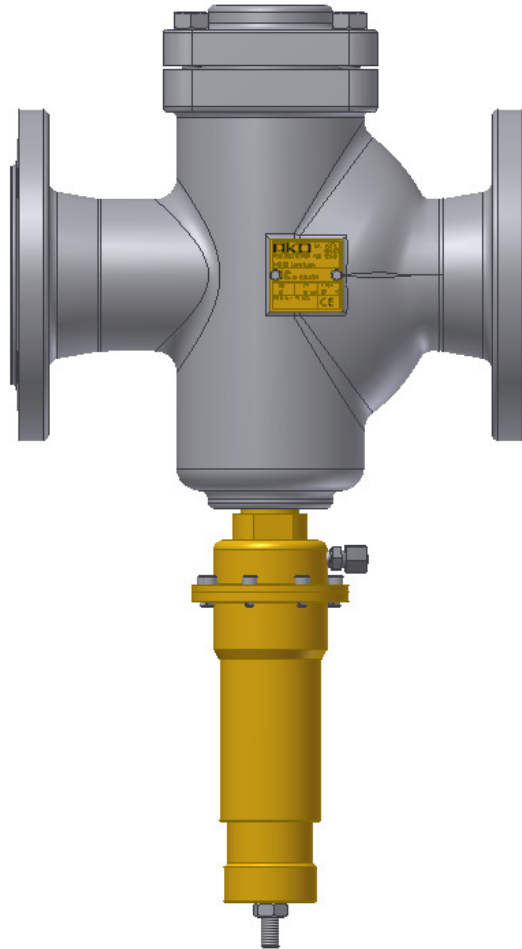


Mounting and Servicing Instructions

AKO pressure reducing valve



AKO pressure reducing valve

Double seated, balanced, with flange connections
Type Series 210.0540, 210B0540, 210G0540

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Contents

1. General information and Safety instructions.....	3
2 . Notes on possible dangers.....	3
2.1 Significance of symbols.....	3
2.2 Explanatory notes on safety information.....	3
3. Scope of applications.....	4
4. Mode of operation.....	5
5. Technical data.....	5
5.1 Control valve.....	5
5.2 Diaphragm control unit.....	5
5.3 Dimensions.....	6
5.4 Marking.....	7
6. Transport and storage	7
7. Installation.....	7
7.1 General notes on installation.....	7
7.2 Installation of the valve.....	8
7.3 Control pipe	9
7.4 Deaeration of the system.....	9
8. Setting the pressure	9
9. Service and maintainance.....	9
10. Exchange of the control diaphragm.....	10
11. Fault detection and corrective	11
12. Reach declaration	11

1. General Information and Safety Instructions

Regulations, guidelines, standards etc. listed in these mounting and servicing instructions correspond to the level of information available at the time of preparation and are not subject to an updating service. They must be applied by the user on his own responsibility in their respective latest valid version.

They are generally binding on transport, storage, installation, start-up, operation, maintenance and repair.

In case of any difficulties, which cannot be solved by means of these mounting and servicing instructions, please contact either the supplier or manufacturer.

Handling and all work must be carried out by expert personnel or all activities must be supervised and checked. It is the owner's responsibility to define areas of responsibility and competence and to monitor the personnel.

In addition, current regional safety requirements must be applied and observed when taking the fittings out of service as well as when maintaining and repairing them.

For appropriate operation, make sure that the temperature regulator is only used in applications where the operating pressure and temperatures do not exceed the operating values based on the valve sizing data submitted in the order.

Note that the manufacturer does not assume any responsibility for damage caused by external forces or any other external influences.

The manufacturer reserves the right to introduce technical modifications and improvements at any time.

These mounting and servicing instructions comply with the requirements of EU Directives.

Note!

The non-electric actuators and valves do not have their own potential ignition source according to the ignition risk assessment stipulated in EN 13463-1:2001, Section 5.2, even in the rare incident of an operating fault. Therefore, they do not fall within the scope of Directive 94/9/EC.

