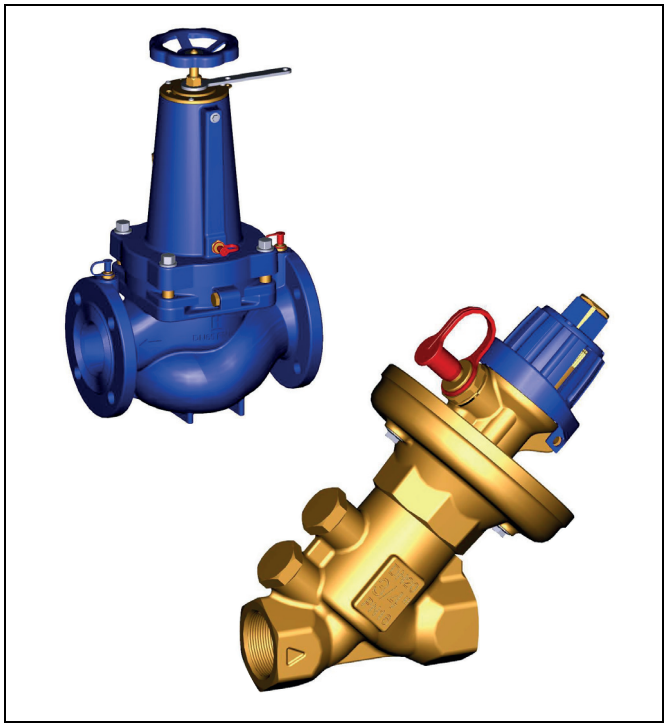
Honeywell

V5001P

Kombi-Auto
Differential Pressure Control Valve

Product specification sheet



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Application

The V5001P Kombi-Auto differential pressure control valve is used to maintain automatically a hydronic balance in residential or commercial hydronic heating and cooling systems. It shall be installed in the return pipeline.

It is used in systems with variable volume flows, for example two-pipe heating systems, and creates a hydronic balance by keeping differential pressure over consumers at a constant preset level even under changing flow or pump pressure conditions, for example in part load states.

Hydronic balance is a significant requirement for efficient operation of a hydronic system. In an unbalanced system under- or oversupply of energy to individual circuits or heat exchangers can occur. Apart from correct selection of radiator valves, regulation of individual circuits is necessary and in some countries required by national standards or regulations.

Special Features

- Automatic balancing of differential pressure
  - Highest energy saving potential due to efficient energy transfer and minimised pump speed
  - Lower noise emission on control valves
  - High authority over the control valves
  - Dividing systems into pressure independent zones
  - No complex calculation needed for selection
  - No balancing method needed for commissioning
- Wide range of application
  - Sizes DN15 up to DN100
  - Wide pre-setting ranges
  - Very high flow rates
- Easy commissioning
  - Pre-setting with visual Δp-scale in kPa
  - Pre-setting by hand without the need of tools
  - Pre-setting lead sealable
  - Removable insert for installation in tight spaces
  - Insulation shells up to DN50 included
- Maintenance friendly
  - Concealed shutoff function up to DN50
  - Various measuring possibilities for problematic applications

Valve Efficiency

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Technical Data

	V5001PY	V5001PF
Nominal Size	DN15 – DN50	DN65 – DN100
Housing	Rotguss	EN-GJL-250
Medium	Water or water-glycol mixture, quality to VDI 2035 (up to 50% Glycol)	
pH-value	8...9.5	
Operating temperature	-20...130°C (-4...266°F)	
Operating pressure	max. 16 bar (232 psi)	
Pump pressure	min.: Δpc + 10kPa ⇒ Q_{maxL} min.: Δpc + 20kPa ⇒ Q_{maxH} max: 6 x Δpc	min: 1.5 x Δpc max: Δpc + 350 kPa
Differential pressure pre-setting range	5…35kPa or 30...60kPa	20…100kPa or 40...200kPa
Factory setting	5kPa or 30kPa	20kPa or 40kPa
Impulse tube	0.8m	1.0m
Flow values	see table on page xxx	see table on page xxx
Control characteristic	see page xxx	see page xxx

Construction

The V5001PY Kombi-Auto (DN15 – DN50) consists of:

- Valve housing DN15 to DN50 with internal threads to DIN EN 10226-1 for threaded pipe and two G1/4" internal threads for installation of pressure test valves, equipped with blind stops
- Valve insert with diaphragm assembly and impulse tube connection
- Handwheel assembly with digital display of presetting value, locking ring and shutoff screw
- Impulse tube with compression fittings and adapter for connection to V5001S Kombi-S shutoff valve in the supply
- SafeCon™ pressure test valve at the membrane with colour marked dust cap
- Insulation shell with DN size and Honeywell marking
- Installation and setup instructions

The V5001PF Kombi-Auto (DN65 – DN100) consists of:

- Valve housing DN65 to DN100 with flanges to EN 1092-2 and two G1/4" equiped with SafeCon™ pressure test valves
- Valve insert with diaphragm assembly and impulse tube connection
- Handwheel
- Impulse tube with compression fittings and adapter for connection to V6000 Kombi-F Kombi-S balancing valve in the supply
- SafeCon™ pressure test valves at the membrane and on inlet and outlet with colour marked dust cap
- Installation and setup instructions

Materials

V5001PY Kombi-Auto (DN15 – DN50):

- Valve housing made of red bronze, lead content <3%
- Blind stops made of brass
- Valve insert made of brass and stainless steel
- Handwheel assembly made of plastic and brass
- SafeCon™ pressure test valve made of brass

V5001PF Kombi-Auto (DN65 – DN100):

- Valve housing made of gray iron, lead content <3%
- Blind stops made of brass
- Valve insert made of gray iron, brass and stainless steel
- Handwheel made of iron
- SafeCon™ pressure test valve made of brass

Method of Operation

The V5001P Kombi-Auto is installed in the return pipeline. Based on required differential pressure at full load valve is preset to a certain value by turning handwheel or pre-setting lever clockwise (increase of differential pressure) or anticlockwise (decrease of differential pressure). Required preset value can be determined by using tables further below, by using a sizing tool, by measuring or directly from design documentation. Required flow at full load is normally calculated in advance by a consultant or similar specialist and must be known for system balancing.

Valve Identification

Each valve is marked as follows:

- OS-Number
- DN size
- PN rating
- Flow arrows
- Serial number/date code

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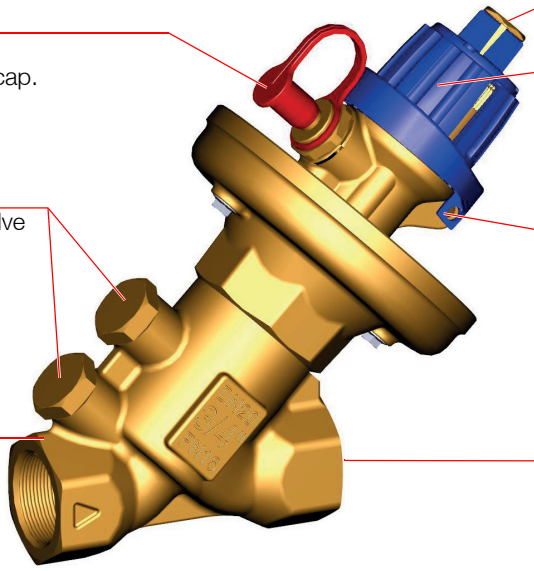
Overview

V5001PY (DN15 - DN50)



Shut-off function
Concealed, with 4mm allen key

Measuring connection
SafeCon™ pressure test valve with colour marked protection cap.

Hand wheel
Visible pre-setting value

Pre-setting without tools. Lift locking ring and turn handwheel.

