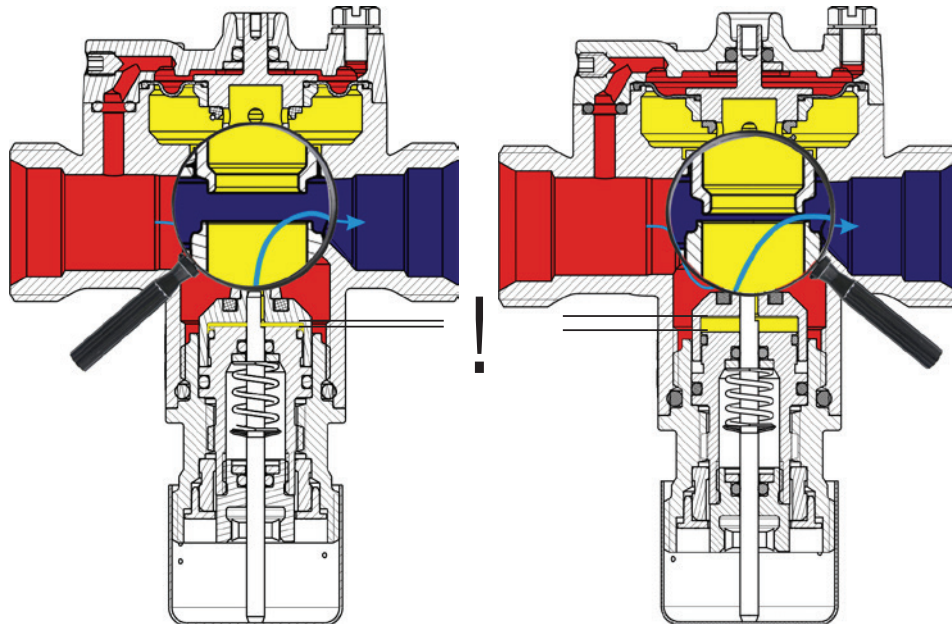
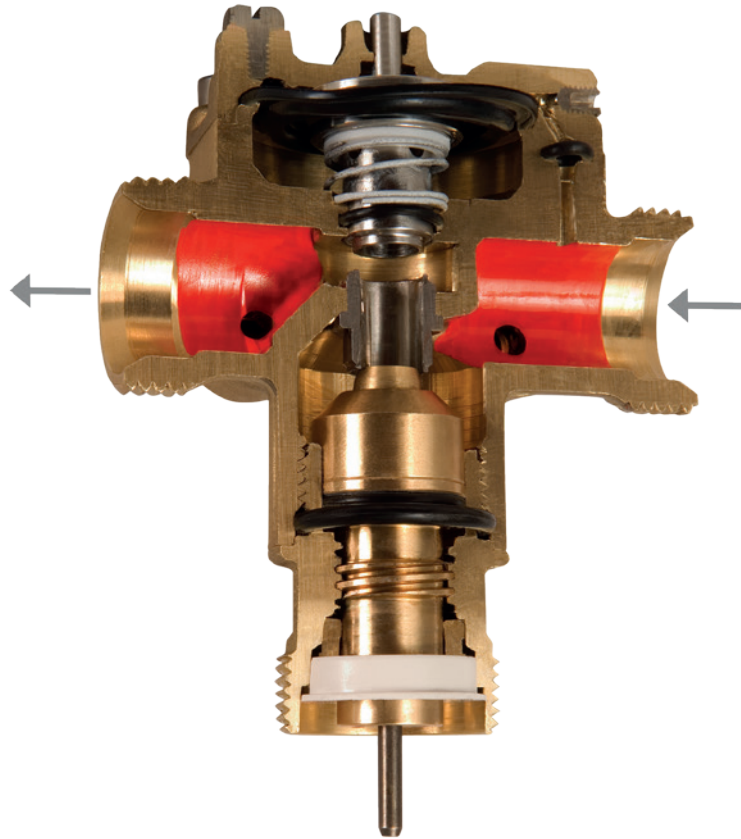


# HERZ-Pressure Independent Control Valves

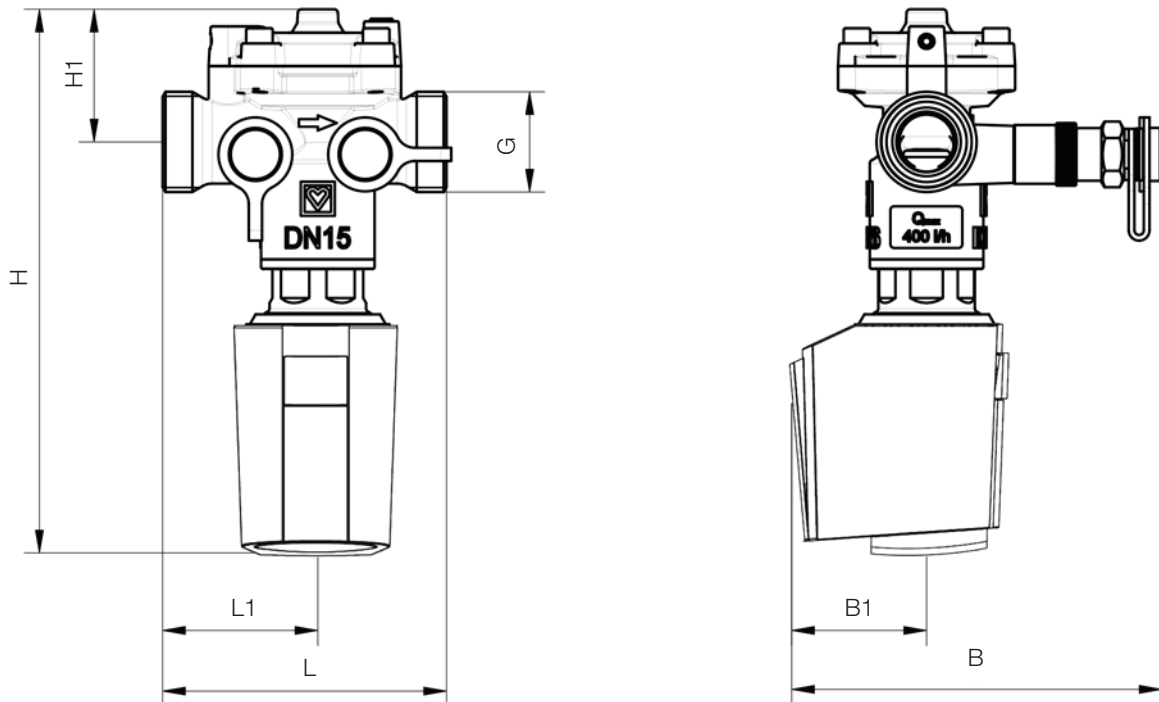




HERZ 4006 SMART in fully open position

HERZ 4006 SMART in operation; due to the pressure relief, very low actuating forces and differential pressures are required

Dimensions in mm  
4006



	Order number	DN	G	L	L1	B	B1	H without actuator	H with actuator	H1
M	1 4006 20	15 LF	3/4	75 mm	41 mm	98 mm	36 mm	104 mm	161 mm	36 mm
	1 4006 21	15	3/4	75 mm	41 mm	98 mm	36 mm	104 mm	161 mm	36 mm
	1 4006 22	20	1	75 mm	41 mm	98 mm	36 mm	105 mm	162 mm	33 mm
	1 4006 29	15 MF	3/4	75 mm	41 mm	98 mm	36 mm	104 mm	161 mm	36 mm
R	1 4006 60	15 LF	3/4	75 mm	41 mm	62 mm	36 mm	104 mm	161 mm	36 mm
	1 4006 61	15	3/4	75 mm	41 mm	62 mm	36 mm	104 mm	161 mm	36 mm
	1 4006 62	20	1	75 mm	41 mm	62 mm	36 mm	105 mm	162 mm	33 mm
	1 4006 69	15 MF	3/4	75 mm	41 mm	62 mm	36 mm	104 mm	161 mm	36 mm

#### Technical data

Max. operating pressure	16 bar
Max. differential pressure over the valve	4 bar
Min. operating temperature	2 °C (pure water)
Min. operating temperature	- 20 °C (with frost protection)
Max. operating temperature	130 °C
Stroke	4 mm
Max. closing pressure with HERZ-Actuators	6 bar

#### Technical data

Body:	dezincification-resistant (DZR) brass
Membranes and O-rings:	EPDM

Water purity in accordance with the ÖNORM H 5195 and VDI 2035 standards.

Ethylene and propylene glycol can be mixed to a ratio of 25 - 50 vol. [%].

The integrated control unit together with the actuating drive is responsible for modular control. Various actuating drives might be used.

**The hydraulic balancing is always a relevant topic in central building control systems. With its 4006 and 4006 SMART combi valves, HERZ has created an easy product for everyday work. The combi valves enable a building control system to be set up with reduced planning effort.**

Our life today is hugely influenced by multifunctional devices, like smartphones and tablets. So why not have a product combining a control valve, a balancing valve, a differential pressure regulator and a shut-off valve all in one? Precisely a “pressure independent automatic control and balancing valve with simple design and operation” or just call it **SMART** for short.

The HERZ **4006 SMART** Pressure Independent Balancing Control Valves (PICV) are (amongst other things) an extension of the **4001** family of models (pressure relief volumetric flow controller DN 15 to DN 50), but featuring a small and compact design and suitable for the lowest flow rates.

It is also the logical complement to the zone valves of the HERZ **2117**, **7217** and **7760** model series.

