RLP 100 F901, F915, F924: Pneumatic room-pressure controller

How energy efficiency is improved
Enables the precise measurement and control of pressure differentials in clean rooms or laboratories without creating additional pressure compensation openings which lead to unnecessary losses of energy.

Areas of application
Room pressure control of extremely well-sealed rooms, e.g. clean rooms or laboratories (up to BSL-4).

Features
- Fast, accurate control system in combination with RLP 100 pneumatic volume-flow controllers
- Highly precise, static sensor, can also be used in areas with contaminated room air
- Measuring ranges up to max. +/- 185 Pa
- ATEX certification for use in Zone 1 potentially explosive areas
- Conformity tested as per EN 13463-1 and EN 1127-1 (Ex II 2 G T6)
- Controller front panel is printed with circuit diagram for rapid identification of function
- Glass-fibre-reinforced thermoplastic housing suitable for wall or top-hat rail mounting (rail EN 60715)
- Compressed-air connections with Rp $1/8$" female thread
- Special measuring connection for recording the volume flow with M4 connector
- Low-pressure connections in form of stepped nipples for flexible plastic hose (internal Ø 4 and 6 mm)
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description
- Supply pressure 1.3 bar ± 0.1
- Response sensitivity of sensor 0.1 Pa
- Linearity 1%
- One input for:
  - remote setpoint adjustment
- Two outputs for:
  - actual volume flow value
  - command variable signal for volume-flow controllers
- Setpoint adjuster for room pressure, as well as adjuster for T_n and X_p
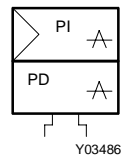
Type	Setting range Pa	Air capacity l_n/h	Weight kg
RLP 100 F901	−20...+20	400	0,6
RLP 100 F915	−50...+50	400	0,6
RLP 100 F924	−180...−35 / +35...+180 [1]	400	0,6

Output pressure	0,2...1,0 bar			Reset time (0...100%)		0...15 s
Remote setpoint adjust.	0,2...1,0 bar			Linearity		1%
	F901	**F915**	**F924**	Permiss. operation pressure p_{stat}		± 3 kPa
Response sensitivity	0,1 Pa	0,25 Pa	0,36 Pa	Permissible pressure to the		
P-band 0...100% $\widehat{=}$	0...40 Pa	0...100 Pa	0...145 Pa	low-pressure connections		± 3 kPa

Supply pressure [2]	1,3 bar ± 0,1	Connection diagram	A02883
Air consumption	50 l_n/h	Dimension drawing	M297570
Permissible amb. temp.	0...55 °C	Fitting instructions	MV 505811
Type of protection	IP 30		

Accessories
-XMP50/50P	Pressure gauge, range −50...+50 Pa or −20...+20 Pa (see PDS, Section 68)
0297354 000*	Short screw-type connector (R $1/8$) for soft plastic tubing, internal dia. 4 mm; 3 pcs req.
0297838 001*	Bracket for two XMP pressure gauges
0297091 000*	Blanking piece for unused opening in bracket
0297867 001*	Reference pressure container
0297870 001*	Fixing bracket for fitting the controller to ceilings, floors or panels.

*)   Dimension drawing or wiring diagram are available under the same number

[1]   Change from measuring over-pressure to under-pressure by transposing the Δp measuring lines
[2]   See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures

Sauter Components

Operation

The measured pressure difference is converted by the low-pressure amplifier into the pneumatic standard signal of 0,2...1,0 bar and compared with the variable pressure signal for the setpoint X_S. The PI-controller compensates without lasting error for the control deviation. The setpoint X_S set at the controller can be adjusted externally via connection 6, in which case the value set serves as the minimum limitation.

N.B.: The pressure to be controlled should always be connected to the '+' connection, even in the case of under-pressure control. Changing from over- to under-pressure control is realised exclusively by the corresponding setpoint value.

The control action can be changed from B (factory setting) to A using the change-over switch.

Additional information on accessories

0297838 001 Bracket for two XMP pressure gauges. Includes:

1 adaptor (0297596) for tube (internal Ø 1,7 or 4,1);

1 Connector (0297112) with seal M4/push-on connector for tube (internal Ø 1,7);

1 m tube (internal Ø 1,7) and 2 screws.

Use the blanking piece (0297091) to cover the unused opening in the bracket. The pressure gauge for indicating the room pressure should be connected to the actual-value terminal M.

