

Pneumatic Volume Booster Type 3755

Application

The volume booster is used together with positioners to increase the positioning speed of pneumatic actuators.

K_{vS} for Supply and Exhaust **2.5 m³/h**
Signal-to-output ratio **1:1**

The pneumatic volume booster supplies an air flow output at the actuator port whose pressure corresponds exactly with the signal pressure, except that it has a much higher volume output.

Special features

- Compact body made of cast aluminum
- Fast dynamic response due low hysteresis
- Bypass restriction with linear characteristic
- Bypass restriction setting lead-sealable
- Sintered polyethylene filter disc to reduce noise emission
- Constant reversing pressure
- Version with optimized dynamics
- Exhaust feedback possible
- Weather protection cover for version with sintered polyethylene filter disc

Versions

Standard version for mounting between positioner and actuator
 Low-noise exhaust over sintered polyethylene filter disc · Supply pressure max. 10 bar · Signal and actuator pressure max. 7 bar
 Ambient temperature range between -40 and 80 °C · G 3/4 connections for supply (SUP) and actuator (OUT) as well as G 1/4 connection for signal (SIG)

- **Type 3755-1** (Figs. 1 and 2) · Pneumatic volume booster with low-noise sintered polyethylene filter disc

Further version

- **Type 3755-2** (Fig. 3) · Pneumatic volume booster, flanged-on exhaust port (ISO 228 G 1 or 1-11 1/2 NPT)

Options

- Connections with NPT thread



Fig. 1 · Type 3755 Pneumatic Volume Booster



Fig. 2 · Type 3755-1, showing sintered polyethylene filter disc



Fig. 3 · Type 3755-2, version with flanged-on exhaust port

Principle of operation

If the positioner signal increases to supply air to the actuator, the pressure above the diaphragm (1) increases. The differential pressure at the diaphragm causes the supply plug (2) to open, providing supply air up to a maximum of 10 bar to the actuator.

In contrast, a positioner signal to vent the actuator causes the exhaust plug (3) to open. The pressure in the actuator is relieved over the exhaust port.

The fail-safe action upon signal pressure failure always causes venting!

The bypass restriction screw (4) is used to adjust the response of the pneumatic volume booster to match the system conditions. The setting of the bypass restriction screw can be locked in position by a lock nut to prevent it from being turned and additionally lead-sealed.

The bypass restriction screw must never be completely closed. This prevents the system from hunting and allows for a stable control performance by the positioner.

Note: The bypass restriction screw (4) with lock nut (4.1) must only be hand-tightened. The maximum permissible tightening torque is 3 Nm.

Mounting on control valves

Mount the pneumatic volume booster so that the air between Supply and Actuator flows in the direction indicated on the body. Mount the device between the positioner and pneumatic actuator (Fig. 5).

Pneumatic connections

The air connections for Signal, Supply, Actuator and for the version with flanged-on exhaust port are designed with G or NPT threads depending on the female thread selected for the pipe.

Note: If higher dynamic requirements are to be met, the supply pressure, hook-up and actuator bench range must be sized accordingly.

