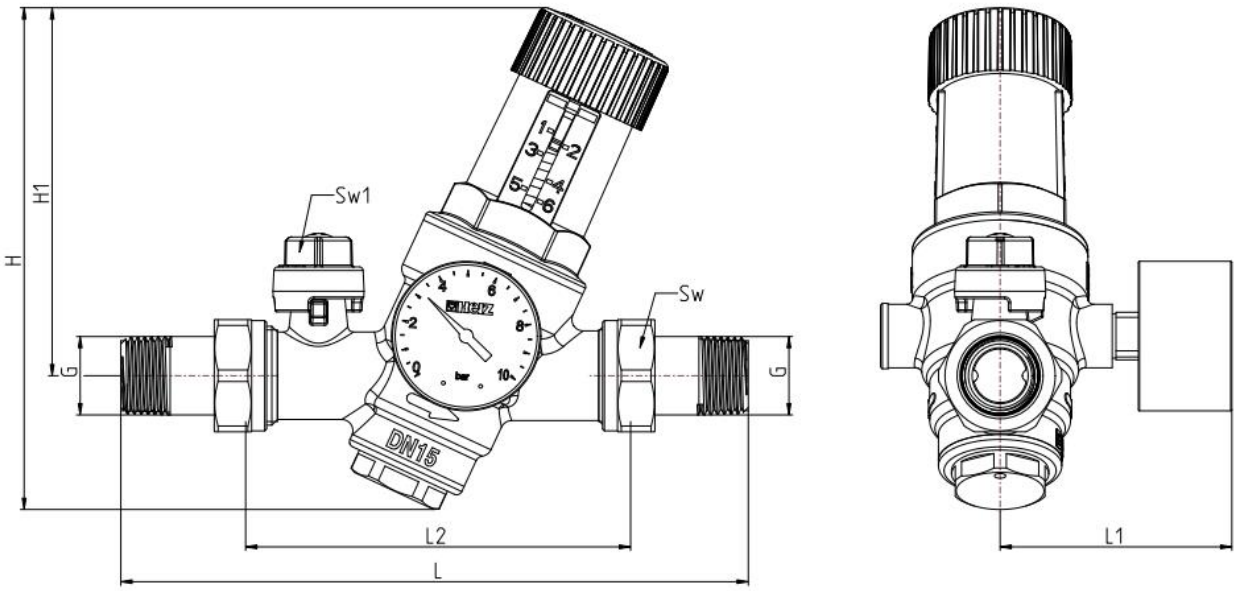
HERZ - Automatic filling valve

Datasheet **1 4216 01**

Dimensions



Order Nr.	DN	Sw [mm]	Sw1 [mm]	G [in]	L [mm]	L1 [mm]	L2 [mm]	H [mm]	H1 [mm]
1 4216 01	15	30	14	1/2"	166	62	103	134	98,5

Material and construction

Body:	forged brass acc. to EN 12165; CW617N
Ball:	forged brass acc. to EN 12165, chrome plated, CW617N
Upper part:	PA6.6
Diaphragm:	EPDM + textile
Spring:	spring steel
Spring guide:	stainless steel
Sealing:	EPDM
Setting knob:	PA 6.6 (red)
Filter:	stainless steel
Ball valve handle:	aluminium alloy (red)

Operating data

Manometer scale:	0-10 bar
Mesh perforatio:	0.3mm
Medium:	water
Maximum inlet pressure:	16 bar
Outlet pressure range:	1.5-6 bar
Factory setting:	1.5
Medium temperature range:	0,5-70°C
Pressure gauge connectors:	1/4" F (ISO 228-1)
Connectors:	external thread acc. to ISO 7-1 and ISO228

Medium:
Heating water purity in accordance to ÖNORM H 5195 and VDI- Standard 2035. The use of ethylene, or propylene glycol in a mixing ratio of 25- 50% is allowed. EPDM gaskets will be affected by mineral oils lubricants and thus lead to failure of the EPDM seals. Please refer to the manufacturer’s documentation when using ethylene glycol products for frost and corrosion protection.