Engineering and fitting notes

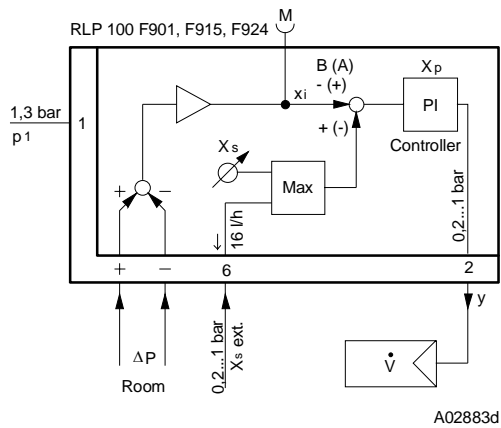The unit should not be fitted laterally (as depicted below, right).
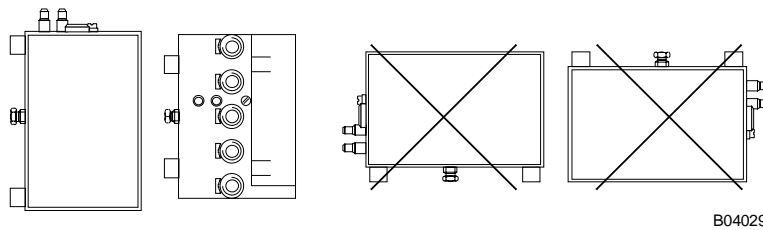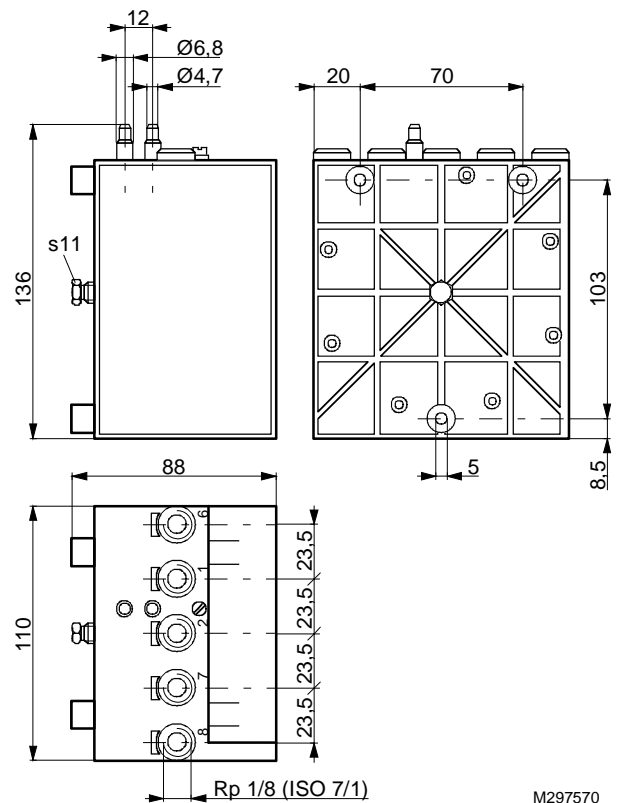

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Technical information

Technical manual: VAV 7 000 621 003
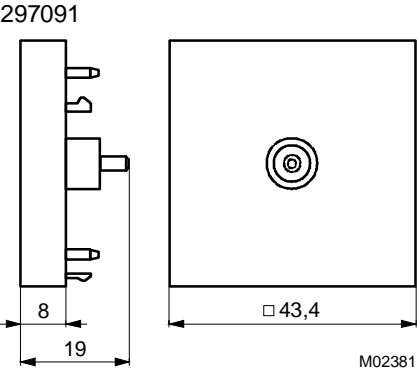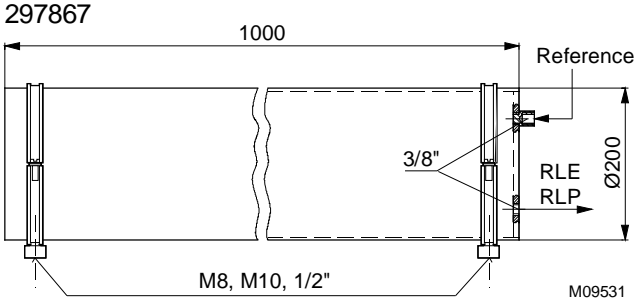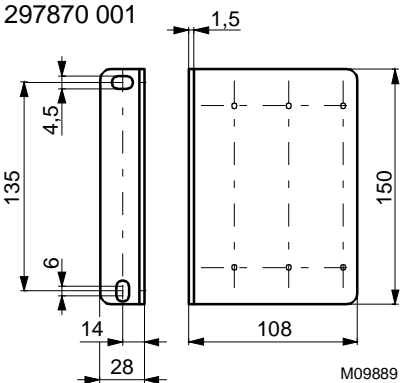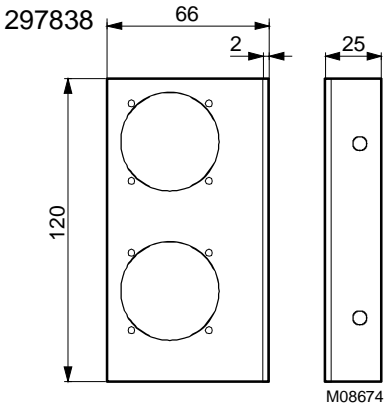
Connection diagram

