

Supply Pressure Regulators Type 4708



Type 4708-1152 with filter receptacle



Type 4708-5352 on Type 3730 Positioner



Type 4708-6252 on Type 3372 Actuator

Fig. 1 · Supply pressure regulators

Mounting and Operating Instructions

EB 8546 EN

Edition April 2007

Contents	Page
1	Design and principle of operation 4
1.1	Versions 6
1.2	Technical data 7
2	Mounting the supply pressure regulator 8
2.1	Compact supply pressure regulator 8
2.1.1	Direction of flow 8
2.1.2	Turning the supply pressure regulator 9
2.2	Supply pressure regulators for attachment to positioners and actuators. . 10
3	Pneumatic connections 14
3.1	Pressure gauge 14
3.2	Additional connection for a solenoid valve 15
4	Set point adjustment 18
5	Maintenance 18
6	Troubleshooting 19
7	Accessories 19
8	Dimensions in mm 20

**General safety instructions**

- ▶ *The supply pressure regulator may only be mounted, started up or serviced by fully trained and qualified personnel, observing the accepted industry codes and practices. Make sure employees or third persons are not exposed to any danger. All safety instructions and warnings in these mounting and operating instructions, particularly those concerning assembly, start-up and maintenance, must be observed.*
- ▶ *Proper shipping and appropriate storage of the regulator are assumed.*

1 Design and principle of operation

The supply pressure regulator is used to supply pneumatic measuring and control equipment with a constant air supply.

The maximum 12 bar pressure of the compressed air network in a plant is reduced to an adjustable minimum pressure of 0.2 to 1.6 bar or 0.5 to 6 bar.

At the input side, the supply pressure regulator is equipped with a filter cartridge with a mesh size of 20 µm. In addition, the regulator can also be equipped with a filter receptacle and a pressure gauge on the outlet side.

The compressed air at the input flows across the filter and through the free cross-sectional area between the seat (1.1) and plug (1.2). It leaves the output with a reduced pressure depending on the plug position.

The output pressure to be controlled is transferred via the bore (1.3) to the operating diaphragm (2) where it is converted into a positioning force. This force is used to move the valve plug depending on the force of the positioning spring (4).

Turning the set point screw (7) causes the spring force to change and, as a result, the required set point is adjusted.

The set point ranges of the supply pressure regulator from 0.2 to 1.6 bar and 0.5 to 6 bar are determined by various tensions of the installed positioning spring (4).

Condensed water contained in the compressed air can be collected and drained when the filter cartridge (9) is mounted horizontally or the filter receptacle (12) is suspended downwards. The stopper (10) or drain plug (15) can be unscrewed to drain condensed water.

Note!

Tighten the drain plug by hand only. The maximum permissible tightening torque is 3 Nm.

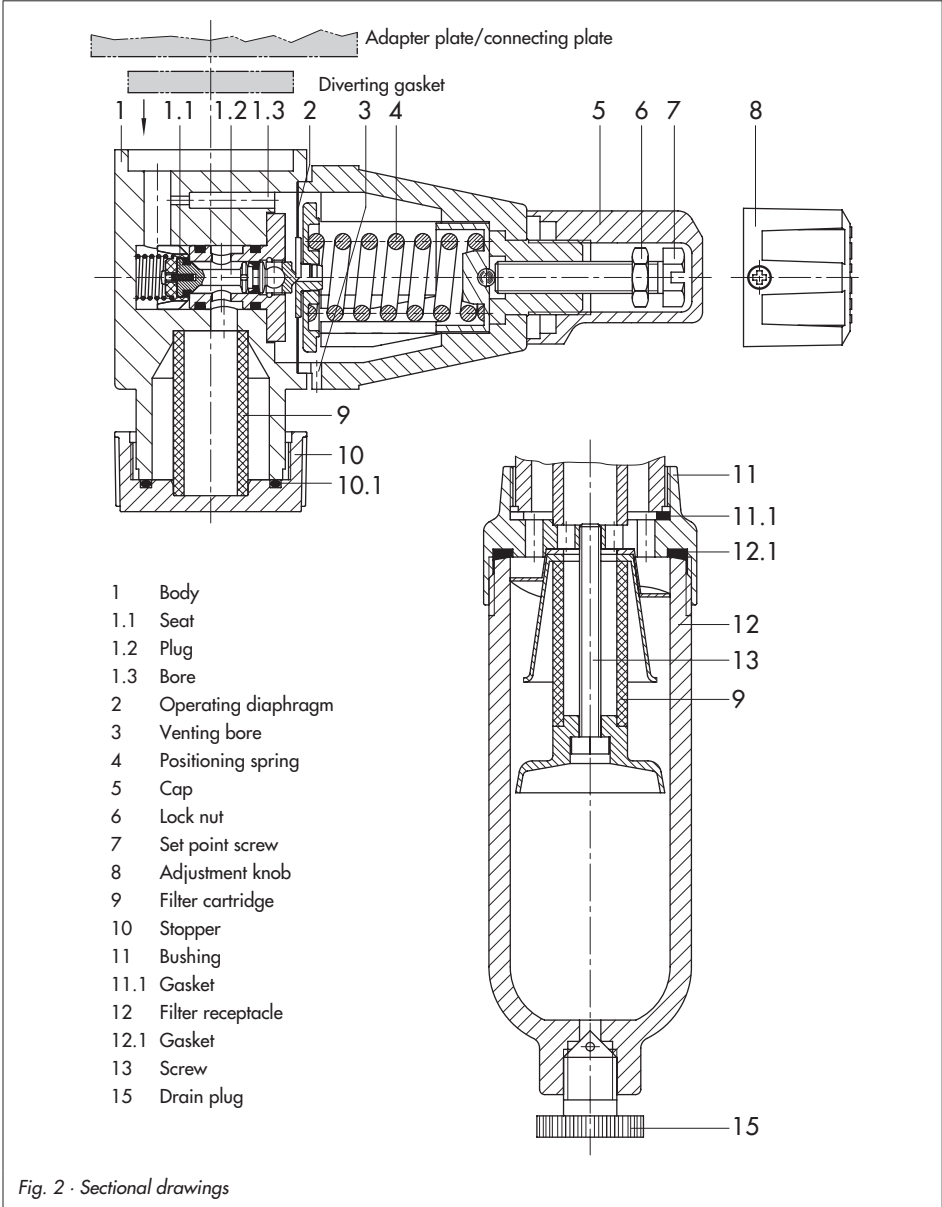


Fig. 2 · Sectional drawings

1.1 Versions

Standard version Type 4708-	x	x	x	x
Filter on aluminum basis without filter receptacle	1	0		
With plastic filter receptacle	1	1		
With aluminum filter receptacle	1	2		
Stainless steel supply pressure regulator				
Filter on stainless steel basis with stainless steel receptacle	1	3		
With plastic filter receptacle	1	4		
Without filter receptacle	1	7		
Connection				
G 1/4			2	
1/4-18 NPT			5	
Set point range 0.5 to 6 bar (8 to 90 psi)				
Without pressure gauge				0
With pressure gauge, completely free of copper				1
With pressure gauge, copper-free housing				2
Set point range 0.2 to 1.6 bar (3 to 23 psi)				
Without pressure gauge				3
With pressure gauge, completely free of copper				4
With pressure gauge, copper-free housing				5

