

---

# Operating Instructions

## Pneumatic And Electro-Pneumatic Valve Positioner

### Type 8047



**Version: 10/2004**

Manual-8047e.doc  
Art.-Nr. 112 8047

Bunsenstrasse  
Tel: +49 841 9654-0

85053 Ingolstadt  
Fax: +49 841 9654-590  
[www.schubert-salzer.com](http://www.schubert-salzer.com)

# Content

<b>1</b>	<b>General</b> .....	<b>3</b>
<b>2</b>	<b>Mounting Kits</b> .....	<b>3</b>
2.1	SELECTION .....	3
2.2	MOUNTING .....	4
2.3	USER-DEFINED SPRING ADJUSTMENT .....	4
<b>3</b>	<b>Positioners</b> .....	<b>6</b>
3.1	MOUNTING .....	7
3.2	ADJUSTMENT OF THE P/P-POSITIONER .....	7
3.3	ADJUSTMENT OF THE I/P-POSITIONER .....	7
3.4	ADJUSTMENT OF THE SUPPLY AIR FLOW .....	8

## 1 General

The positioners can be mounted on top of any pneumatic control valve with strokes from 5 to 22 mm. However the actuator has to be designed "air to open". The positioners are available in both p/p- and i/p-version as well as ex-proofed. To ease the adaption to the valve different mounting kits and feedback spring units are supplied (see table) including the required mounting parts for connecting valve actuator and positioner, an optical valve position indicator and a factory-adjusted range spring to be connected to the valve stem for proper feedback of the valve stroke.

## 2 Mounting Kits

### 2.1 Selection

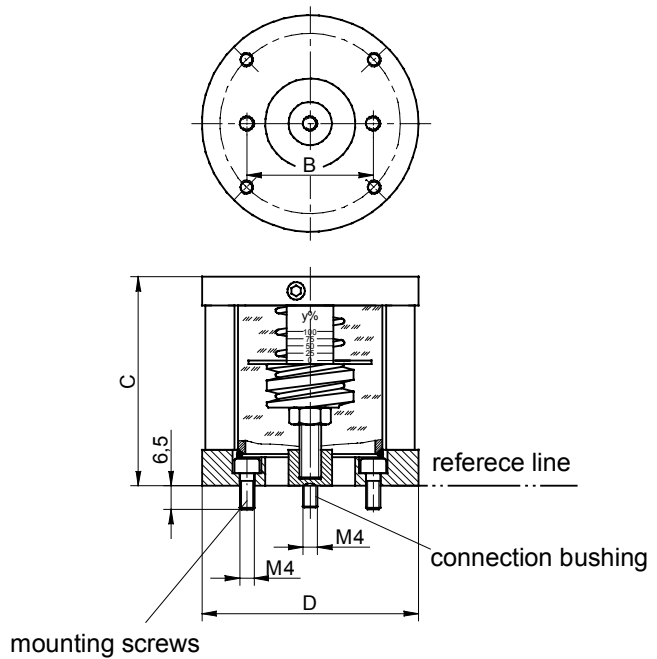
There are standard mounting kits and factory-adjusted feedback springs available for usual strokes. In this case select mounting kit and spring unit from the table with respect to the required valve stroke. If other strokes than indicated are needed, the feedback spring can be user-adjusted for this purpose (see below).

DN	Stroke	Mounting Kit	Feedback Spring Unit	Mounting Kit For Saunders Diaphragm Valves
8	5	4040900	4008202	----
10	6	4040900	4008203	4 008 209
15	6	4040900	4008203	4 008 209
20	7	4040900	4008204	4 008 210
--	8	4040900	4040474	----
--	9	4040900	4040475	----
25	10	4040900	4008205	4 008 211
--	12	4040900	4040476	----
--	12	4040901	4040477	----
--	13	4040901	4040478	----
--	14	4040901	4040479	----
40	17	4040901	4008206	4 008 212
50	22	4040901	4008207	4 008 213