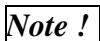
For connection to the equipotential bonding system, observe the requirements specified in EN 60079-14:1977 (VDE 0156 Part 1), section 6.3.

2. Notes on possible dangers

2.1 Significance of symbols



Warning of general danger



General mounting, start-up and maintenance information

2.2 Explanatory notes on safety information

In these mounting and servicing instructions dangers, risks and items of safety information are highlighted to attract special attention.

Information marked with the above symbol and "ATTENTION" describe practices, a failure to comply with which can result in serious injury or danger of death for users or third parties or in material damage to the system or the environment. It is vital to comply with these practices and to monitor compliance.

3. Scope of applications

The AKO pressure reducing valve can be used for pressure control in heating and cooling units operated with water, oil, neutral fluids as well as air and non inflammable gas. AKO pressure reducing valves provide high operation reliability and are largely free of maintenance.

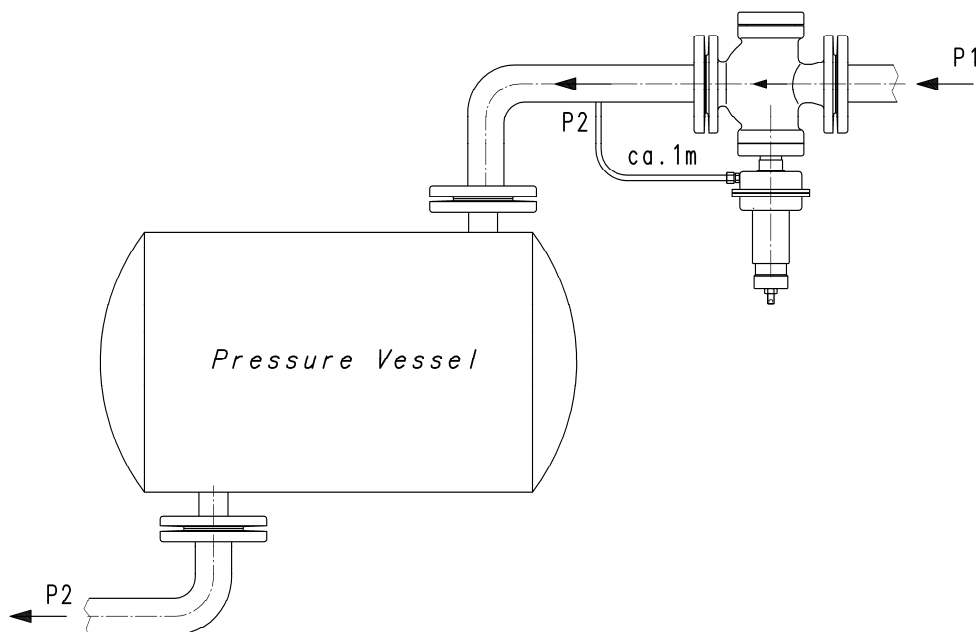


ATTENTION

- Refer to the data sheet for applications, limits on use and possibilities.
- Certain media require or preclude the use of special materials.
- The valves are designed for standard operating conditions. If conditions exceed these requirements, e.g. aggressive or abrasive media, the operator should state the higher requirements when ordering
- Valves made from grey cast iron are not authorized for the use in systems subject to TRD 110.

Application example, schematic representation of

- Installation of a pressure reducing valve for controlling the pressure in a pressure vessel



4. Mode of operation

The control valve consists of:

- 2-way control valve
- diaphragm-drive

The AKO-pressure reducing valve operates without external power supply.

From the measuring spot, the pressure of the fluid is transferred to the diaphragm. This value is compared to the preset pressure and a corrective action taken by the valve.