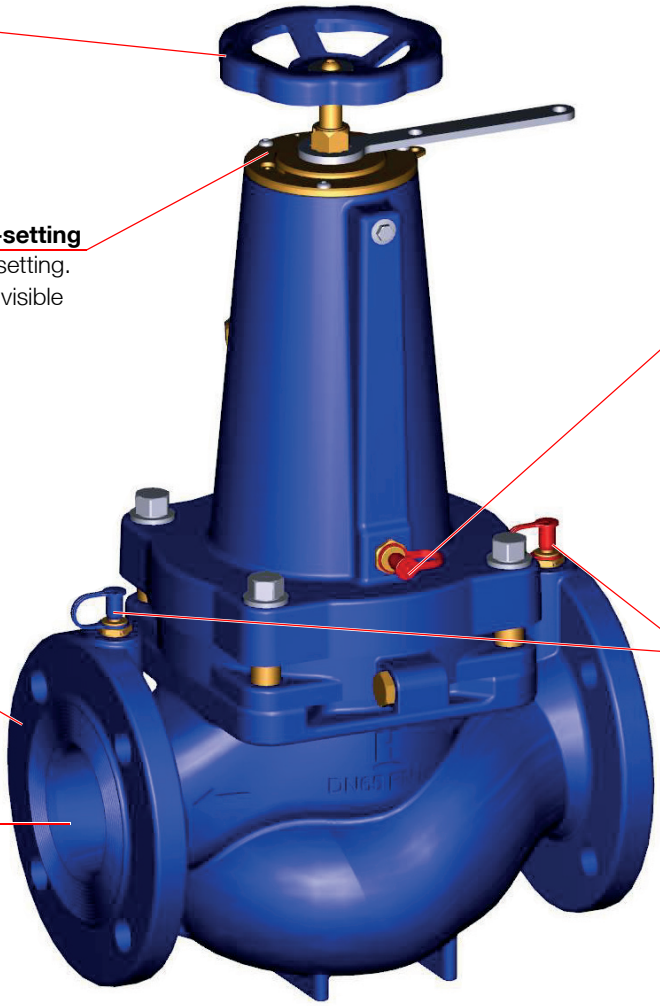
Additional connections
For SafeCon™ pressure test valve or draining valve

Lockable pre-setting
A slot in the locking ring and the housing prevents a change of the pre-setting value. A seal or a cable strap can be drawn through the eye.

Robust housing
Red bronze

High flow rates

V5001PF (DN65 - DN100)



Hand wheel
To shut the valve without affecting the pre-setting

Differential pressure pre-setting
No extra tools required for setting. Differential pressure clearly visible on kPa scale.

Measuring connection
SafeCon™ pressure test valve with colour marked protection cap.