Brass

HERZ Automatic filling valve is made from brass due to its good strength and excellent corrosion resistance. Under Article 33 of the REACH Regulation (EC No. 1907/2006), we are obliged to point out that the material lead is listed on the SVHC list and that all brass components manufactured in our products exceed 0.1 % (w / w) lead (CAS: 7439-92-1 / EINECS: 231-100-4). Since lead is a component part of an alloy, actual exposure is not possible and therefore no additional information on safe use is necessary.

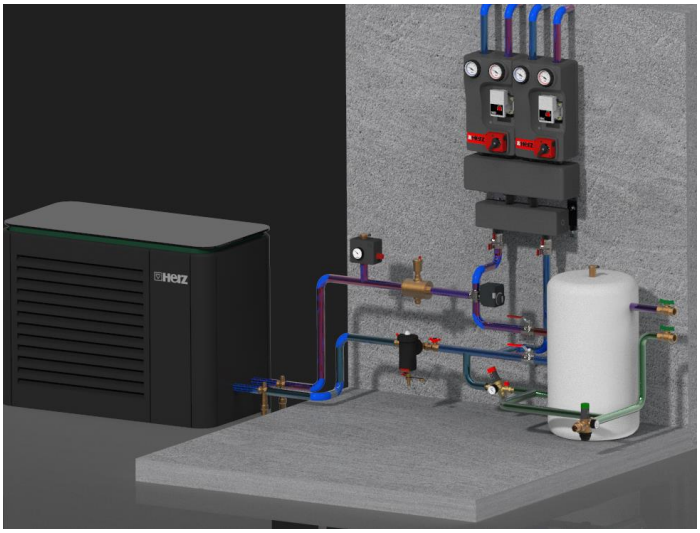
Field of application

Automatic filling valve is installed within the water supply piping of sealed heating systems, primarily to maintain stable system pressure at a predetermined value by automatically adding water when necessary.

During the filling or topping-up process, the water supply automatically stops once the desired pressure is reached. The desired pressure can be easily set before installation using the red knob located on top of the valve. The factory preset is set to 1,5 bar for convenience, but it can be adjusted to specific requirements within a range of 1.5 to 6 bar.

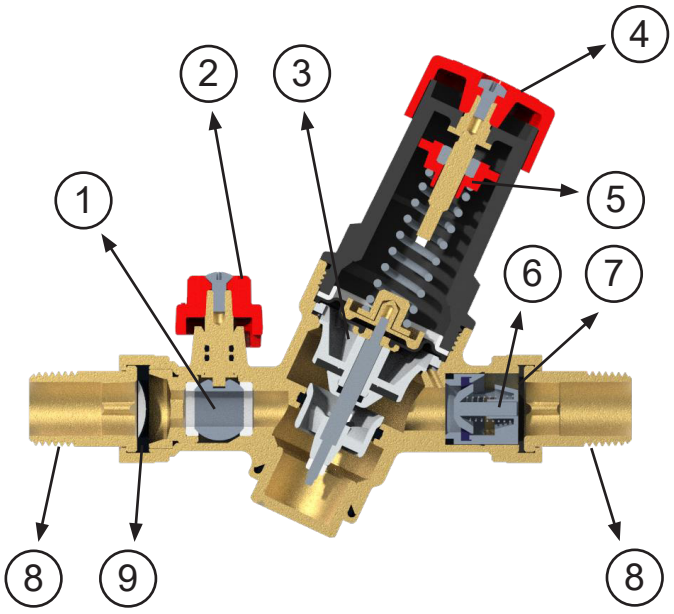
For enhanced control, the integrated ball valve allows for seamless shut-off of the filling valve, improving both convenience and safety. Additionally, the built-in check valve ensures that water from the heating system remains separate from the potable water supply, preserving water quality and safety.

The integrated pressure indicator enables easy monitoring of system pressure, providing peace of mind and precise control. Be cautious not to exceed the stated values on the pressure reducer scale, as doing so may damage the valve. After each adjustment to the outlet pressure, it is essential to open and close the regulated valve to ensure proper operation.