The **4006 SMART** PICV enables HERZ to offer its customers and partners a precise actuator excelling under extreme application conditions with low investment and operational costs.

The **4006 SMART** PICV is not only a combination of control and balancing valve, but is also pressure relieved.

This means that the valve, by taking into consideration a minimum differential pressure, balances the flow rate itself, whereby the required actuating forces are minimal and the regulating behaviour is of the highest standard.

The set nominal value = desired flow rate value, selected by valve setting. Starting at 0, one complete rotation is 100%. The setting is in percentage values and is continuously adjustable.

The flow rate adjustments required in operation are performed by an integrated balancing valve and valve actuator, while the valve authority is constantly maintained at around 100% by the integrated differential pressure regulator.

The actuator (valve actuator) should preferably be a modulating (constant) working actuator in the range of 0 - 10 or 0 - 5, 5 - 10 volts. Due to the pressure relief, even the highest differential pressures only require small actuating forces of a few kg or Newton [N].

### **Temperature control made easy**

Room temperature control systems are set up in commercial and public areas mostly as a combination of room heating and cooling.

Thus the consumer (fan coil, wall or ceiling systems) is

subject to different flow rates or differential pressures in summer and winter operation.

For such applications, HERZ has combined control and balancing valves, whereby the flow rate in selected parts of the system is automatically limited to the preset value. Variations in pressure are compensated for by the diaphragm. The valve setting is made in the %-percentage of the maximum flow rate possible.

### **HERZ 4006 combi valve**

Volumetric flow controller with integrated control valve, presettable stroke limitation, constant or on/off control on an individual room basis in room heating and cooling systems.

### **Dimensioning example**

Assume that a consumer requires a 300l/h flow rate.

The setting value is to be determined for a ½” HERZ 4006 combi valve. Maximum rate of flow through the ½” valve is 400 l/h.

This means that this 400 l/h flow rate represents 100% of the valve. Thus 300 l/h is then 75% of the maximum flow rate. So it is only necessary to set the display on the valve to 75% and meter it as a check. Please note that for proper valve operation there must be a minimum differential pressure according to the data sheets.

The HERZ 4006 combi valve is operated by 2-point or modulating actuators. In this regard, however, we always recommend the continuous control. The reason for this is that a constant and energy efficient control is the critical factor for quick working systems, such as cooling systems and air heaters.

Maximum energy savings are only achieved by using modulating control valves. Under constant control, the flow rate is continuously restricted with the least variation between the minimum and maximum room temperature.

The continuous control also enables all the other system-specific components up to the pump to be used more sparingly. The 2-point control is recommended for inert systems such as floor heating.

HERZ **4006** combi valves enjoy advantages over the conventional series connection of a flow rate controller and differential pressure controller, because the flow rate controller is constant (dependent on the flow rate of the system), while the differential pressure is variable. If the



4006 & 7708

volume of water is reduced once room temperature is reached, the differential pressure will rise. The operating parameter resulting from this is completely different to that from hydraulic compensation.

This means that valves connected in series hamper each other.

For the HERZ combi valve, the valve authority is ideally 1. A valve authority under 0.3 is equivalent to an ON/OFF control. To ensure the efficiency of your system as well as proper operation, however, a modular control with an authority greater than 0.5 should be aimed at. As the HERZ 4006 valve compensates for the different differential pressures, the flow rate to the consumer is maintained at a constant value. In this manner, an under- or oversupply to the individual consumer is excluded.

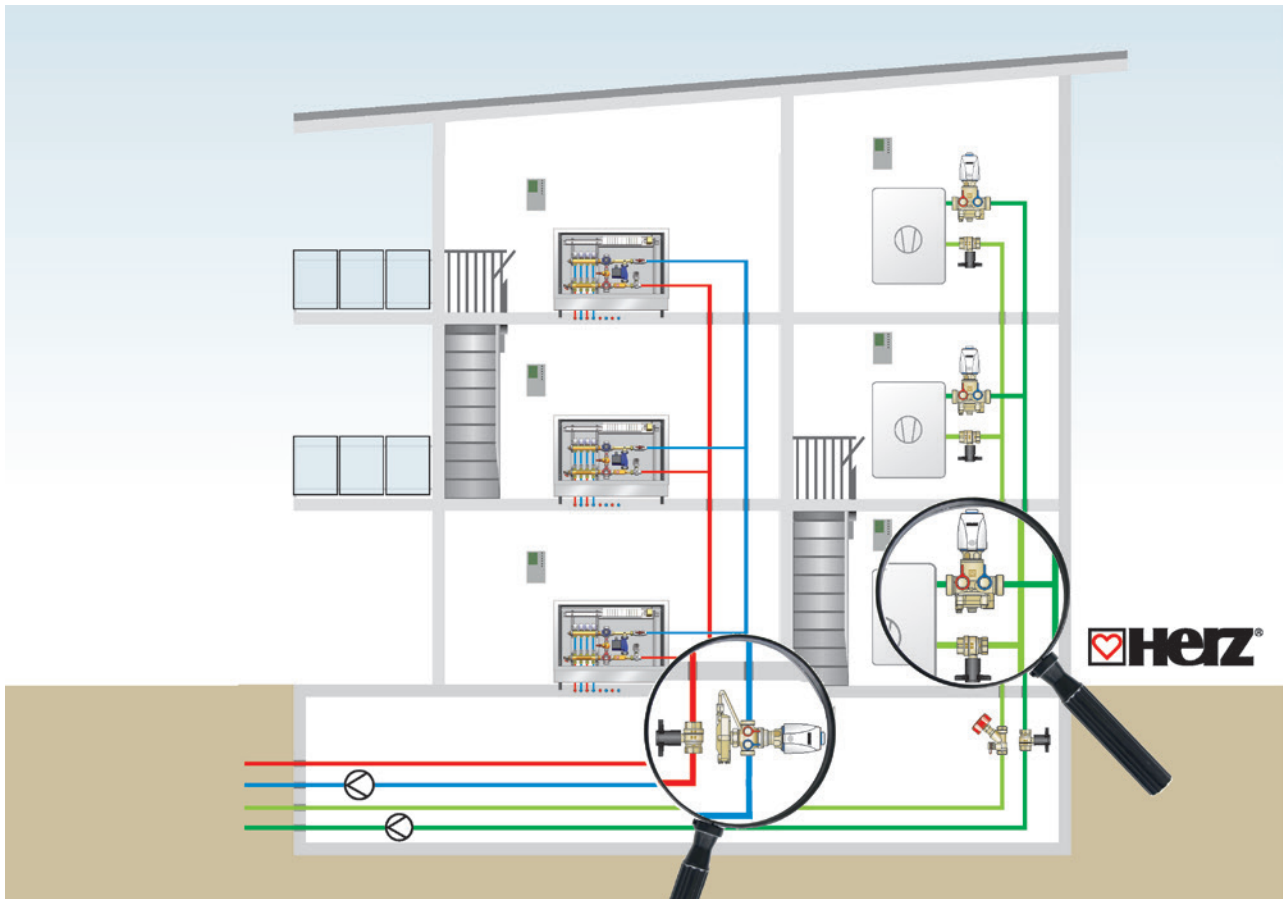
### Accessories

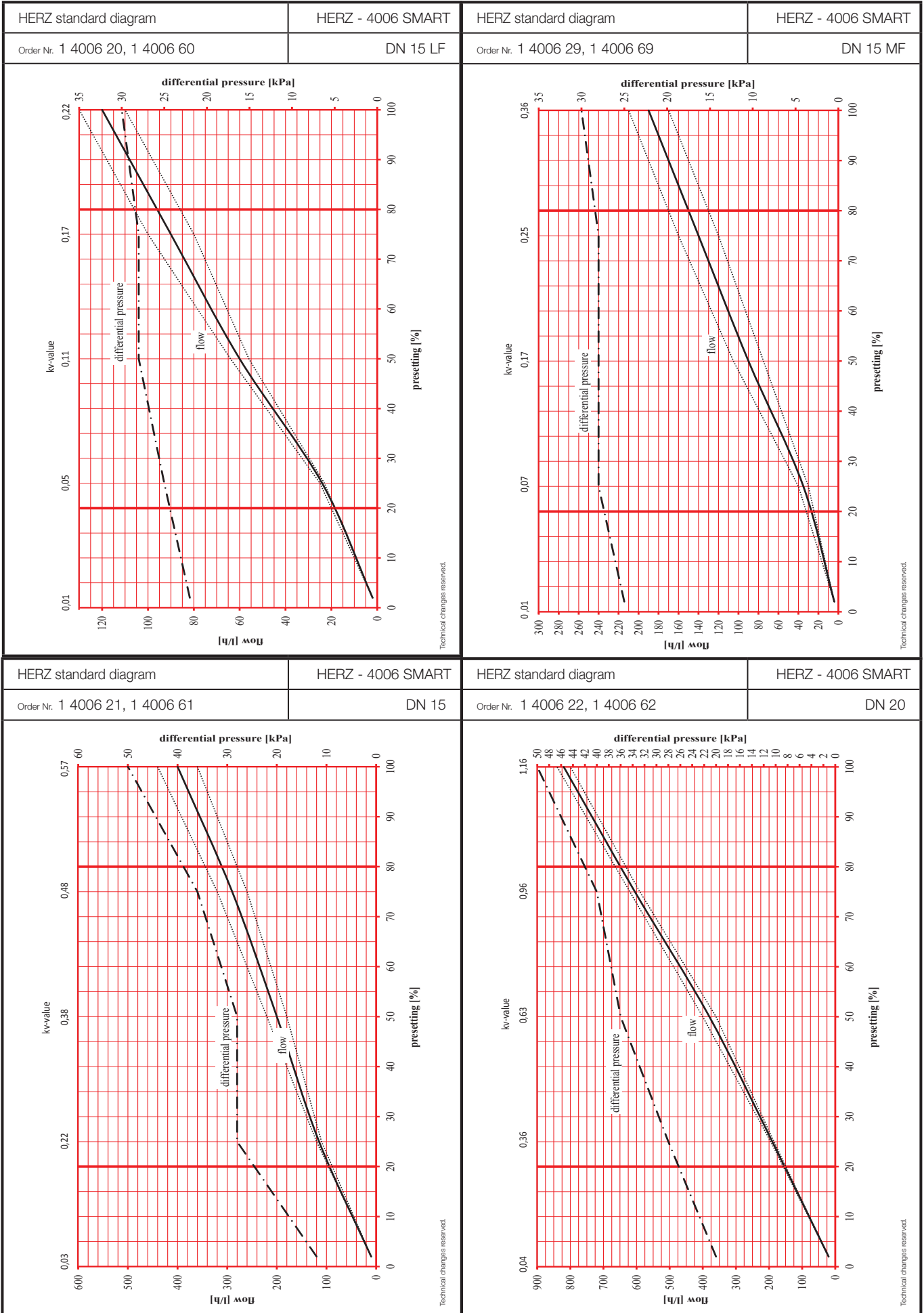
HERZ actuator for 2-point or pulse control, HERZ actuator for continuous control, HERZ metering valve with draining, HERZ room temperature controller for heating, cooling or both combined.

