

USER MANUAL

EPP2000 - Pneumatic

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1 Safety instructions

For a safe installation of a positioner in hazardous area the following must be observed. The module must only be installed by qualified personnel who are familiar with the national and international laws, directives and standards that apply to this area and all instructions in this manual.

EPP2000 EEx i models:

The installation must observe EC Type examination Certificate LCIE 05 ATEX 6076 X, Document and EC-Declaration of conformity.

The positioner must only be connected to certified intrinsically safe apparatus or according to § 5.4 EN 50020 standard. These combinations must be compatible as regards the electrical parameters.

This EC Type examination certification relates only to the design and construction of this specified equipment or protective system in accordance with the Directive 94/9/EC.

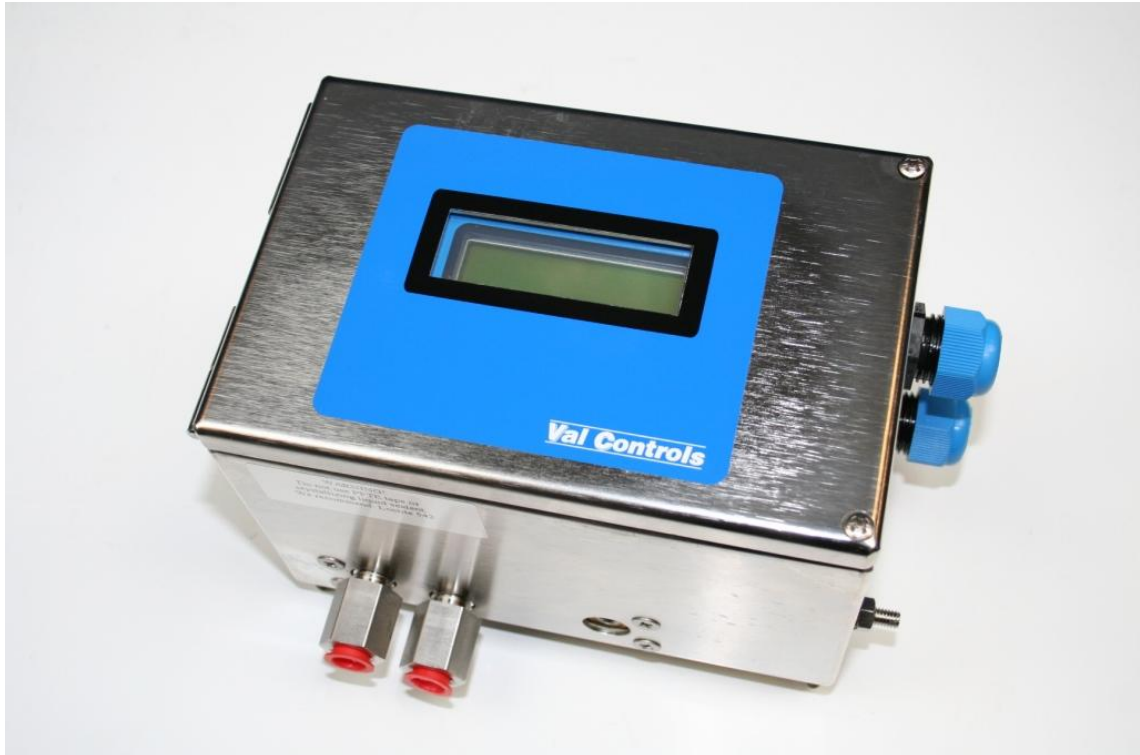
If any information not contained in this manual is needed, please do not hesitate to contact us.

The information in this user manual is subject to change without notice.

2 Application

Val Controls intelligent 2-wire positioners, controls almost all pneumatic, linear, rotary, single-return (SR) and double-acting (DA) actuators on the market.

The enclosure is in AISI 316 stainless steel, which makes the positioner stronger facing extreme outside exposure, and the compact design, with few moving parts, makes it very reliable. The flexible software calibrates automatic, contains intern safety surveillance together with several standard flowcurves. A special flow curve is defined very simple, and the positioners' setpoint and deadband can be adjusted from the user menu.



3 Choice of positioner

This is a little guide, which will help you pick a positioner, which fits exactly your actuator.

To choose the right positioner, you need to have some knowledge about the actuator. Is the positioner for a linear or rotary actuator? Is it a single or a double-acting actuator, and what is the volume of the actuator?

3.1 Positioner for single-return (SR) actuators

For a single-return actuator you have two pressure-blocks to choose from. A standard block or a high capacity, HC, block. The HC pressure-block, delivers 10 times more air than the standard block, as seen below.

