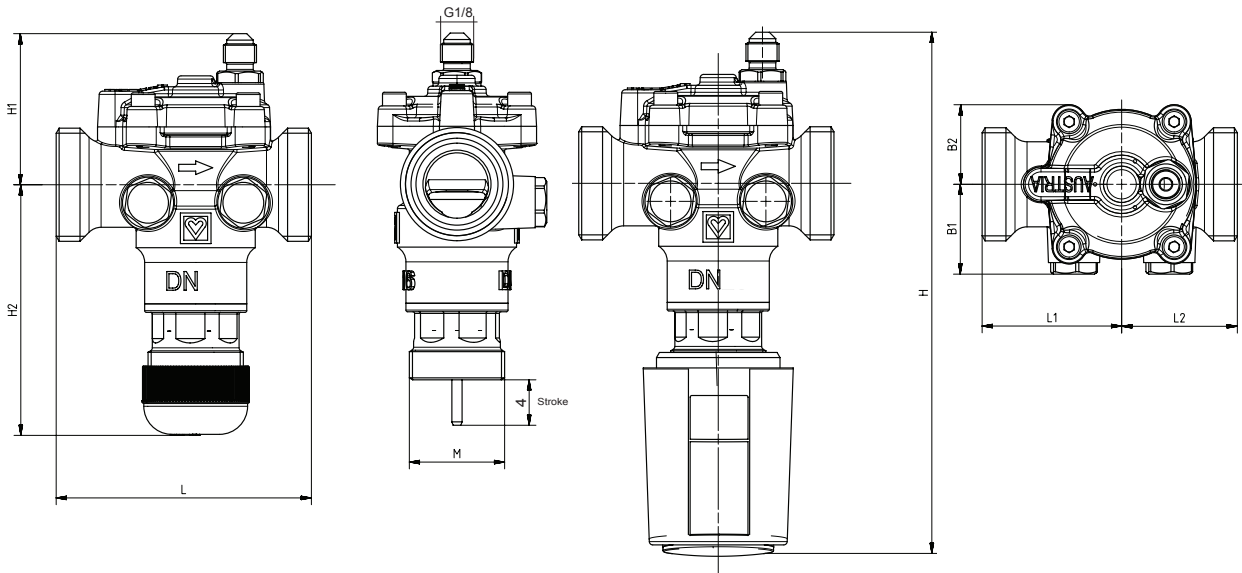


# Differential pressure control valve with integrated control, shut-off and zone valves

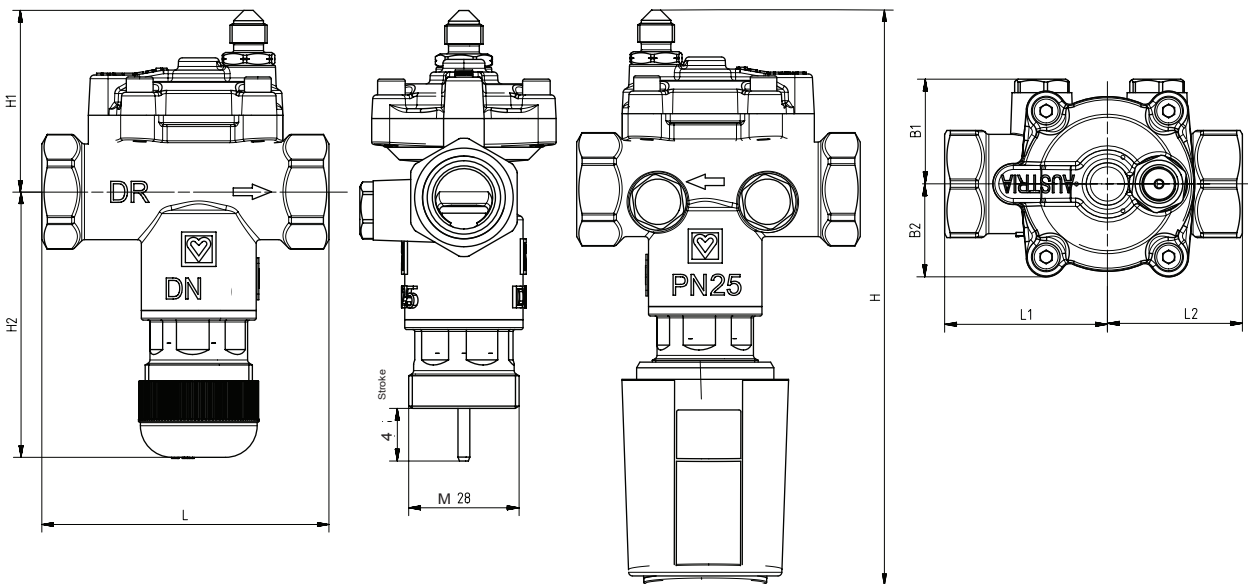
Data sheet 1 4012 2X, 1 4212 2X, Issue 1120