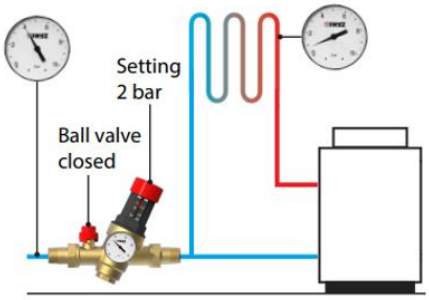
Components of Automatic filling valve

1. Ball valve
2. Square handle SW14
3. Integrated pressure-reducing valve
4. Setting knob
5. Pressure setting indicator
6. Check valve
7. Flat sealing
8. Free-turning nut connectors
9. Integrated filter

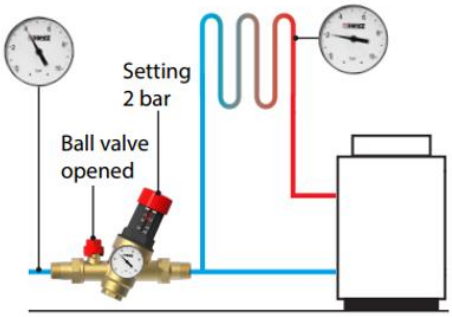


Function principle

Step 1: Pressure Drop in the Heating Circuit
In the first step, the pressure in the heating circuit is observed to have dropped from the prescribed 2 bar to 0.8 bar*. At this point, the ball valve in the automatic filling valve (AFV) remains in the closed position, effectively isolating the drinking water circuit (which is maintained at a pressure of 4 bar*) from the heating circuit. The closed ball valve ensures that the two systems remain separate, preventing any unintended pressure transfer or backflow between them. This isolation is crucial to maintaining system integrity, as the difference in pressure between the two circuits could otherwise result in uncontrolled filling or backflow, potentially leading to damage or inefficiency in the heating system. The AFV is specifically designed to respond to pressure changes in a controlled manner, and it remains inactive while the ball valve is closed, maintaining a stable boundary between the drinking water supply and the heating circuit. This allows the system to monitor and detect any discrepancies in pressure that require corrective action without immediate risk of cross-contamination or leakage.



Step 2: Opening the Ball Valve
In the second step, the installer opens the ball valve of the automatic filling valve (AFV). At this moment, the pressure from the drinking water system, which is maintained at 4 bar*, flows through the AFV, which is pre-set to regulate the output pressure to 2 bar*. As the water flows through the valve, it automatically adjusts the pressure, ensuring that only 2 bar* is delivered into the heating circuit, effectively refilling it to the required level. The AFV's built-in regulator is designed to precisely control the pressure differential, preventing any over-pressurization or under-pressurization in the heating system. This ensures that the heating circuit is safely and accurately replenished to the optimal operating pressure of 2 bar*, maintaining the desired system performance. The controlled refilling process is essential to avoid stress on the heating components, which could result from excessive pressure, and to ensure that the system remains efficient and functional. By setting the AFV to the correct pressure level, the installer ensures that the refilling process is both safe and effective, providing stable operation and preventing potential damage to the heating system.



Step 3: Closing the Ball Valve
In the third and final step, the installer should close the ball valve after the heating circuit has been filled to the desired pressure of 2 bar*. Closing the ball valve isolates the heating circuit from the constant pressure of the drinking water system, preventing any continuous exposure to the 4 bar* pressure of the potable water supply. This step is crucial to avoid keeping the heating circuit under constant pressure, which would increase the risk of significant leakage in the event of a pipe crack or malfunction in the heating system components. By closing the ball valve, the AFV maintains the optimal pressure within the heating circuit without subjecting it to the potential dangers of over-pressurization. This action also protects the integrity of the heating system by minimizing the risk of accidental water ingress or backflow, which could lead to water damage, energy loss, or other operational problems. Regularly closing the ball valve after filling operations helps ensure that the heating system remains safely isolated, preserving its functionality and extending the lifespan of all components involved.

* The pressures mentioned in these three steps are provided for illustrative purposes only; actual pressures in real-world situations may vary depending on specific system configurations and operating conditions.