Supply pressure SR (Min/Max) : 1,5-8 Bar
Air-flow SR : In Qn = 40L/min, out Qn = 22L/min

Supply pressure SR HC (Min/Max): 3-8 Bar
Air-flow SR HC : In Qn = 485L/min, out Qn = 200L/min

It is very important to pick the right positioner, or the actuator will malfunction. The opening and closing time of the actuator must at least be more than five sec. else, the pressure-block is too big. It is important to set the supply-pressure correctly, so it fits the actuator and the positioner.

3.2 Positioner for double-acting (DA) actuator

For a double-acting actuator there is only one pressure-block to choose from, so you have to adjust it.

Supply pressure DA (Min/Max) : 4-8 Bar
Air-flow DA : In Qn = 1066L/min, out Qn = 438L/min

It is important to set the supply-pressure correctly, so it fits the actuator and the positioner.

4 Specifications

Housing	: 1,5mm AISI-316 stainless steel.
Main dimensions: (lxwxh)	: 185x120x120 mm.
Ingress protection	: IP-66, DS/EN 60529.
Mounting according to	: Standard mounting
Weight	: Approximately 3,5 kg
Glands entries	: M20
Terminals	: 0,5 - 2,5 mm ²
Air-supply SR	: 1,5-8 Bar
Air-supply SR HC	: 3-8 Bar
Air-supply DA	: 4-8 Bar
Air-flow SR	: In Qn = 40 L/min, out Qn = 22 L/min
Air-flow SR HC	: In Qn = 485 L/min, out Qn = 200 L/min
Air-flow DA	: In Qn = 1066 L/min, out Qn = 438 L/min
Air consumption	: Approximately 0, when not operated
Air entry	: 1/4" NPT
Air filtering	: < 30 um, dried and filtered air. Do not use PTFE-tape or liquid crystallising sealant.
Recommended sealant	: LocTite 542
Oil mist lubrication air	: None or only little, max 30 mg/m ³
Recommended oil	: Mineral oil type VG32, ISO-3448
Control Loop	: 2 wire, 4 - 20 mA.
Control Loop Ui max	: 11,5V DC (@20mA)
Control Loop Ri max	: 550 Ohm.
Transmitter loop	: 4 - 20 mA, Loop Powered
Transmitter Ri max	: 250 Ohm
Hysteresis	: 1 %
Linearity	: < 1 %
Sensitivity	: 0,4 %
Min/Max Rotations-angle (Rot. act.)	: 40 - 300°
Min/Max Rotations-angle (Lin. act.)	: 40 - 60°
LCD-display accuracy	: 0-100%, ± 1%.
Limit switches	: Optional
Gauges	: Optional

5 Quick guide installation

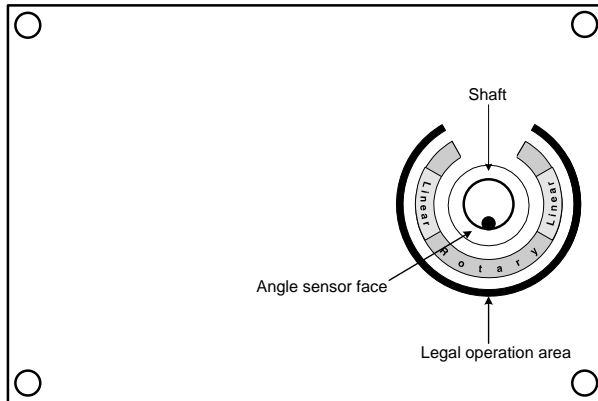
1. Mount the feedback lever/adapter on the positioner, see section 6.1 and 0.
2. Mount the bracket on the actuator see section 6.1 and 0.
3. Mount the positioner on the bracket see section 6.1 and 0.
4. Linear only: Adjust arm on actuator, see section 6.1 and 0.
5. Connect and adjust the air supply and connect the actuator, see section 6.4.
 - I = inlet
 - A = Actuator
6. Connect wires, see section 6.4.
 - 1 Control loop +
 - 2 Control loop –
 - 3 Transmitter + (optional)
 - 4 Transmitter – (optional)
7. Calibrate positioner by pressing CAL.
 - Choose auto tuning
8. If needed adjust air flow on pressure block and calibrate again.

6 Mounting and installation

Instructions on how the positioner is mounted and installed.

6.1 Mounting, rotary actuator

When using the Valve positioner on actuators with rotary action, the allowed angle in which the angle sensor will have to work is between 40-300 degrees.