Dimension in mm

1 4012 2X



1 4212 2X



**Order numbers**

Order number	DN	Connection thread		L, mm	H1, mm	H2, mm	H*, mm	B1, mm	B2, mm	L1, mm	L2, mm	M, mm
1 4012 20	15 LF	M	G 3/4"	75	47	69	154	26	23	41	34	28
1 4012 21	15	M	G 3/4"	75	47	69	154	26	23	41	34	28
1 4012 22	20	M	G 1"	75	44	73	154	26	23	41	34	28
1 4212 20	15 LF	F	1/2"	75	47	67	154	26	23	41	34	28
1 4212 21	15	F	1/2"	75	47	65	154	26	23	41	34	28
1 4212 22	20	F	3/4"	103	44	71	154	26	23	41	34	28

\* with 1 7708 XX actuator

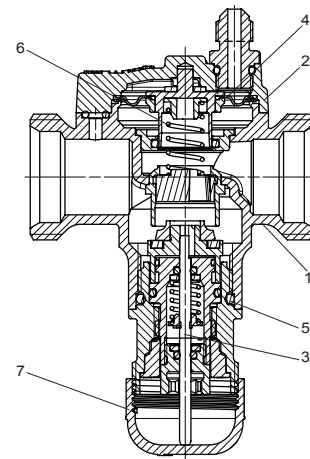
**Technical parameters**

Nominal diameter	15 LF	15	20
Flowrate at setting 100%	80 l/h	415 l/h	885 l/h
Max. differential pressure	400 kPa		
Min. differential pressure $\Delta P_{Strang}$	10 kPa		
Nominal maximal pressure	PN16		
Control valves characteristic	Linear		
Medium temperature max	130 °C		
Medium temperature min	2 °C (pure water); - 20 °C (antifreeze)		
Stroke	4 mm		
Regulation range	10% - 100%		
Connection Actuator	M28*1,5		
Max. Pressure at zero load	25 kPa		

The integrated control insert is used for modular control via an actuator. Various actuators can be used. (See paragraph: Accessories and spare parts).

**Materials**

N	Description	Materials
1	Body	DZR Brass CC770S
2	Membrane body	Brass CW602N
3	Pin	Edelstahl 14301
4	Membrane	EPDM
5	O-Ringe	EPDM
6	Spring	Spring steel
7	Protection cap	Plastic



Water purity in accordance with the ÖNORM H5195 and VDI 2035 standards. Ethylene and propylene glycol can be mixed to a ratio of 25 - 50 vol. [%].

HERZ compression adapters for copper and steel pipes, allowable temperature and pressure ratings according to EN 1254-2 1998 Table 5. HERZ plastic pipe connections max. operating temperature 95 ° C and max. operating pressure 10 bar, if approved by the pipe manufacturer.

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

Pursuant to 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.

#### ☑ Disposal

Disposal must comply with local and current legislation. Prior to the assembly, maintenance and disassembly, the system must be depressurized, cooled down and emptied. Only authorized, trained and qualified personnel may perform activities of assembly, start-up, operation and disassembly of the equipment. Before disposal the valve must be dismantled into groups of structural components and delivered to authorized waste recycling organizations in order to preserve the environment. Local legislations must be obeyed when disposing of the components.

#### ☑ Installation

HERZ differential control valve VS-TS has to be mounted in return line in the direction of the arrow on the valve body. The impulse pipe should be installed between the valve and supply line via 1/4 inch nipple (included in delivery). Alternatively, impulse pipe can be connected to commissioning valve, such as 4017 or 4217. The valves must be installed for the correct application using clean fittings. A HERZ strainer (4111) should be fitted to prevent impurities

#### ☑ Applications

HERZ differential control valve VS-TS is designed to be used for heating and cooling application - radiator or floor heating systems. Design of this valve presumes 4 valves integrated in one: differential pressure control valve, balancing valve, zone valve, shut-off valve.

