

T 2595 EN

Self-operated Pressure Regulators · Accessories

Compensation chamber · Screw fittings · Control line connection · Control line

Application

Accessories for Type 41-23 Universal Pressure Reducing Valve, Type 41-73 Universal Excess Pressure Valve, Type 2422/2424 Pressure Reducing Valve and Type 2422/2425 Excess Pressure Valve

SAMSON offers various accessories for the listed pressure regulators:

- **Screw joint with restriction, 6x1 mm pipe connection**

For connection of the control line to the actuator.

Male thread R 1/4, female thread G 3/8 for control line connection; other connections for 8x1 and 10x1 pipes are also available. Furthermore, Serto (8 x 1, 10 x 1), Swagelok fittings (Ø12, 1/2") and 1/2" NPT screw joints with restrictions are available (see also 'Screw joints with restriction for Types 2413, 2424 and 2425 Actuators').

- **Control line**

For transmitting the pressure to the operating diaphragm of the regulator.

6x1 mm pipe with screw joint with restriction (standard for DIN regulator versions).

1/4" pipe with screw joint with restriction (standard for ANSI regulator versions)

- **Compensation chamber ¹⁾**

Required for steam or liquids above 150 °C. To collect condensation in applications with vapors and for protection of the operating diaphragm against high temperatures.

- **Funnel tube ¹⁾**

To help fill the diaphragm chamber including the compensation chamber and the control line with the process medium.



Fig. 1: Type 41-23 Universal Pressure Reducing Valve with control line

¹⁾ The accessories are not included in the scope of delivery and must be ordered separately.

The specified permissible temperatures apply to the Type 41-23, Type 41-73, Type 2422/2424 and Type 2422/2425 Regulators, depending on the process medium and additional equipment.

Table 1: Process medium and permissible medium temperature depending on the accessories used and the diaphragm material in the actuator · Metal-seated plug

Process medium	Accessories				Min./Max. ^{1) 2) 3)} medium temperature in °C			
	Control line kit without compensation chamber for pressure tapping at the valve body or screw joint with restriction G 3/8	Compensation chamber, screw joint with restriction G 3/8 and funnel tube or control line kit with compensation chamber for pressure tapping at the valve body	Compensation chamber with welding connections, screw joint with restriction G 3/8 and funnel tube	Control line kit for process medium with high or low temperatures ⁴⁾	Actuator diaphragm (material)			
					EPDM	FKM	NBR	Bellows
Water ⁵⁾	•				-30 to 150			
Air	•				-30 to 80	0 to 150	-30 to 80	Up to 350
				•	-50 to 150	-20 to 220	-50 to 150	
Nitrogen	•				-30 to 80	0 to 150	-30 to 80	Up to 350
				•	-50 to 150	-20 to 220	-50 to 150	
CO ₂	•				-30 to 80	0 to 150		Up to 350
				•	-50 to 150	-20 to 220	-50 to 150	
Flammable gases ⁶⁾	•					0 to 150	-30 to 80	Up to 350
				•		-20 to 220	-50 to 150	
Steam	•							Up to 350
		•			Up to 250			
Mineral oils ⁶⁾			•		Up to 350			
	•					0 to 150	-30 to 80	Up to 350
		•				Up to 250	Up to 250	
Liquids ⁶⁾			•			Up to 350	Up to 350	
	•				-30 to 150	0 to 150	-30 to 80	Up to 350
		•			Up to 250	Up to 250	Up to 250	
			•		Up to 350	Up to 350	Up to 350	

Table 2: Process medium and permissible medium temperature · Soft-seated plug

Process medium	Min./Max. ^{1) 2)} medium temperature in °C		
	Soft-seated plug (material)		
	EPDM	FKM	NBR
Water ⁵⁾	-30 to 150		
Air	-30 to 80	0 to 150	-30 to 80
Nitrogen	-30 to 80	0 to 150	-30 to 80
CO ₂	-30 to 80	0 to 150	-30 to 80
Flammable gases ⁶⁾		0 to 150	-30 to 80
Steam			
Mineral oils ⁶⁾		0 to 150	-30 to 80
Liquids ⁶⁾	-30 to 80	0 to 150	-30 to 80

- 1) The minimum or maximum permissible temperature may be restricted by the valve material. See temperature diagrams in ► T 2500, Fig. 2.
- 2) Medium temperatures below 0 °C may cause ice to form on the valve, depending on the air humidity. This may affect, in particular, the functioning of the stem guide or set point adjuster. This must be prevented on site by taking appropriate precautions (e.g. enclosure, trace heater etc.).
- 3) Temperature limits for metal-seated plug. Deviating temperatures may arise when a soft-seated plug is used (see Table 2).
- 4) The ambient temperature must be at least 30 °C above the lowest medium temperature or 100 °C below the highest medium temperature. Example: lowest medium temperature -45 °C → ambient temperature at least -15 °C.
- 5) If applicable, use antifreeze. In principle, the materials are also resistant to high concentrations of glycol. However, the glycol may start to degrade over the service life. During the degradation process, corrosive products (e.g. acids) may form. We cannot prevent this reaction. Therefore, plant operators must prevent it by using suitable inhibitors.
- 6) Specific compatibility with the process medium on request. The viscosity must not exceed 100 cSt.