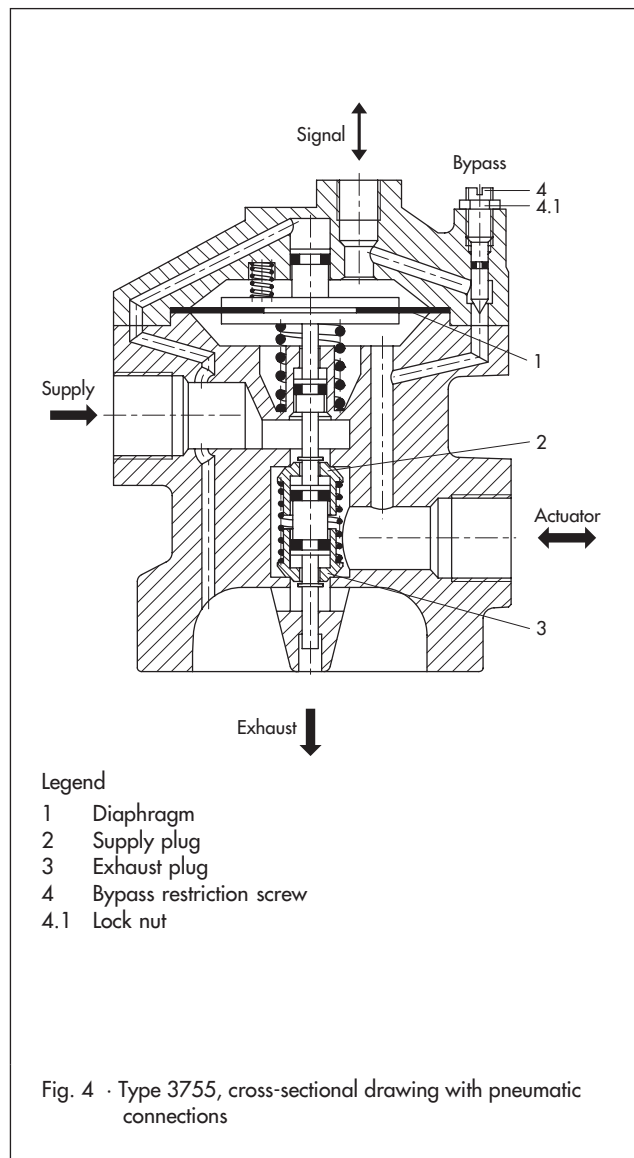


Fig. 4 · Type 3755, cross-sectional drawing with pneumatic connections

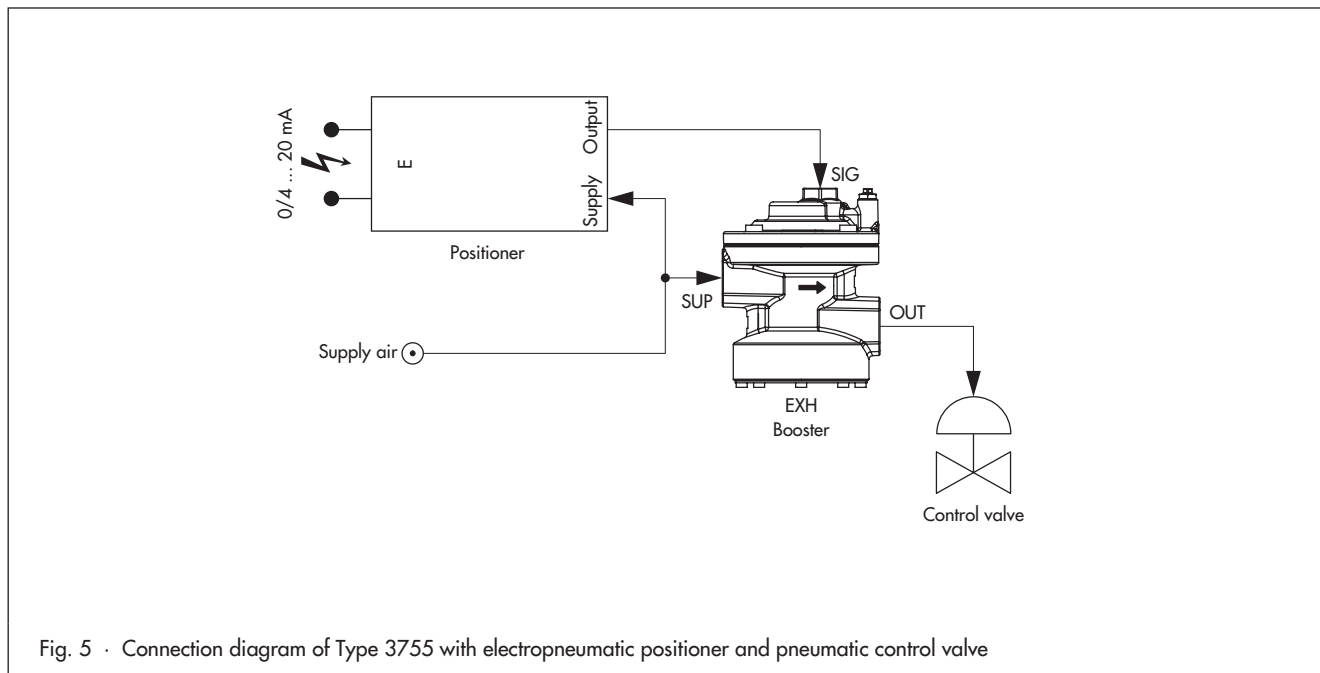


Fig. 5 · Connection diagram of Type 3755 with electropneumatic positioner and pneumatic control valve

Table 1 · Technical data

Type 3755 Pneumatic Volume Booster	
Flow capacity	
K _V S Supply	2.5 m ³ /h
K _V S Exhaust	2.5 m ³ /h
K _V S Bypass	0.8 m ³ /h
Control performance	
Pressure ratio	Signal to output = 1:1
Reversing pressure	80 mbar
Dynamic versions	Standard (options in preparation)
Pressure	
Supply	max. 10 bar · max. 150 psi
Actuator	max. 7 bar · max. 105 psi
Signal	max. 7 bar · max. 105 psi
Air quality according to ISO 8573-1	Maximum particle size and density: Class 4 · Oil content: Class 3 Pressure dew point: Class 3 or at least 10 K below the lowest ambient temperature to be expected
Connecting thread	
Supply (SUP)	G ¾ (optionally ¾ NPT)
Output (OUT)	G ¾ (optionally ¾ NPT)
Signal (SIG)	G ¼ (optionally ¼ NPT)
Flanged-on exhaust port (EXH)	G 1 or G ¾ (optionally 1 NPT or ¾ NPT)
Other operating parameters	
Permissible ambient temperature	-40 to 80 °C
Service life	≥ 1 × 10 ⁷ full strokes
Degree of protection	IP 42 (with the exhaust port facing downwards)
Use in safety-instrumented systems acc. to IEC 61508/SIL 2	Pending
Weight	2.1 kg · Version with flanged-on exhaust port: 2.4 kg

