

# Series 3381

## Type 3381 Silencer

DIN and ANSI versions



### Application

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

**Valve size**      **DN 40 to 800**   · **NPS 1½ to 32**  
**Pressure rating** **PN 10 to 400**   · **Class 150 to 2500**

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

- Single attenuation plates in Type 3381-1 (see Fig. 3 and Fig. 4) or single attenuation plates in reduced construction in Type 3381-1R (see Fig. 5)
- System with two to five attenuation plates in a body (Type 3381-3 in Fig. 8) or as a wafer-type version (Type 3381-4 in Fig. 9)
- 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** · Single attenuation plate mounted between the valve or a pipe expander and the pipe flange (Fig. 3 and Fig. 4).
- **Type 3381-1R** · Reduced construction using less material: Single attenuation plate with reduced diameter and possibly the thickness, clamped between the valve or a pipe expander and the pipe flange (Fig. 5). Available in standard materials in DN 200/NPS 8 and larger based on the pressure rating as specified in Table 2.
- **Type 3381-3-X** · Silencer with two to five attenuation plates located in a body. An additional pipe expander is not required (Fig. 8).
- **Type 3381-4-X** · System with two to five attenuation plates installed as a wafer-type version. Usually downstream of a pipe expander (Fig. 9).

### Further versions

- **Combination of Type 3381-1 and Type 3381-1R** with two attenuation plates in varying nominal sizes (Fig. 6 and Fig. 7)
- **Special materials** (e.g. Monel, Hastelloy) · On request
- **Special materials for Type 3381-1R** for nominal sizes < DN 200/NPS 8 · On request
- **Welding ends** · On request
- **Larger nominal sizes** · On request
- **JIS version** · On request