Additional connections
For SafeCon™ pressure test valve or draining valve

Robust housing
EN-GJL-250

High flow rates

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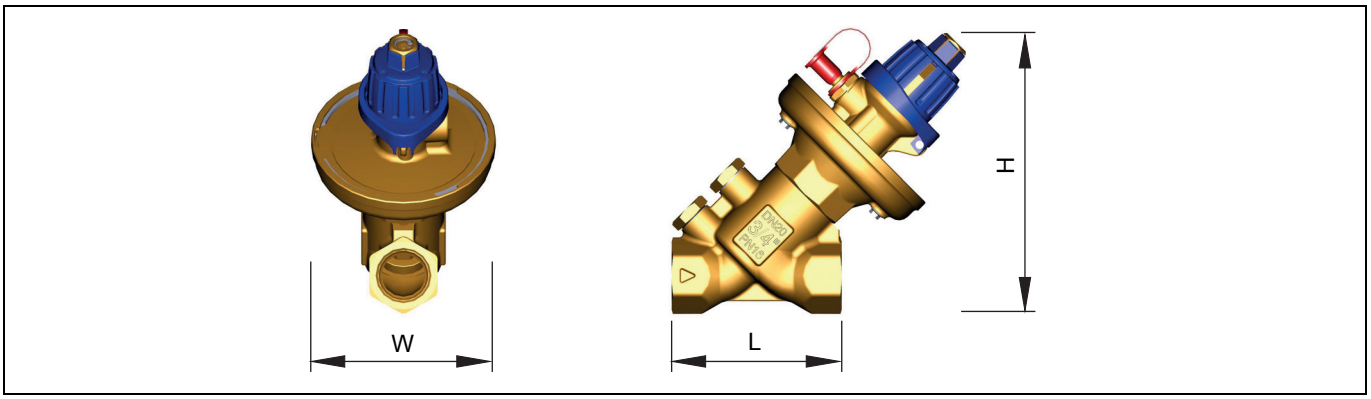
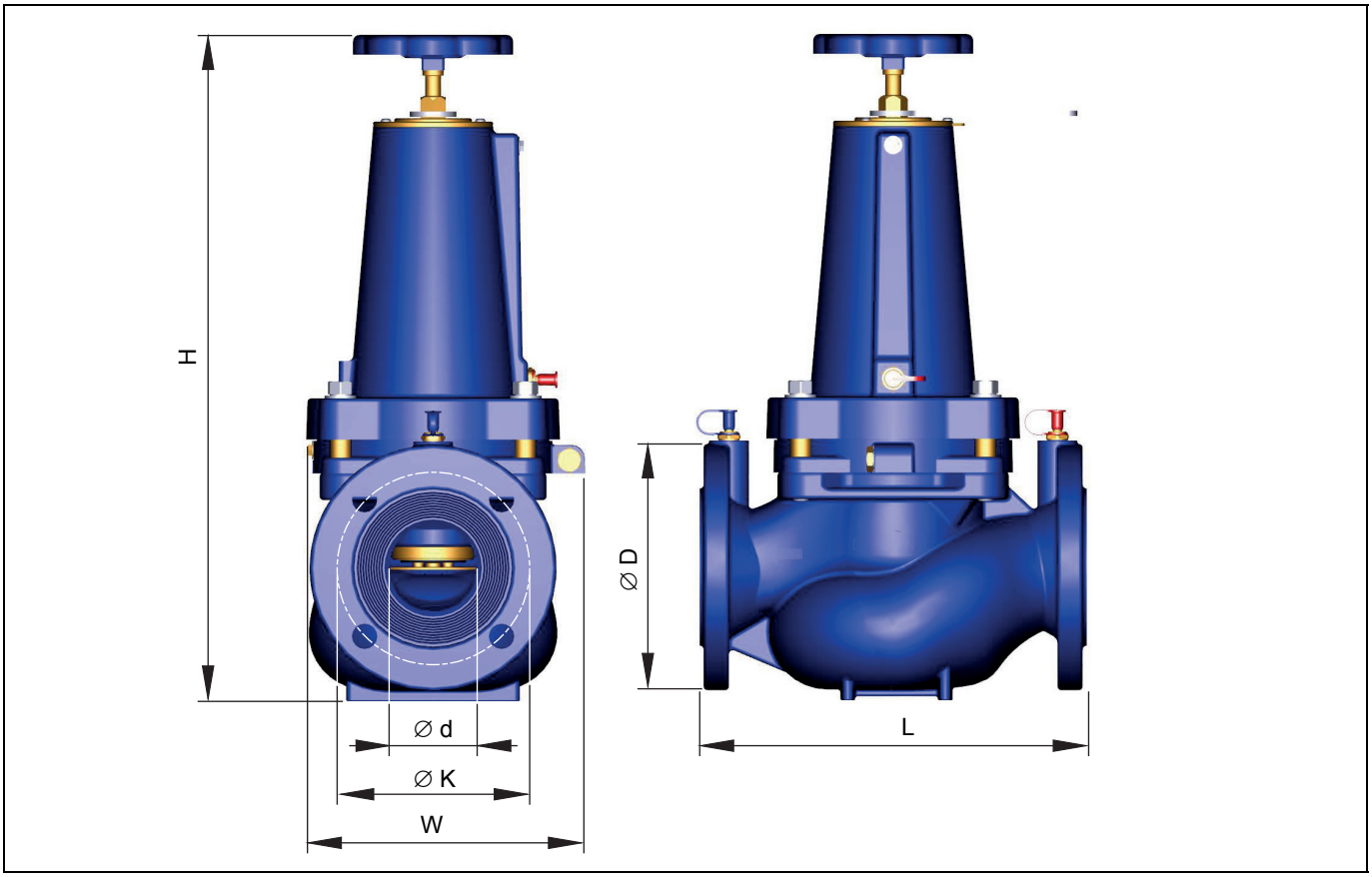
Dimensions

V5001PY (DN15 - DN50)



DN	Thread	Without insulation shell			With insulation shell			Weight [kg]
		L	W	H	L	W	H	
15	Rp1/2”	140	87	127	170	87	160	1.5
20	Rp3/4”	140	87	138	167	93	163	1.6
25	Rp1”	143	87	138	173	104	171	1.8
32	Rp1 1/4“	188	117	183	225	117	222	3.6
40	Rp1 1/2“	194	117	185	231	126	229	4.0
50	Rp2”	206	117	201	243	147	245	4.9

V5001PF (DN65 - DN100)



DN	L	W	H	Ø D	Ø K	n x Ø d	Weight [kg]
65	290	209	562	185	145	4 x 19	33
80	310	209	562	200	160	8 x 19	30
100	350	209	572	220	180	8 x 19	36

Note: All dimensions in mm unless stated otherwise.

