



Technical description

Application:

Heating and cooling systems.
For other applications consult manufacturer.

Function:

Opens at increasing pressure at the inlet.

Pressure class:

PN 16

Max. differential pressure:

16 bar

Temperature:

Max. working temperature: 150°C
Min. working temperature: -10°C

Media:

Water and neutral fluids, water-glycol mixtures. Other media on special request.

Material:

Valve body: Ductile iron EN-GJS-400-18LT
Valve seat: Stainless steel
Valve plug: Stainless steel with EPDM insert
Diaphragm: NBR

Surface treatment:

Spray painting.

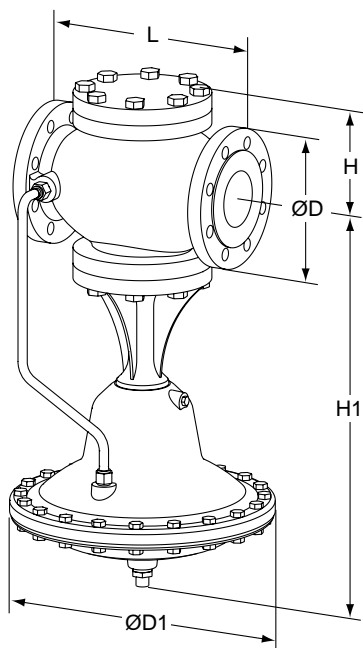
Marking:

TA, DN, PN, GGG 40.3, Kvs and flow direction arrow.

Flanges:

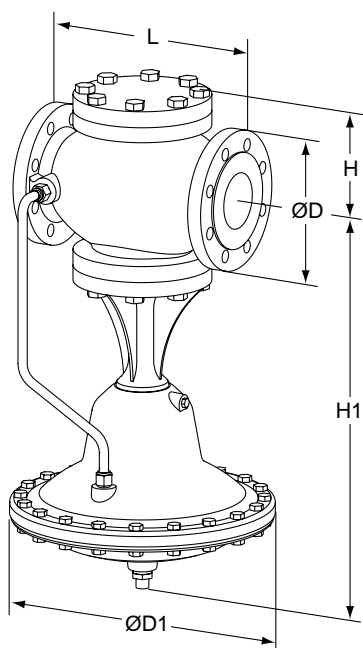
According to EN 1092-2:1997, type 21.

P 8



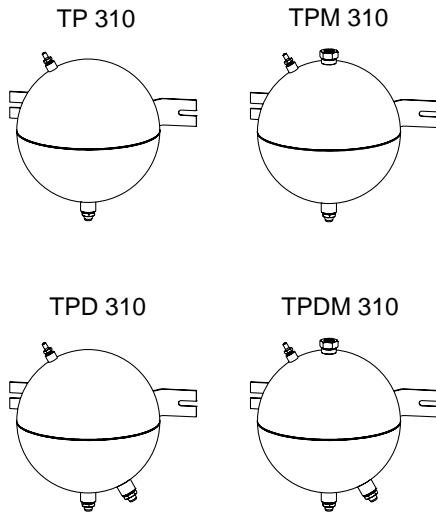
TA No	DN	D	D1	L	H	H1	Kvs	Kg
52 775-165	65	185	375	290	125	545	50	68
52 775-180	80	200	375	310	135	555	80	78
52 775-190	100	220	375	350	165	600	110	98
52 775-191	125	250	375	400	175	610	120	106

V 8



TA No	DN	D	D1	L	H	H1	Kvs	Kg
52 774-165	65	185	375	290	125	545	50	68
52 774-180	80	200	375	310	135	555	80	78
52 774-190	100	220	375	350	165	600	110	98
52 774-191	125	250	375	400	175	610	120	106

Pressure vessels



TA No	Type	Ø
52 790-005	TP 310	310
52 790-006	TPM 310	310
52 790-007	TPD 310	310
52 790-008	TPDM 310	310

Description:

TP 310 is provided with a filling valve and one connection for the connecting pipe.

TPM 310 the same as TP 310 and a manometer connection.

TPD 310 is provided with two connections for the connecting pipe.

TPDM 310 the same as TPD 310 and a manometer connection.

Operating function

P 8

The regulator consists of a valve (1), an actuator (3) and a pressure vessel (8). The fluid pressure at the valve's inlet acts through the impulse pipe (2) to the top side of diaphragm (5), and attempts to open the valve together with the force of the auxiliary spring (4).

The pressure of compressed air (9) in the pressure vessel acts through the connection pipe (6) to the bottom side of diaphragm, and attempts to close the valve.

As long as the forces on the diaphragm are balanced, the valve's plug stands still. If the fluid pressure increases, the valve opens until the new balance is reached.

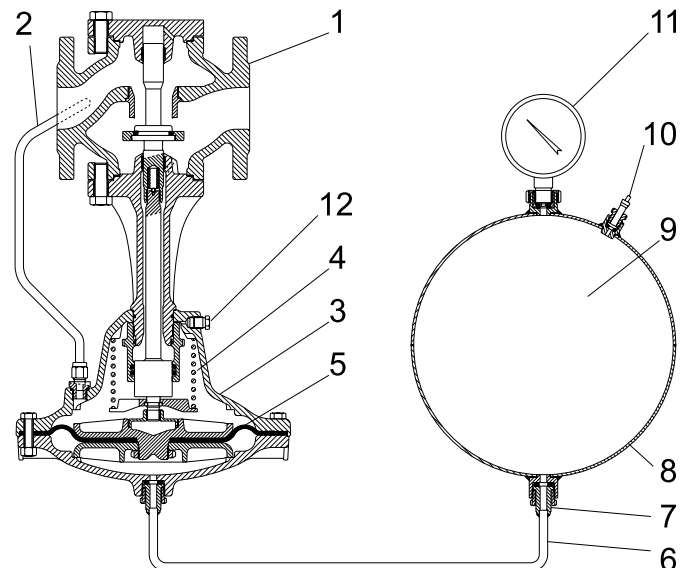
In case of a diaphragm rupture, the pressure of fluid on top side and compressed air on bottom side of diaphragm are equalized, and the auxiliary spring instantly fully opens the valve.

