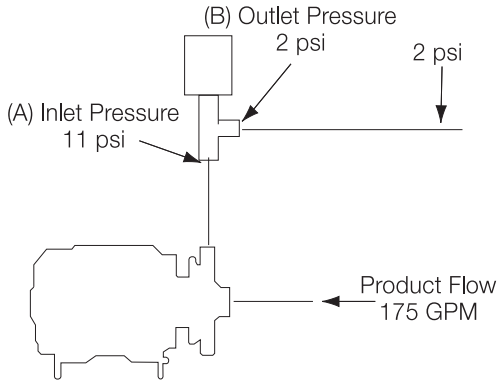
Determine the proper size valve for 175 GPM of water.

Inlet pressure of 11 psi
Outlet pressure of 2 psi

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

DP = 11 psi - 2 psi = 9 psi

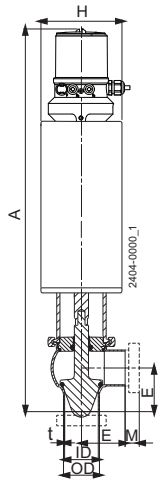
$$Cv = \frac{175}{\sqrt{9}} = \frac{175}{3} = 58.3$$




How to Use Data to Select Valve Size

After the Cv 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 Cv factor (58.3) is marked on the chart. You will find that a 2" valve crosses 1 Cv curve, 2½" 1 curve, 3" 3 curves and 4" 3 curves. The correct valve size to use is 2" because Cv 58.3 crosses the curve closest to the optimum operating point 50%. Alternatively the 4" valve is also close to the 50%.

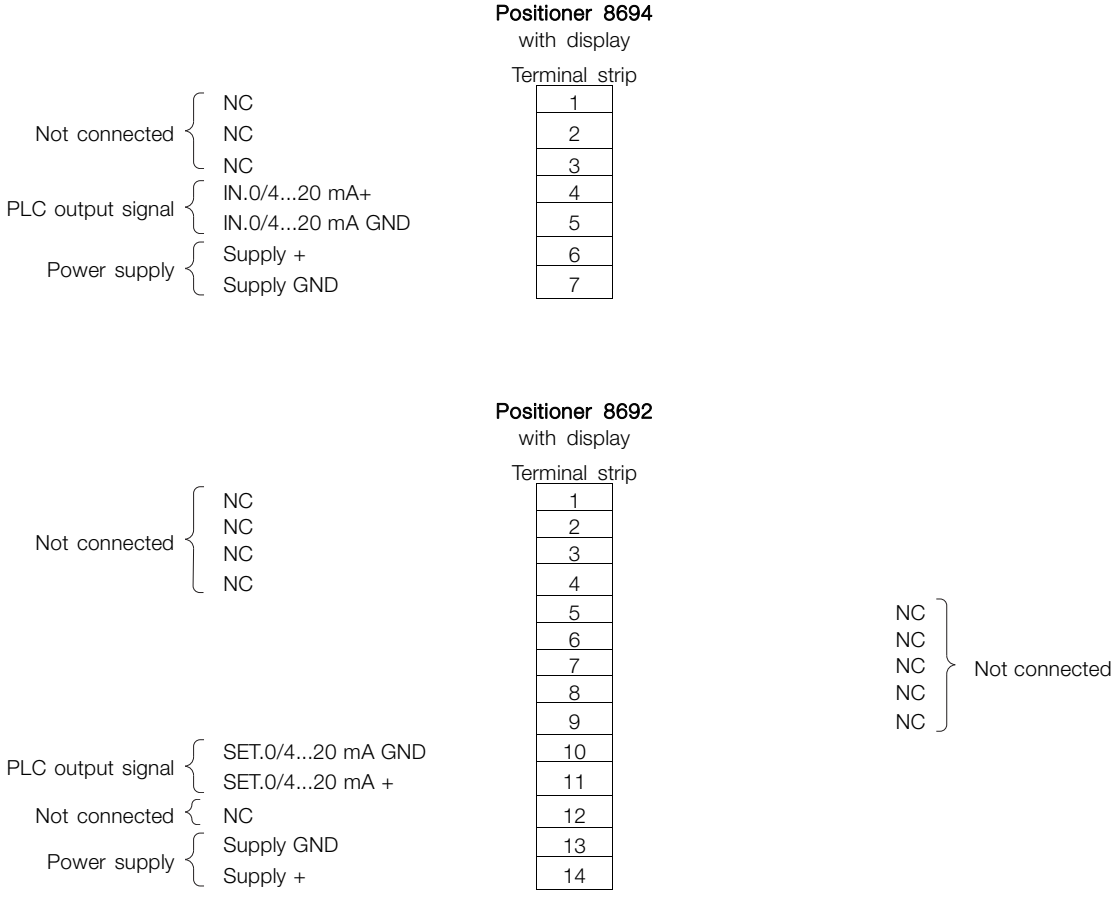



Dimensions (inch)

| | Size | 1.5<br>inch | 2<br>inch | 2.5<br>inch | 3<br>inch | 4<br>inch |
|---|---|---|---|---|---|---|
| A (with positioner 8694) | | 17.70 | 19.63 | 20.66 | 21.97 | 23.76 |
| A (with positioner 8692) | | 19.15 | 21.1 | 22.12 | 23.4 | 25.21 |
| OD | | 1.5 | 2.0 | 2.5 | 3 | 4 |
| ID | | 1.37 | 1.88 | 2.37 | 2.87 | 3.84 |
| t | | 0.06 | 0.06 | 0.06 | 0.06 | 0.08 |
| E1 | | 1.95 | 2.40 | 3.19 | 3.39 | 4.69 |
| H | | 3.35 | 4.53 | 4.53 | 6.20 | 6.20 |
| M/ Clamp | | 0.5 | 0.5 | 0.5 | 0.5 | 0.63 |
| Weight (lb) | | 16.09 | 20.94 | 23.15 | 36.16 | 41.01 |

Air Connections Compressed air:
R 1/8" (BSP) internal thread for actuator.

## Electrical connections



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