You will also find diverse installation accessories for, as an example, soft steel or copper pipes or plastic composite pipes (Pipefix) in the range of products on offer by HERZ.

### Installation

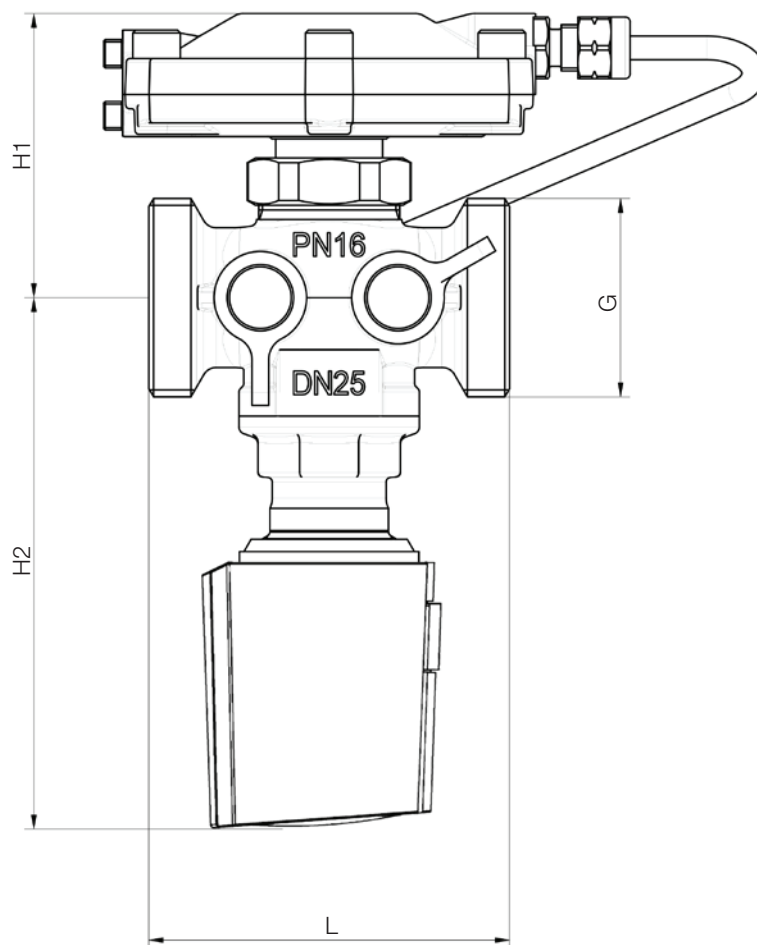
The installation is made in the return flow, in any orientation. The direction of flow is specified by the direction of the arrow on the housing. The installation of an isolation valve is recommended before and after the combi valve. The combi valve is preset using the HERZ adjusting tool, or alternatively, it is also possible to shut off the valve with a spanner. The use of a strainer is also recommended.







Dimensions  
4006



Order number	DN	G	L	H1	H2 without actuator	H2 with actuator	M
1 4006 11	15	3/4 G	66	59	75	132	28 x 1,5
1 4006 12	20	1 G	76	60	75	132	28 x 1,5
1 4006 13	25	5/4 flatsealing	76	60	75	132	28 x 1,5
1 4006 14	32	1½ flatsealing	114	76	86	143	28 x 1,5
1 4006 15	40	1¾ flatsealing	132	86	97	154	28 x 1,5
1 4006 16	50	2¾ flatsealing	140	86	97	154	28 x 1,5

**Technical data**

Max. operating pressure	16 bar
Max. differential pressure over the valve	4 bar
Min. operating temperature	2 °C (pure water)
Min. operating temperature	- 20 °C (with frost protection)
Max. operating temperature	130 °C (up to DN 32)
Max. operating temperature	110 °C (from DN 40)
Stroke	4 mm
Max. closing pressure with HERZ-Actuators	6 bar