Dimensions in mm

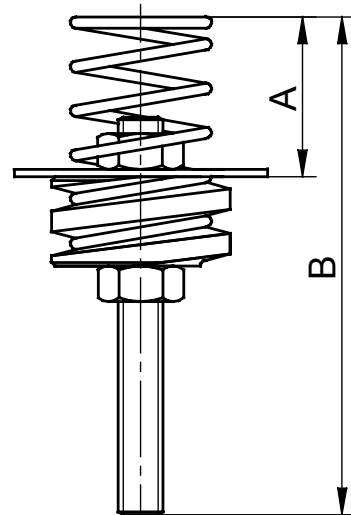
## 2.2 Mounting

Screw the mounting kit to the valve actuator with two M4-screws. An adaption bushing (M4) fixes the feedback spring and has to be connected to the valve stem. As all actuator designs differ from each other this connection has to be user-provided in such a way that for the closed valve the bushing is located in the shown position ("reference line"). This is essential for a proper correlation of stroke and positioner set point signal.

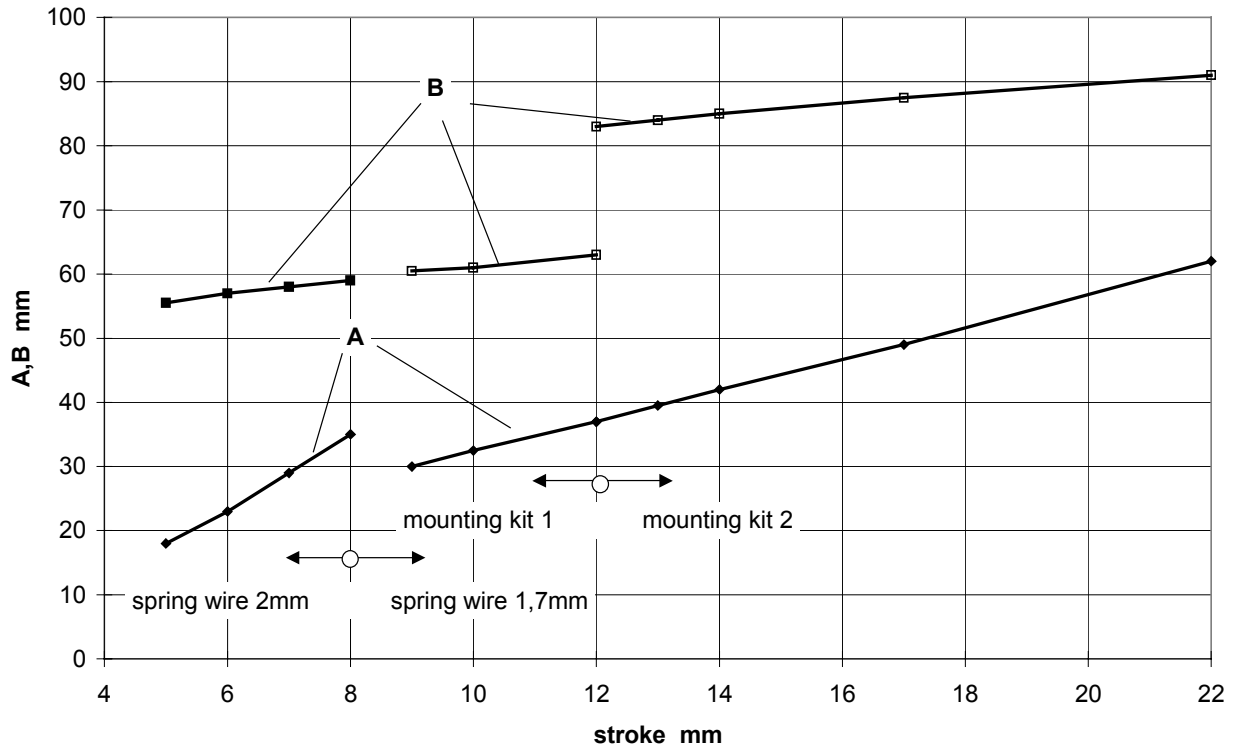


## 2.3 User-Defined Spring Adjustment

For strokes not indicated in the table above select the required range spring and the mounting kit and adjust "A" and "B" as shown in the table/chart "spring adjustment" (both "A" and "B" refer an unloaded spring!). Cut off the unused turns of the spring afterwards. Note that due to this further re-adjustment for a new stroke is only possible for shorter strokes as otherwise the spring becomes too short.