The pressure reducing valve consists of a 2-way control valve and a control diaphragm with a setting spring. The fluid flows in direction of the arrow onto the valve body and leaves the valve with the reduced pressure. The pressure dependant on the flow volume of the subsequent installation is transferred to the control unit via a control pipe. The forces on both sides of diaphragm are compared. When the pressure changes the valve slider is moved in or to adjust the cross section influencing the flow rate and thus achieving the preset pressure. The pressure has to be set manually by means of the control bolt.

5. Technical data

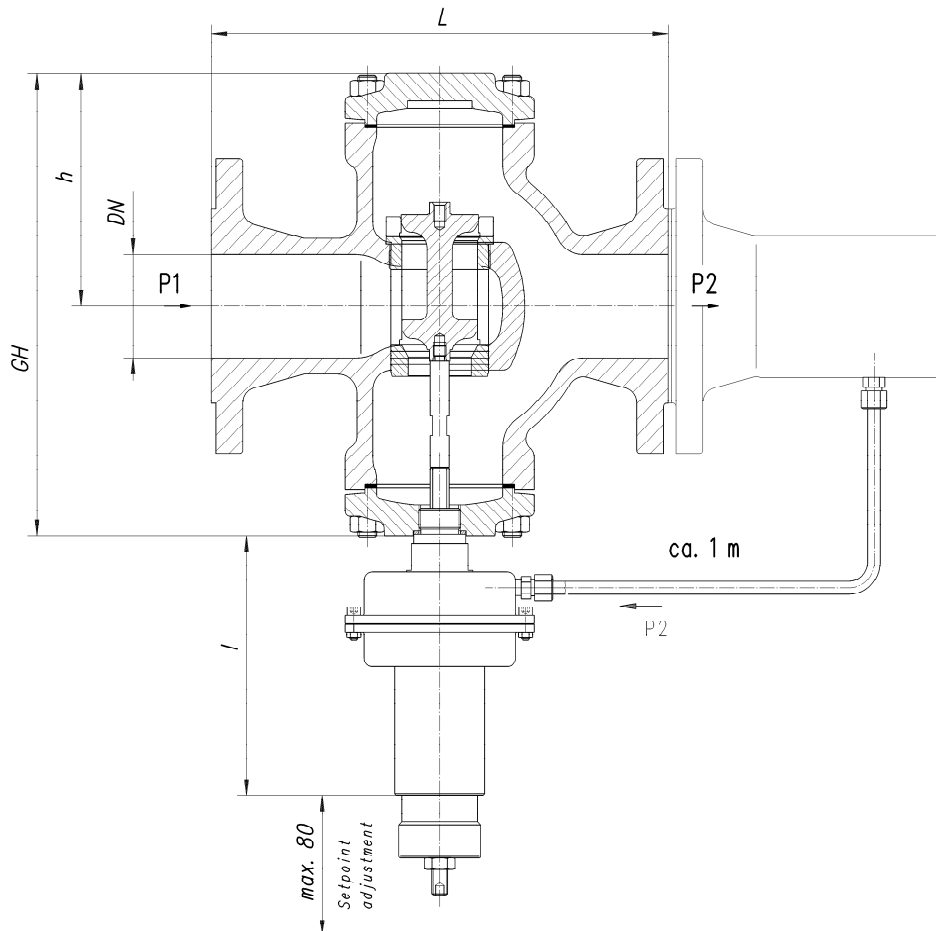
5.1 Control valve

- body material	EN-GJL-250, CuSn10-C, EN-GJS-400-15
- inner parts	stainless steel, brass
Gaskets	NBR
Operating temperature	up to 230 °C max.
Operation pressure	max. 16 bar
Admissible differential pressure	max. 16 bar
nominal pressure	PN 16
connections	flanges EN 1092-2 form B

5.2 Diaphragm control unit

- diaphragm body	brass, stainless steel
- diaphragm	FPM
- spring	stainless steel (1.4310)
operation temperature	-20°C to +150 °C
general pressure range	0,02 bar to 16 bar (according to chosen configuration) configurations available to be taken from data sheet 261.3000-xxx