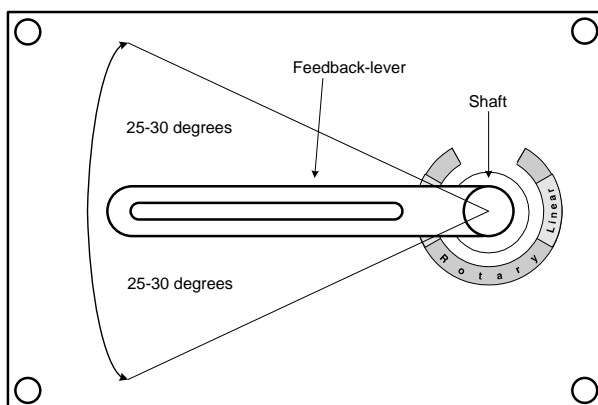


The angle-sensor face is during operation only allowed to move inside the legal operation area. If the angle-sensor face is moving inside the illegal operation area the positioner will give an error message during the calibration-routine.

Notice: All adapters delivered by Val Controls A/S are marked to tell the position of the angle-sensor face.

6.2 Mounting, linear actuator

When using the Valve positioner on linear actuators the following instruction must be followed. The operation of the feedback-lever must be in accordance with the details shown on the following figure.

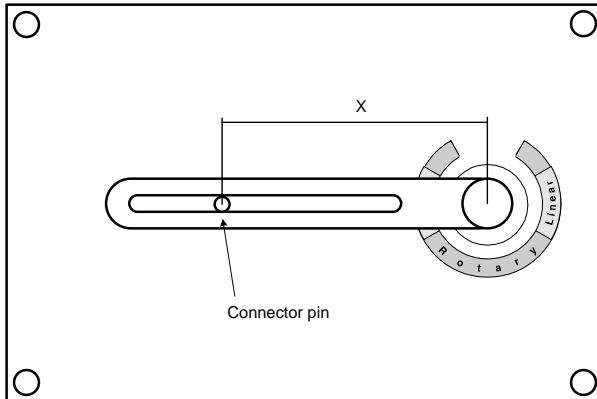


The allowed operation-angle is between 50-60 degrees. The centre of the operation-angle must be as shown on the sketch (horizontal). The rotation angle is showed on a label mounted on the bottom.

6.3 Installations guide

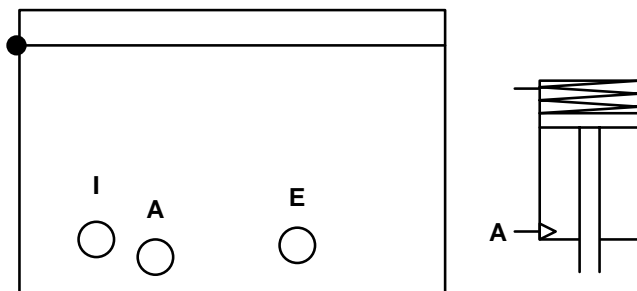
Step by step installations guide.

1. Measure the travel distance of the actuator.
2. The travel length is called X.
3. Then you set the actuator so it has travelled $\frac{1}{2}X$, 50%.
4. Then you set the connector pin to be X from the shaft, and the feedback-lever to be horizontal, see the picture below.
5. Now the Feedback-lever should travel approximately 60° .



6.4 Pneumatic connections

EPP2000 SR for Spring-Return actuators.



EPP2000 SR-HC for Spring-Return actuators.

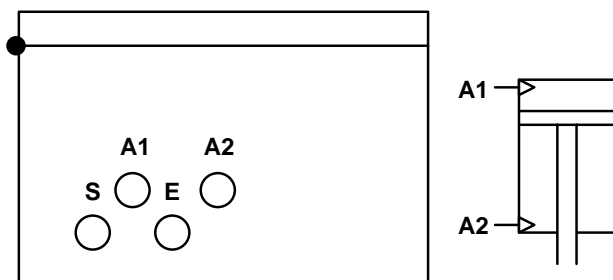


Pneumatic connections for the EPP2000 SR and EPP2000 SR-HC:

- Supply air : I
- Actuator : A
- Exhaust : E

In powerless condition the Valve positioner will exhaust the actuator (A).

EPP2000 DA for double-acting actuators.



Pneumatic connections for the EPP2000 DA:

- Supply air : I
- Actuator chamber 1 : A1
- Actuator chamber 2 : A2
- Exhaust with throttle screw : E

4mA closed position - Pressure on A1 & A2 exhausted

20mA open position - Pressure on A2 & A1 exhausted

In powerless condition the Valve positioner will keep the valve-position (stay-put). .