### Spring Adjustment



Stroke	Mounting Kit				Spring Unit				Spring Art.-Nr.
	Art.-Nr.	ØD	C	B	Ød	Ød	A	B	
5	4040900	60	58	35	4008202	2	18	55,5	4104431
6	4040900	60	58	35	4008203	2	23	57	4104431
7	4040900	60	58	35	4008204	2	29	58	4104431
8	4040900	60	58	35	4040474	2	35	59	4104431
9	4040900	60	58	35	4040475	1,7	30	60,5	4104434
10	4040900	60	58	35	4008205	1,7	32,5	61	4104434
12	4040900	60	58	35	4040476	1,7	37	63	4104434
12	4040901	80	78	66	4040477	1,7	37	83	4104434
13	4040901	80	78	66	4040478	1,7	39,5	84	4104434
14	4040901	80	78	66	4040479	1,7	42	85	4104434
17	4040901	80	78	66	4008206	1,7	49	87,5	4104434
22	4040901	80	78	66	4008207	1,7	62	91	4104434

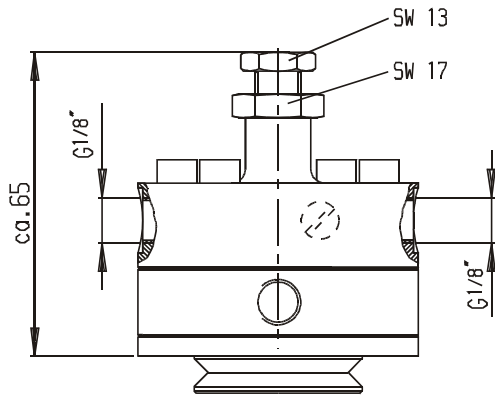
Dimensions in mm

**Example:** What is the right configuration for a stroke of 11 mm?

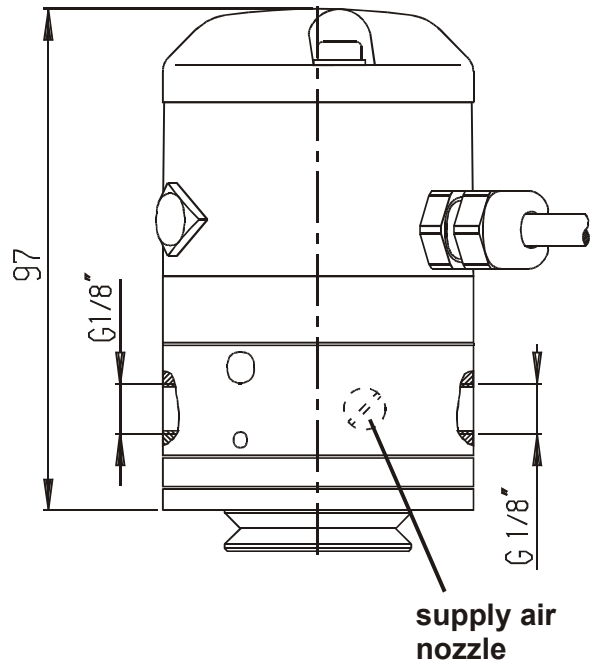
1. For strokes below 12 mm the 58 mm-high mounting kit has to be used.
2. Strokes longer than 8 mm require the 1,7 mm dia. range spring (part no. 4104434)
3. A should be adjusted to 35 mm.
4. B should be adjusted to 62 mm.