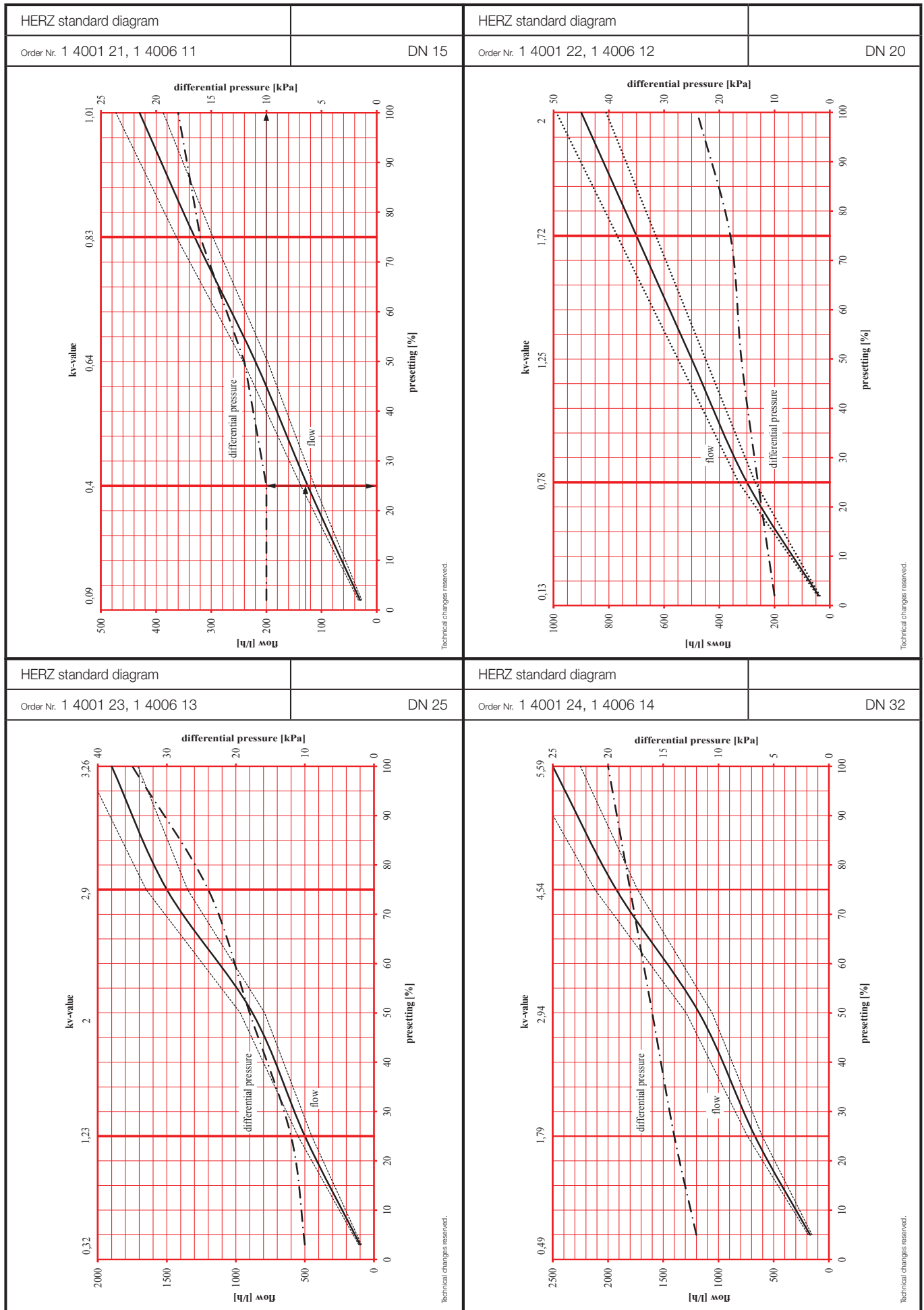
**Technical data**

Body: dezincification-resistant (DZR) brass  
 Membranes and O-rings: EPDM

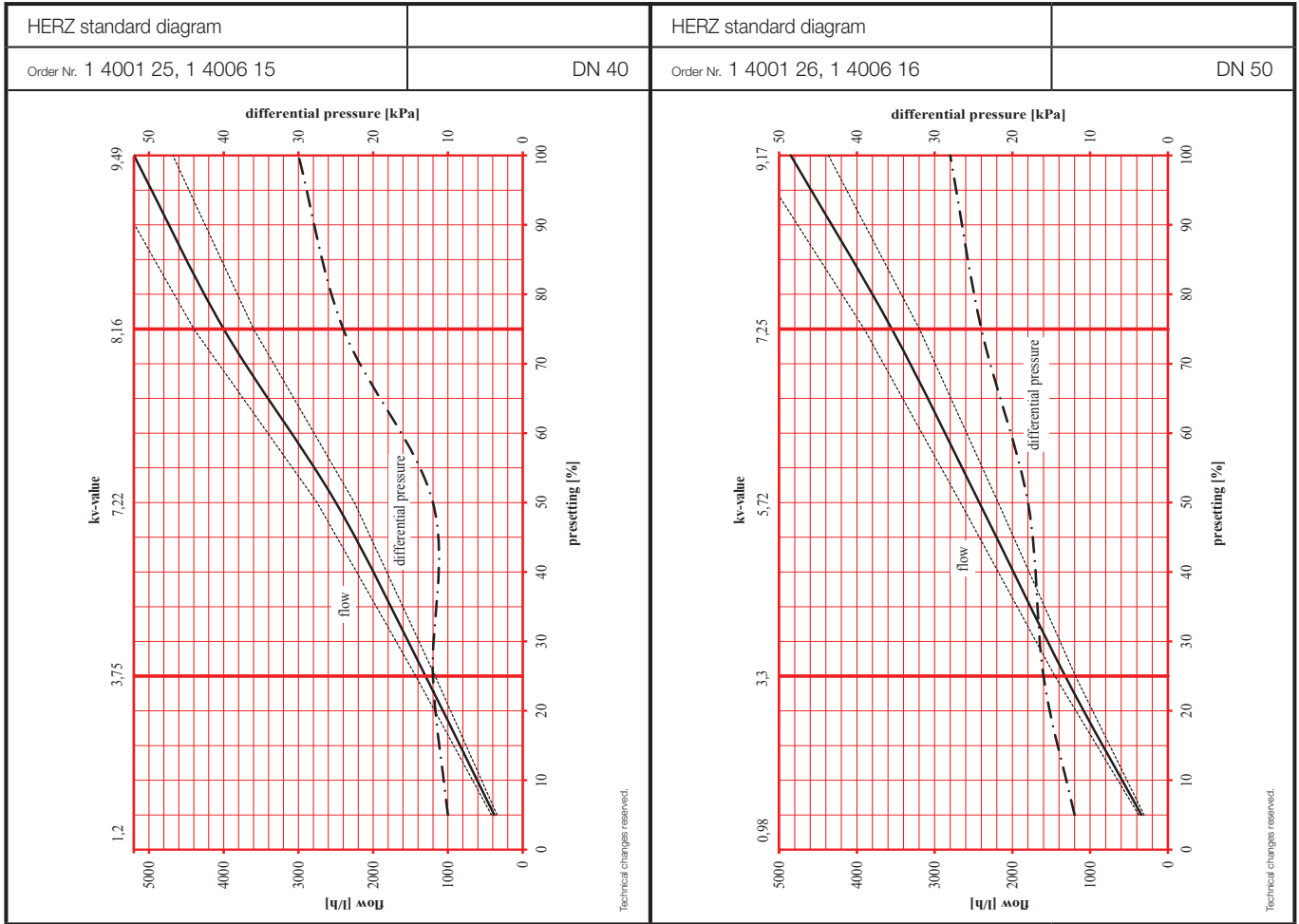
Water purity in accordance with the ÖNORM H 5195 and VDI 2035 standards.

Ethylene and propylene glycol can be mixed to a ratio of 25 - 50 vol. [%].

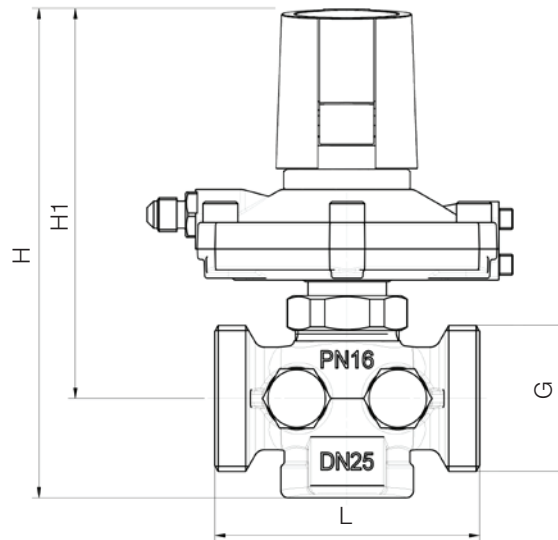
The integrated control unit together with the actuating drive is responsible for modular control. Various actuating drives might be used.







Dimensions  
4002



	DN	G	L	H	H1	M
1 4002 81	15	3/4 G	66	154,5	126	28 x 1,5
1 4002 82	20	1 G	76	156	127	28 x 1,5
1 4002 83	25	5/4 flatsealing	76	156	127	28 x 1,5
1 4002 84	32	1½ flatsealing	114	190	143	28 x 1,5
1 4002 85	40	1¾ flatsealing	132	209	153	28 x 1,5
1 4002 86	50	2¾ flatsealing	140	211	153	28 x 1,5

### Technical data

Max. operating pressure	16 bar
Max. differential pressure over the valve	2 bar
Min. operating temperature	2 °C (pure water)
Min. operating temperature	-20 °C (with frost protection)
Max. operating temperature	130 °C (up to DN 32)
Max. operating temperature	110 °C (from DN 40)
Hub	4 mm
Max. closing pressure with HERZ-Actuators	6 bar

### Application

The differential pressure controller is a straight version linear controller and works without auxiliary power. The fixed nominal differential pressure is 23 kPa. A capillary (1000 mm) is included and should be connected to the circuit regulating valve in the flow.

### Materials

Body: dezincification-resistant (DZR) brass  
 Membranes and O-rings: EPDM  
 Water purity in accordance with the ÖNORM H 5195 and VDI 2035 standards  
 Ethylene and propylene glycol can be mixed to a ratio of 25 - 50 vol. [%].

Ammonia contained in hemp can damage brass valve bodies. EPDM sealings can be affected by mineral oils lubricants and thus lead to failure of the EPDM sealings. Please refer to manufacturers documentation when using ethylene glycol products for frost and corrosion protection.

### $k_{vs}$ -values

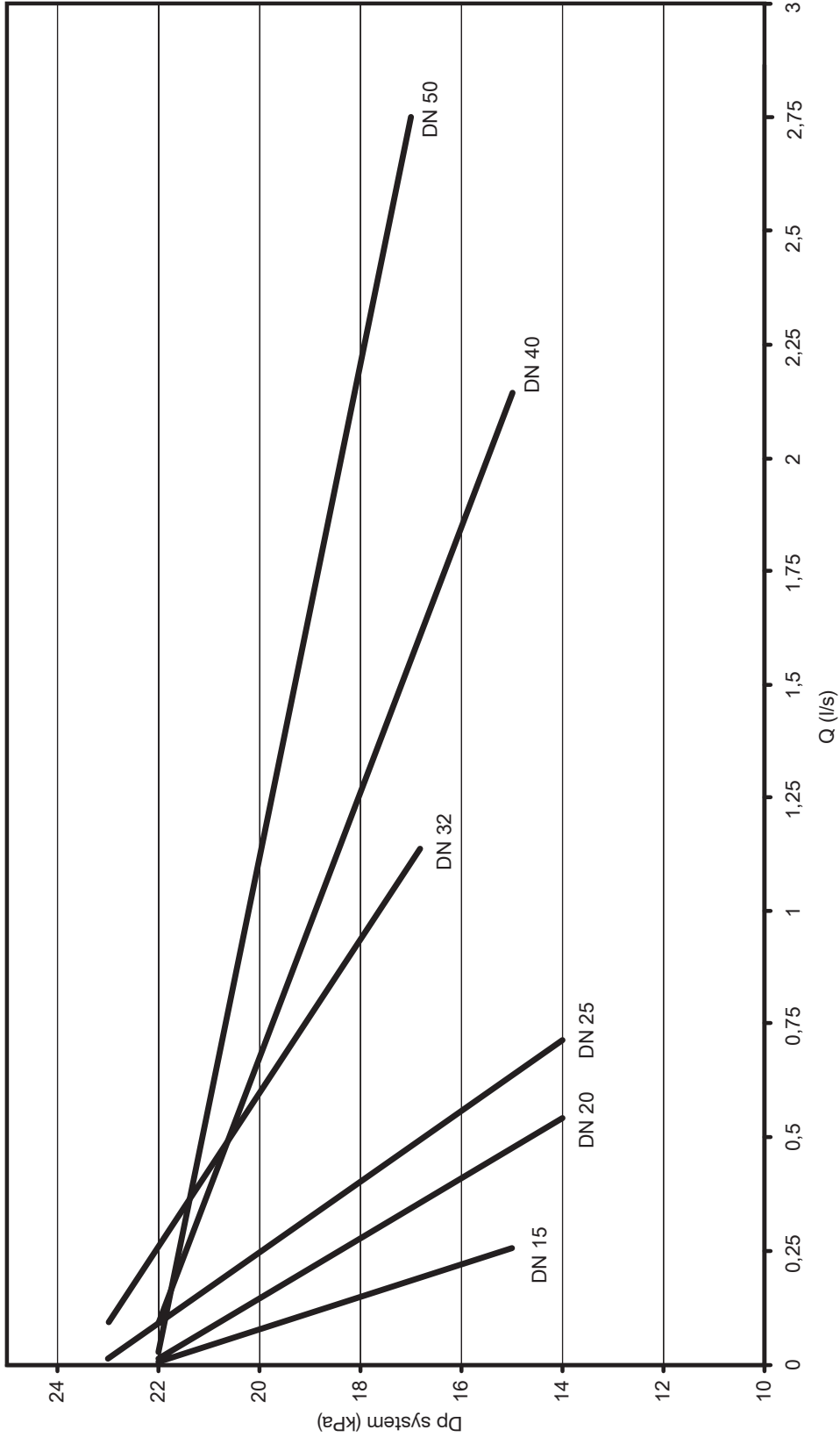
	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50
4002	2,66	4,36	5,38	9,48	14,95	14,95

### Actuator for 4002 FIX-TS

The differential pressure controller **4002** FIX-TS can be fitted with 2-Point-Actuators (**7708** and **7709**). An additional adapter ring 1 **7708** 95 is needed.