Supply pressure regulator with adapter plate for positioners				
Type 3730, 3766, 3767, 3780, 3785, 3787	5	3		
Type 3730, 3766, 3767, 3780, 3785, 3787	5	4		
Type 4763/4765	5	5		0
Type 3760	5	7		
Type 3761	5	8		
Supply pressure regulator with adapter plate for pneumatic actuators				
Type 3277 (240 to 700 cm ²) with Type 3730, 3766, 3767, 3780, 3785 or 3787 Positioner	6	3		0
Type 3372	6	2		
Filter without pressure gauge Type 4708-				
	x	x	x	0
Aluminum housing and plastic filter receptacle	8	3		0
Aluminum housing and aluminum filter receptacle	8	4		0
Stainless steel housing and plastic filter receptacle	8	6		0
Stainless steel housing and stainless steel filter receptacle	8	7		0

1.2 Technical data

Supply pressure regulator	Type 4708-xx									
Supply pressure	1 bar (15 psi) above the adjusted set point, however, at least 1.6 bar (24 psi) · Max. 12 bar (180 psi)									
Output pressure	Adjustable from 0 to 1.6 bar (0 to 24 psi) or 0 to 6 bar (0 to 90 psi)									
Set point range	0.2 to 1.6 bar (3 to 24 psi) or 0.5 to 6 bar (8 to 90 psi)									
Air consumption	≤ 0.05 mn ³ /h (with 7 bar supply air)									
Permissible ambient temperature	-20 to 70 °C (-30 °C possible, but in this case, air consumption reaching up to 0.3 m _n ³ /h with 7 bar supply pressure)									
Input pressure dependance	< 0.01 bar / Δp = 1 bar									
Reversing error	0.1 bar to 0.4 bar (depending on the set point)									
Hysteresis	< 0.1 bar									
Pressure gauge Ø40 indication range	0 to 1.6 bar (0 to 24 psi) or 0 to 6 bar (0 to 90 psi) Connection G 1/8									
Type 4708-	10	11	12	13	14	17	53	54	55	
Weight, approx.	0.48	0.58	0.66	1.65	1.2	1.0	0.68	0.95	0.37	
Type 4708-	57	58	62	63	83	84	86	87		
Weight, approx.	0.47	0.4	0.4	0.87	0.24	0.32	0.59	0.95		
Materials										
Body	Polyamide, glass fiber reinforced									
Adapter plate	Aluminum alloy, anodized black									
Stopper and gasket	Polyamide, glass fiber reinforced and NBR									
Cover	Polyamide, glass fiber reinforced									
Cap	Polyamide, glass fiber reinforced									
Plug	Polyamide, glass fiber reinforced and polyoxymethylene									
Plug sealing	NBRT and VMQ									
Diaphragm	NBR									
Diaphragm plate	Polyamide, glass fiber reinforced									
Filter cartridge	Polypropylene									
Pressure gauge housing connection	Stainless steel St. steel (version free of copper)					Brass, nickel-plated				

2 Mounting the supply pressure regulator

To prevent excessive amounts of condensed water from collecting, the distance between the compressor and supply pressure regulator should be kept as short as possible. Make sure the drain plug faces downwards in versions with a filter receptacle.

2.1 Compact supply pressure regulator

The supply pressure regulator can either be mounted directly in the pipeline of the air supply or on rails or brackets using the corresponding mounting parts (see table in section 7 on page 19).

Observe the direction of flow of the supply air. An arrow on the nameplate indicates the direction.

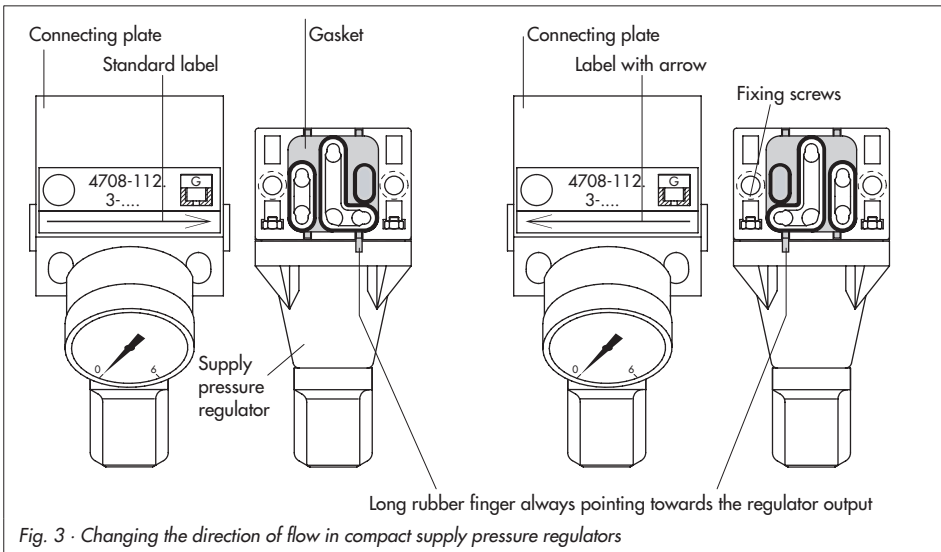
2.1.1 Direction of flow

In the compact supply pressure regulators **4708-10xx/-11xx/-14xx** and **-17xx** the direction of flow can be changed as follows:

1. Unscrew both fixing screws and lift the supply pressure regulator off its connecting plate.
2. Remove the diverting gasket, turn it 180 degrees and reposition it as shown in Fig. 3.

Note! The long rubber finger of the gasket must always point in the direction of the regulator output.

3. Screw the supply pressure regulator tight onto the connecting plate.
4. Stick the enclosed adhesive label over the arrow of the nameplate, ensuring the arrow indicates that the supply air flows in the opposite direction.



2.1.2 Turning the supply pressure regulator

The supply pressure regulator can be turned on its connecting plate to allow the set point adjuster to face either up or down.

1. Unscrew both fixing screws and lift the supply pressure regulator off its connecting plate.
2. Pull the diverting gasket out of the regulator and keep it in this position.

3. Turn the regulator 180 degrees and reinsert the gasket. In this way, you keep the bore assignment of the gasket for supply air input and regulator output. **Note!** The long rubber finger of the gasket must always point in the direction of the regulator output (reduced supply pressure).
4. Screw the regulator tight onto the connecting plate.