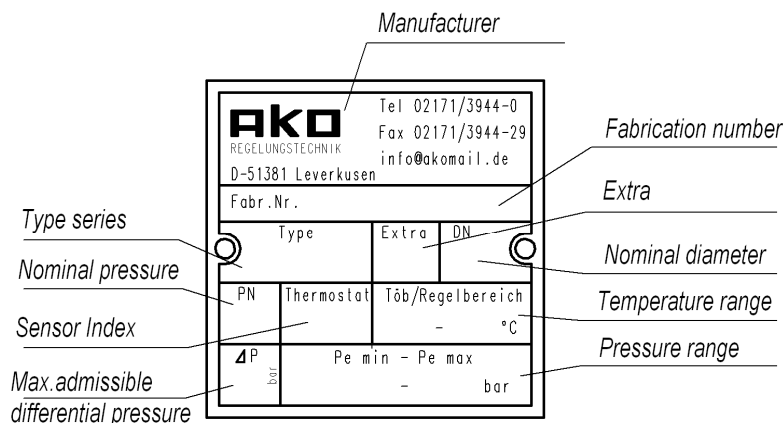
5.3 Dimensions



Article no. (valve only)	DN	L	GH	h	Δp Zul.	KVs	weight	Diaphragm drive		l	weight
								range	Article no. (drive only)		
210.0540-025	25	160	190	90	16	8,0	15	0,02 – 0,25	261.3160-001-101	166	10
210.0540-032	32	180	190	100	16	12,5	16	0,04 – 0,40	261.3160-001-102	166	10
210.0540-040	40	200	220	110	16	20,0	17	0,05 – 0,60	261.3160-001-103	166	10
210.0540-050	50	230	210	115	16	32,0	22	0,20 – 1,00	261.3050-010-104	164	3,5
210.0540-065	65	290	290	146	16	50,0	30	0,20 – 1,60	261.3050-010-105	164	3,5
210.0540-080	80	310	340	170	16	80,0	42	0,20 – 2,50	261.3050-010-106	164	3,5
210.0540-100	100	350	380	190	16	120,0	45	0,40 – 4,00	261.3023-001-107	167	2,8
210.0540-125	125	400	432	216	16	195,0	72	0,50 – 6,00	261.3023-001-108	167	2,8
								2,00 – 10,0	261.3040-002-109	172	2,8
								2,00 – 16,0	261.3024-003-110	174	2,8

The pressure reducing valves can be combined with any diaphragm drive.

5.4 Marking



6. Transport and storage

Proper shipping and appropriate storage of the control valves are provided.

Note the transport and storage temperature of -25 to 80 °C.

7. Installation

7.1 General notes on installation

Please take notice of installation instructions of the machine builder.

The following guidelines of installation must be noticed

ATTENTION

- Ensure that the piping is pressure free and completely drained.
- Ensure that the system has cooled down to ambient temperature.
- Ensure that the system is properly ventilated, especially when previously operated with inflammable, corrosive, toxic or other aggressive or harmful media.

- The designer respectively the operator of the system is responsible for positioning and installation of the valve.
- In case of outside installation and exposure to corrosive ambient conditions (e.g. sea water, off shore, corrosive vapours etc.) the use of appropriate materials and special protection measures are recommended.
- The piping system has to be cleaned (flushed) from any dirt and contamination before the control valve is installed, in order to avoid damage of the moving valve parts.
- The flow direction has to be according to the flow indication on the valve body.
- The media temperature has to be controlled by thermometers.
- In front of the valve a strainer has to be installed in order to keep dirt out of the control valve, the filter has to be installed showing downwards.

Notice!

Ensure that there is enough space to easily change the filter element!

- Make sure that there is good accessibility and space for service and removing the valve from the piping.
- Install block valves in front and after the pressure reducing valve in order to allow easy service and removal.

Notice!

