Operating Instructions for Pressure Reducing Valves

All pressure reducing valves comply with the Pressure Equipment Directive 2014/68/EU.

Berluto

Pressure reducing valve in red bronze DRV 2xx

Installation Size	Max. Inlet Pressure	Outlet Pressure	Internal Thread	Flange acc. DIN	Reduction Ratio	max. Temperature
Diaphragm pressure reducer standard and wide range pressure						
DN8-50	PN25	1,5-8	200	230	10:1	75°C
DN8-50	PN25	0,8-8	200-G	230-G	10:1	75°C
Pressure reducer with low pressure diaphragm						
DN8-50	PN25	0,2-2	250	--	20:1	75°C
Pressure reducer with high pressure piston						
DN8-50	PN40	1,5-20	225	235	6:1	75°C
DN8-20	PN60	20 - 45	226	--	3:1	75°C

Pressure reducing valve in red bronze DRV 3xx, 4xx, 5xx, 6xx

Installation Size	Max. Inlet Pressure	Outlet Pressure	Outside Thread	Internal Thread	Flange acc. DIN	max. Temperature
Pressure reducer for drinking water						
DN15-32	PN16	1,5-6	403-6	303-6		75°C
DN40-65(80)	PN16	1,5-6	402-6	302-6*	502-6	75°C
DN80-150	PN16	1,5-6	--	--	602-6	75°C
Diaphragm pressure reducer standard pressure						
DN15-32	PN16	1,5-6	403	303		75°C
DN15-32	PN25	1,5-6	402	302	502	75°C
DN40-65(80)	PN25	1,5-6	402	302*	502	75°C
DN80-150	PN16	1,5-6	--	--	602	75°C
DN15-32	PN25	1,5-10	408	308	508	75°C
DN40-65(80)	PN25	1,5-10	408	308*	508	75°C
DN80-150	PN16	3,0-10	--	--	608	75°C
Pressure reducer with high pressure piston						
DN15-32	PN25	1,5-12	424	324	524	75°C
DN40-65(80)	PN25	1,5-12	424	324*	524	75°C
DN80-100	PN25	4,0-12	--	--	624	75°C
DN15-32	PN25	2,0-20	425	325	525	75°C
DN40-65(80)	PN25	2,0-20	425	325*	525	75°C
Pressure reducer with low pressure diaphragm						
DN15-32	PN16	0,2-2	450	350	550	75°C
DN40-65(80)	PN16	0,2-2	450	350*	550	75°C
Diaphragm pressure reducer wide range pressure						
DN15-32	PN16	0,5-4	473	373		75°C
DN15-32	PN25	0,5-4	472	372	572	75°C
DN40-65(80)	PN25	0,5-4	472	372*	572	75°C
DN80-150	PN16	0,5-4	--	--	672	75°C
DN15-32	PN25	0,5-9	478	378	578	75°C
DN40-65(80)	PN25	0,5-9	478	378*	578	75°C
DN80-150	PN16	0,5-9	--	--	678	75°C

* DN 15 - DN 50

Subject to technical changes and errors reserved.
The proficiency testing is the responsibility of the user.
The specified data do not represent legally guaranteed properties.

Pressure reducing valve in stainless steel DRV 7xx, 8xx

Installation Size	Max. Inlet Pressure	Outlet Pressure	Internal Thread	Flange acc. DIN	max. Temperature
Diaphragm pressure reducer standard and wide range pressure					
DN15-32	PN16	1,5-6	703 (-R*)		75°C
DN15-50	PN40	1,5-6	702	802	190°C
DN15-50	PN40	0,5-4	772	872	190°C
DN15-50	PN40	1,5-10	708	808	190°C
DN15-50	PN40	0,5-9	778	878	190°C
Pressure reducer with low pressure diaphragm					
DN15-50	PN25	0,2-2	750	850	190°C
Pressure reducer with high pressure piston					
DN15-50	PN40	1,5-12	724	824	190°C
DN15-50	PN40	2,0-20	725	825	190°C

*DRV 703-R with outside thread

1. Transport and storage:
Pressure regulators must be handled, transported and stored with care. The pressure reducing valve has to be transported and stored in its protective packaging until the date of final installation. Even packaged pressure regulators must be transported with caution. When stored prior to installation, the pressure reducing valve must be placed in closed rooms and protected from harmful influences such as dirt, moisture and frost.

2. Functional Description:
The pressure reducing valves of the series 3xx/ 4xx/ 5xx/ 6xx are generally designed for the pressure control of water and other neutral and non-viscous fluids. Nevertheless, they can also be used for the pressure control of air and neutral gases.
Particularly the series 403-6/402-6/303-6/302-6/502-6/602-6 are qualified for the use in domestic water systems. The regulations of the DVGW directive W382 “Installation and operation of pressure reducing valves in drinking water systems” have to be kept without fail as well as DIN 1988 “Technical regulations for drinking water installations”. Same applies for the required inspection and maintenance intervals.
A pressure reducing valve reduces a high inlet pressure to a constant lower outlet pressure. The strict observance of pressure and temperature limits and the sufficient dimensioning are mandatory for the proper functioning of the device (see also chapter “Application Area”).