Important	: The air-filtering must be < 30 um. Do not use PTFE-tape or crystallising liquid sealant on the fittings! We recommend LockTite 542
Oil mist lubrication	: None or only little, max. 30 mg/m ³ .
Recommended oil	: Mineral oil, type VG32 to ISO-3448.
Max. supply pressure	: 8 bar.

6.5 Adjusting the pressure-block

It is possible on the pressure-block, to adjust the amount of air going through the pressure-block.

The pressure-block must be adjusted such that the travel time of the actuator is minimum 10 sec.

6.5.1 SR-model

To adjust the SR-model, remove the mainboard inside the positioner, and under the mainboard lays the pressure-block. On the pressure-block there are two screws, the one to the left adjusts the air-flow in to the actuator, I. The one to the right adjusts the outlet from the actuator, E.

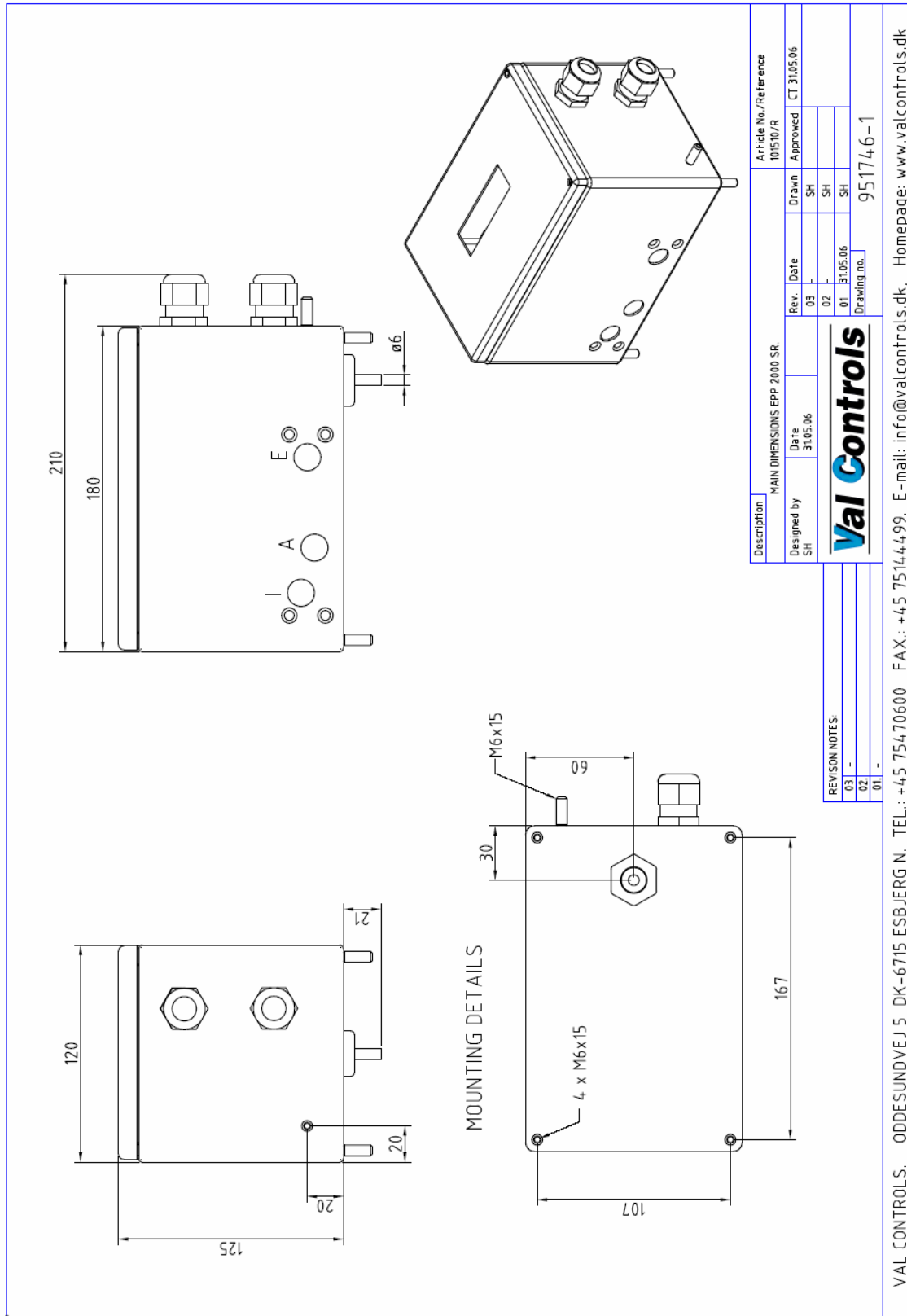
6.5.2 SR HC-model

To adjust the SR HC-model, use the two screws, which is placed by I and E. The one to the left adjusts the air-flow in to the actuator, I. The one to the right adjusts the outlet from the actuator, E.