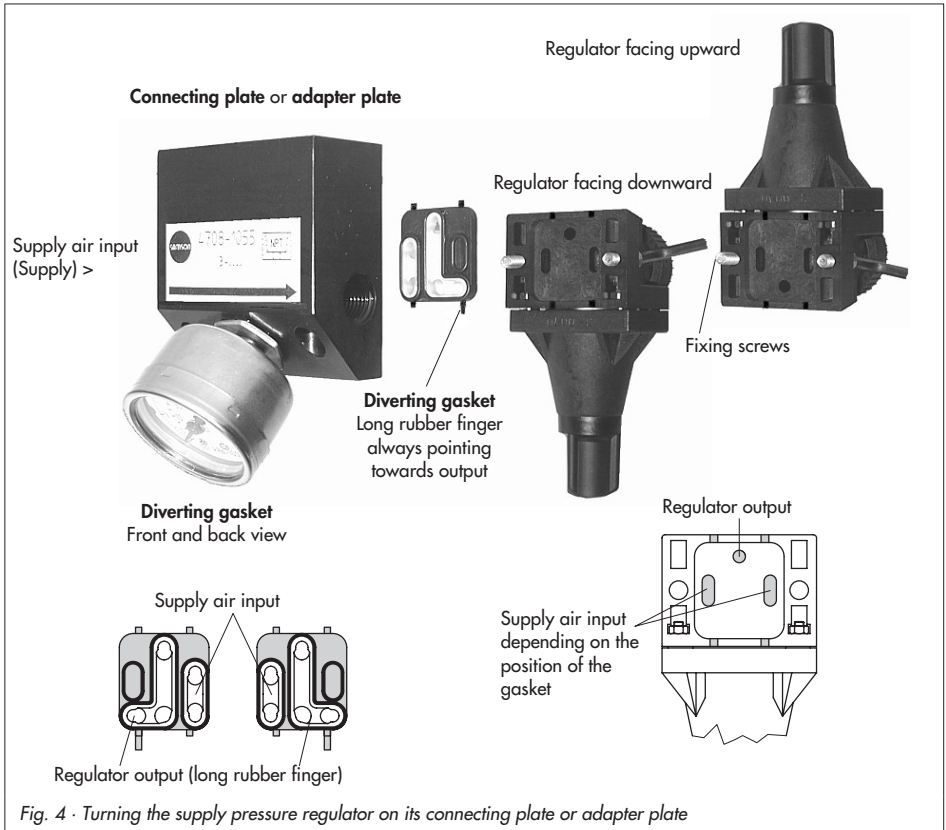


Fig. 4 - Turning the supply pressure regulator on its connecting plate or adapter plate

2.2 Supply pressure regulators for attachment to positioners and actuators

The supply pressure regulator versions intended for attachment to positioners and actuators are equipped with various adapter plates for the attachment.

If required, the installation position of the supply pressure regulator can be changed by turning it 180° on its adapter plate to allow the adjustment knob to face either up or down. This applies particularly for positioners which can be attached either to the left or right side of the valve yoke to determine the operating direction and fail-safe action of the actuator.

To turn the supply pressure regulator, proceed as described for the compact supply pressure regulator in section 2.1.2. The regulator is turned on its adapter plate instead of on the connecting plate.

Regulators for Types 3730/3766/3767/3780/3785/3787 Positioners

Type 4708-53xx for Type 3271 Actuator up to 700 cm² and Type 3277 Actuator with 120 cm² as well as 240 to 700 cm² with hooked-up accessories

1. Insert the gasket (2) into the recess of the adapter plate (1).
2. Place the supply pressure regulator on the positioner on the side where the pneumatic connections SUPPLY and OUTPUT are located. Screw tight using both M5 screws (3).
3. Close the spare connections with stoppers (4) to prevent dirt from entering the device.

Type 4708-54xx for Type 3271 Actuator with 1400 and 2800 cm² or single-acting rotary actuators.

Proceed to mount as for Type 4708-53xx.

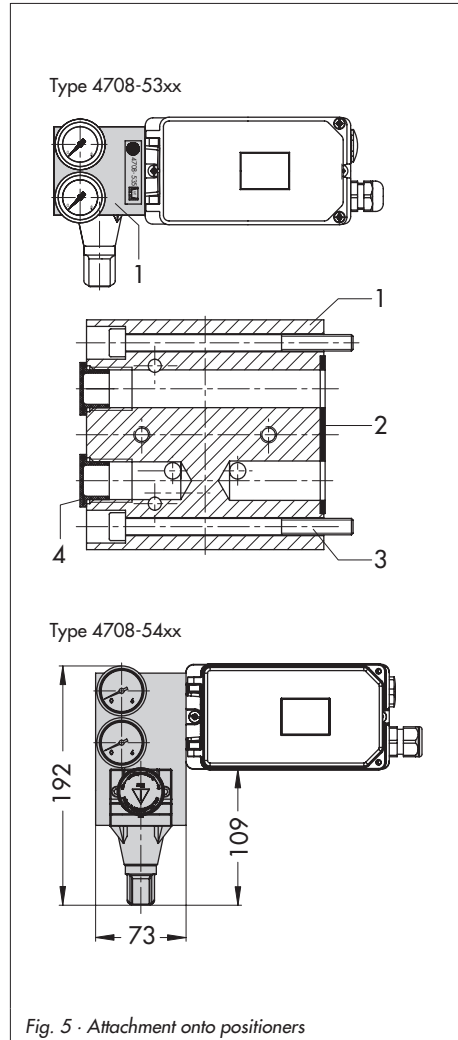


Fig. 5 · Attachment onto positioners

Type 4708-55xx for Type 4763 and Type 4765 Positioner

1. Screw the special nuts (5) into the connecting bores of the positioner.
2. Insert the gasket (2) into the recess of the adapter plate (1).
3. Push the special hollow screws (6) for SUPPLY and (7) for OUTPUT into the connecting bores of adapter plate (1).
4. Place the supply pressure regulator onto the positioner and screw it tight using both special screws.
5. Close the spare connections with stoppers (4) to prevent dirt from entering the device.

Type 4708-57xx for Type 3760 Positioner

The attachment for a positioner mounted on the left side of the valve yoke (seen from the black switchover plate) is shown. For a positioner mounted on the right side, the adapter plate is attached in the same way, except the supply pressure regulator must be turned by 180° (see bottom of page 23).

1. Screw the special nuts (5) into the connecting bores of the positioner.
2. Insert the O-rings (9) into the recess of the adapter plate (1).
3. Push the special hollow screws (6) for SUPPLY and (7) for IN. SIGNAL into the connecting bores of the adapter plate (1).
4. Place the supply pressure regulator onto the positioner and screw it tight using both special screws.
5. Close the spare connections with stoppers (4) to prevent dirt from entering.