Control line kits

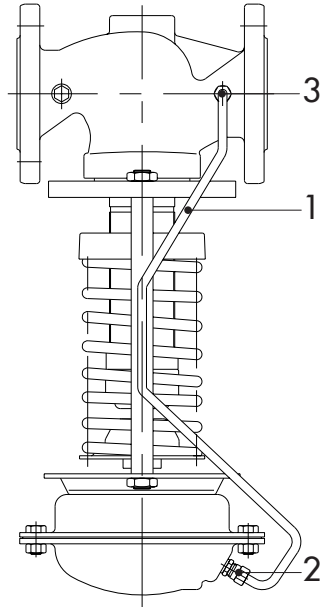
Note: Depending on the process conditions, how the pipeline is routed and the adjusted set point, adverse flow conditions may arise at the point of tapping at the body, possibly leading to pressure fluctuations. Therefore, we recommend using an external pressure tapping for a set point lower than 0.8 bar.

Control line kit without compensation chamber for Type 41-23 or Type 41-73

Control line with accessories

Control line kit for liquids and gases (standard)

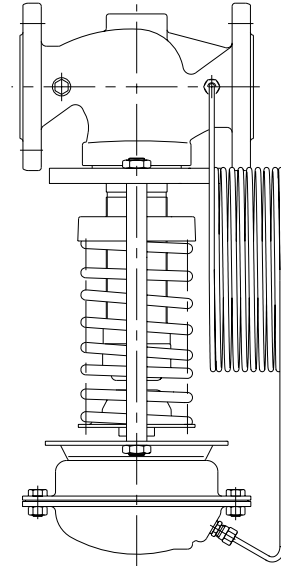
Type 41-23 →
Type 41-73 ←



Control line kit for high or low temperatures (not for steam)¹⁾

Control line length

Type 41-23 →
Type 41-73 ←

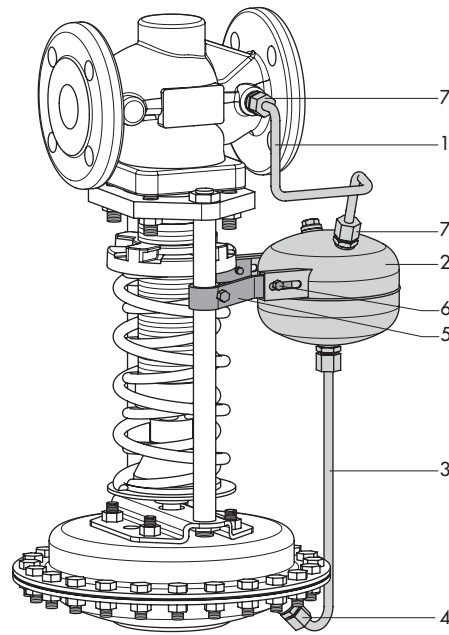


- 1 Control line · 6x1 mm/1/4" pipe · Material 1.4404/316L
- 2 Screw joint with restriction · Material 1.4571
- 3 Compression-type fitting · Material 1.4571

Fig. 2: Control line kit **without** compensation chamber

¹⁾ Recommendation: do not mount the control line kit before delivering the regulator to prevent it from being damaged during transportation.

Control line kit with compensation chamber for Type 41-23 or Type 41-73



- 1 Control line between valve body and compensation chamber · 8x1 mm/ $\frac{3}{8}$ " · Material 1.4404/316L
- 2 Compensation chamber · Material 1.4301/1.0566
- 3 Control line between actuator and compensation chamber · 6x1 mm/ $\frac{1}{4}$ " pipe · Material 1.4404/316L
- 4 Screw joint with restriction · Material 1.4571 · 1.4404/316L
- 5 Fastening bracket
- 6 Screw M6x10, SK 8.8 · A4-70
- 7 Compression-type fitting · Material 1.4571 · 1.4404/316L

Fig. 3: Control line kit with compensation chamber for steam

Compensation chamber (see Fig. 4) with welding connections for Type 41-23, Type 41-73, Type 2422/2424 or Type 2422/2425

If the operating conditions make a compensation chamber necessary, the necessary dimensions and the associated order number must be selected from Table 3 according to the nominal size and dimensions of the actuator (diaphragm area).

The control line and the connection pipe are welded to the weld connections of the compensation chamber. They must be provided on site.

