

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

Various accessories are available for the pressure regulators listed:

- **Standard screw joint with restriction G $\frac{3}{8}$**

For connection of the control line to the actuator. Male thread R $\frac{1}{4}$, female thread G $\frac{3}{8}$ for control line connection, other connections for 6 x 1, 8 x 1, 10 x 1 pipe are possible.

Furthermore, Serto (8 x 1, 10 x 1), Swagelok fittings ($\varnothing 12$, $\frac{1}{2}$ "") and $\frac{1}{2}$ " 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.

6 x 1 mm pipe with standard screw joint with restriction (standard for DIN versions of regulators)

- **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			
			•		Up to 350			
Mineral oils ⁶⁾	•					0 to 150	-30 to 80	Up to 350
		•				Up to 250	Up to 250	
			•			Up to 350	Up to 350	
Liquids ⁶⁾	•				-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. Nevertheless, glycol may decompose gradually during use. During which, corrosive substances, e.g. acids may form under certain circumstances. 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

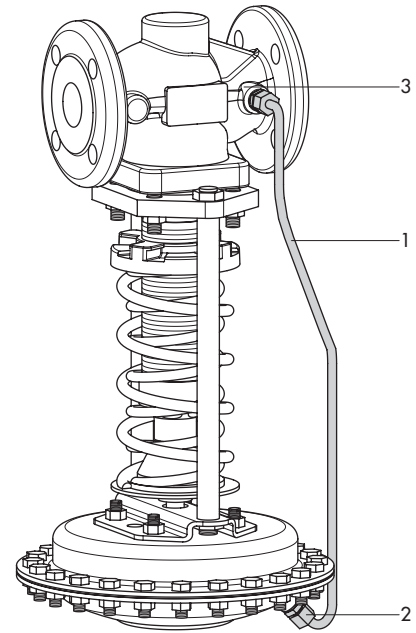
Note: Depending on the process conditions, how the pipeline is routed and the adjusted set point, adverse flow conditions may arise at the point of tapping at the body, possibly leading to pressure fluctuations. Therefore, we recommend using an external pressure tapping for a set point lower than 0.8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

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

Table 3: Control line kit ¹⁾ without compensation chamber with order number

Nominal size DN	Order no. Actuator area				
	33 cm ²	62 cm ²	40/80 cm ²	160 cm ²	320 cm ²
15	1402-1339	1402-1345	1402-1348	1402-1351	1402-1354
20	1402-1340	1402-1346	1402-1349	1402-1352	1402-1355
25	1402-1341	1402-1347	1402-1350	1402-1353	1402-1356
32	1402-1342	On request	1400-8867	1400-8868	1400-8869
40/50	1402-1343	On request	1400-8873	1400-8874	1400-8875
65/80	1402-1090	1402-1482	1400-8879	1400-8880	1400-8881
100	1402-1344	On request	1400-8885	1400-8886	1400-8887

¹⁾ Control line kits for direct pressure tapping at a DIN cast body without compensation chamber, only suitable for standard regulator versions. Other kits available on request (e.g. for actuators with two diaphragms, ANSI valves etc.).

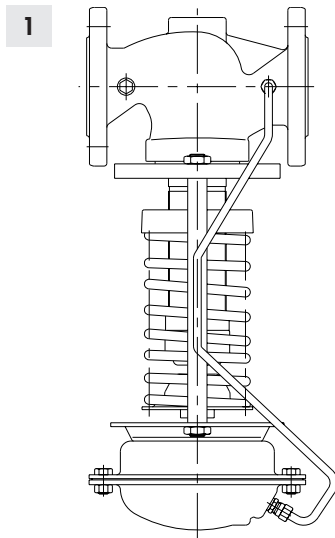


- 1 Control line · 6 x 1 mm pipe · Material 1.4571
- 2 Screw joint with restriction · Material 1.4571
- 3 Compression-type fitting · Material 1.4571

Control line with accessories · Arrangement according to drawing 1120-2257- x

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!)

Type 41-23 →
Type 41-73 ←

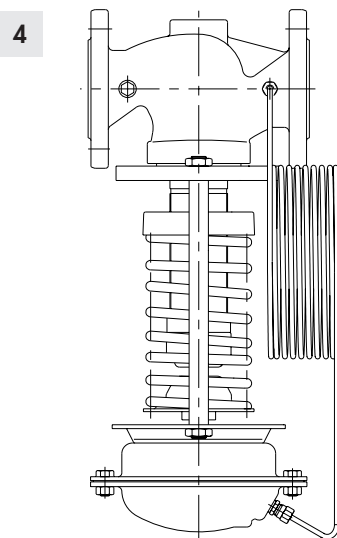


Fig. 2: Control line kit without compensation chamber

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

Table 4: Control line kit ¹⁾ with **steel** compensation chamber with order number

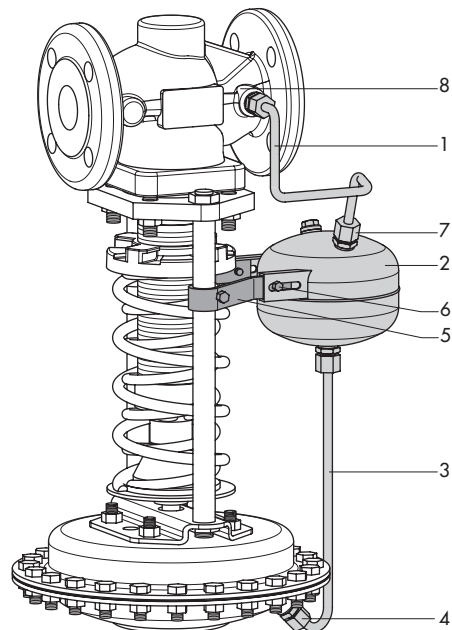
Nominal size DN	Order no. Actuator area		
	40/80 cm ²	160 cm ²	320 cm ²
15	1400-8890	1400-8891	1400-8892
20	1402-1411	1402-1413	1402-1408
25	1402-1391	1402-1414	1402-1416
32	1400-8895	1400-8896	1400-8897
40/50	1400-8900	1400-8901	1400-8902
65/80	1400-8905	1400-8906	1400-8907
100	1400-8910	1400-8911	1400-8912