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Ordering Information

Available versions and OS-Nos (OS=Ordering Specification)

Order text	DN size	Thread	ΔP range	k_{VS}-value	OS-No.
V5001P Kombi-Auto with internal threads to DIN EN 10226-1 (ISO7)	DN15	Rp1/2”	5…35kPa	3.6	V5001PY1015
	DN20	Rp3/4”		5.8	V5001PY1020
	DN25	Rp1”		7.1	V5001PY1025
	DN32	Rp1 1/4”		15.4	V5001PY1032
	DN40	Rp1 1/2”		22.0	V5001PY1040
	DN50	Rp2”		35.8	V5001PY1050
	DN15	Rp1/2”	30…60kPa	3.6	V5001PY2015
	DN20	Rp3/4”		5.8	V5001PY2020
	DN25	Rp1”		7.1	V5001PY2025
	DN32	Rp1 1/4”		15.4	V5001PY2032
	DN40	Rp1 1/2”		22.0	V5001PY2040
	DN50	Rp2”		35.8	V5001PY2050
V5001P Kombi-Auto with flanges to EN 1092-2	DN65		20…100kPa	52	V5001PF1065
	DN80			75	V5001PF1080
	DN100			96	V5001PF1100
	DN32		40…200kPa	52	V5001PF2065
	DN40			75	V5001PF2080
	DN50			96	V5001PF2100

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Flow Data V5001PY

Standard Range for Kombi-Auto with Δp range 5…35kPa

Preset Δp	5 kPa					10 kPa					15 kPa					20 kPa				
Pump pressure [l/h]		Δpc+10kPa		Δpc+20kPa			Δpc+10kPa		Δpc+20kPa			Δpc+10kPa		Δpc+20kPa			Δpc+10kPa		Δpc+20kPa	
	Q_{min}	Q_{nom}	Q_{max}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}	Q_{nom}	Q_{max}
DN15	40	550	1000	750	1600	40	550	1000	750	1600	40	570	1000	780	1600	40	600	1100	800	1600
DN20	60	850	1500	1200	2100	60	870	1500	1250	2150	60	900	1700	1300	2400	60	900	1700	1300	2450
DN25	100	1000	1700	1400	2500	100	1000	1800	1400	2650	100	1100	1900	1450	2800	100	1100	2000	1470	2850
DN32	150	1200	2500	1700	3600	150	1700	2900	2500	4200	150	2100	3500	3000	5500	150	2200	4000	3200	5700
DN40	200	2500	4000	3900	7500	200	2600	4500	3900	7700	200	2700	5000	4000	7900	200	2800	5500	4000	8250
DN50	450	3000	5000	5000	10500	450	3000	6000	5000	11000	500	3000	7000	5000	13000	500	4500	9000	6500	14000

Preset Δp	25 kPa					30 kPa					35 kPa				
Pump pressure [l/h]		Δpc+10kPa		Δpc+20kPa			Δpc+10kPa		Δpc+20kPa			Δpc+10kPa		Δpc+20kPa	
	Q_{min}	Q_{nom}	Q_{max}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}	Q_{nom}	Q_{max}
DN15	40	600	1100	800	1600	40	600	1100	800	1650	40	650	1200	850	1700
DN20	60	900	1750	1300	2500	60	900	1800	1300	2550	60	950	1850	1350	2600
DN25	100	1200	2000	1500	2900	100	1200	2100	1500	2950	100	1300	2100	1800	3000
DN32	150	2400	4100	3600	5900	150	2600	4300	3800	6100	150	2700	4500	4000	6500
DN40	200	3000	5700	4300	8500	200	3300	5800	4700	8750	200	3500	6000	5000	9000
DN50	500	5500	9500	8000	15000	500	7000	9500	10000	17000	500	8500	10000	12000	19000