HERZ standard diagram	Differential pressure controller
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Order Nr. 1 4002 2x; 1 4002 8x	DN 15 - DN 50
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Technical changes reserved.

**Successful energy efficiency can be achieved in heating and cooling systems with the installation of automatic balancing valves. Certainly, the load and time dependence should be decreased to a minimum. Therefore the selection of regulating valves and the control areas have a critical importance.**

### Energy saving by using pressure regulators 4002

Since the default settings of flow rate limiters integrated in regulating and control valves are always based only on a maximal load, the actual operating conditions are not adequately regulated. Thus, only small energy savings can be achieved.



4002 & 7708

HERZ combined zone valve and differential pressure controller **4002-FIX-TS** for usage in apartments

The only way to compensate this deficit is to install automatic balancing valves. At any given time they work automatically and without the need for auxiliary power, excluding only the flow rates, which require a modern room temperature controller.

In addition, the automatic balancing valves have an advantage which allows the re-adjustment of the settings if local conditions change. For this reason all HERZ differential pressure and volume flow controllers could be equipped with test points to measure the differential pressure.

Hence, it is very easy to choose the controllers from a wide range of HERZ products that fit the requirements for every building technology.

### Heating with radiators in multi-storey houses

HERZ Differential Pressure Control with integrated zone valve; model **4002-FIX-TS** and actuator **HERZ 7708**. In two-pipe heating systems all radiators are preset with thermostatic control valves HERZ, Model **TS-90-V** and **9230** thermostatic head. For each flat or zone with a maximum of eight radiators the HERZ differential pressure controller with locked preset value of e.g. 13 kPa is built in. The zone valve integrated into the differential pressure controller is actuated On/Off - as needed and can be incorporated with a HERZ 7791 room temperature controller. It should be noted that the proportional band for thermostatic radiator valves is chosen in the region of 0.5K to 1.5 K and therefore in a living room, where a room temperature controller is installed, the valves should be equipped with HERZ handwheels.

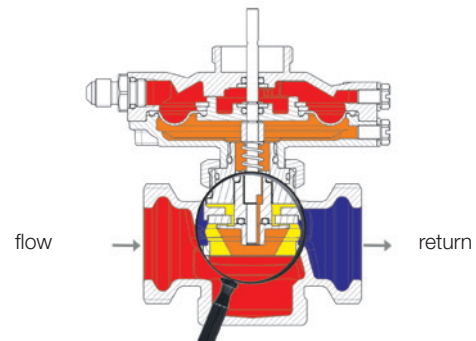
Since all HERZ differential pressure and flow controllers of **4006** and **4002** families are pressure independent, these automatic zone valves can also be used as combination valves in the riser mains of systems fed by district heating or weather-compensated secondary systems. In this case the factory default setting of 23 kPa should be selected. An actuating power of 100 Nm is sufficient for the thermal drive in any case. For the control HERZ recommends the heating controller 7793 with a connection and an external air temperature sensor.

### Relieving pressure

All automatic proportional controllers (flow rate and/or differential pressure controllers) require a minimal differential pressure to operate effectively. If the differential pressure is too low, the flow rate and differential pressure controller will not function correctly.

Usually, a controller has to overcome the differential pressure across the valve seat with corresponding resisting forces. Since the differential pressure conditions are different for the each seat position, the resisting forces have to overcome very high differential pressures.

To keep the operating forces low, the valve seat is pressure relieved.



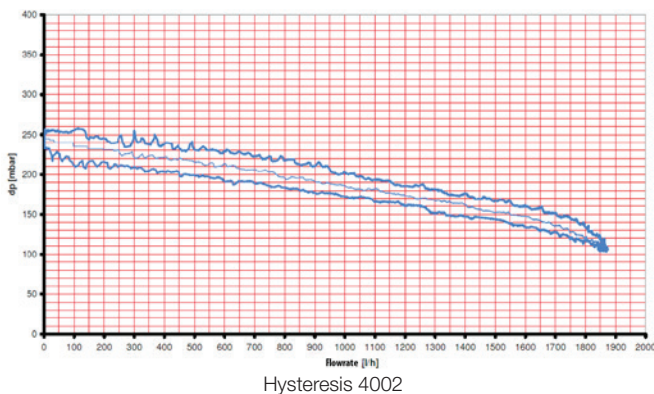
Pressure relief at the flow controller **4006**

The lower the resisting forces, the better the performance of the controller. Such regulators have a small hysteresis (a deviation from setpoints) over the entire valve stroke.

The pressure relief at the valve seat is possible due to the constructive characteristics of the flow through and around the seat. Therefore the the differential pressure on the upper and the lower parts is equal. Regulation with an actuator is economically efficient, because an actuator with less thrust power is significantly cheaper to purchase.

## Differential pressure controller with presetting

HERZ differential pressure controllers are available in sizes DN15 to DN50 and come with a set range of 5 to 30 kPa or 25 to 60 kPa. The valve is set with reference to the flow chart and the setting is clearly shown by the sticker on the body. It is common for the HERZ differential pressure controllers, that the required proportional band is extremely small, therefore the controllers are unparalleled in terms of precision and speed. All of the valve types come with male thread and a comprehensive range of union connections for different types of pipe, for easy servicing and saving costs.



## Flow controller

The flow controller can be used in the renovation of one-pipe heating systems. **HERZ 4001** can help to achieve greater energy savings in refurbishment of vertical pipe

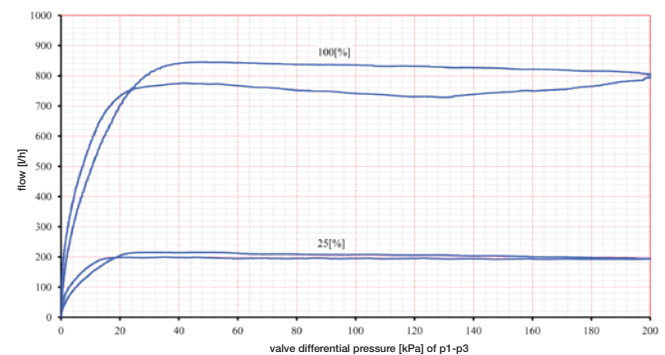
systems or rather, allows the consumption to be reduced after the thermal renovation of a building.

HERZ flow controller **4006** is used for the regulation of constant volume from 400 to 4000 l/h.

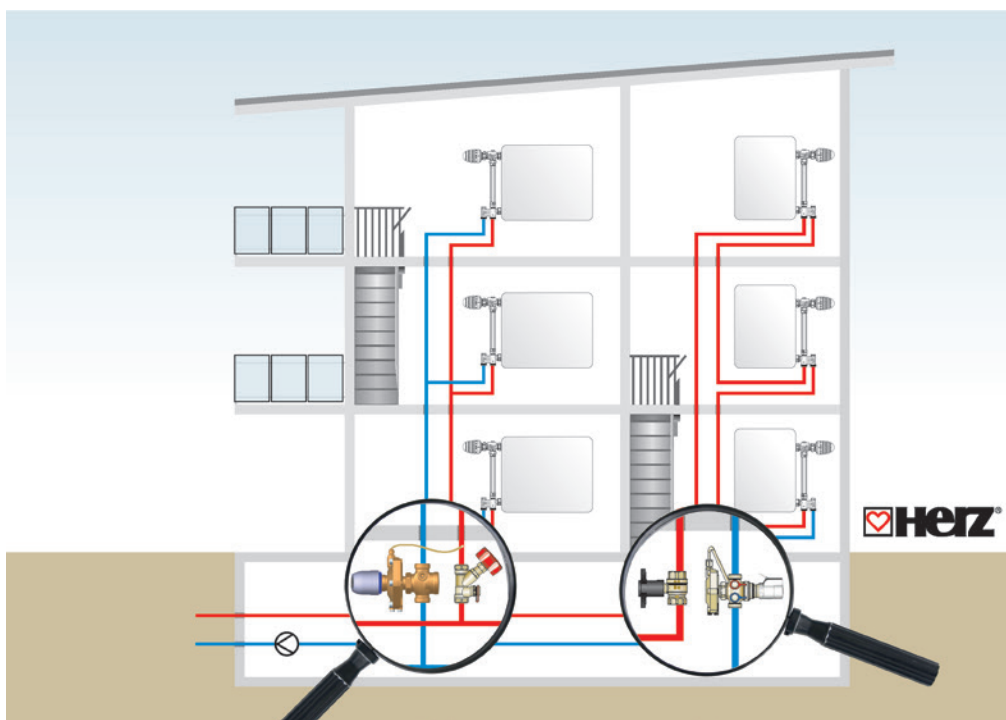
The body of the controller and the parts in contact with water are made of dezincification-resistant brass.