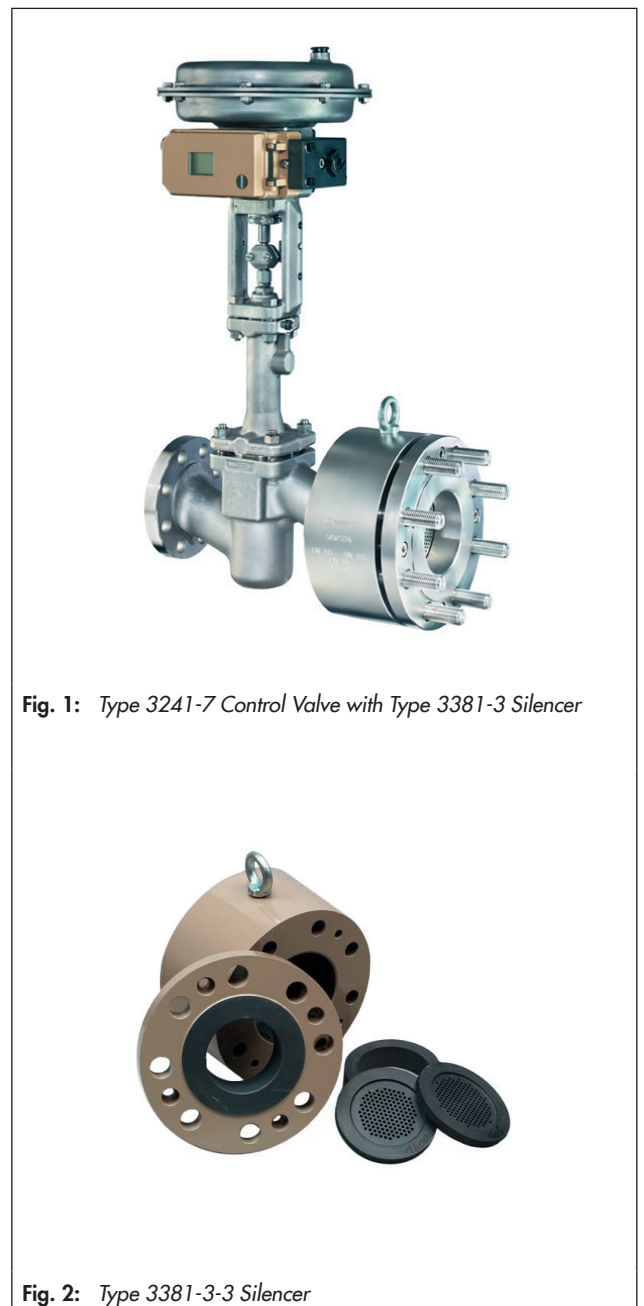


Fig. 1: Type 3241-7 Control Valve with Type 3381-3 Silencer

Fig. 2: Type 3381-3-3 Silencer

## Principle of operation

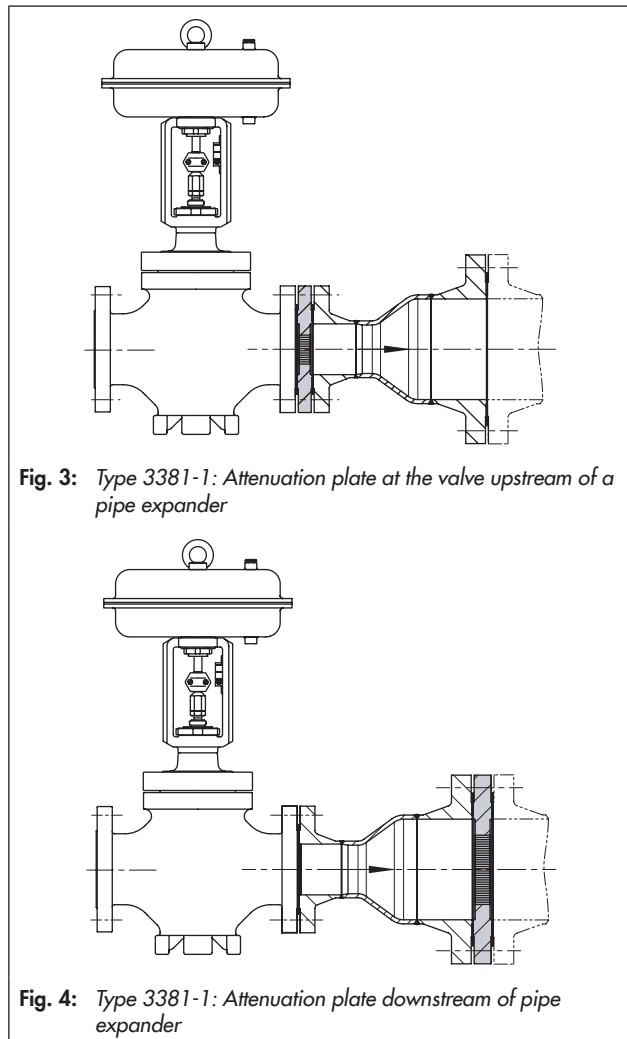
The Type 3381 Silencer provides noise attenuation by acting as a fixed restriction. The silencer raises the pressure of the medium flow at the valve outlet and reduces the pressure downstream of the silencer to the required downstream pressure  $p_2$ . As a result, the sound pressure level is reduced.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

The pressure reduction per attenuation plate ( $\Delta p$ ) 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 and Type 3381-4-5) normally provides a maximum pressure drop of 35 bar.

## Type 3381-1 Silencer

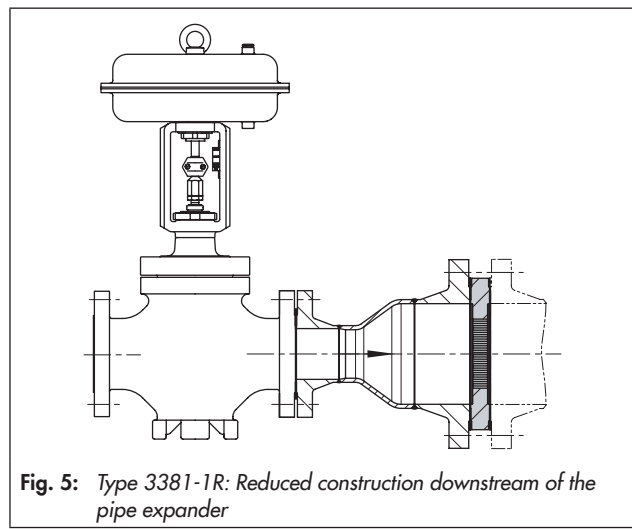
In Type 3381-1 the attenuation plate can be installed upstream and/or downstream of the pipe expander (Fig. 3, Fig. 4 and Fig. 6). The nominal size of the attenuation plate depends on the nominal size of the valve or pipe expander.