A02883d

Δp = pressure difference
y   = output pressure

Dimension drawing

M297570

Accessories

297354

R 1/8
(ISO 7/1)

Ø5

s10

10

M00568

297838

66

2

25

120

M08674

297870 001

1,5

4,5

135

6

150

14

28

108

M09889

297867

1000

Reference

3/8"

Ø200

RLE
RLP

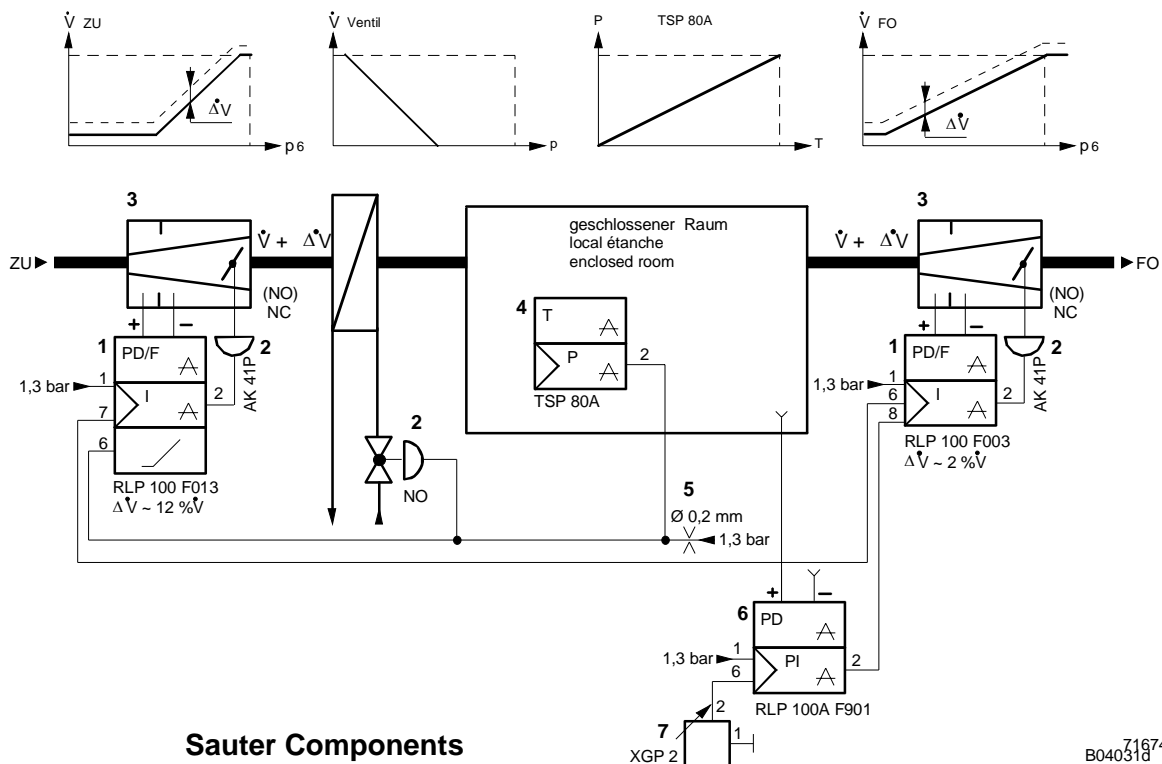M8, M10, 1/2"