⚠ NOTICE: Pressure reducing valves must not be used as a substitute for safety valves or shut off valves.

3. Application Area:

Media:
All media must be belong to group 2, Article 9, paragraph 2.2 of the Pressure Equipment Directive 97/23/EC.

DRV 2xx
Compressed air, nitrogen and other non-combustible gases, water and neutral non viscous liquids.

DRV 3xx, 4xx, 5xx, 6xx
Water and chemical neutral, non-combustible liquids up to a max. viscosity of 65 cSt (mm ² / s), air and inert gases.

DRV 7xx, 8xx
Aggressive water, demineralized water, other aggressive liquids, compressed air, nitrogen and gases.

Temperature:
See Table
In case of uncertainties regarding the use please contact the manufacturer.

Pressures:
See Table
In case of uncertainties regarding the use please contact the manufacturer.

4. Installation and adjustment:

⚠ WARNING: Installation should be carried out by qualified staff.

The pipe must be free of dirt and foreign particles. A prior flushing is mandatory.
The installation has to be carried out in close proximity to a floor drain in order to avoid structural damage in case of a medium leakage. DIN 1988 is to be followed!

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⚠ WARNING: Make sure that the system is depressurized before starting the assembly!

The flow direction is indicated by the directional arrows on the valve body. The correct mounting direction must be observed. The connections vary according to the type: DIN flanges or internal threads as per ISO 228. The installation instructions for the actual connection type are to be observed. The appropriate sealing material has to be selected, depending on the medium and the operating conditions.
A conical fitting should never be screwed into an internal thread with high force or torque, this might cause a rupture of the body. Fastening screws of a flange connection have to be tightened crosswise.

⚠ NOTICE: After completion of the installation no major torque or forces should be transmitted from the pipeline to the valve.

The outlet pressure is to be set at zero flow (all system components are closed) using the hand wheel at the top (hood). Turn it clockwise to increase the pressure and counterclockwise to reduce it. It is recommended to open and close one or more valves after setting, to double-check the actual system pressure and to readjust the outlet pressure if necessary as soon as the system flow is stable.

5. Maintenance:

Pressure regulators are sensitive to dirt. Dirt or foreign particles inside or a clogging of the strainer in the inlet can lead to loss of function or functional failure. Depending on the medium pressure reducing valves must be serviced annually.

In some rare cases foreign particles, excessive temperatures or aggressive media can lead to damage of the diaphragm or the piston seal and might cause a leak on the outside. Such a leak will be immediately visible as the medium will enter through the small venting holes into the bonnet. Pressure regulators should therefore be inspected regularly to ensure that such damage will be detected at an early stage.

When opening pressure regulators for the purpose of cleaning or replacement of internal components proceed as follows:

⚠ WARNING: The disassembly and maintenance should be carried out by qualified staff.

⚠ WARNING: Make sure that the system is depressurized before starting the assembly.

⚠ WARNING: Turn counterclockwise the screw at the top hand wheel (bonnet) in order to completely release the spring in the bonnet.

Bonnets with fine threads (up to DN 32) can be unscrewed with the cast hexagon and a suitable tool e.g. a box wrench. Do not use a pipe wrench! Bonnets larger than DN 32 can be removed by loosening the fastening screws.

Type 2xx DN8 to DN50

After removing the bonnet (see above) take off the spring and the spring retainer. Unscrew the hex nut and remove spring disc and diaphragm. With piston design valves remove the piston. Take off the bottom plug, now the swing with main seal can be removed and inspected. Reassemble in reverse order. Please make sure that the swing will be positioned freely in the center of the main body and that it will not be clamped. The O-rings should be slightly lubricated with grease.

Type 3xx, 4xx, and 5xx to DN 32

After removing the bonnet (see above) remove one of the two lateral G ¼"plugs or the pressure gauge. Bring in a screwdriver through the ¼ "hole and lift up the inner parts.
The internal parts are assembled as a unit (= cartridge). If no external damage is visible, clean the cartridge, especially the filters, otherwise use a new cartridge. Assemble the pressure reducing valve in reverse order. The O-rings should be slightly lubricated with grease.

⚠ WARNING: Only use KTW-approved greases for drinking water applications!

Type 3xx, 4xx, and 5xx DN 40 to DN 80

After removing the bonnet (see above) remove the plug at the bottom with ring- or open-end wrench. Do not use a pipe wrench! Raise spring disc (placed above the diaphragm) with a pipe wrench and unscrew the hexagonal nut. Remove spring disc and diaphragm and pull out all inner parts at the bottom side. Press out the valve seat. Caution - do not use sharp objects! Clean the inlet parts, especially the strainer and assemble in reverse order. O-rings and seals should be slightly lubricated with grease.