#### ☑ Sizing

The differential pressure controllers are used to stabilize the differential pressure in heating and cooling circuits, which ensures the independence of the consumer of dynamic fluctuations in the branching heating pipes.

Example:

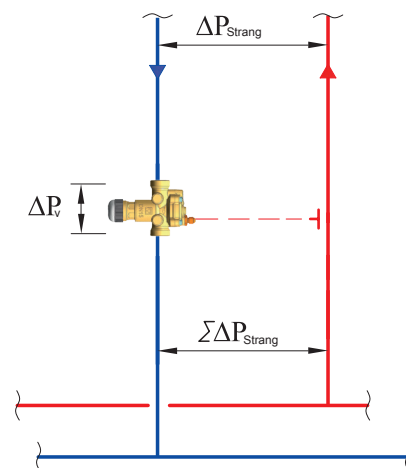
Design flow rate trough energy consumer loop:  $Q=260$  l/h.

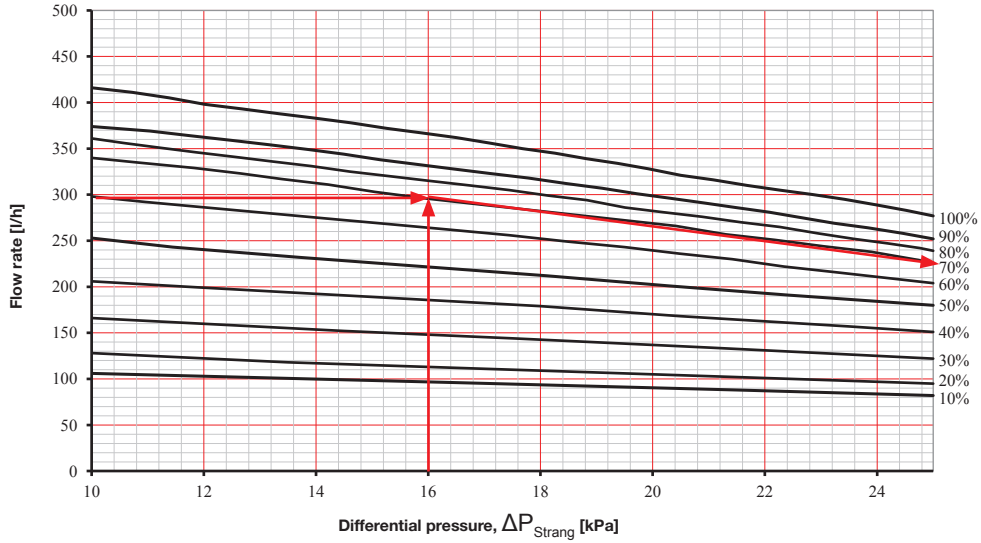
Pressure drop trough the loop at design flow:  $\Delta P_{Strang} = 20$  kPa

Solution: 1 4012 21 DN 15 is selected. Preset is according to the diagram (70%).

The valve is designed to maintain differential pressure when design flow rate is achieved.

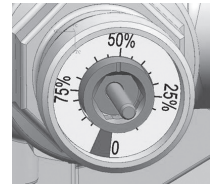
$$\Sigma \Delta P_{Strang} = \Delta P_{Strang} + \Delta P_v$$



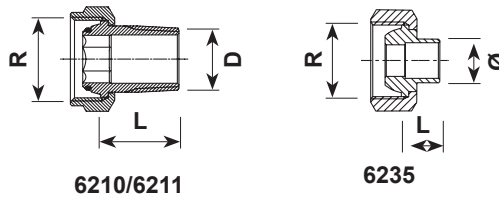


**Pre-setting**

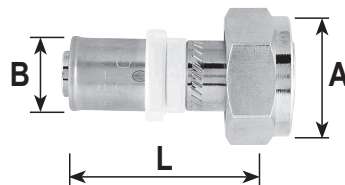
The valve setting is clearly shown in percent. The preset value can be easily adjusted with **14006 02**.