M09531

297091

8

19

□ 43,4

M02381
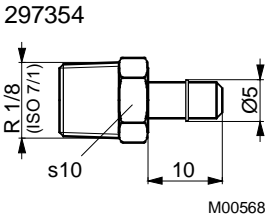
Examples of use

1. Control facility for variable air volume with re-heater, for 'closed rooms', controlled for over- and/or under-pressure, activating the supply-air controller has controlaction B; normally-open re-heater; room-temperature controller has controlaction A.
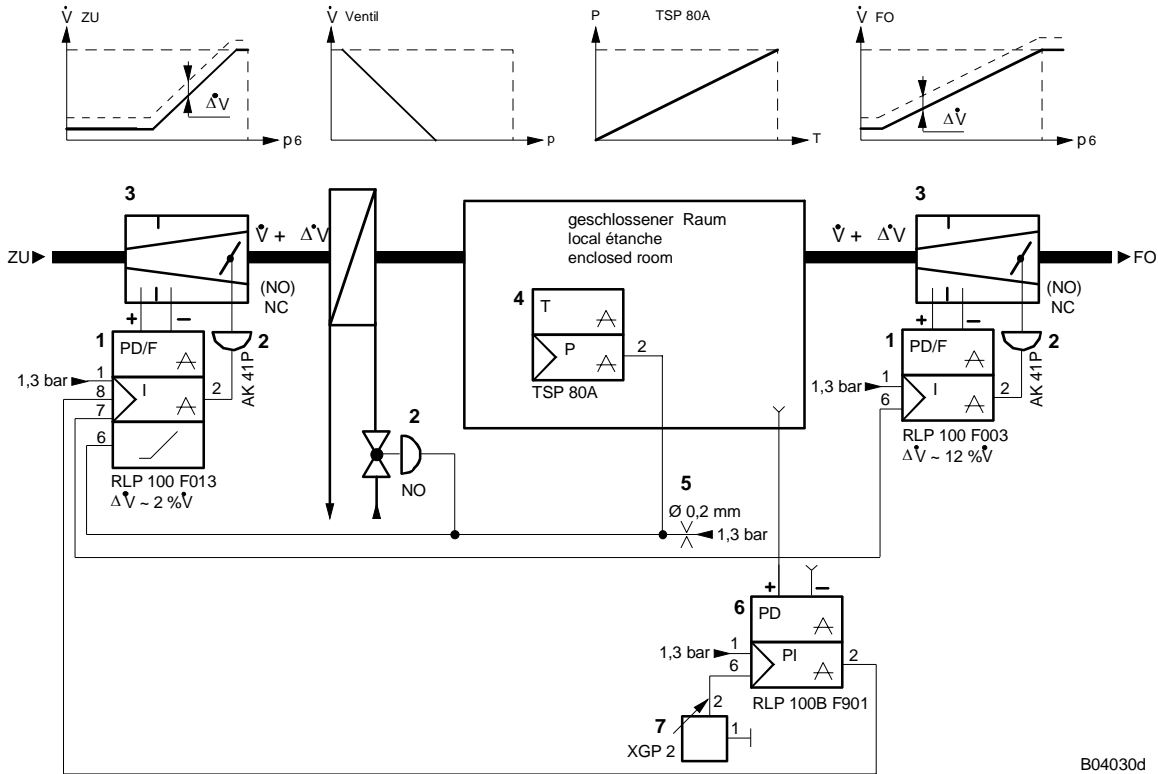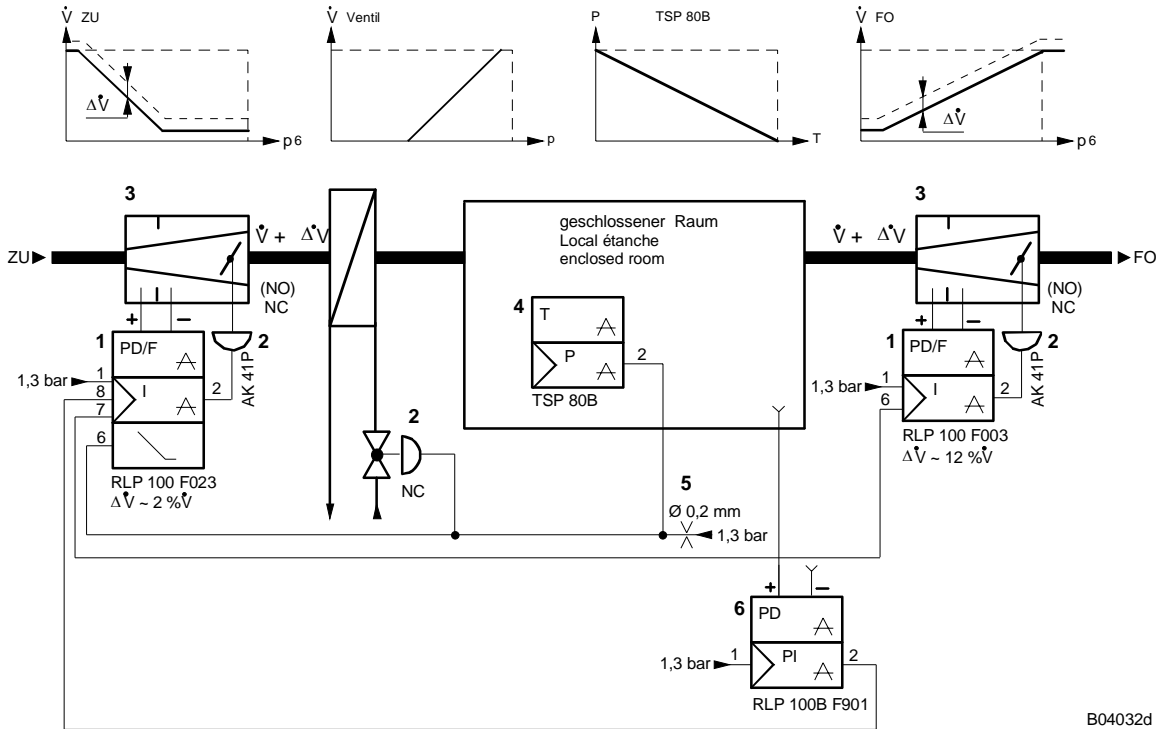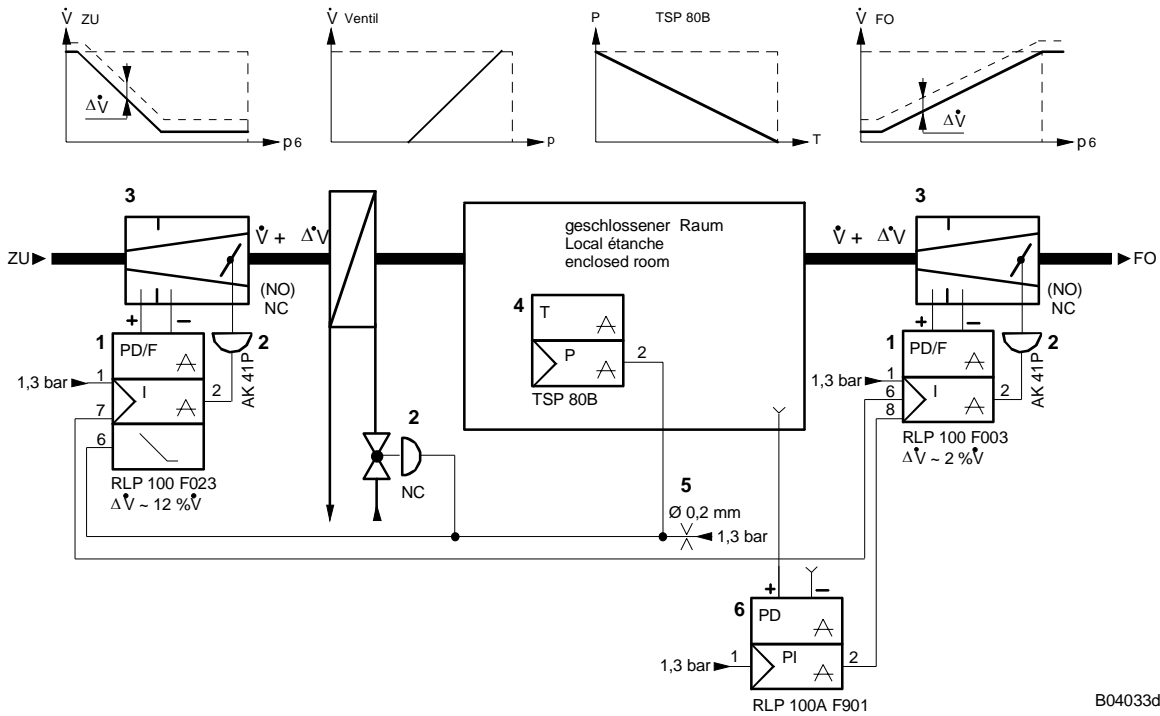

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2. Control facility for variable air volume with re-heater, for 'closed rooms', controlled for over- and/or under-pressure, activating the exhaust-air controller has controlaction A; normally-open re-heater; room-temperature controller has control action A.