## Type 3381-1R Silencer

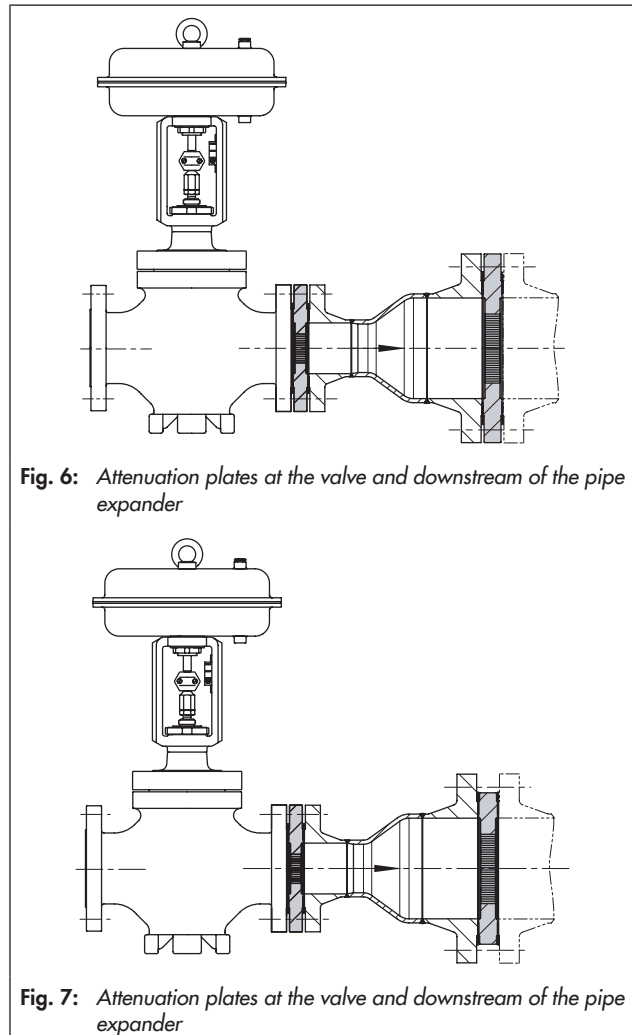
In Type 3381-1R, the diameter and possibly the thickness of the attenuation plates is reduced in comparison to Type 3381-1 (Fig. 5).

Only the nominal sizes and nominal pressures listed in Table 2 can be combined with one another for this version (in standard materials).



## Combination of Type 3381-1 and Type 3381-1R

The Type 3381-1 and Type 3381-1R can be combined with one another (Fig. 6 and Fig. 7). Two attenuation plates in different nominal sizes are installed: one at the valve outlet and one downstream of the pipe expander.



### Type 3381-3-X Silencer

In Type 3381-3-X, two to five attenuation plates are installed one after the another in a body (Fig. 8). The nominal sizes of the inlet and outlet can vary: The nominal inlet size of the body corresponds to the nominal size of the valve. The nominal outlet size corresponds to the downstream nominal pipe size. A pipe expander is already integrated into the body.

The "x" in the type designation indicates the number of attenuation plates installed. The silencer is delivered as a ready-to-install unit with nuts and bolts (but without gaskets).

### Type 3381-4-X Silencer

In Type 3381-4-X, two to five attenuation plates are clamped between the valve outlet or pipe expander and the pipeline (wafer-type version). A pipe expander must be installed if the nominal size of the attenuation plates is larger than that of the valve (Fig. 9).

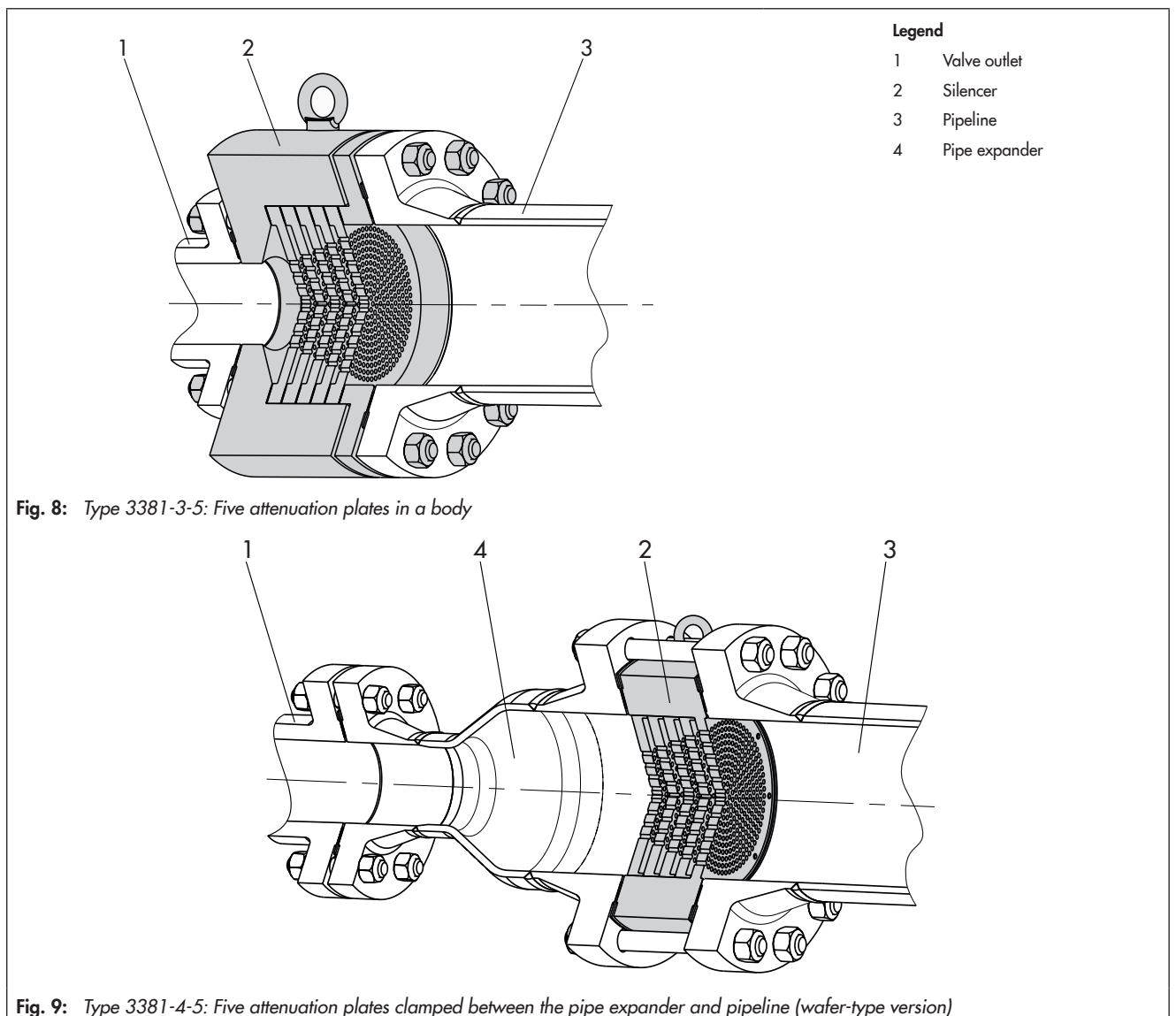
The "x" in the type designation indicates the number of attenuation plates.