⚠ WARNING: Only use KTW-approved greases for drinking water applications

Type 6xx DN 80 to DN 150

After removing the bonnet (see above), unscrew blind flange and take off the flange. Remove the top nut with a wrench, while doing so use a hex key to hold the spindle. Remove the spring disc and diaphragm. Now the inlet parts can be pulled out.

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Inspect all parts, especially the seals, for damage. If necessary, replace parts. Clean parts and assemble in reverse order. The seals should be slightly lubricated with grease.

⚠ WARNING: Only use KTW-approved greases for drinking water applications

For the re-installation into the pipeline follow the instructions of section "Installation and adjustment".

Type 524 and 525 DN 40 to DN 80
The disassembly is equal to Type 3xx, 4xx, and 5xx DN 40 to DN 80. In contrast, after the removal of the bonnet, the ring between cover and housing is also to be removed. To do this, hold tight the hexagon nut. The central pin on the top of the piston is to be loosen with a pipe wrench and can then be unscrewed.

Type 624 DN 80 to DN 100

The disassembly is equal to Type 6xx DN 80 to DN 150. In contrast, the connecting rod is provided with a cross hole which serves to hold. The hexagon nut on top of the piston can then be unscrewed.

Type 702/708/772/778 and 802/808/872/878 DN 15 to DN 50

After removing the bonnet (see above) remove the screw of the cartridge and take off the cartridge with a slide hammer.
The internal parts are assembled as a unit (= cartridge). If no external damage is visible, clean the cartridge, especially the filters, otherwise use a new cartridge. Assemble the pressure reducing valve in reverse order. The O-rings should be slightly lubricated with grease.

Type 724/725 and 824/825 DN 15 to DN 50

After removing the bonnet (see above) remove piston guide and take off the cartridge.
The internal parts are assembled as a unit (= cartridge). If no external damage is visible, clean the cartridge, especially the filters, otherwise use a new cartridge. Assemble the pressure reducing valve in reverse order. The O-rings should be slightly lubricated with grease.

Type 750 and 850 DN 15 to DN 20

After removing the bonnet (see above) remove unscrew the diaphragm support and take off the cartridge.
The internal parts are assembled as a unit (= cartridge). If no external damage is visible, clean the cartridge, especially the filters, otherwise use a new cartridge. Assemble the pressure reducing valve in reverse order. The O-rings should be slightly lubricated with grease.

Type 750 and 850 DN 25 to DN 32

Remove the 6 screws of the channel flange, take off channel flange. Remove the diaphragm and diaphragm support. Take off the cartridge.
The internal parts are assembled as a unit (= cartridge). If no external damage is visible, clean the cartridge, especially the filters, otherwise use a new cartridge. Assemble the pressure reducing valve in reverse order. The O-rings should be slightly lubricated with grease.

Type 750 and 850 DN 40 to DN 50

Remove the 6 screws of the channel flange, take off channel flange. Remove the diaphragm, unscrew the 4 screws of the diaphragm support and remove the diaphragm support and the adapter. Take off the cartridge.
The internal parts are assembled as a unit (= cartridge). If no external damage is visible, clean the cartridge, especially the filters, otherwise use a new cartridge. Assemble the pressure reducing valve in reverse order. The O-rings should be slightly lubricated with grease.

Replacement of spare parts:
Only original spare parts from Berluto Armaturen GmbH must be used. The exchange may only be done by qualified staff following strictly these instructions.
In case of uncertainties please contact the manufacturer.

Pressure gauge
⚠ NOTICE: when fitting the gauges for nominal widths ¼" to ¾" the maximum screw in depth must not exceed 13mm.

Terms and conditions:
The delivery terms and conditions of Berluto Armaturen GmbH apply.

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Applies to the following articles:

Pressure regulator DRV 200, Standard design, non-reversible	
Article No.	Type No.
101426 to 101433	200.01 to 200.08

Pressure regulator DRV 250, Low pressure design, non-reversible	
Article No.	Type No.
101434 to 101436	300.01 to 300.03

Pressure regulator DRV 225, High pressure design, non-reversible	
Article No.	Type No.
101437 to 101444	400.01 to 400.08

Pressure regulator DRV 424 for portable water, without DVGW	
Article No.	Type No.
101327 to 101332	100.111 to 100.116

Pressure regulator DRV 450 for water, without DVGW	
Article No.	Type No.
101333 to 101338	100.121 to 100.126

Pressure regulator DRV 403 for portable water DVGW-tested acc. To EN 1567	
Article No.	Type No.
101349 to 101352	100.101 to 100.104
145385 to 145386	100.102-2 to 100.103-2

Pressure regulator DRV 402 for portable water, without DVGW	
Artikel Nr.	Typen Nr.
101353 to 101354	100.105 to 100.106

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