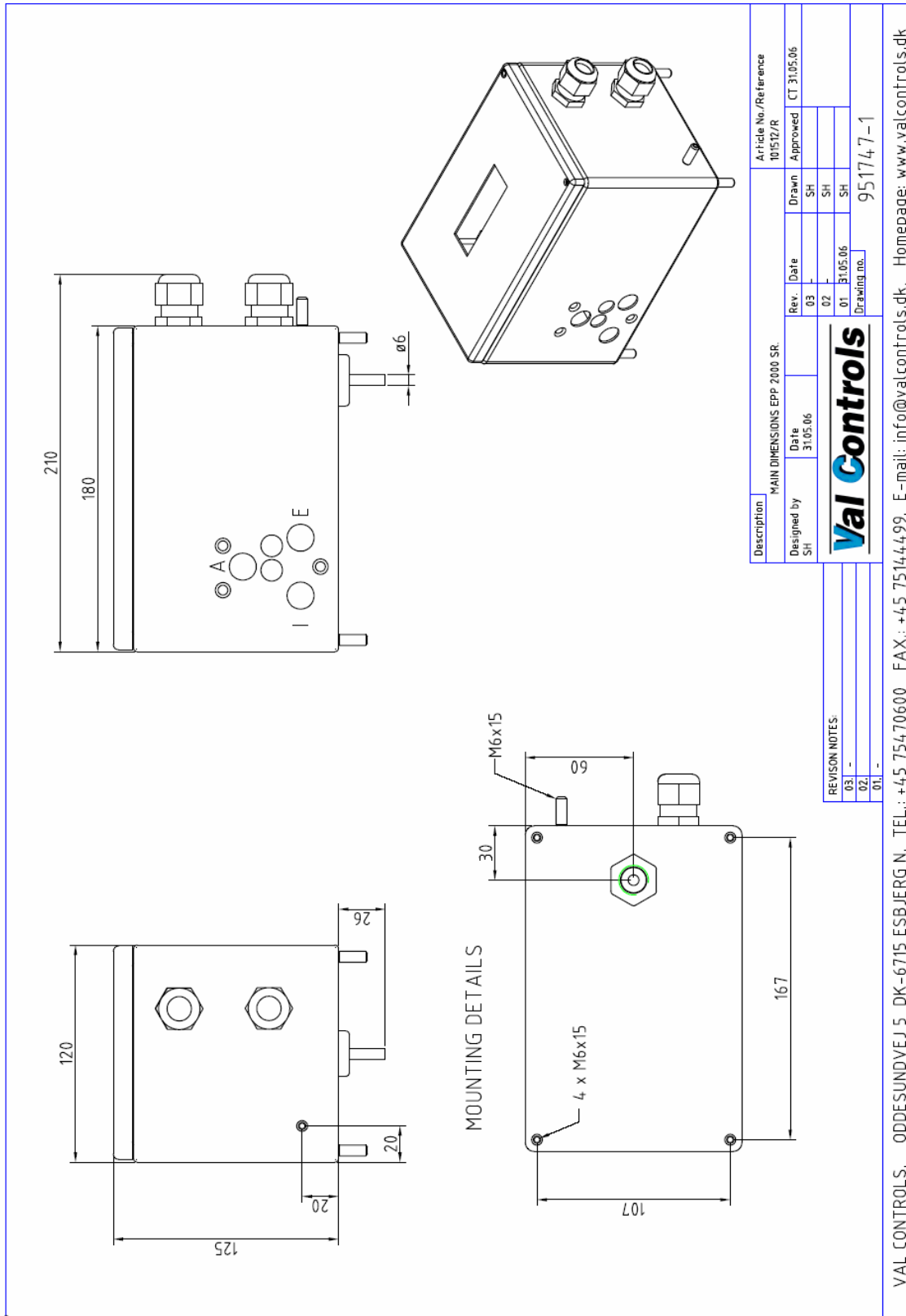
6.5.3 DA-model

On the DA-model the outlet-filter can be adjusted. Here you can't control the amount of air coming in to the pressure-block, only the outlet, E.

7 Main Dimensions EPP2000 SR



8 Main Dimensions EPP2000 SR-HC



9 Main Dimensions EPP2000 DA