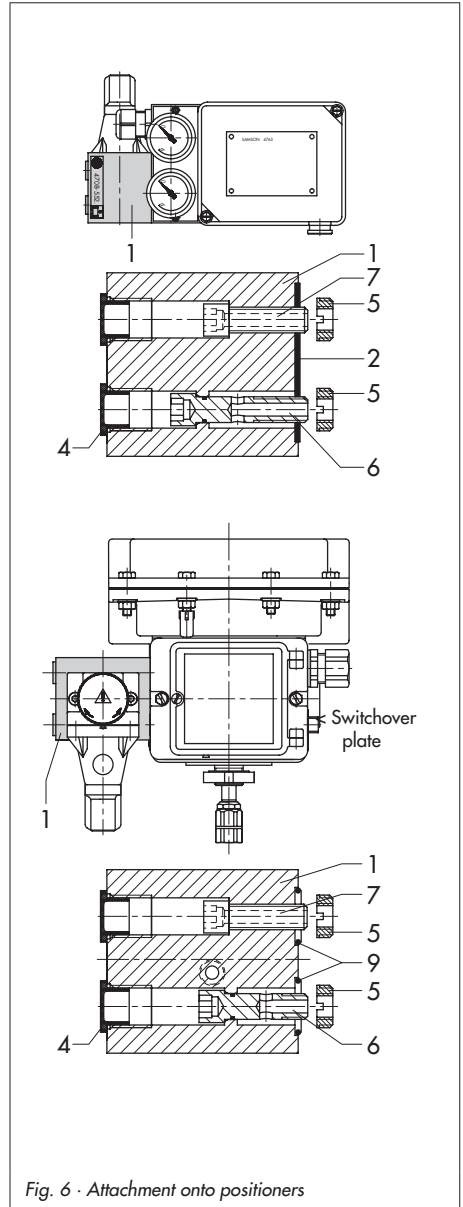


Fig. 6 · Attachment onto positioners

Type 4708-58xx for Type 3761 Positioner

1. Screw the special nut (5) into the SUPPLY connecting bore of the positioner.
2. Push the special hollow screw (6) into the connection bore of the adapter plate (1).
3. Insert the O-ring (9). Position the supply pressure regulator and screw it tight to the positioner with the special screw.
4. Close the spare connections with stoppers (4) to prevent dirt from entering the device.

Type 4708-63xx for Type 3277 Actuator

Before attaching the supply pressure regulator, check whether the tongue of the gasket (1.2) is aligned at the adapter block (1) in such a way that the actuator symbol (1.3) indicating "Actuator stem extends" or "Actuator stem retracts" matches the fail-safe action of the actuator.

If this is not the case, unscrew the three fixing screws (3), lift off the cover plate (1.1) and turn the gasket (1.2) by 180° and reinsert it.

1. Place the adapter block on the positioner and actuator yoke and fasten using fixing screws (2).

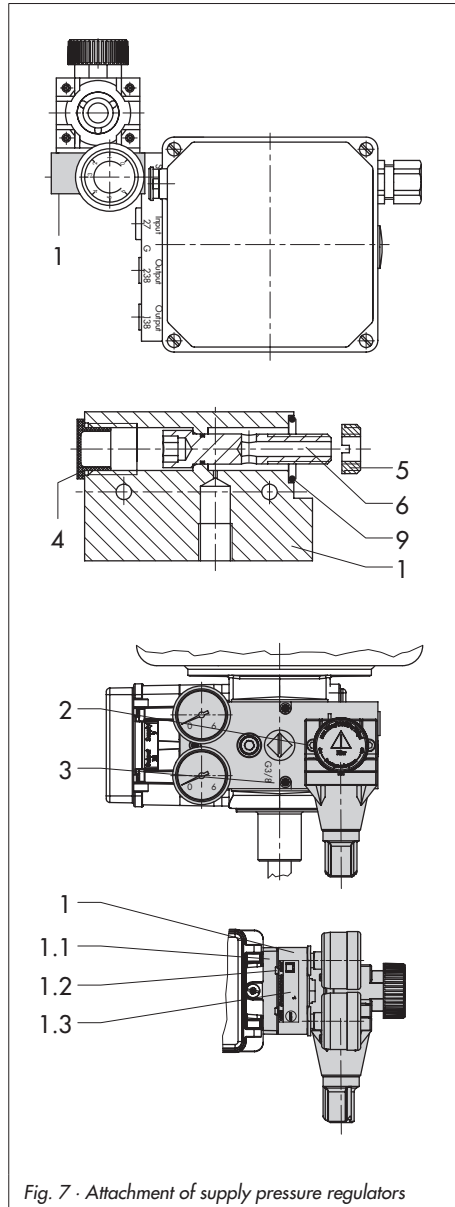


Fig. 7 · Attachment of supply pressure regulators

Type 4708-62xx for Type 3372 Actuator

1. Screw the special nut (5) into the SUPPLY connecting bore of the actuator.
2. Push the special hollow screw (6) into the connecting bore of the adapter plate.
3. Insert the O-ring (9). Position the supply pressure regulator and screw it tight onto actuator using the special screw.
4. Close the spare connections with stoppers (4) to prevent dirt from entering the device.

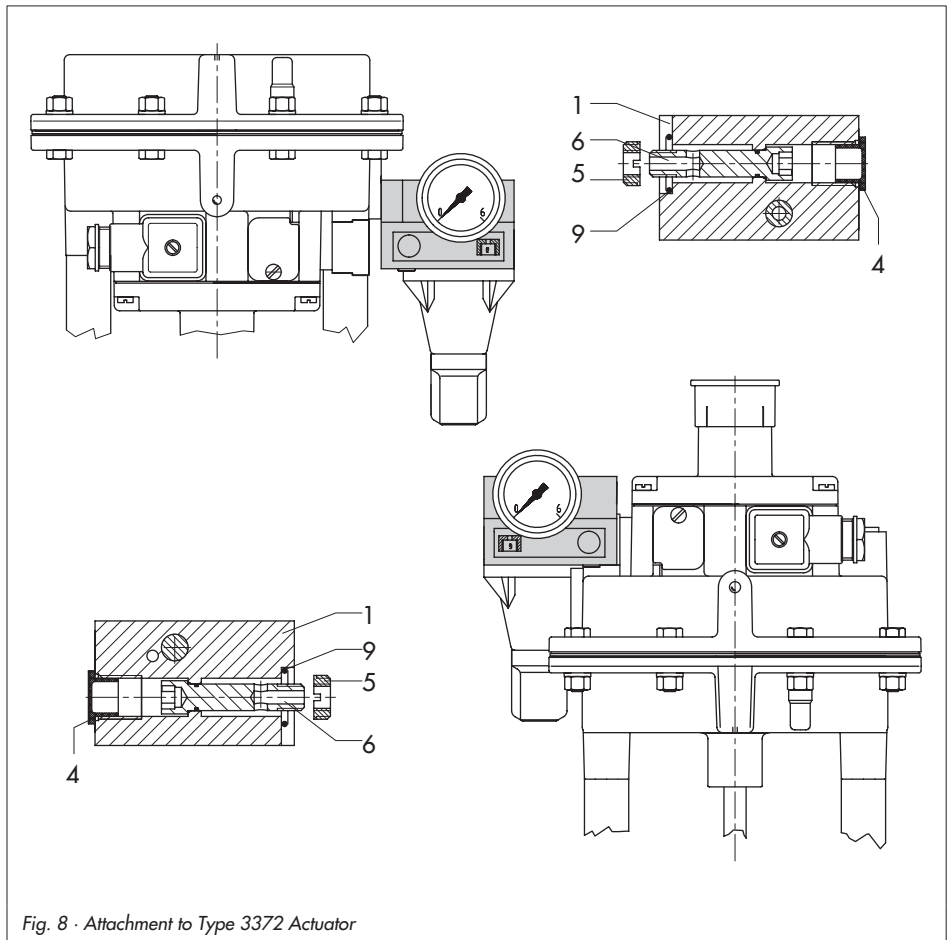


Fig. 8 · Attachment to Type 3372 Actuator

3 Pneumatic connections

The pneumatic connections are designed either as G 1/4 or 1/4 NPT-18 threads. In compact supply pressure regulators, an arrow on the adhesive label indicates the direction from the supply air input to the output.