Installation

The HERZ Automatic filling valve (AFV) can be installed in any position (vertical and horizontal pipes). A system where the HERZ AFV is installed must be flushed to remove any dirt or debris that may have accumulated during installation. Failure to remove dirt or debris may affect performance and the manufacturer's warranty. The installation of filters of appropriate capacity at the inlet of the water from the main supply is always advisable. In areas that are subject to highly aggressive water, arrangements must be made to treat the water before it enters the valve. Access to the HERZ AFD must be unobstructed for any maintenance that may be required to the AFV or valve connections. The pipework from/to the HERZ AFV must not be used to support the weight of the AFV itself. When connecting the HERZ AFV to the system components use suitable sealing material (spinning material, Teflon ribbon, sealing paste) to coat the pipes. There should not be an excess of sealing material on the pipe because it can damage the thread. All the connecting pipes have to be correctly aligned, so the AFV is not loaded with a bending moment. When using copper or plastic pipes take into account the pressure and temperature limits of used material. When assembling, use a suitable assembly tool that adapts to AFV end connections. Following assembly, the connections of the AFV must be checked for water-tightness by the installer. All engineering standards and recognized regulations must be adhered to by these specialist staff.

Important warnings

WARNING

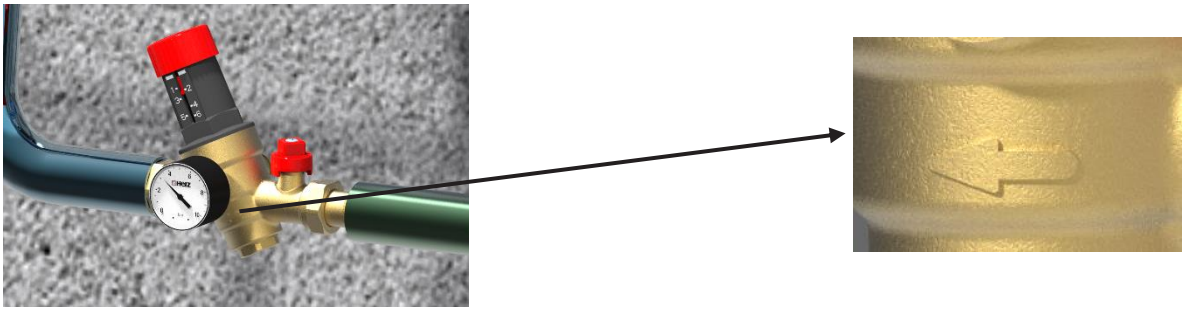
HOT WATER / LIQUID

Pay attention while installing / commissioning / servicing the Automatic filling valve because the temperature of medium can exceed 100°C. Exposure to this high temperature medium can cause death, serious injury or damage of the other components in the system. Make sure that when works are being carried out on the HERZ Automatic filling valve the system is cooled down and it is unpressurised. Before any disassembly make sure that the system is drained.

Failure to follow the instructions and unprofessional work may result in the following:
- AFD malfunction
- endangering the safe operation of the system
- damage to the system
- risk of injuries for persons in contact with the system