**Connection elements**



Valve dimension	Order number	R	D	ø	L
DN 15	1 6210 21	3/4	1/2	-	25
DN 15	1 6210 26	3/4	1/2	-	21
DN 15	1 6210 11	3/4	1/2	-	30
DN 15	1 6211 00	3/4	3/8	-	24
DN 20	1 6210 02	1	3/4	-	30
DN 20	1 6210 12	1	1/2	-	30
DN 15	1 6235 21	3/4	-	12	13
DN 15	1 6235 31	3/4	-	15	13
DN 15	1 6235 41	3/4	-	18	18
DN 20	1 6235 12	1	-	18	18



Valve dimension	Order number	A	B	L
DN 15	P 7014 81	G 3/4	14 x 2	50
DN 15	P 7016 81	G 3/4	16 x 2	50
DN 15	P 7018 81	G 3/4	18 x 2	50
DN 15	P 7020 81	G 3/4	20 x 2	50

## Pipe connections (with cone seal) for metal pipes

Pipe		8	10	12	14	15	16	18	22
Valve		DN 15	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15	DN 20
Nut G		3/4	3/4	3/4	3/4	3/4	3/4	3/4	1
Connection	with metallic seal	1 6274 18	1 6274 00	1 6274 01	1 6274 02	1 6274 03	1 6274 04	-	1 6273 01
Connection	with soft seal	-	-	1 6276 12	1 6276 14	1 6276 15	1 6276 16	1 6276 18	-


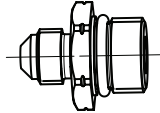
## Pipe connections (with cone seal) for plastic pipes

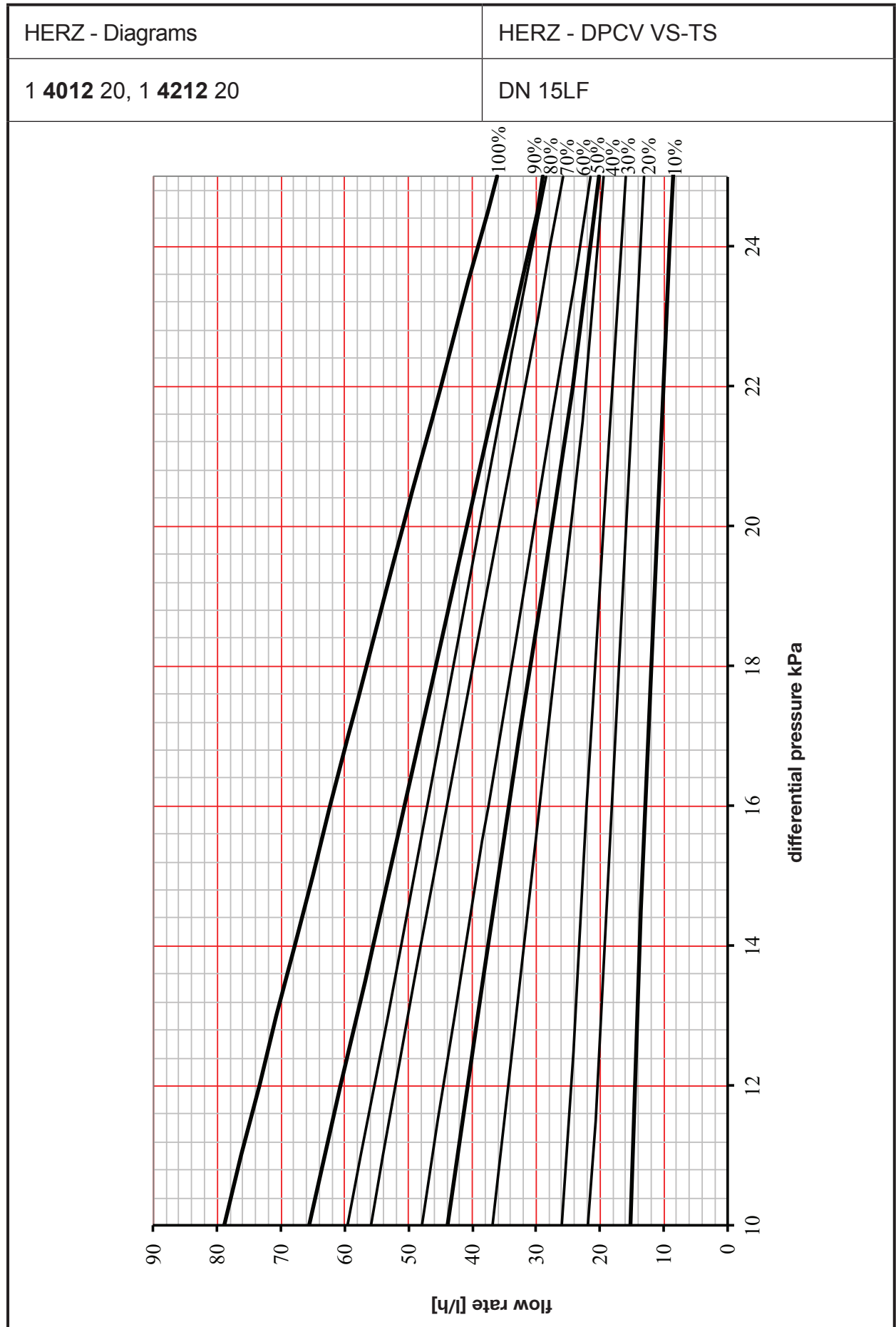
Pipe	10 x 1,3	14 x 2	15 x 2,5	16 x 2	16 x 2,2	17 x 2	17 x 2,5	18 x 2,5	18 x 2
Valve	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15
Nut G	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Connection	1 6098 18	1 6098 02	1 6098 16	1 6098 03	1 6098 12	1 6098 04	1 6098 05	1 6098 06	1 6098 07