**Sauter Components**

7167420003 05

B04031d

3. Control facility for variable air volume with re-heater, for 'closed rooms', controlled for over- and/or under-pressure, activating the supply-air controller has controlaction B; normally-closed re-heater; room-temperature controller has control action B.

B04032d

4. Control facility for variable air volume with re-heater, for 'closed rooms', controlled for over- and/or under-pressure, activating the exhaust-air controller has controlaction A; normally-closed re-heater; room-temperature controller has control action B.

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Sauter Components   7167420003 05

5. Control facility for variable air volume with re-heater, for 'closed rooms', controlled for over- and/or under-pressure, activating the supply-air controller has controlaction B; normally-open re-heater; room-temperature controller has control action A.
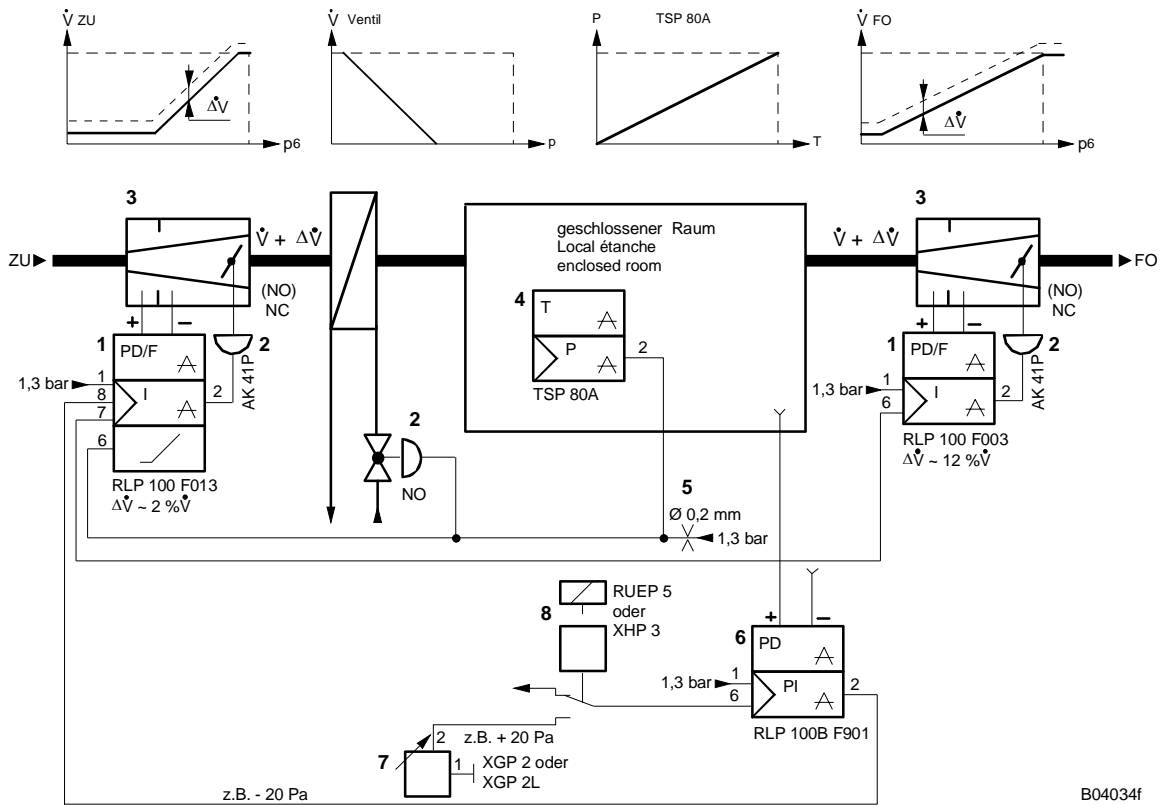
1	VAV controller	5	External line restrictor	Ventil	Valve
2	Damper/valve drive	6	Pressure controller	FO	EA (exhaust air)
3	Pressure-release unit	7	Remote setpoint adjuster	ZU	SA (supply air)
4	Room-temperature controller	8	Manual switch or E-P relay	NO	Normally open
				NC	Normally closed

Sauter Components