In supply pressure regulators with two connecting bores in the adapter plate (Figs. 5 and 6, top), the supply air connection is marked **SUPPLY**. The positioner's output signal is led in these versions via the **OUTPUT** bore through the adapter plate to the actuator.

3.1 Pressure gauge

Mount the pressure gauge in such a way that there is a 2-3 mm gap between the lock nut and pressure gauge's square end after tightening the lock nut (20).

In the compact versions 4708-12xx/13xx, make sure additionally that the stopper (23) is only screwed in to the point where it becomes aligned with the housing, otherwise the gaskets (21, 22) will be damaged. Each gasket is assigned either to the pressure gauge or to the stopper and must be changed correspondingly if you change the location of the pressure gauge and stopper to the other side.

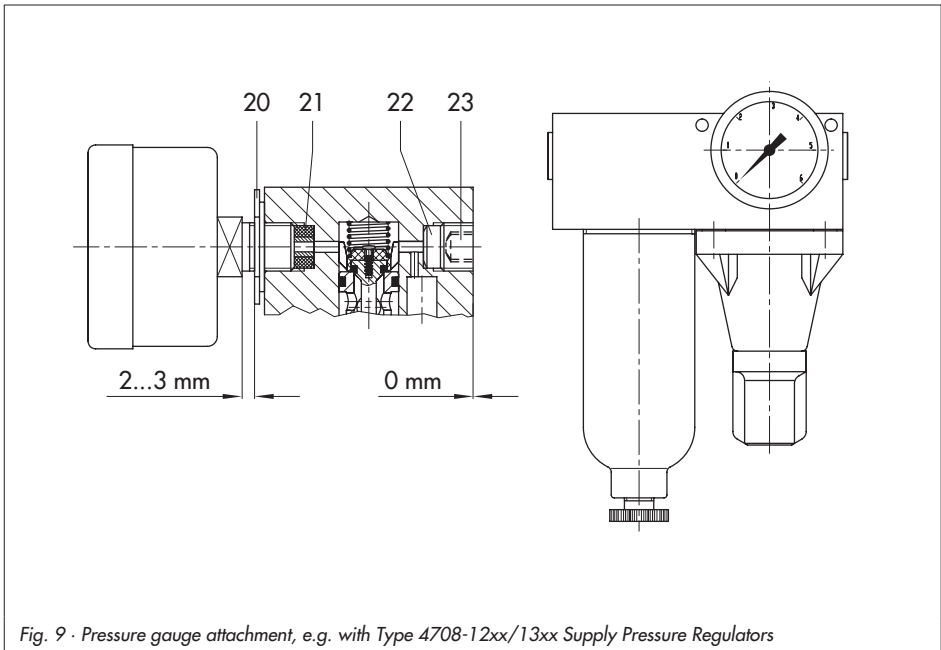


Fig. 9 · Pressure gauge attachment, e.g. with Type 4708-12xx/13xx Supply Pressure Regulators

3.2 Additional connection for a solenoid valve

An intermediate plate must be mounted between the connecting or adapter plate and the regulator to connect a solenoid valve. The reduced supply pressure of the supply pressure regulator is additionally led to the threaded connection at the side via the corresponding bores in the intermediate plate.

All supply pressure regulators have the same intermediate plate, except for Type 4708-57xx, designed for attachment to Type 3760 Positioner (Fig. 12), its intermediate plate has a different bore assignment for the air ducts. All versions can be ordered made of aluminum or stainless steel and with either G or NPT threads. See section 7 for more details.

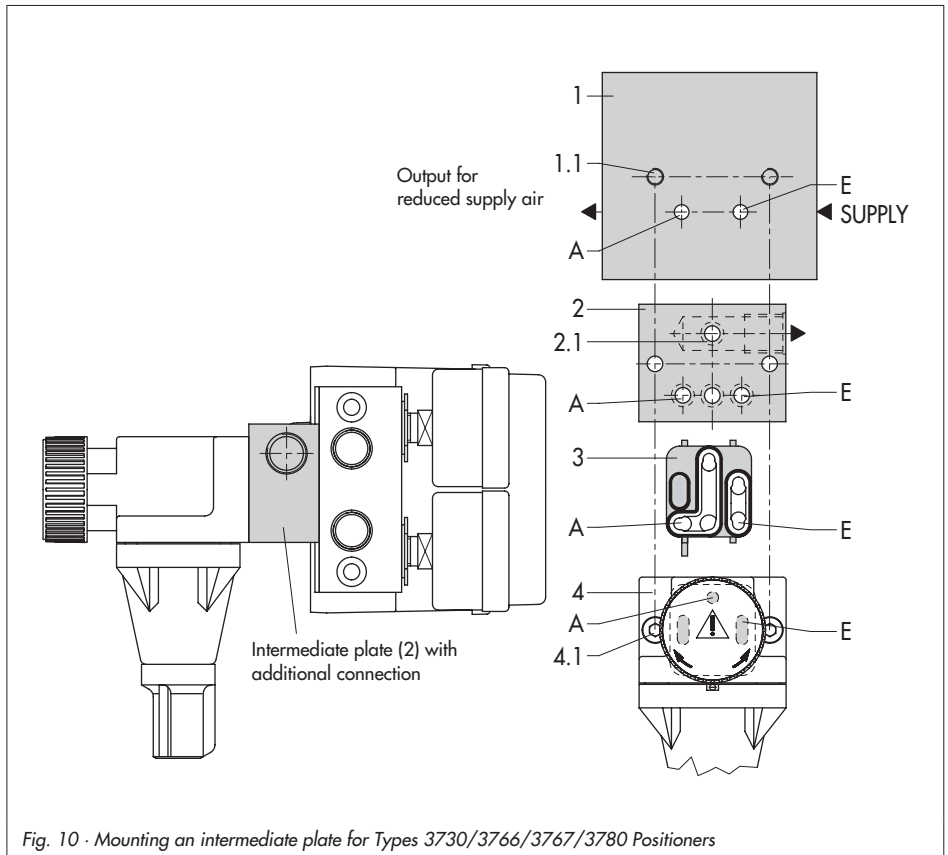


Fig. 10 · Mounting an intermediate plate for Types 3730/3766/3767/3780 Positioners

Mounting the intermediate plate

1. Remove the fixing screws and lift the supply pressure regulator (4) together with the diverting gasket (3) off the adapter plate (1).
Make sure you do not change the position of the diverting gasket in the supply pressure regulator.

Note! The long rubber finger of the diverting gasket (3) must always point in the direction of the regulator output (reduced supply air). See Figs. 10, 11, 12.