The force of the auxiliary spring corresponds to a pressure of approx. 20 kPa.

V 8

Function is the same as at P 8, only the force of the auxiliary spring is smaller.

It corresponds to the pressure of approx. 5 kPa.



Combination of pressure relief and safety valve

If pressure relief valve P 8 and safety valve V 8 are connected to the same pressure vessel, both valves will be normally closed. If pressure relief valve is forced to open, but the pressure at the inlet accidentally rises for any reason by additional 15 kPa, the safety valve starts to open.

Pressure difference between acting ranges of both valves depends on forces of auxiliary springs. This combination ensures the best possible accuracy and security of two jointly working valves.

Combination of reducing and safety valve

If reducing valve R 8 and safety valve V 8 are connected to the same pressure vessel, reducing valve will be normally open, and safety valve tightly closed.

If the reducing valve is forced to close completely, but the pressure at the outlet accidentally rises for any reasons by additional 15 kPa, the safety valve starts to open.

Pressure difference between acting ranges of both valves depends on forces of auxiliary springs. This combination ensures the best possible accuracy and security of two jointly working valves.

Caution: Reducing valve R 8 and relief valve P 8 cannot be connected to the same pressure vessel, because the forces of both springs are the same. In such case the relief valve would remain constantly open.

Installation

Install the valve into a horizontal pipeline with actuator body below. The direction of flow is shown with an arrow on the valve body.

Installation of a strainer upstream the pressure relief and safety valve is **NOT** allowed.

For impulse and connection pipe use copper pipe Ø10x1.

Pressure vessel installation

The pressure vessel has a spherical form with two hooks for mounting on the wall.

The vessel type **TP 310** is provided with a filling valve (10) and one connection (7) for the connecting pipe.

The vessel type **TPM 310** is additionally provided with a manometer connection (11).

Type **TPD 310** is provided with two connections (7) for the connecting pipe, and type **TPDM 310** has a manometer connection in addition.

Solder the pipe that connects pressure vessel with the valves (copper Ø10mm) to the connection parts.

Prior to mounting of the connecting pipe and manometer, check the sealing surfaces and clean them if necessary. Install very carefully and check tightness with soap or spray.

Make sure to use only original rubber seals. Never use hemp or teflon tape.

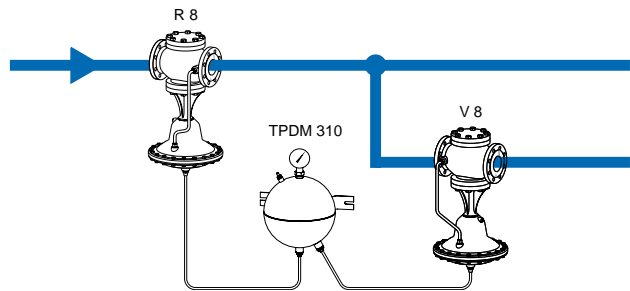
Install the vessel as far away from hot surfaces as possible.

Pressure adjustment

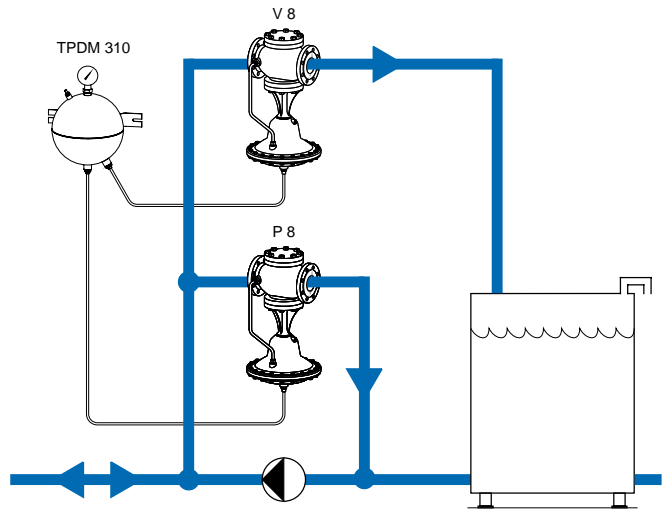
Fill the pressure vessel with compressed air or nitrogen.

The pressure in the vessel must be by approx. 20 kPa higher than the desired pressure of regulated fluid.

Pressure reducing system with reducing valve and safety valve both connected to the common pressure vessel



Run and spill system of keeping constant pressure at one point of installation



Sizing

It is recommended to choose the flow speed of water within 0,5 to 2 m/s. Optimal speed is approx. 1 m/s. Control the pressure drop in valve by formula:

$$\Delta p = 100 \times q^2 / Kvs^2 \text{ [kPa]}, \text{ where } q \text{ is flow in m}^3/\text{h}.$$