### Dimensions

The dimensions of Type 3381-3-X and Type 3381-4-X depend on the number of attenuation plates and the nominal pressure. Further details are available on request.

### Note concerning all versions

The pipe expander is not included in the scope of delivery.



**Table 1: Technical data**

Type 3381-1, Type 3381-1R, Type 3381-3-X or Type 3381-4-X Silencer				
Version according to	DIN		ANSI	
Material <sup>1)</sup>	Forged steel P250GH · 1.0460	Forged stainless steel 1.4401	Forged steel A105	Forged stainless steel A182 F316
Nominal size	DN 40 to 800		NPS 1½ to 32	
Nominal pressure <sup>2) 3)</sup>	PN 10 to 400		Class 150 to 2500	
Type of connection	All DIN EN versions		All ANSI versions	
Temperature range <sup>4)</sup>	-50 to +400 °C		-58 to +750 °F	

- 1) Other materials on request
- 2) Only nominal sizes possible according to the standard
- 3) Varying pressure ratings for inlet and outlet for Type 3381-3-X on request
- 4) Other temperature ranges on request

**Table 2: Possible wafer-type versions for Type 3381-1R as well as for combinations of Type 3381-1 and Type 3381R**

**Note:**

- Wafer-type version only for standard materials according to Table 1
- Only nominal sizes possible according to the standard and depending on the nominal pressure

DIN EN versions		ANSI versions	
Nominal size	Pressure rating (min.)	Nominal size	Pressure rating (min.)
DN 200	PN 400 and higher	NPS 8	Class 2500 and higher
DN 250	PN 250 and higher	NPS 10	Class 1500 and higher
DN 300	PN 100 and higher	NPS 12	Class 600 and higher
DN 350	PN 63 and higher	-	-
DN 450	PN 40 and higher	NPS 16 and larger	All pressure ratings
DN 600 and higher	All pressure ratings	-	-

**Selecting and sizing the silencer and the upstream control valve**

Always size the silencer together with the upstream control valve to achieve the best results.

1. Calculate the suitable  $K_{VS}$  coefficient according to IEC 60534.
2. Select nominal size from Table 2.
3. Select materials, pressure and temperature from Table 1 and from the pressure-temperature diagram (see ► T 8000-2 EN)

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

**Order specifications:**

Nominal size/pipe diameter	DN ... or NPS ... Upstream and downstream of the vena contracta
Nominal pressure	PN ... or Class ... According to DIN, ANSI or JIS
Material	According to Table 1
Process medium	Density in kg/m <sup>3</sup> and temperature in °C or °F
Flow rate	kg/h or m <sup>3</sup> /h in standard or operating state with minimum, normal and maximum flow rate
Operating pressure	bar or psi with minimum, normal and maximum flow rate

Specifications subject to change without notice