Table 2 · Materials

Body	Cast aluminum, gray-beige, RAL 1019 powder paint coated
Flanged-on exhaust port	Aluminium, gray-beige, RAL 1019 powder paint coated
Silencer (not for version with flanged-on exhaust port)	Sintered polyethylene filter disc
Diaphragm	VMQ
Other external parts	Stainless steel 1.4301

Standard version: Exhaust over sintered polyethylene filter disc

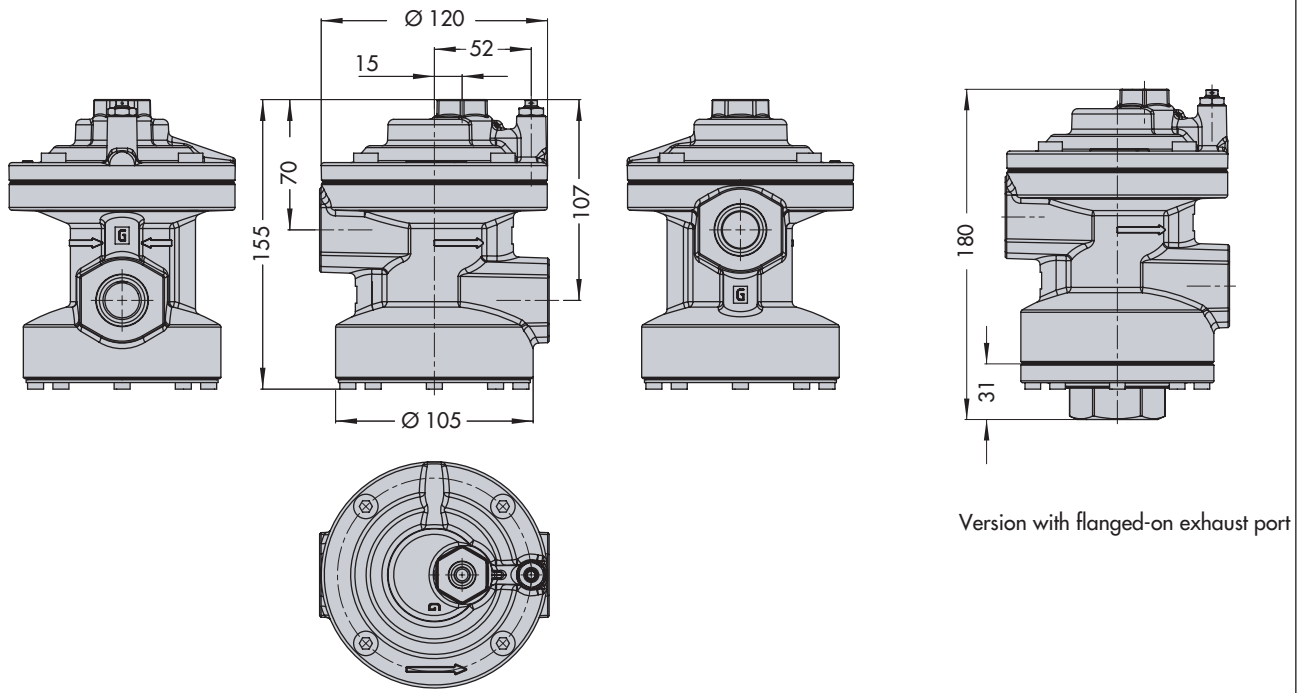


Fig. 6 · Dimensional drawings of Type 3755 · Dimensions in mm

Article code

Pneumatic volume booster	Type 3755-	x	x	x	0	0	x	x	0	0	x	0	0	0	0
Version															
Standard: low-noise exhaust over sintered polyethylene filter disc	1		0												
Flanged-on exhaust port	2		3/5												
Pneumatic connections															
Standard: Supply and Actuator ISO 228 - G 3/4, Signal ISO 228 - G 1/4	1														
Supply and Actuator 3/4-14 NPT, Signal 1/4-18 NPT	2														
Exhaust connection															
Standard: sintered polyethylene filter disc			0												
Flanged-on exhaust port ISO 228 - G 1			3												
Flanged-on exhaust port 1-1 1/2 NPT			5												
Flow capacity															
Standard: Supply K _{VS} = 2.5 m ³ /h, Exhaust K _{VS} = 2.5 m ³ /h															
Dynamic response															
Standard															
Body material															
Standard, aluminium							0								
Color															
Standard: Gray-beige, RAL 1019, structured finish								0							
Temperature range															
Standard: -40 to 80 °C														0	

Ordering text

Pneumatic Volume Booster	Type 3755
Version	Low-noise exhaust or Flanged-on exhaust port
Pneumatic connections	G/NPT
Exhaust connection	Silencer/ flanged-on exhaust port
Body material	Aluminum
Color	Gray-beige, structured finish RAL 1019



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