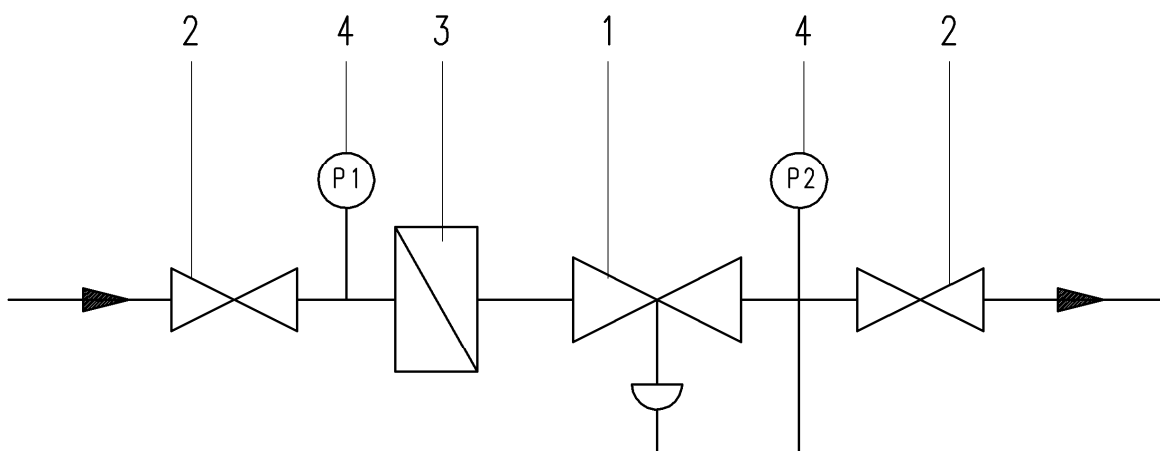
Never install other devices (temperature controllers, lock valves etc.) between the pressure reducing valve and its pressure control pipe.

The data necessary for correct installation as there are dimensions, connections, operating parameters, are to be taken from the data sheet.

7.2 Installation of the valve

Install the control valve with the diaphragm drive perpendicular down. The flow indication on the valve body (arrow) has to comply with the actual flow direction. The valve body must be installed free of flexional and torsional forces.

Example of mounting the pressure reducing valve to a piping system.



- 1- pressure control valve
- 2- lock valve
- 3- strainer
- 4- manometer

7.3 Control pipe

For the measuring point of the pressure the customer has to provide a control line with tube diameter of 8 mm.
The distance to the measuring point of the pressure should be at least 1 m or 20 x nominal size of the valve. For liquid media the control line has to be welded to the bottom center of the pipe system or for gaseous media in the top center of the pipe system.

Notice!

Never install other devices (temperature controllers, lock valves etc.) between the pressure reducing valve and its pressure control pipe.

7.4 Deaeration of the system

After starting the plant, the pressure control valve has to be deaerated (bled). In order bleed the valve the coupling nut of the control pipe is opened slightly, to let air escape from the pipe. When the air has escaped completely, tighten the coupling nut accurately.

 **ATTENTION**

The coupling nut must not be opened during operation of the control valve. Danger of escaping hazardous media (steam, hot condensate, harmful fluids!)