2. Insert O-rings (2.1) in the bores of the intermediate plate (2).
3. Place the intermediate plate in such a way that the three holes located next to one another

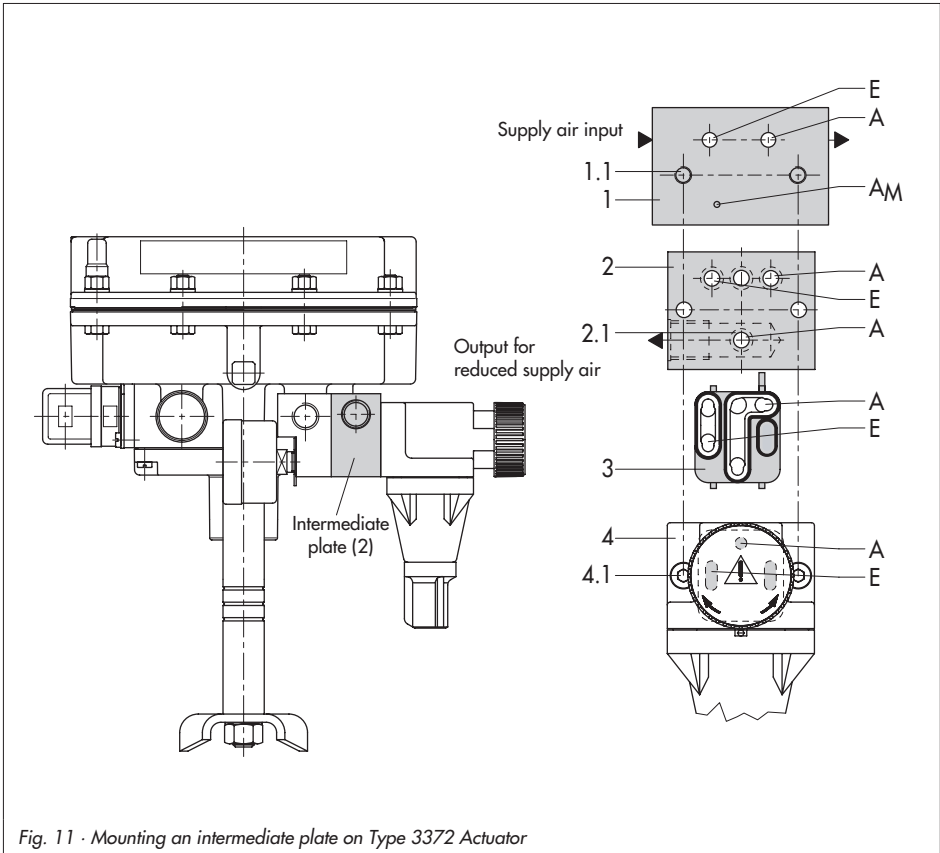


Fig. 11 · Mounting an intermediate plate on Type 3372 Actuator

are positioned over both 5 mm holes on the adapter plate and the bores (1.1) for the fixing screws are aligned.

4. Place the supply pressure regulator (4) with the diverting gasket (3) onto the intermediate plate (2). Insert the longer fixing screws and screw tight.

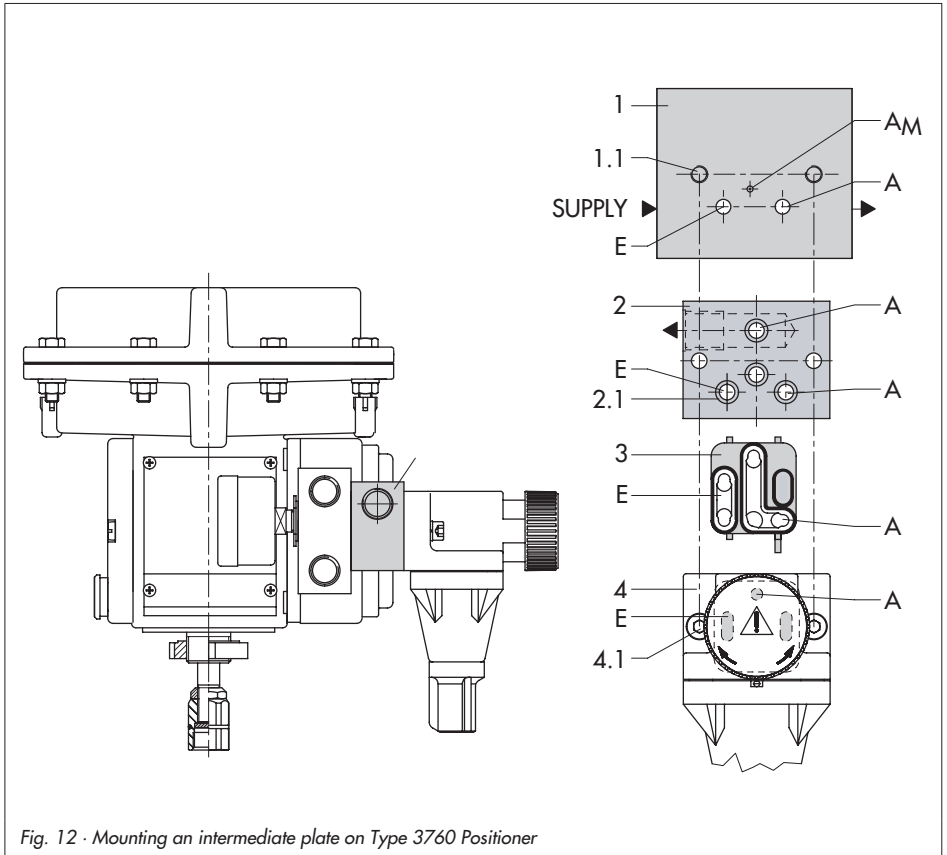


Fig. 12 · Mounting an intermediate plate on Type 3760 Positioner

4 Set point adjustment

(Fig. 2)

Depending on the version, the set point of the supply pressure regulator can be adjusted either at the adjustment knob (8), or after screwing off the cap (5), at the set point screw (7).

- ▶ Turning the knob or screw clockwise increases the output pressure and turning it counterclockwise reduces the output pressure.
- ▶ Use the lock nut (6) to secure the setting.

Note!

When using the version with the adjustment knob (8) to adjust the set point, make sure that the Phillips screws are screwed tight to prevent the knob from coming loose due to possible vibrations.

5 Maintenance

(Fig. 2)

We recommend you check the filter as often as possible.

Drain condensed water that has collected by removing the stopper (10) or by unscrewing the drain plug (15) about half a turn.

Note!

Tighten the drain plug by hand only. The maximum permissible tightening torque is 3 Nm.

When faults occur, e.g. a pressure drop, unscrew the stopper (10) or the filter receptacle (12) and replace the filter cartridge (order no. 8504-9027).

Prior to carrying out any maintenance work, shut off the air supply!

In the version with a filter receptacle, screw the fixing screw (13) tight so that the filter cartridge sits properly. Replace the gasket (12.1) order no. 0439-0061, if necessary. In the versions 4708-11xx/14xx, do not unscrew the bushing (11), if at all possible. If, however, you needed to unscrew it, you can replace the gasket (11.1) order no. 0439-0287 as well.

If there is any leakage at the stopper (10), the entire stopper and seal ring (10.1) order no. 1099-3871 must be replaced.