## Air conditioners and large heating systems

Climate control ceilings, air heaters, floor or wall heating systems and fan coils can be equipped with a HERZ volume controller. These dynamic control valves should be installed in pipe branches or in zones. By means of automatic and fully automatic mass flow controllers this system enables the highest system efficiency.



Hysteresis for 25% and 100% flow for the flow controller 4001



Left line shows two-pipe heating system with differential pressure controller, right line shows one-pipe heating system with flow controller

## HERZ Actuators



HERZ Standard Actuators (1 **7708** 31, 1 **7708** 37, 1 **7708** 38, 1 **7708** 39, 1 **7708** 52, 1 **7708** 53) are thermoelectric valve drives for opening and closing valves on heating circuit distributors of concealed floor heating and cooling systems. The main field of application is the energy-efficient individual room

temperature control in the range of building management systems and home automation. The Actuator is controlled according to model either by a 24 V or a 230 V room thermostat with two point output.

### Technical data

- Stroke: 4.0 mm
- Available in normally closed (NC: 1 **7708** 52, 1 **7708** 53, 1 **7708** 38, 1 **7708** 39) or normally open (NO: 1 **7708** 31)
- Power consumption 1 Watt
- Complete compatibility to Valve-Adapter-System
- Simple snap-on installation
- 360° installation position
- Patented 100% protection against leaking valves
- First-Open function (for NC only): In its delivery condition, the Actuator is open when due to the First-Open function. This enables hydraulic balancing (without dismantling all actuator) and heating operation during the initial construction phase even when the electric wiring is not yet complete. As soon as power is first time applied the actuator works normally.
- Adaptation check on valve
- Alignment aid on the valve
- Compact size, small dimensions
- Noiseless and maintenance-free
- Certified by TÜV

### Function

The actuator mechanism of the HERZ Actuator uses a PTC resistor-heated wax element and a compression spring. The wax element is heated by applying the operating voltage and moves the integrated ram. The force generated by the movement is transferred onto the valve spindle and thus opens and closes the valve.

## HERZ Actuator End Switch

HERZ Actuator End Switch (1 **7708** 37) is a thermoelectric valve drive for opening and closing valves and small valves used in the scope of HVAC technology. The integrated micro switch with floating contact allows direct operation of a pump or fan control unit. The Actuator End Switch is controlled according to model by a 230 V room thermostat with two point output.

### Technical data

- Integrated switch with floating contact

- Stroke: 4.0 mm
- Available in normally closed (NC: 1 **7708** 37)
- Power consumption 1 Watt
- Complete compatibility to Valve-Adapter-System
- Simple snap-on installation
- 360° installation position
- Patented 100% protection against leaking valves
- First-Open function (for NC only): In its delivery condition, the Actuator is open when due to the First-Open function. This enables hydraulic balancing (without dismantling all actuator) and heating operation during the initial construction phase even when the electric wiring is not yet complete. As soon as power is first time applied the actuator works normally.
- Adaptation check on valve
- Alignment aid on the valve
- Compact size, small dimensions
- Noiseless and maintenance-free
- Certified by TÜV

### Function

The actuator mechanism of the HERZ Actuator with end switch uses a PTC resistor-heated wax element and a compression spring. The wax element is heated by applying the operating voltage and moves the integrated ram. The force generated by this movement is transferred on the valve lifter and opens and closes the valve. The integrated micro switch allows the use of its switching signal depending on the opening of the valve.

## HERZ Actuator Proportional

The HERZ Actuator Proportional 5 mm (1 **7990** 31) and Proportional 6,5 mm with valve path recognition (1 **7990** 32) is a thermoelectric actuator for the control of heating and cooling systems in direct proportion to the applied control voltage. The control of the actuators is performed by a 0-10 V DC signal via a central DDC system or by a room thermostat. Principal area of application is the building management systems range. These are equipped with valve path recognition (1 **7990** 32) that automatically registers the valve path for an optimum use of the active control voltage range. This guarantees an even more precise control of all valves.

### Technical data

- 5 mm (1 **7990** 31) or 6.5 mm (1 **7990** 32) stroke
- Designs "normally closed" (NC) and "normally open" (NO)
- Power consumption of only 1.2 Watt
- Control by a 0-10 V DC signal
- Optionally with (1 **7990** 32) or without (1 **7990** 31) valve path recognition
- Short response times, resulting in improved control response
- Closing point verification and possible adaptation during operation
- Complete compatibility to the valve adapter system
- Simple plug-in installation
- 360° installation position
- Patented 100% protection in case of leaking valves



- First-Open function (for NC only): In its delivery condition, the Actuator is open when due to the First-Open function. This enables hydraulic balancing (without dismantling all actuator) and heating operation during the initial construction phase even when the electric wiring is not yet complete. As soon as power is first time applied the actuator works normally.
- Adaptation check on the valve
- Plug-in connecting cable
- Compact size, small dimensions
- All-round function display
- Noiseless and maintenance-free
- High functional safety and long expected service life
- Certified by the TÜV

### Function

The actuator mechanism of the HERZ Actuator uses a PTC resistor-heated elastic element and a compression spring. The elastic element is heated by applying the operating voltage and moves the integrated plunger. The force generated by this movement is transferred to the plunger, thus opening or closing the valve.

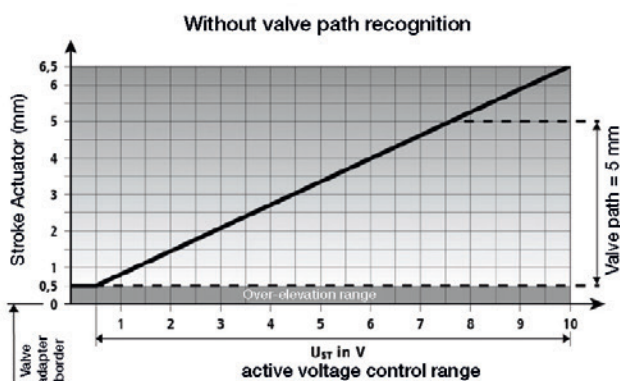
### NO/NC

After switching on the operating voltage, the first-open function is unlocked. Directly after that, the actuator automatically detects the valve closing point and switches to regular operation. This process guarantees an optimum adaptation of the actuator to the valve. If a control voltage is applied after the closing point detection, the actuator opens the valve evenly with the plunger movement after the dead time has elapsed. An internal wear-free position detection

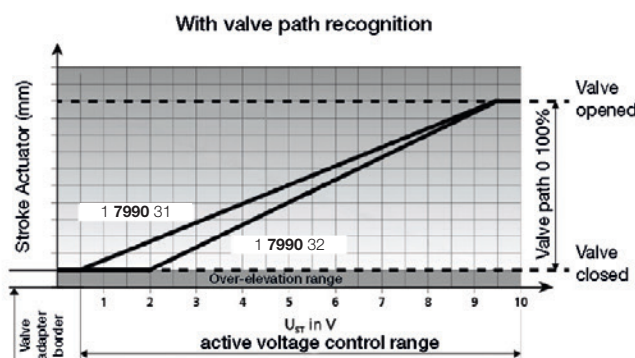
controls the temperature required for the maximum stroke (minus over-elevation) and consequently the energy intake of the elastic element. No excess energy is stored inside the elastic element. If the control voltage is reduced, the electronic control system immediately adapts the heat input to the elastic element. In the range of 0 – 0.5 V (depending on the model) the actuator remains in a quiescent state in order to ignore ripple voltage occurring in long cables (rpm). The closing force of the compression spring is matched to the closing force of commercially available valves and keeps the valve closed when de-energised.

In the NO model the valve is kept open whilst the actuator is switched off. After switching on the operating voltage, the actuator automatically detects the valve closing point and switches to regular operation. This process guarantees an optimum adaptation of the actuator to the valve. If a control voltage is applied after the closing point detection, the actuator opens the valve evenly with the plunger movement after the dead time has elapsed. An internal wear-free position detection controls the temperature required for the maximum stroke (minus over-elevation) and consequently the energy intake of the elastic element. No excess energy is stored inside the elastic element. If the control voltage is reduced, the electronic control system immediately adapts the heat input to the elastic element. In the range of 0 – 0.5 V (depending on the model) the actuator remains in a quiescent state in order to ignore ripple voltage occurring in long cables (rpm). The closing force of the compression spring is matched to the closing force of commercially available valves and keeps the valve closed when de-energised.

### Valve path recognition



If a 6,5 mm actuator without valve path recognition is used for valves with an actuator stroke of 5 mm, the actuator travels without load for certain control voltages.

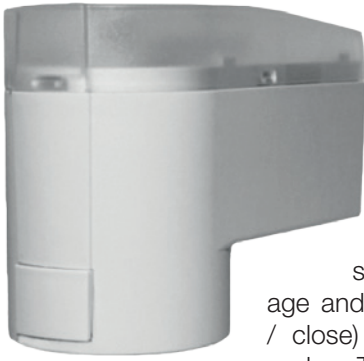


For the variant with valve path recognition, the actuator calculates the valve path and automatically adapts the active control voltage range to this. This allows an even more precise control of the valve and prevents the actuator from travelling without load. The complete voltage spike of the thermostat is used for flow control purposes.