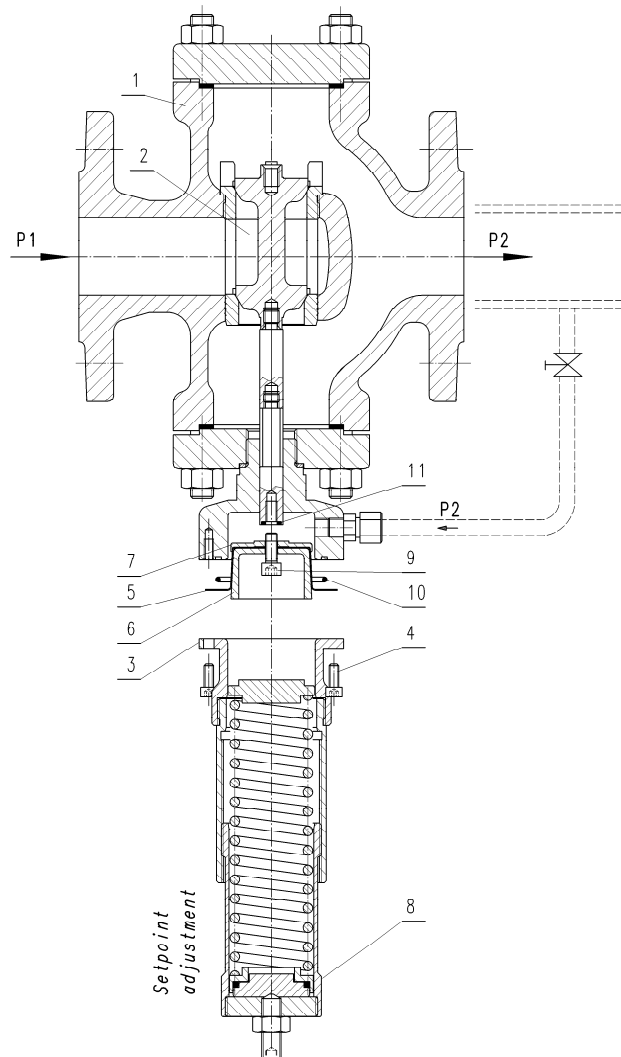
8. Setting the pressure

Setting the pressure is executed by turning the control bolt at the lower end of the diaphragm drive with a wrench. Check the set pressure by means of a manometer at the lower pressure side of the valve. An indicative setting is made by means of the setting pressure correction tube, turn left to lower the pressure, turn right to increase the pressure.

9. Service and maintenance

AKO pressure reducing valves are mainly free of maintenance. Still the operation of the valve can be affected by staining of the moving parts. Therefore it is recommended to clean the valve in certain intervals. Depending on the application the valve should be checked in determined intervals to avoid possible malfunction.

10. Exchange of the control diaphragm



To exchange the control diaphragm proceed as follows:

- Make the system pressure free.
- Drain the pressure control valve accurately.
- Release the pressure control spring by turning the setting tube pos. 8 to the left.
- Remove the bolts pos. 4 and lift the bottom of the drive.
- Remove the bolt pos. 9 and take out the diaphragm pos. 5 with the diaphragm plates pos. 6 and 7.
- Replace O-rings pos 10 and 11.

Mount the new diaphragm tot he body by executing the above steps in reverse order.

- Adjust the holes of the diaphragm to the bolt holes of the body and tighten the fixing bolt pos.9 after that.
- Assemble the bottom part pos. 3 of the body with the bolts pos.4.
- Set the desired pressure by turning the pressure setting tube tot he desired set point.

11. Fault detection and corrective

In case of dysfunction please check if the installation according has been executed strictly according to this mounting and servicing instruction.

In case the after-pressure will not increase beyond the adjusted value at the control unit, the following reasons may be the cause :

- valve seat and valve cone are dirty and jam
(please clean the regulating valve)
- seat and coneslider are leaky due to normal wear and tear.
(please replace seat and coneslider of the valve)
- the control line is blocked up
(please clean or replace the control line)
- the control diaphragm is damaged.
(please replace the control diaphragm)



ATTENTION

When repairing, please keep in mind the following:

- *pressure less piping system*
- *medium to be cooled down*
- *plant to be mode empty*
- *purge piping system in case of caustic, inflammable, aggressive or toxic media*

12. Reach Declaration

Declaration to regulation EC 1907/2006 concerning the Registration, Evaluation, authorization and restriction of Chemicals (REACH).

By the REACH Regulation, the company AKO Regelungstechnik GmbH & Co. KG is only affected as a downstream user. Responsibilities due to the production and Marketing of substances / chemicals for pre-registration or registration are not applicable for us. As a downstream user we will fulfill all requirements according to REACH.