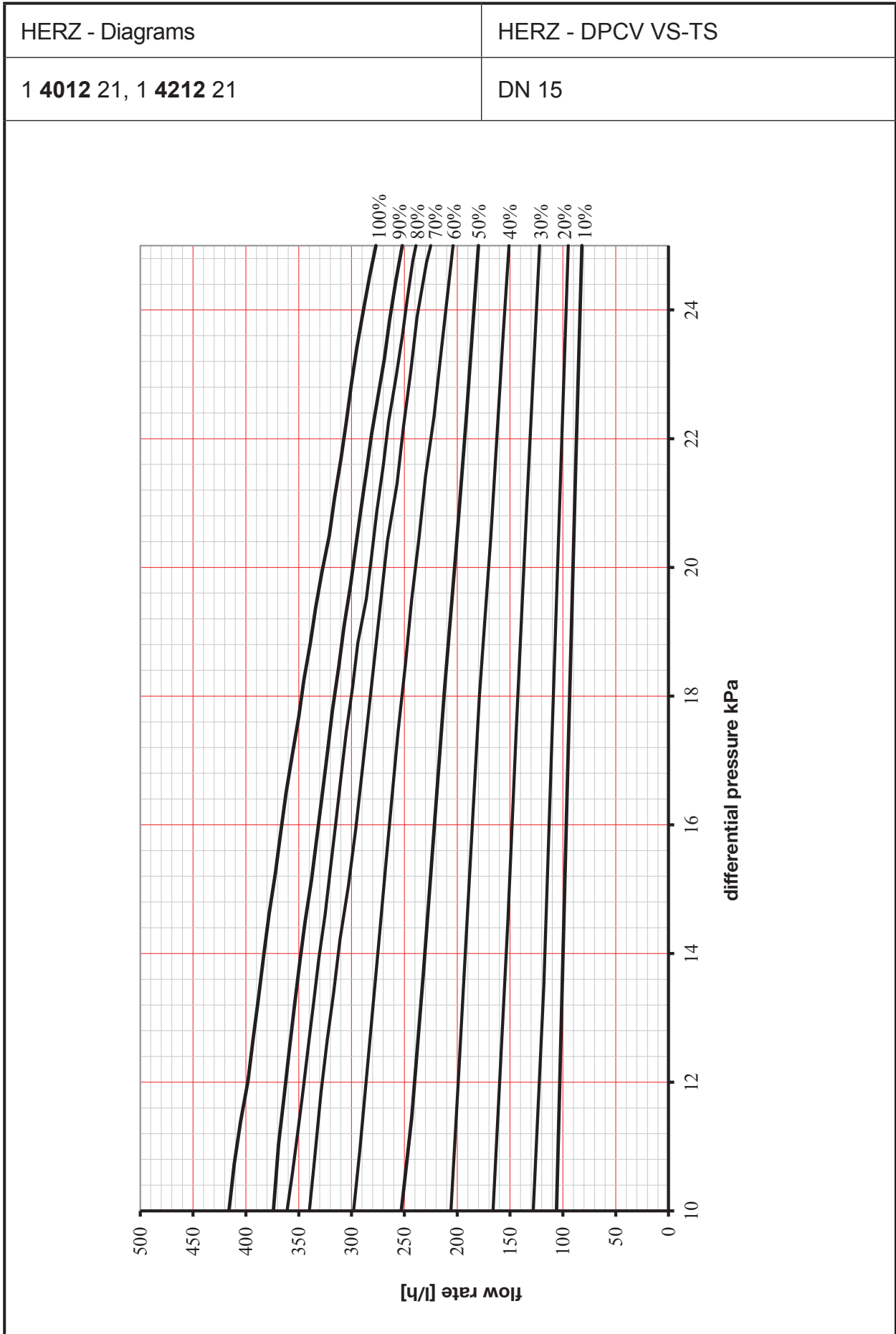
Pipe	20 x 2	20 x 3,5	20 x 2,5	25 x 3,5	26 x 3
Valve	DN 15	DN 15	DN 15	-	-
Nut G	3/4	3/4	3/4	-	-
Connection	1 6098 08	1 6098 10	1 6098 11	-	-
Valve	DN 20	-	-	DN 20	DN 20
Nut G	1	-	-	1	1
Connection	1 6198 12	-	-	1 6198 00	1 6198 01