## HERZ Actuator

HERZ electromotive actuator is a valve drive for opening and closing valves on heating circuit distributors of concealed floor heating and cooling systems.



The actuator has a backlight LCD screen to display the current stroke of the control voltage and operating modes (open / close) and the possible error codes. The actuator is delivered

with a pluggable connection cable as well as in emergency cases by hand adjustable stroke. The main field of application is the energy-efficient individual room temperature control in the range of building management systems and home automation.

### HERZ Actuator DDC 0-10 V

The control of HERZ Thermomotors 0-10 V (1 7708 42) is performed via 0-10 V DC-Signal of a central DDC-System.

### HERZ DDC / 3-point actuator

The DDC / 3-point actuator is either in 24 V (1 7708 40) or in 230 V (1 7708 41) available.

### Function

The adjusting mechanism of the thermo-motor uses a step motor, a micro-controller and a transmission. The direction of movement caused by the force is transmitted to the valve plate and thus opens or closes the valve. The actuator is mounted directly to the upper part of the small valve. The drive is delivered with retracted valve pressure plate.

### Technical data DDC / 3-point

- 24 V for AC- and DC- operation suitable (1 7708 40, 1 7708 42)
- Stroke max. 8,5 mm
- Max. actuating power 200 N
- LCD display (stroke, control voltage, failure codes)
- Function signal LEDs
- Back signal for BMS-function control
- 24-hour valve protection
- stepless modulating valve positioning
- Position presetting (0 to 100 %)
- Short response times, resulting in improved control response
- Motorized micro-controller system allows high energy efficiency
- Self-locking gear (power-off) in all positions
- Automat stop system when the valve reaches the end-position
- Manual stroke adjustment
- Very low energy consumption in Standby-mode
- Simple snap-on installation
- 100% protection against leaky valves (IP 54)
- 360° installation position
- Plug-in connecting cable
- Noiseless und maintenance-free

## F 4006

Combi valve, flow controller with integrated control valve, is primarily designed to control the flow of circulation water in district heating and HVAC systems. The flow controller is operated by electric actuators F 7712 81 - 98 which are controlled by a microprocessor controller.

The limitation and flow regulation is realized by means of the pressure actuator with a diaphragm and integrated control valve. The control valve cone is controlled by the electric actuator and limited by the adjustable nut. Changing the position of the adjustable nut increases or decreases the maximum flow through the valve.

The pressure actuator with a diaphragm is connected to the valve flow port via a capillary pipe. The pressure difference acts through the impulse tube on the control diaphragm and flow controller cone. Each pressure change on the valve upstream port, causes the movement of the control diaphragm and flow controller cone and causes increase or decrease of the valve orifice.

Differential pressure across the restrictor is kept constant,  $\Delta p_w = 0,2$  bar.



Flanged  
Combi Valve  
DN 15 - DN 125

## Type overview F 4006

F 4006 (PN 16)			
DN	$k_{vs}$ (m <sup>3</sup> /h)	Stroke (mm)	Type
15	2,5	10	F <b>4006</b> 71
15	4	10	F <b>4006</b> 72
25	6,3	14	F <b>4006</b> 73
25	8	14	F <b>4006</b> 93
32	12	14	F <b>4006</b> 74
40	20	14	F <b>4006</b> 75
50	32	14	F <b>4006</b> 80
65	50	16	F <b>4006</b> 81
80	80	18	F <b>4006</b> 82
100	125	21	F <b>4006</b> 83
125	180	21	F <b>4006</b> 84

F 4006 (PN 25)			
DN	$k_{vs}$ (m <sup>3</sup> /h)	Stroke (mm)	Type
15	2,5	10	F <b>4006</b> 90
15	4	10	F <b>4006</b> 91
25	6,3	14	F <b>4006</b> 92
25	8	14	F <b>4006</b> 53
32	12	14	F <b>4006</b> 94
40	20	14	F <b>4006</b> 95
50	32	14	F <b>4006</b> 96
65	50	16	F <b>4006</b> 97
80	80	18	F <b>4006</b> 98
100	125	21	F <b>4006</b> 99
125	180	21	F <b>4006</b> 10

## Technical data - valve

Nominal diameter	DN	15	15	25	25	32	40	50	65	80	100	125
$K_{vs}$ -value	(m <sup>3</sup> /h)	2,5	4	6,3	8	12	20	32	50	80	125	180
Min. flow rate	(m <sup>3</sup> /h)	0,25	0,4	0,6	0,8	1,3	2,6	3,2	6	8	12,6	16
Max. flow rate	(m <sup>3</sup> /h)	1,3	2	3	4	6,5	11	16	28	40	63	80
Cavitation factor Z		0,6		0,55				0,45		0,40		
Nominal pressure	PN (bar)	16 (F 4006 71 - 84) or 25 (F 4006 90 - 10)										
Medium		water / water with Ethylene and propylene glycol can be mixed to a ratio of 25 - 50 vol. [%]										
Max. medium temperature	(°C)	130										
Type of connection		Flange (EN 1092-2)										
Approx. valve weight	(kg)	7	7	10	10	13	15	20	44	56	73	95
Valve body material		GG-25 (F 4006 71 - 84) or GGG 40.3 (F 4006 90 - 10)										
Gasket material		FPM (ISO1629)										
Cones, stem, seat material		WN1.4057, WN1.4404, WN1.4021										

## Technical data - pressure actuator

Nominal diameter	DN	15	25	32	40	50	65	80	100	125	
Effective surface	(cm <sup>2</sup> )	80				300					
Max. pressure difference	(bar)	10 (PN 16) or 15 (PN 25)									
Diff. pressure across the restrictor	(bar)	0,2									
Diaphragm material		EPDM									
Impulse tube		Ø6			Ø8		Ø10				
		WN1.4301									
Approx. weight	(kg)	2				7					

## Dimensions

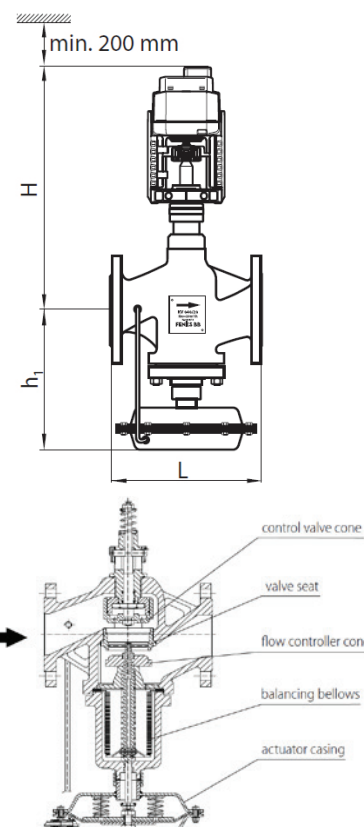
DN (nominal diameter)	(mm)	15	25	32	40	50	65	80	100	125
L (distance between flanges)	(mm)	130	160	180	200	230	290	310	350	400
h1 (height up to the flange axis)	(mm)	170	195	210	220	235	355	395	435	480
H (height of the valve with actuator)	(mm)	245	265	280	285	325	435	450	455	480

## Installation

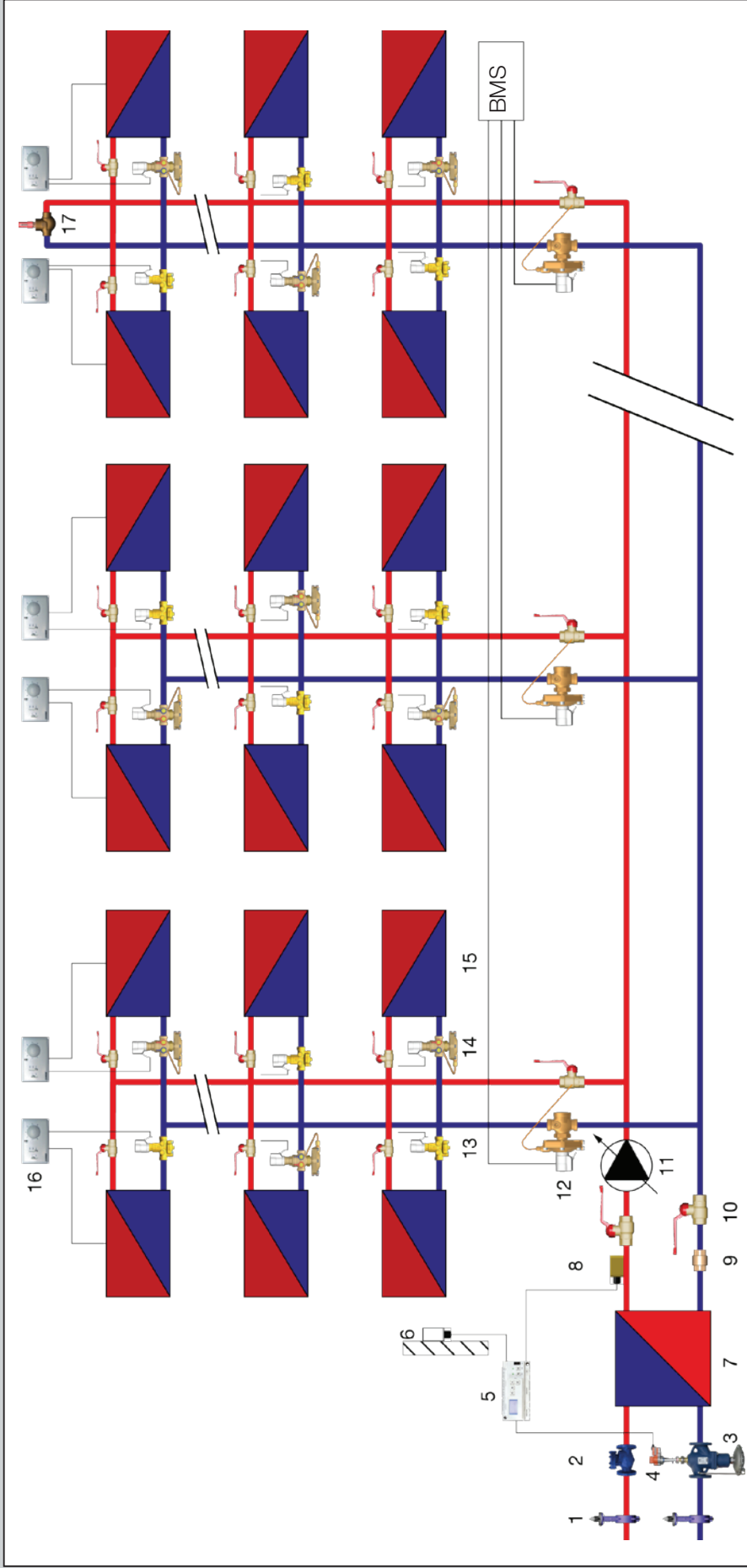
Recommended installation: Install the valve in the return flow pipe of the system. Electric actuator should be placed in upward position, at  $\pm 45^\circ$  angle to the vertical pipe axis. Permissible installation: The valve should be installed in horizontal supply flow pipes of the system. The valves must be installed for the correct application using clean fittings. A HERZ strainer (**4111**) should be fitted to prevent impurities.