6 Troubleshooting

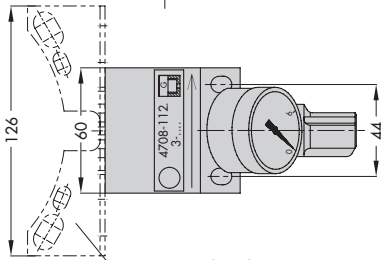
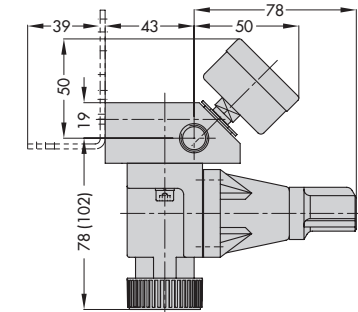
- ▶ Leakage between supply pressure regulator and adapter plate:
Check whether the diverting gasket (Figs. 3 and 4) is installed and both fixing screws are tightened properly.
- ▶ Excessive blow-off over the venting bore (3 in Fig. 2):
Check whether the diverting gasket (Figs. 3 and 4) is installed correctly.
- ▶ The air supply decreases and the output pressure drops:
Check the filter cartridge (9 in Fig. 2) for dirt and make sure the set point is correctly adjusted.

7 Accessories

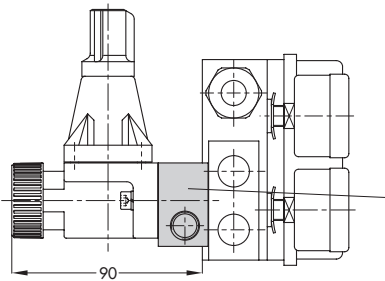
Accessories	Order no.
Mounting parts for mounting on rail acc. to EN 50022 acc. to EN 50035	1400-7341 1400-7342
Mounting parts for mounting on bracket for Type 3271 Actuator	1400-7343
Intermediate plate for additional connection with Types 4708-10xx/-11xx/-53xx/-55xx/-58xx/-62xx/-63xx	
Aluminum with G 1/4 thread	1400-7400
Aluminum with 1/4 NPT thread	1400-7404
Stainless steel with G 1/4 thread	1400-7402
Stainless steel with 1/4 NPT thread	1400-7406
Intermediate plate for additional connection with Type 4708-57.. Supply Pressure Regulator	
Aluminum with G 1/4 thread	1400-7401
Aluminum with 1/4 NPT thread	1400-7405
Stainless steel with G 1/4 thread	1400-7403
Stainless steel with 1/4 NPT thread	1400-7407
Adjustment knob for set point adjustment	1400-7408
Nut for panel mounting	1400-7725

8 Dimensions in mm

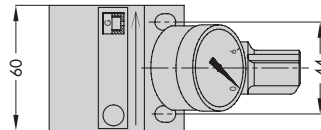
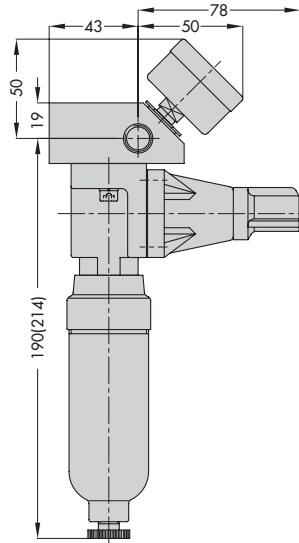
Type 4708-10xx/17xx Supply Pressure Regulator



Mounting bracket
(accessories)

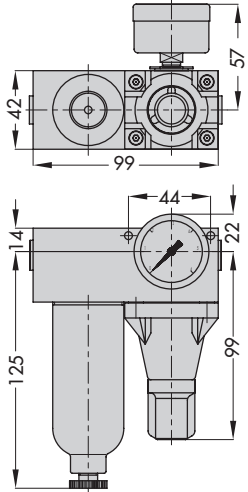


Type 4708-11xx/14xx Supply Pressure Regulator

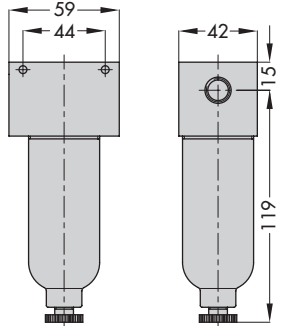


Supply pressure regulators with intermediate plate
The overall height increases by 24 mm for the
additional connection.
In this case, the dimensions in parentheses () apply.

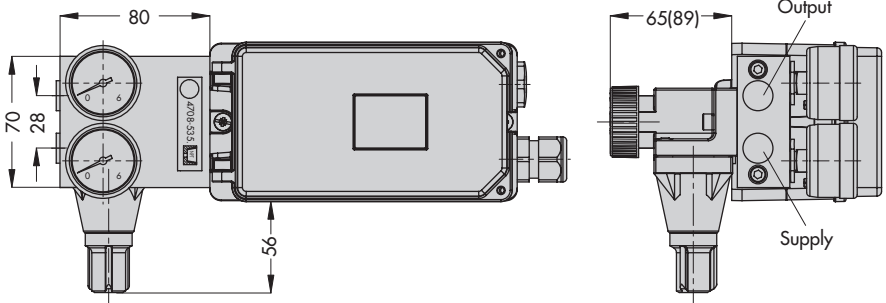
Type 4708-12xx/13xx Supply Pressure Regulator



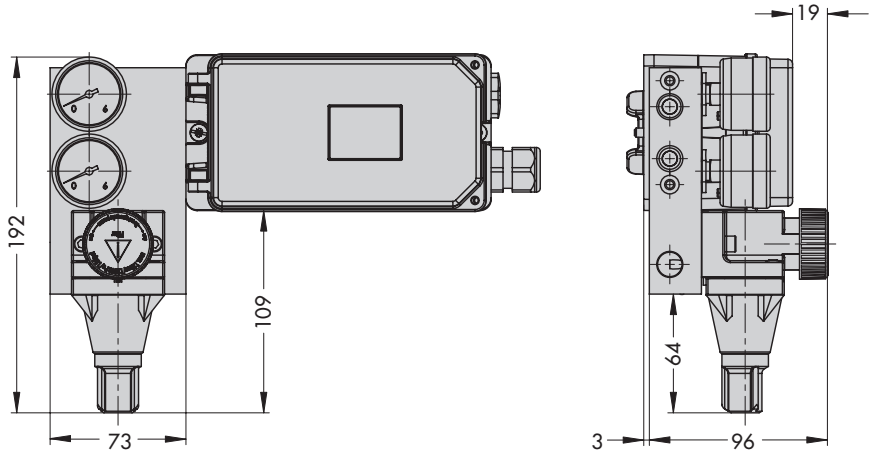
Type 4708-83xx/84xx/86xx/87xx Supply Pressure Regulator