### 3 Positioners

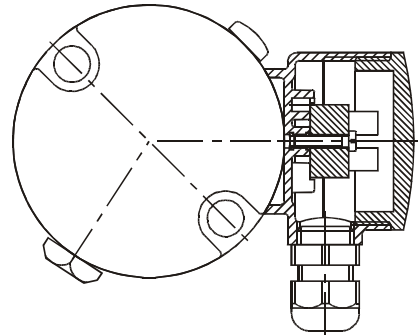
**Pneumatic Positioner**



**Electro-Pneumatic Positioner**



**i/p-positioner (special version with screwed terminals)**



	<b>Art.-Nr.</b>
i/p-standard 0...20 mA	4 008 174
i/p-standard 4...20 mA	4 008 175
i/p-intrinsic safety 0...20 mA	4 040 342
i/p-intrinsic safety 4...20 mA	4 040 343
i/p (clamp adaptor) 0...20 mA	4 040 120
i/p (clamp adaptor) 4...20 mA	4 040 121
p/p-standard 0,2...1 bar	4 008 178

### 3.1 Mounting

The positioner is fixed on the mounting kit by three socket screws. Take care that the range spring is centered properly in the diaphragm washer of the positioner. Connect output "A" to actuator and supply air (instrument quality) to port "P" and the 0,2-1 bar set point signal for the pneumatic version to "W" (all ports are G 1/8").

For the electropneumatic version the connection of the input signal is provided by a two-wire cable as follows:

<u>Standard version</u>	<b>brown „+“</b>	<b>black „-“</b>	impedance <220 Ω
<u>Intrinsically safe version</u>	<b>1 „+“</b>	<b>2 „-“</b>	impedance <420 Ω

Factory adjustment has been carried through at 4 bar supply pressure. Different supply pressures or other reasons might require a re-adjustment of the positioner.

### 3.2 Adjustment of the p/p-positioner

Loose fixing nut on top. Apply set point signals as follows:

<i>Set point signal 0,2 bar</i>	Valve is fully closed.
<i>Set point signal 0,35 bar</i>	Valve starts to open (first flow). Adjustment is done with zero point screw on top. Note that the signal range of 0,2-0,35 bar is required to ensure the proper shut-off of the valve (especially for pinch and diaphragm valves).
<i>Set point signal 1 bar</i>	Valve is fully opened. Adjustment is possible with range spring, however <u>user adjustment is not required</u> .

After the adjustment the zero point screw has to be locked again.

### 3.3 Adjustment of the i/p-positioner

For the i/p-version zero point (ZERO) and end value (SPAN) of the internal i/p-converter are factory adjusted. They have only to be re-adjusted in special cases:

ZERO: remove cap, turn spur wheel with a screw driver ("+" converter pressure rises, "-" converter pressure drops).

SPAN: remove bleeder screw, turn trimmer with a small screw driver ("counter-clockwise" converter pressure rises, "clockwise" converter pressure drops).

To ease the procedure it is recommended to use a small pressure gauge for controlling the converter pressure (to be mounted to the port which is closed by the screw cap). The adjustment of ZERO and SPAN have to be repeated alternatively for several times, as they are influencing each other.

Apply set point as follows:

<i>Set point signal 4 mA</i>	Valve is completely closed.
<i>Set point signal 7 mA</i>	Valve starts open, pressure at control gauge should be approx. 0,35 bar (adjusted by "ZERO"). Note that the signal range of 4-7 mA is required to ensure the proper shut-off of the valve (especially on pinch and diaphragm valves).
<i>Set point signal 20 mA</i>	Valve is completely opened, pressure at control gauge should be approx. 1 bar (adjusted by "SPAN").

After the adjustment has been finished the control gauge is removed and the cap (with sealing) is mounted again. The bleeder screw and the protection cap are inserted.

### 3.4 Adjustment of the supply air flow

Using the adjustment nozzle the air consumption and at the same time the actuator velocity are controlled. Turning the nozzle screw clockwise makes the air consumption decrease. Furthermore the opening of the valve is slowed down. Throttling too far has to be avoided as the valve then will not be able to open completely. Turning the nozzle screw counter-clockwise makes the air consumption increase. The opening of the valve is speeded up and the closing is slowed down. Opening the nozzle too far has to be avoided as the valve then will not be able to close completely. As we do not recommend any adjustment the nozzle screw is fixed after factory adjustment.