¹⁾ Control line kits for direct pressure tapping at a DIN cast body with compensation chamber, only suitable for standard regulator versions. Other kits available on request (e.g. for actuators with two diaphragms, ANSI valves etc.).

Table 5: Control line kit ¹⁾ with **stainless steel** compensation chamber with order number

Nominal size DN	Order no. Actuator area		
	40/80 cm ²	160 cm ²	320 cm ²
15	1400-8915	1400-8916	1400-8917
20	On request	On request	On request
25	On request	On request	On request
32	1400-8920	1400-8921	1400-8922
40/50	1400-8925	1400-8926	1400-8927
65/80	1400-8930	1400-8931	1400-8932
100	1400-8935	1400-8936	1400-8937

¹⁾ Control line kits for direct pressure tapping at a DIN cast body with compensation chamber, only suitable for standard regulator versions. Other kits available on request (e.g. for actuators with two diaphragms, ANSI valves etc.).



- 1 Control line between valve body and compensation chamber · 8 x 1 mm pipe · Material 1.4571
- 2 Compensation chamber 0.7 l · Material 1.4301/S235JR (St 37-2)
- 3 Control line between actuator and compensation chamber · 6 x 1 mm pipe · Material 1.4571
- 4 Screw joint with restriction · Material 1.4571
- 5 Fastening bracket
- 6 Screw M6 x 10, SK 8.8 · A4-70
- 7 Welding nipple to connect compensation chamber with control line to the valve
- 8 Compression-type fitting · Material 1.4571

Control line with accessories · Arrangement according to drawing 1120-2258- x

Type 41-23 →
Type 41-73 ←

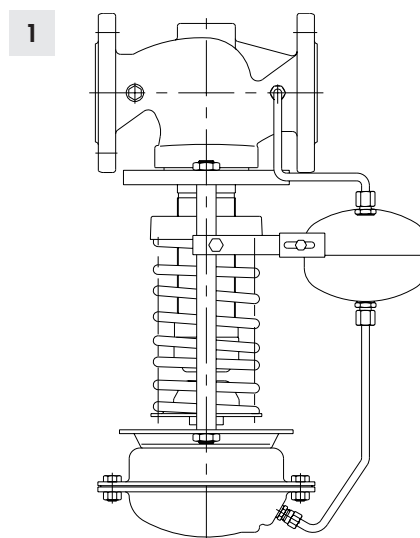


Fig. 3: Control line kit with compensation chamber for steam

Compensation chamber (see Fig. 4) for welding 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 6 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 6: Compensation chambers with welding connections

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 (6 x 1 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 7: Dimensions · Compensation chambers

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

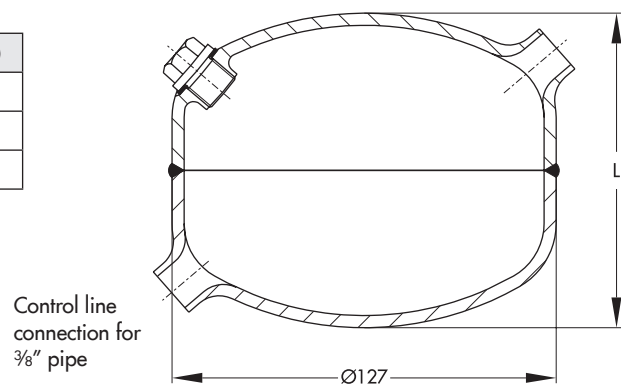


Fig. 4: Compensation chamber with welding connections

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

Table 8: Screw joints with restriction for Type 2413 · Standard version and version for oxygen

Accessories	Nominal size DN	Actuator area in cm ²	Order no.	
			Standard (air)	Oxygen
Standard version · Screw joint with restriction (3/8" thread) only	15 to 250	33 to 160	1059488	1059498
Stainless steel version · Ermeto screw joint with restriction (6 x 1 mm) only	15 to 250	33 to 160	1059492	1059492

Overview

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

Table 9: 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 10: 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

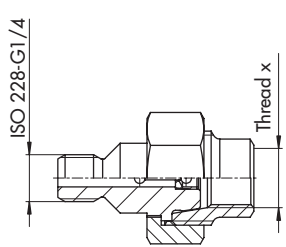
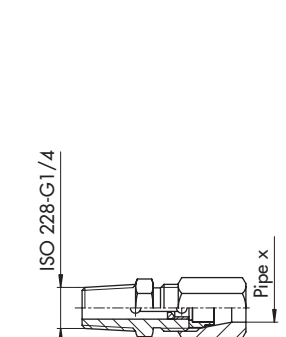


Table 11: Restriction versions for Types 2413, 2424 and 2425 with pipe connection

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. 1190 - ... (see Table 6)
- Screw joint with restriction, order no. ... (see Table 8, Table 9, Table 10, Table 11)
- 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 (see Table 3)
For vapors and liquids up to 350 °C, pressure tapping at the valve body, with compensation chamber (see Table 4 and Table 5)