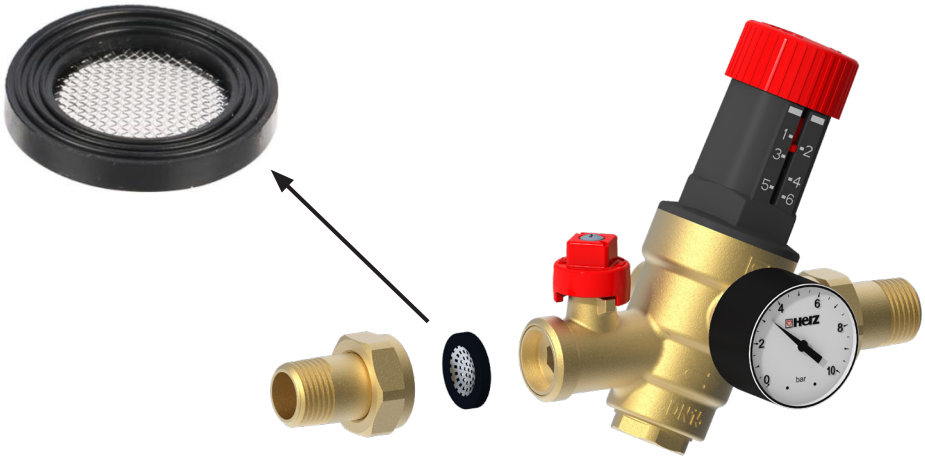
Flow direction

The HERZ Automatic Filling Valve is designed to maintain a single, one-way flow direction, which is crucial for the proper functioning of heating systems. An arrow, clearly marked on the brass body of the valve, indicates the correct flow direction. During installation, it is essential to align the valve according to this arrow to ensure that water flows in the intended direction. Reverse flow is not permitted and could result in serious system malfunctions, such as backflow contamination, loss of pressure, or damage to internal components. The valve's construction and markings are designed to prevent errors during installation, ensuring optimal performance and reliability. Proper alignment according to the flow direction indicated on the brass housing is essential for the valve to function correctly, protecting the heating system from potential damage and ensuring efficient and safe operation. Always check the arrow direction to maintain correct system operation and prevent malfunctions.



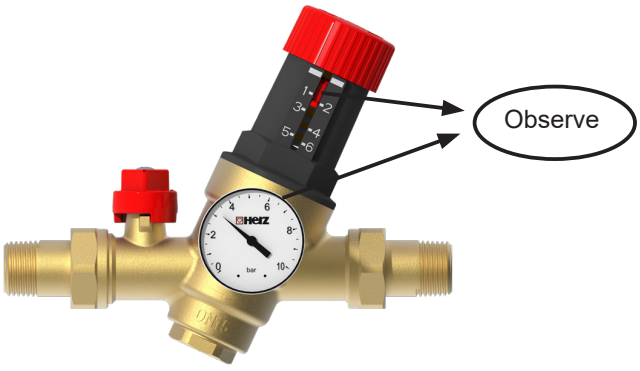
Pressure gauge
The HERZ automatic filling valve features a pressure gauge with a 0-4 bar scale, allowing precise monitoring of the pressure within the heating system. The gauge can be installed on either side of the valve housing due to the two available 1/4" connectors, providing flexibility in installation. The unused connector is securely sealed with a plug to prevent leaks. The pressure gauge measures the pressure specifically within the heating circuit, not the supply pressure from the water system before the valve. This enables accurate control and maintenance of the heating system's pressure, ensuring optimal performance and safety.

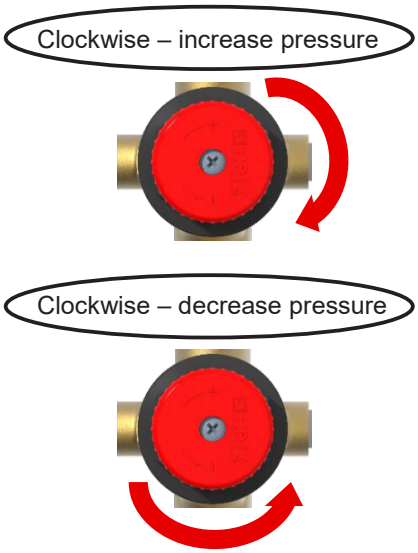
Filter
The HERZ Automatic filling valve incorporates an integrated filter within a flat gasket seal, designed to provide dual functionality. For correct installation, the filter must be positioned on the upstream side, before the valve, at the starting point of the arrow marked on the valve body. Place the gasket between the brass housing and the free-turning nut connector to ensure that the water is filtered before entering the valve. This filtering process is essential to protect the internal plastic components from damage caused by debris, scale, or other impurities present in the medium. Failure to install the filter correctly may compromise the valve's performance and lead to system malfunctions. Regular inspection and maintenance of the filter are recommended to ensure optimal sealing and continuous protection of the internal components, thereby prolonging the valve's lifespan and maintaining efficient system operation. Proper filter placement is crucial for maintaining system integrity and performance.