Therefore an installation is recommended.

For installation, the local and international rules and standards have to be followed.



# Example application scheme



## Caption

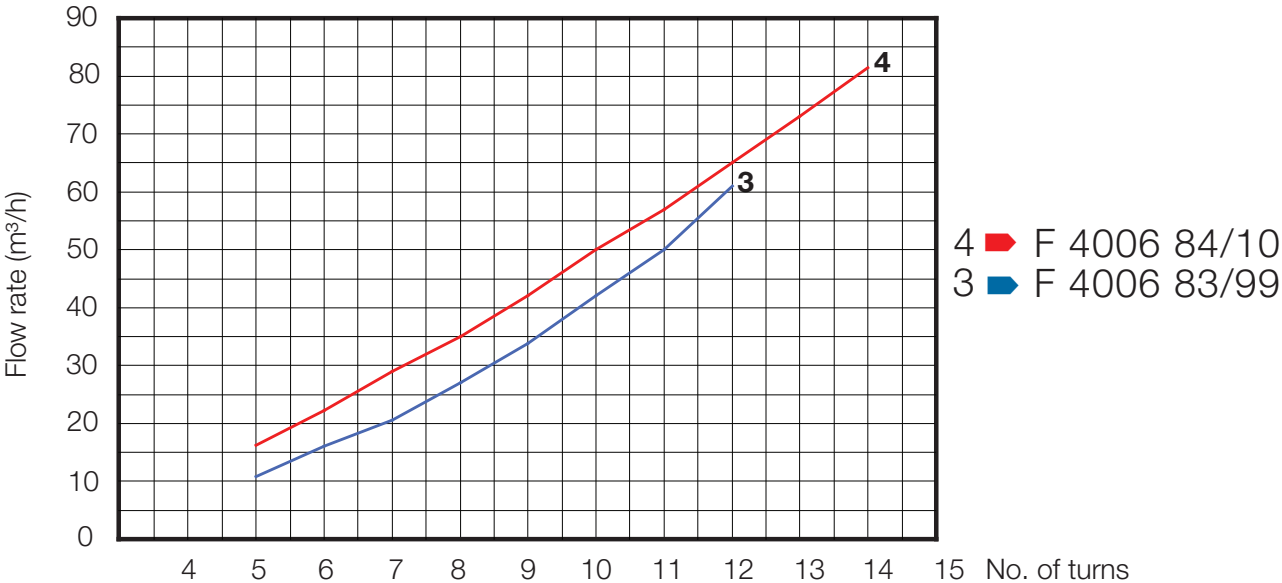
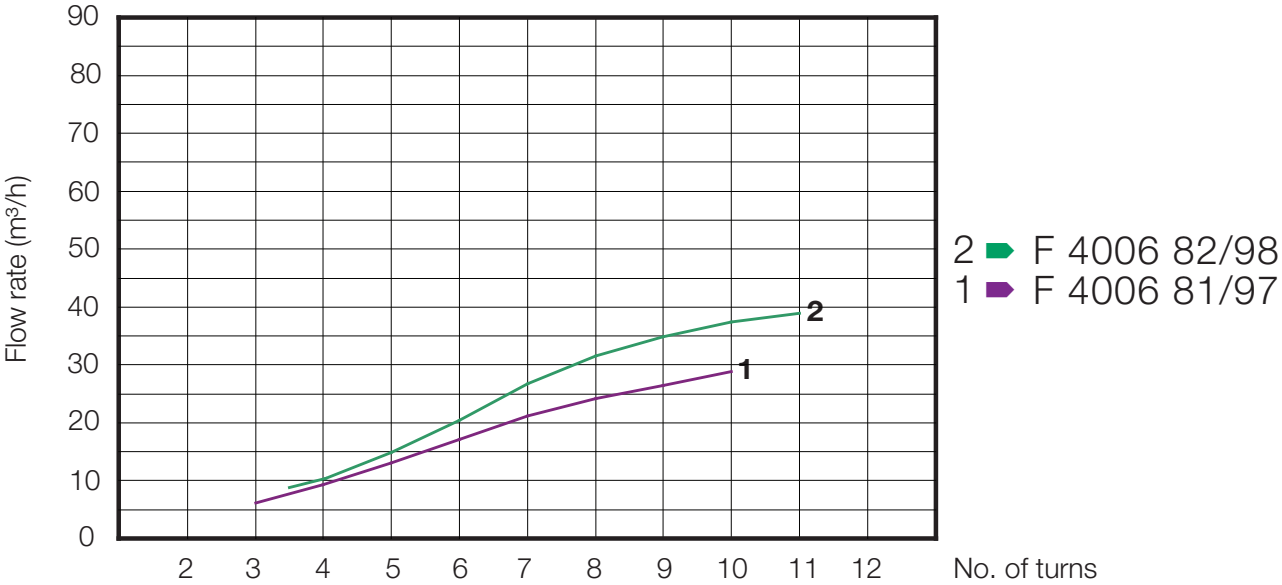
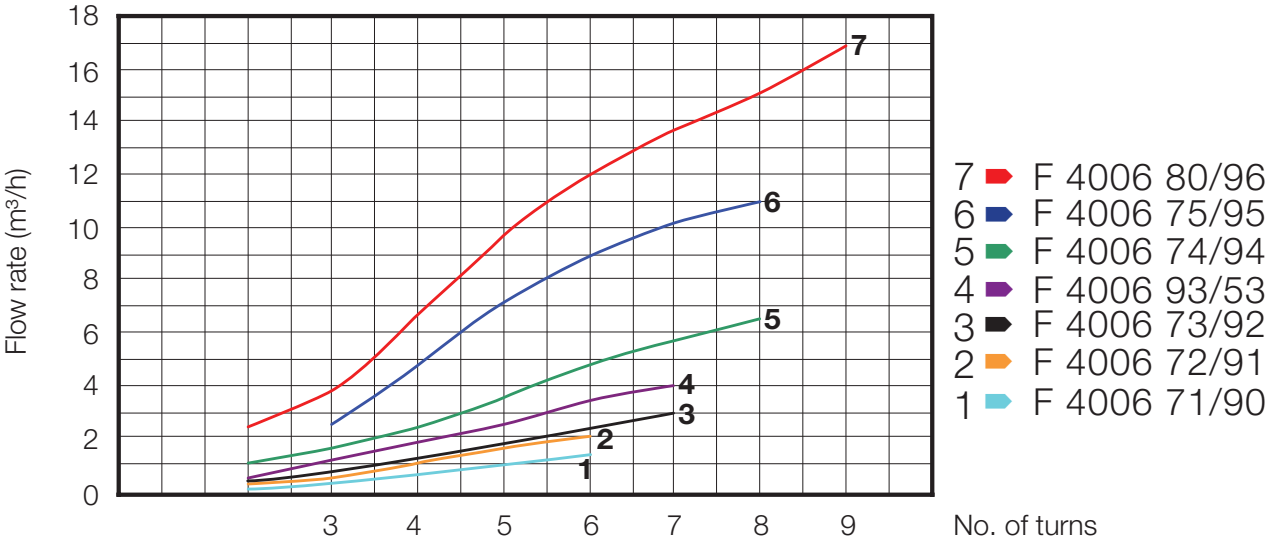
1	4219
2	2622
3	F 4006
4	F 7712
5	7793 30

6	7793 60
7	Heat exchanger
8	7793 4x
9	2622
10	2100

11	Variable speed pump
12	4002 + 7711
13	4006 SMART + 7711
14	4006 + 7711

15	Heater
16	7795
17	4004

### Flow charts F 4006





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