Table 3: Compensation chambers for welding

Accessories	Nominal size DN	Actuator area in cm ²	Order no.
Standard version · Screw joint with restriction (3/8" thread), compensation chamber and funnel tube	15 to 250	40 to 160	1059489
	15 to 50	320	5482511
	65 to 250	320	1059490
	15 to 50	640	5482538
	65 to 250	640	1059491
Stainless steel version · Ermeto screw joint with restriction (6x1 mm), compensation chamber and funnel tube	15 to 250	40 to 160	1059493
	15 to 50	320	5482540
	65 to 250	320	1059494
	15 to 50	640	5482542
	65 to 250	640	1059495
Standard version · Compensation chamber (see Fig. 4)	15 to 250	40 to 160	1190-8788 (0.7 l)
	15 to 50	320	1190-8788 (0.7 l)
	65 to 250	320	1190-8789 (1.5 l)
	15 to 50	640	1190-8789 (1.5 l)
	65 to 250	640	1190-8790 (2.4 l)

Table 4: Dimensions · Compensation chambers (including material)

Order no.	1190-8788	1190-8789	1190-8790
Contents	0.7 l	1.5 l	2.4 l
Length L	105 mm	195 mm	285 mm
Material	Sheet steel S235JR (St 37-2)		

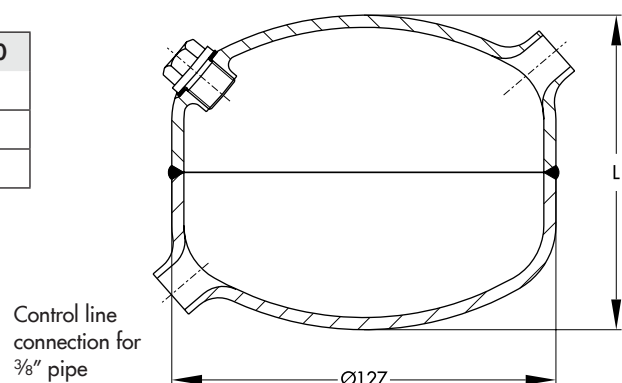


Fig. 4: Compensation chamber with welding connections

Screw joints with restriction for Types 2413, 2424 and 2425 Actuators

Table 5: Screw joints with restriction for Type 2413

Accessories	Nominal size DN	Actuator area in cm ²	Order no.
Standard version · Screw joint with restriction (3/8" thread) only	15 to 250	33 to 160	1059488
Stainless steel version · Ermeto screw joint with restriction (6x1 mm) only	15 to 250	33 to 160	1059492

Overview

K = Small orifice cross-section, **G** = Large orifice cross-section

Table 6: Assignment of nominal size, actuator size and orifice cross-section

Nominal size DN	15 to 250	15 to 50	65 to 250	15 to 50	65 to 250
Actuator area	33 to 160 cm ²	320 cm ²	320 cm ²	640 cm ²	640 cm ²
Orifice cross-section	K			G	

Table 7: Orifice versions for Types 2413, 2424 and 2425 (with connecting thread)

Orifice cross-section	Connecting thread x	Order no.	
		Steel	Stainless steel
K	G 3/8	1490-2175	-
G		1990-3815	-
K	1/2 NPT	-	1992-2708
G		1990-4831	-
K	1/4 NPT	-	1992-3178

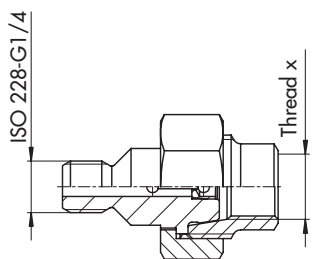
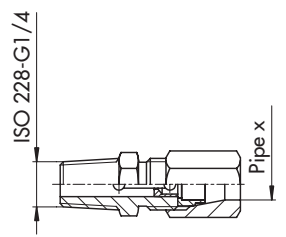


Table 8: Restriction versions for Types 2413, 2424 and 2425 with pipe connection

Orifice cross-section	Type	Pipe x	Order no.	
			Steel	Stainless steel
K	Ermeto	6 x 1 mm pipe	-	1890-8577
G			-	1890-8578
K		8 x 1 mm pipe	1790-4681	1991-1723
G			-	-
K		10 x 1 mm pipe	1790-5596	1991-1724
G			-	-
K	Serto	8 x 1 mm pipe	1990-4834	-
K		10 x 1 mm pipe	1990-8554	-
K	Swagelok	Ø12	-	1990-5751
K		1/2"	-	1990-5752
G		Ø12	-	1990-5928
G		1/2"	-	1990-5929



Ordering text

- Compensation chamber, order no. ... (see Table 3)
- Screw joint with restriction, order no. ... (see Table 5, Table 6, Table 7, Table 8)
- Funnel tube
- Control line kit for Type 41-23 and Type 41-73 (for pressure set point ≥0.8 bar)
 - For liquids up to 150 °C, air and gases up to 80 °C, without compensation chamber
 - For vapors and liquids up to 350 °C, pressure tapping at the valve body, with compensation chamber