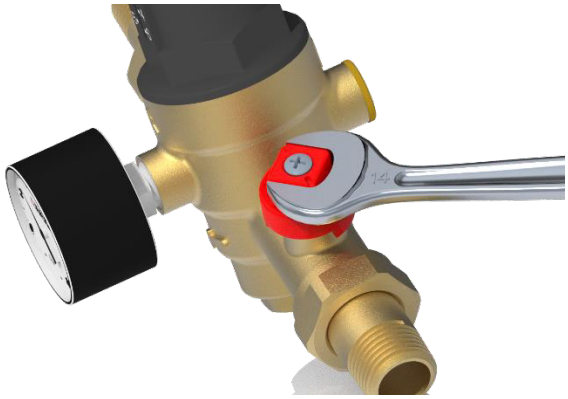
Pressure setting
To set the pressure on the automatic filling valve, use the red adjustment knob located on top of the product. The knob allows for easy manual adjustment of the pressure in the heating circuit. To increase the pressure, turn the knob clockwise; to decrease the pressure, rotate it counterclockwise. The knob is designed for comfortable hand operation, enabling quick and straightforward adjustments without the need for additional tools.

The pressure setting can be roughly observed using the pressure setting indicator, which is a white scale positioned just below the red adjustment knob. This indicator provides a visual reference for the approximate pressure setting. However, due to potential variations in system characteristics—such as pipe sizing, flow rates, and existing pressure differences—this scale may not always provide a precise reading. Therefore, it is recommended to use the pressure gauge attached to the AFV for more accurate monitoring and fine-tuning of the pressure setting.

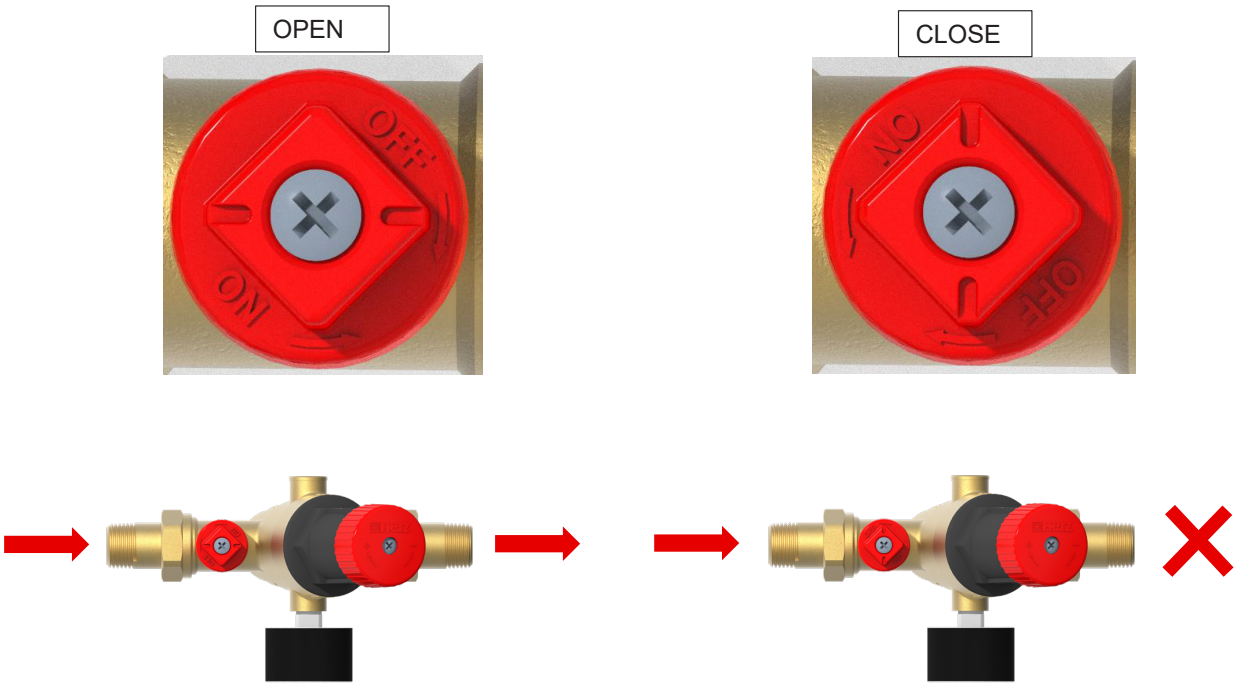




Closing the ball valve
Ball valve features an integrated handle that requires a 14mm spanner for operation, ensuring that unauthorized personnel cannot easily manipulate the valve. This design provides security by restricting access to those with the proper tools, preventing accidental or unwanted adjustments.