When installing soft steel or copper pipes with a pipe wall of 1 mm or less with compression unions, we recommend the use of support sleeves (order no.: 1 0674 xx). When installing plastic pipes, suitable calibration tools are needed. Please refer to our instruction manual.

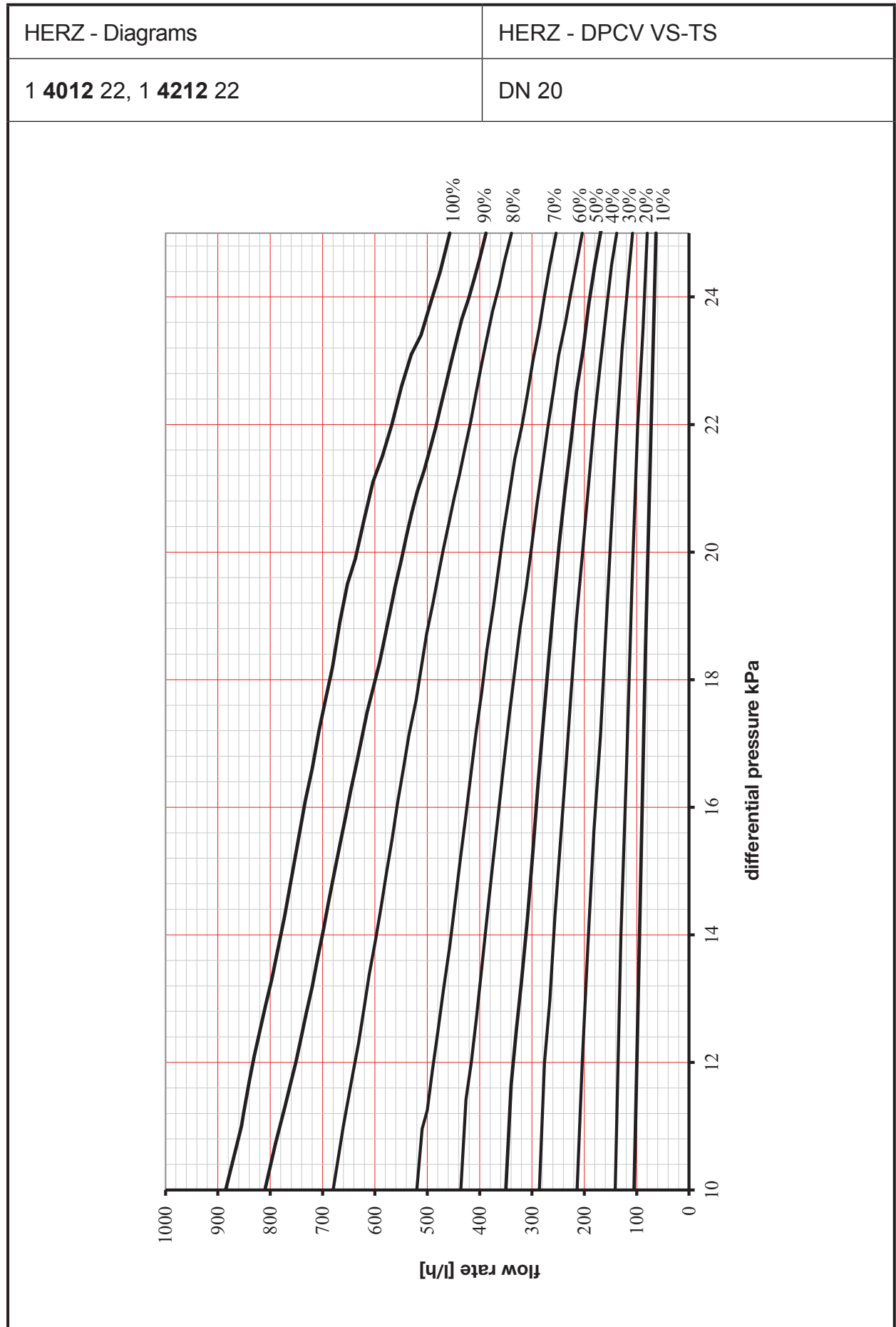
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Accessories Order number	Description	Model
1 7990 32	HERZ actuating drive for continuous control M 28 x 1.5, 0..10 V, 6.5 mm stroke, adapter M 28 x 1.5 colour blue integrated, male connector, cable loose, without limit switch. Closing force 125 N, 1.2 watt with valve stroke detection.	
1 7708 53	HERZ actuating drive for 2-point control for floor heating circuit distributors and valves M 28 x 1.5, 2-point, also suitable for pulse-pause operation, 5 mm stroke, adapter M 28 x 1.5 colour red integrated, cable fixed, without limit switch. Closing force 100 N. Power consumption 1 watt.	
