

Silencer Type 3381

DIN and ANSI versions



Application

Noise attenuation for liquids, gases and vapors · Velocity reduction at the valve outlet for gases and vapors

Nominal size DN 40 to 400 · NPS 1½ to 16
Nominal pressure PN 10 to 160 · Class 300 to 900



Type 3381 Silencer acting as a fixed restriction to reduce the sound pressure level.

- One or two attenuation plates in flangeless version (Type 3381-1, see Figs. 3 and 4 or Type 3381-2, see Fig. 5) or
- System of two to five attenuation plates in a body (Type 3381-3-x, see Figs. 1, 2, 6)
- Flow velocity reduction of compressible media at the valve outlet
- Used in conjunction with SAMSON Series 240 and Series 250 Valves

Versions

- **Type 3381-1.x** · Attenuation plates mounted between the valve and the pipe flange. The nominal size of the silencer can either be the same as the nominal valve size (Type 3381-1.1, Fig. 3) or the same as the following expander (Type 3381-1.2, Fig. 4).

Depending on the K_V/C_V coefficient of the attenuation plates either Type 3381-1.1 or Type 3381-1.2 is used.

- **Type 3381-2** · A combination of the Type 3381-1.1 and Type 3381-1.2, always with two attenuation plates. This version can only be used with certain K_V/C_V coefficient combinations as the attenuation plates are mounted directly between the valve and pipe flange, not requiring a separate housing.

The pipe expander is not scope of the delivery of both versions (Type 3381-1.x and Type 3381-2).

- **Type 3381-3-x** · Silencer with two to five attenuation plates located in one housing. The “x” in the type designation indicates the number of attenuation plates. A pipe expander similar to the Types 3381-1.x and 3381-2 is not required since it is already provided by the housing holding the attenuation plates. The scope of delivery includes all parts necessary for installation including bolts.

Other versions for

- **Higher differential pressures** · On request



Fig. 1 · Type 3241-7 Control Valve with Type 3381-3 Silencer



Fig. 2 · Type 3381-3-3

Principle of operation

The Type 3381 Silencer provides noise attenuation by acting as a fixed restriction. The silencer raises the pressure of the medium flow at the valve outlet and reduces the pressure downstream of the silencer to the required downstream pressure p_2 . As a result, the sound pressure level is reduced. In applications using compressible media, it additionally lowers the flow velocity at the valve outlet.

The pressure reduction per attenuation plate (Δp) depends on the flow rate and the prevailing operating temperature. Generally, the pressure reduction is between 5 and 7 bar.

A five-stage silencer (Type 3381-3-5) normally provides a maximum pressure drop of 35 bar.

Selecting and sizing the silencer and the upstream control valve

The silencer should always be sized together with the upstream control valve to achieve the best results.

1. Calculate appropriate K_V coefficient according to IEC 60534.
2. Select nominal valve size from Table 2.
3. Select materials, pressure and temperature from Table 1 and from the associated pressure-temperature diagram (see T 8000-2 EN).

The number of attenuation plates and the nominal size is determined from the operating data at hand.

Dimensions

The dimensions of Type 3381-3-x depend on the number of attenuation plates and the pressure rating. More details are available on request.

The following details are required on ordering:

Operating pressure	in bar (a), bar (g), psi (a), psi (g) at minimum, normal and maximum flow rate
Flow rate	in kg/h m ³ /h in standard or operating state at minimum, normal and maximum flow rate
Process medium	Density in kg/m ³ and temperature in °C or °F
Pipe diameter	DN or NPS upstream and downstream of the silencer
PN...	According to DIN, ANSI or JIS
Material	According to Table 1
Others	All other data required to size the control valve

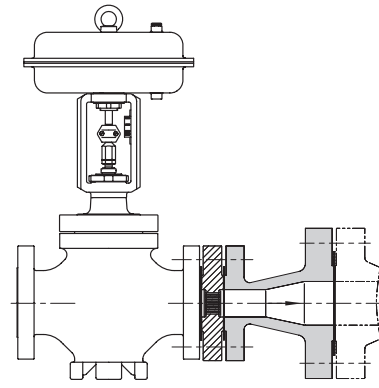


Fig. 3 · Type 3381-1.1

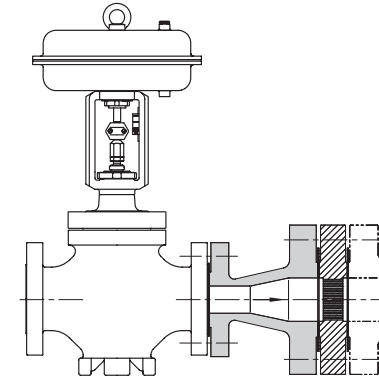


Fig. 4 · Type 3381-1.2

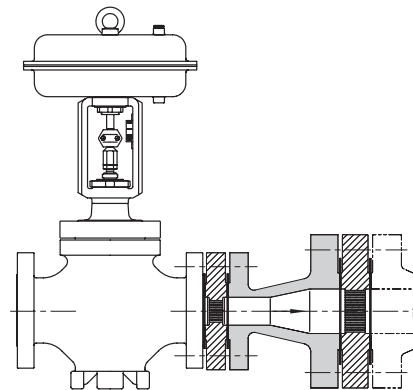


Fig. 5 · Type 3381-2

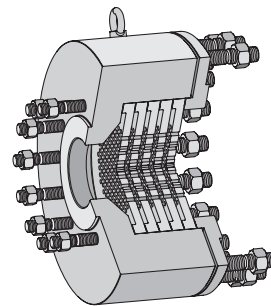


Fig. 6 · Sectional drawing of Type 3381-3-5, five-stage

Table 1 · Technical data

Type 3381-1.x, Type 3381-2 and Type 3381-3.x Silencers					
Version according to		DIN		ANSI	
Material ¹⁾		Forged steel P250GH · 1.0460	Stainless forged steel 1.4571	Forged steel A105	Stainless forged steel A182 F316
Nominal size (inlet) ²⁾		DN 40 ... 400		NPS 1½ ... 16	
Nominal pressure ³⁾		PN 10 ... 160		Class 150 ... 900	
Type of end connections		All DIN flanges		Flanges RF	
Temperature range ⁴⁾		-50 ... 400 °C		-58 ... 750 °F	

- 1) Other materials on request
 2) Available nominal sizes and possible combinations as listed in Table 2
 3) Varying pressure ratings for inlet and outlet for Type 3381-3.x on request
 4) Other temperature ranges for Type 3381-1.x and Type 3381-2 on request

Table 2 · Available nominal size combinations

Nominal valve size (inlet)		Outlet pipe nominal size									
		40	50	80	100	150	200	250	300	400	500
DN	NPS	1½	2	3	4	6	8	10	12	16	20
40	1½	•	•	•	•	•	(•)	(•)	(•)	(•)	(•)
50	2		•	•	•	•	•	(•)	(•)	(•)	(•)
80	3			•	•	•	•	•	(•)	(•)	(•)
100	4				•	•	•	•	•	•	(•)
150	6					•	•	•	•	•	•
200	8						•	•	•	•	•
250	10							•	•	•	•
300	12								•	•	•
400	16									•	•

(•) Special version

Specifications subject to change without notice.



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