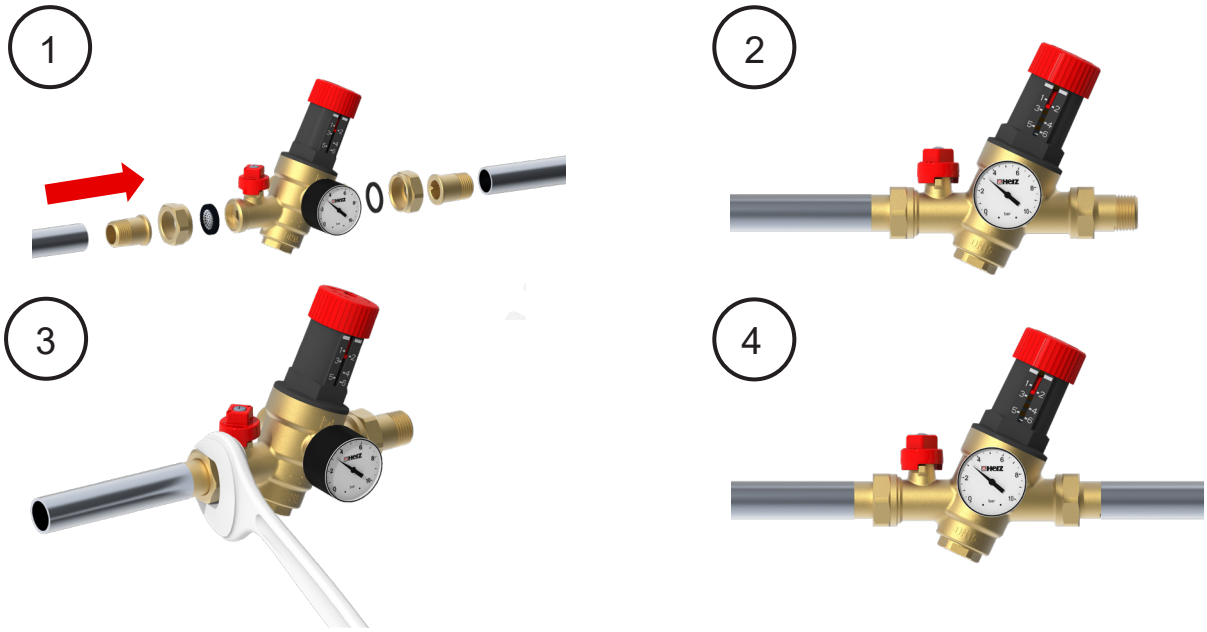
The handle is clearly marked to indicate the valve's status: when the marking is perpendicular to the flow or pipe, the valve is closed; when aligned parallel, the valve is open. These markings provide a clear visual reference, aiding in the correct operation and maintenance of the heating system.



Free turning nut connectors
HERZ Automatic filling valve is designed to be connected to the system with a free-turning nut (which are supplied in the set). This allows easy service and the possibility of disconnecting the valve during the maintenance process. The opposing connection piece has to have the correct thread which has to be made according to standard ISO 228/1. Assemble according to instructions shown below:

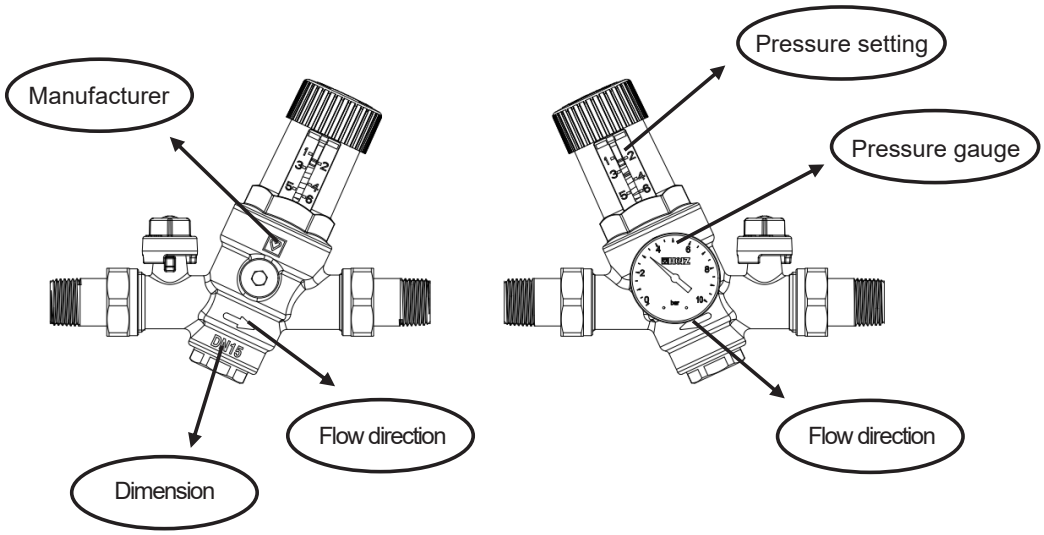
1 Assemble the free-nut connection (nut + connector + flat sealing). For correct installation, the rubber gasket with filter must be positioned on the upstream side, before the valve, at the starting point of the arrow marked on the valve body.
2. Screw the connector into the thread of a fitting, ensuring it is securely connected to the pipe.
3. Using a suitable spanner, tighten the nut until the system is sealing. Ensure that the valve body is secured with a suitable tool. Take care to not overtighten.
4. Repeat the process on all connections.

Use suitable force when screwing the free-turning nut.



NOTE: During assembly, ensure the use of appropriate assembly tools that match the valve's end connections to avoid damage. Avoid subjecting the valve to bending momentum to maintain its integrity. Prior to connecting the valve to system components, refer to the installation guidelines outlined in the preceding paragraph.

Labelling



Maintenance

The ingress of condensate, dripping water etc. into the drive should be prevented. Repairs on the device must be carried out by authorized persons only. According to EN 806-5 (point 6. Operation), ball valves must always be in their fully opened or closed position and actuated at regular intervals to ensure they remain operational. Therefore HERZ Ball valves must be closed and opened periodically at least twice a year. This prevents the ball valve from blocking, reduces sediment deposition, and reduces the possibility of corrosion inside the valve. Regular maintenance of heating systems keeps them running smoothly, optimizing their energy consumption and reducing utility bills. Well-maintained components ensure the heating system doesn't have to work harder than necessary to achieve the desired temperature. Make sure, that regular maintenance is done periodically at least twice a year, according to the procedures written below:

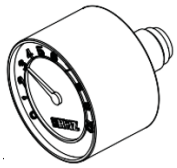
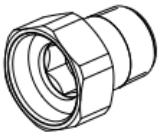
1. Check and clean the system filters.
2. Check that the non-return valves are operating normally, without problems caused by impurities.
3. Limescale can be removed from internal components by immersion in a suitable de-scaling liquid.
4. When the components which can be maintained have been checked, commissioning should be carried out again.

In-service tests should be carried out regularly to monitor the automatic filling valve performance, as deterioration of performance could indicate that the valve and/or the system require maintenance. If, during these tests, the performance of the valve has changed significantly in comparison to the previous tests, the details given in the installation sections should be checked and maintenance carried out. The following aspects should be checked regularly to ensure that the optimum performance levels of the valve are maintained, periodically at least twice a year.

Disposal instructions

The disposal of HERZ Zone valve accessories must not endanger the health or the environment. National legal regulations for the proper disposal of the HERZ Zone valve accessories have to be followed.

Spare parts

Illustration	Description	Item number
	Tool for maintenance	1 **2682** 27
	Pressure gauge	1 **2682** 34
	Free turning nut connector: ¾″ - ½″	1 **6221** 31
	Gasket with integrated filter	1 **6386** 10

Troubleshooting

Problem	Description	Solution
Decreased downstream pressure (while ball valve is closed)	Cause can be leaking pipe or malfunctioning component of heating system.	Check the heating system and repair leaking component.
Manometer shows a lower pressure under flow conditions than set pressure at no flow.	This is normal due to potential variations in system characteristics—such as pipe sizing, flow rates, and existing pressure differences.	For precise installation observe pressure gauge setting.
Low flow rate, low downstream pressure	Filter blocked with debris	Clean the integrated filter.