1 7708 52	HERZ actuating drive for 2-point control for floor heating circuit distributors and valves M 28 x 1.5, 2-point, also suitable for pulse-pause operation, 5 mm stroke, adapter M 28 x 1.5 colour red integrated, cable fixed, without limit switch. Closing force 100 N. Power consumption 1 watt.	
1 7708 40	HERZ geared motor 3-point Adapter M 28 x 1.5 colour blue integrated, 24 V, stroke distance max. 8.5 mm, max. actuation force 200 N.	
1 7708 41	HERZ geared motor 3-point Adapter M 28 x 1.5 colour blue integrated, 230 V, stroke distance max. 8.5 mm, max. actuation force 200 N	
1 7708 42	HERZ geared motor DDC 0–10 V Adapter M 28 x 1.5 colour blue integrated, 24 V, stroke distance max. 8.5 mm, max. actuation force 200 N.	
1 7708 46	HERZ geared motor DDC 0–10 V Adapter M 28 x 1.5 colour blue integrated, 24 V, stroke distance max. 8.5 mm, max. actuation force 200 N. With valve port detection and feedback channel.	
1 4007 79	Capillary for differential pressure control valve, 1 m, 1/8" G x 1/4" G.	
1 0269 19	Connection nipple for capillary 1/8" x 1/4"	