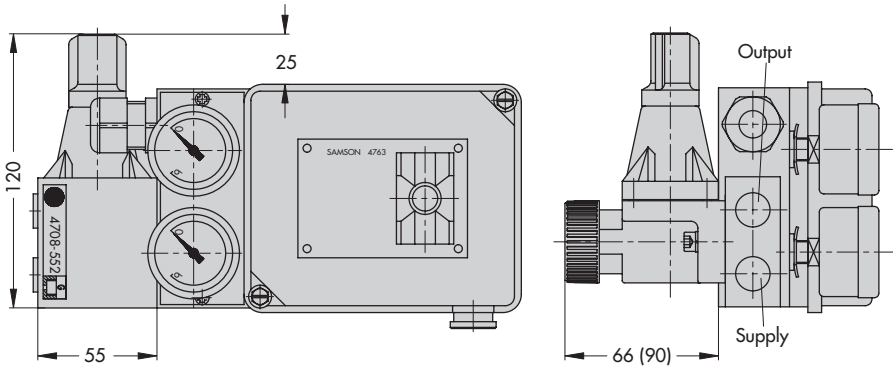
Type 4708-53xx Supply Pressure Regulator
for Types 3730/3766/3767/3780/3785/3787 Positioners

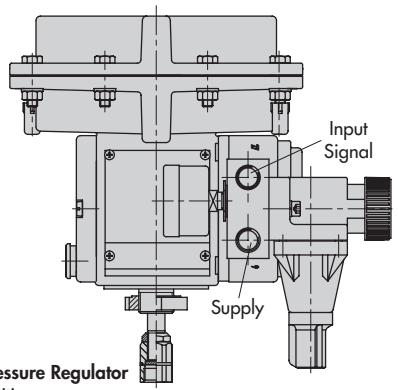
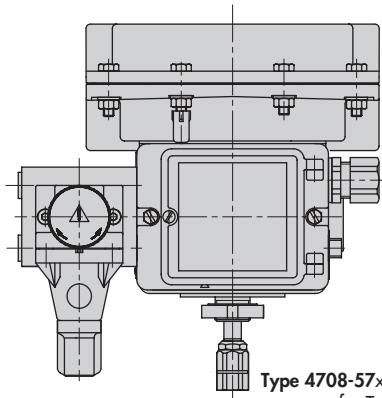


Type 4708-54xx Supply Pressure Regulator
for Types 3730/3766/3767/3780/3785/3787 Positioners

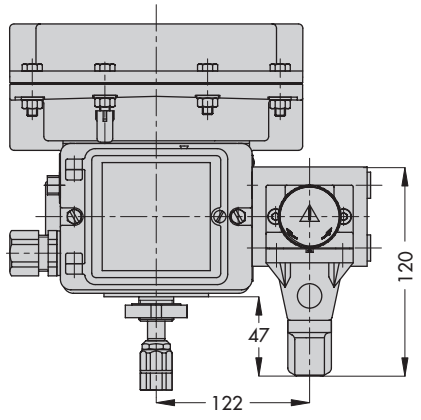
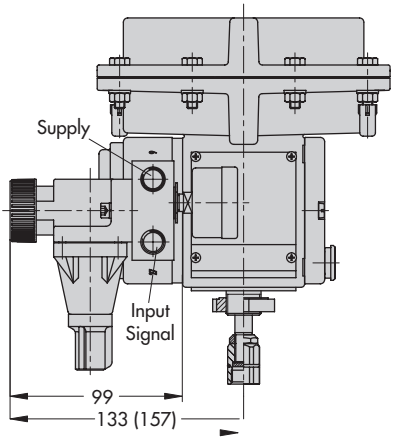


Type 4708-55xx
for Types 4763/4765 Positioners

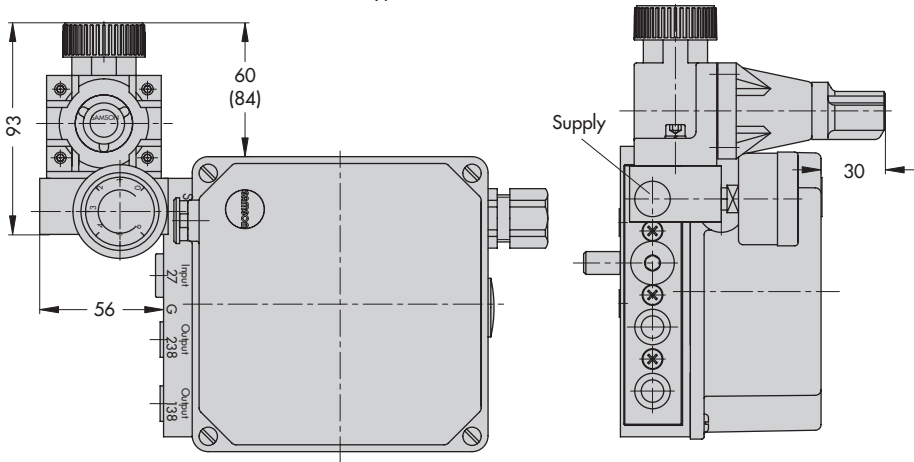




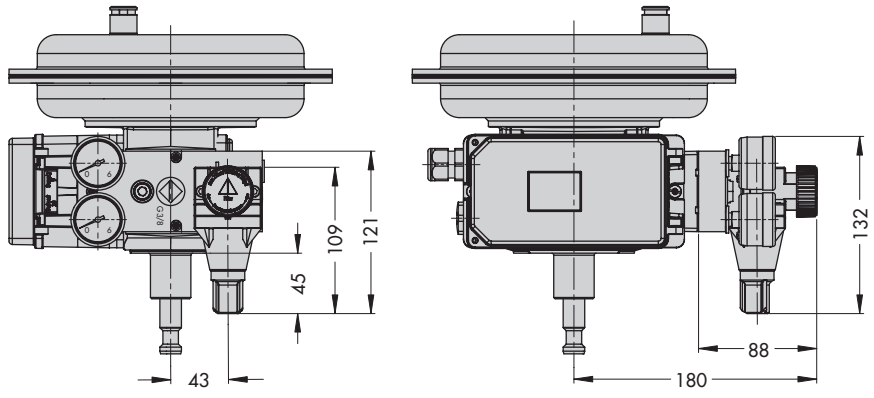
Type 4708-57xx Supply Pressure Regulator
for Type 3760 Positioner



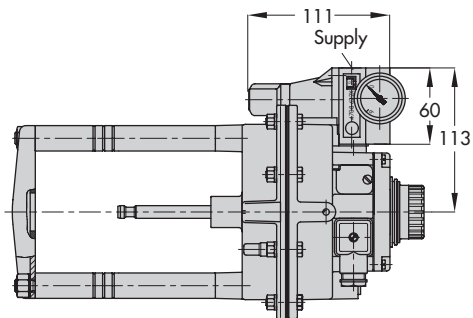
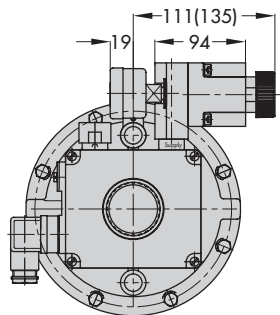
Type 4708-58xx
for Type 3761 Positioner



Type 4708-63xx
for Type 3277 Actuator
Attachment on left or right



Type 4708-6221
for Type 3372-031x Actuator





SAMSON AG · MESS- UND REGELTECHNIK
Weismüllerstraße 3 · 60314 Frankfurt am Main · Germany
Phone: +49 69 4009-0 · Fax: +49 69 4009-1507
Internet: <http://www.samson.de>

EB 8546 EN

S/Z 2007-04