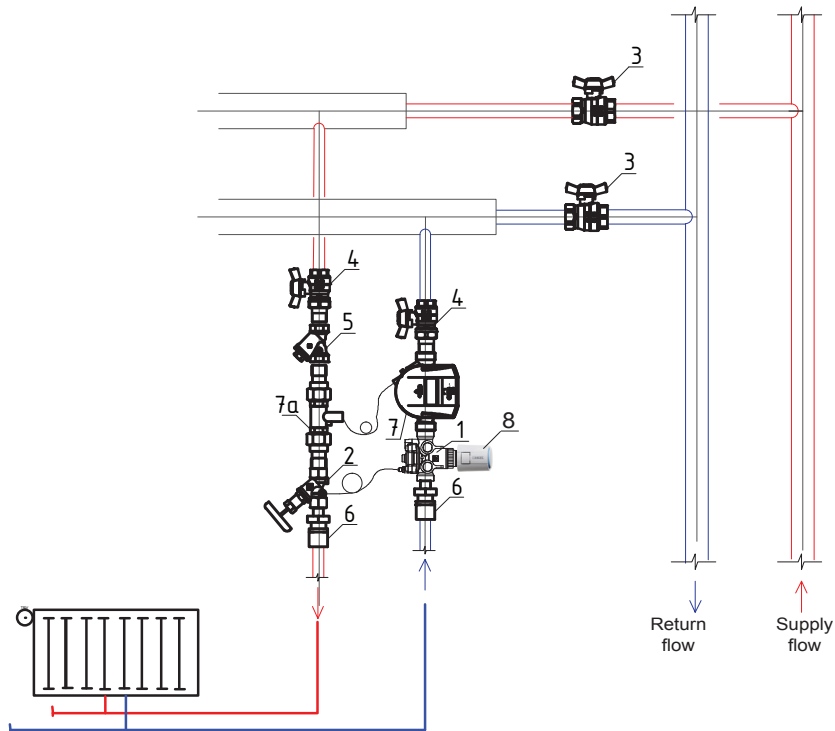




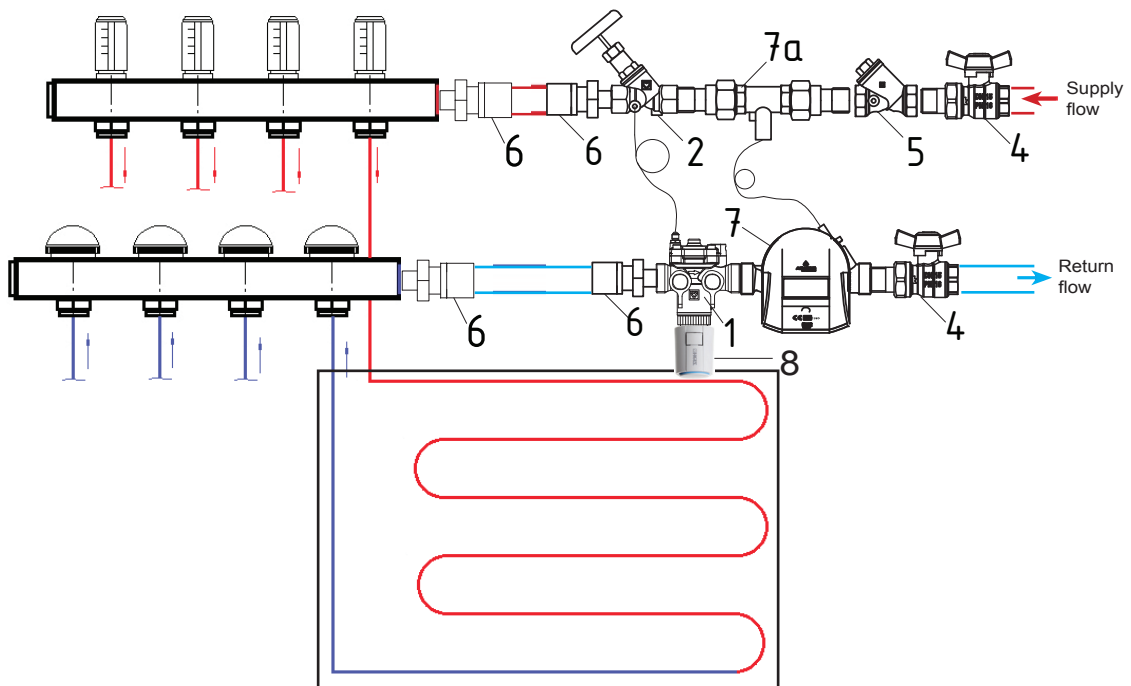


☑ Examples of systems with differential pressure control valve VS-TS with integrated control, shut-off and zone valves

1) Installation plan with differential pressure control valve VS-TS for radiator heating



2) Installation plan with differential pressure control valve VS-TS for floor heating



- 1 - HERZ differential pressure control valve **4012** VS-TS with integrated control, shut-off and zone valves;
- 2 - HERZ shutoff valve 1 **4115** 1X, 1 **4125** 7X;
- 3 - HERZ ball valve;
- 4 - HERZ ball valve;
- 5 - HERZ strainer 1 **2662** 0X;
- 6 - HERZ fitting for plastic pipes;
- 7/7a - compact heat meter with connector and T-piece for mounting a temperature sensor;
- 8 - HERZ actuating drive