Extended Range for Kombi-Auto with Δp range 30…60kPa

Preset Δp	30 kPa			35 kPa			40 kPa			45 kPa			50 kPa			55 kPa			60 kPa		
Pump pressure [l/h]	Δpc+20kPa			Δpc+20kPa			Δpc+20kPa			Δpc+20kPa			Δpc+20kPa			Δpc+20kPa			Δpc+20kPa		
	Q_{min}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}
DN15	50	1000	1900	50	1000	1900	50	975	1900	75	1000	1900	100	1000	1900	125	1000	1900	150	1000	1900
DN20	50	1300	2600	50	1350	2650	50	1400	2700	75	1450	2750	100	1500	2800	125	1550	2900	150	1600	3000
DN25	100	1550	3000	100	1600	3100	100	1650	3200	100	1675	3250	100	1700	3300	125	1750	3400	150	1825	3500
DN32	200	3100	6000	200	3350	6500	200	3600	7000	200	3850	7500	200	4100	8000	200	4600	9000	200	5100	10000
DN40	250	5100	10000	250	5375	10500	250	5625	11000	250	5875	11500	250	6125	12000	250	6375	12500	250	6625	13000
DN50	500	6250	12000	500	6750	13000	500	7250	14000	500	7750	15000	500	8250	16000	500	9250	18000	500	10250	20000

Note: Pump pressure: max: 6 x Δpc
Δpc = controlled differential pressure (e.g. 10kPa)

Flow Data V5001PF

Standard Range for Kombi-Auto with Δp range 20…100kPa

Preset Δp	20 kPa			40 kPa			60 kPa			80 kPa			100 kPa		
Pump pressure [l/h]	Δpc+20kPa														
	Q_{min}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}
DN65	600	10000	20000	600	17000	33000	500	21000	42000	400	24000	47000	450	25000	49000
DN80	600	15000	30000	700	23000	45000	1000	28000	55000	1200	32000	63000	2200	36000	70000
DN100	1100	18000	35000	1100	28000	55000	1100	36000	70000	1100	43000	85000	1100	46000	90000

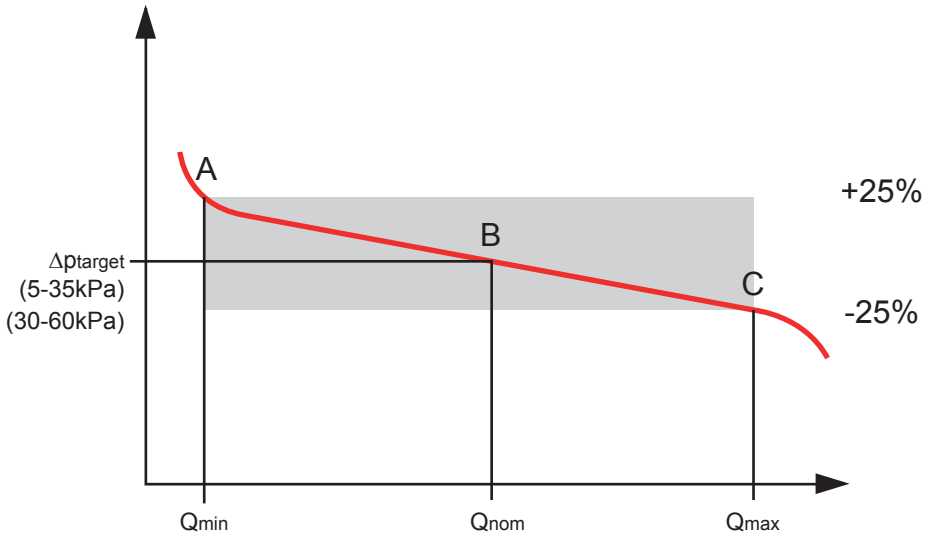
Extended Range for Kombi-Auto with Δp range 40…200kPa

Preset Δp	40 kPa			80 kPa			120 kPa			160 kPa			200 kPa		
Pump pressure [l/h]	Δpc+20kPa														
	Q_{min}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}	Q_{min}	Q_{nom}	Q_{max}
DN65	750	16000	30000	750	20000	45000	1000	30000	60000	2000	35000	70000	2500	39000	75000
DN80	750	20000	40000	750	28000	55000	500	35000	70000	500	43000	85000	500	48000	95000
DN100	2000	35000	60000	1500	38000	75000	1240	48000	95000	2200	59000	116000	2000	69000	136000

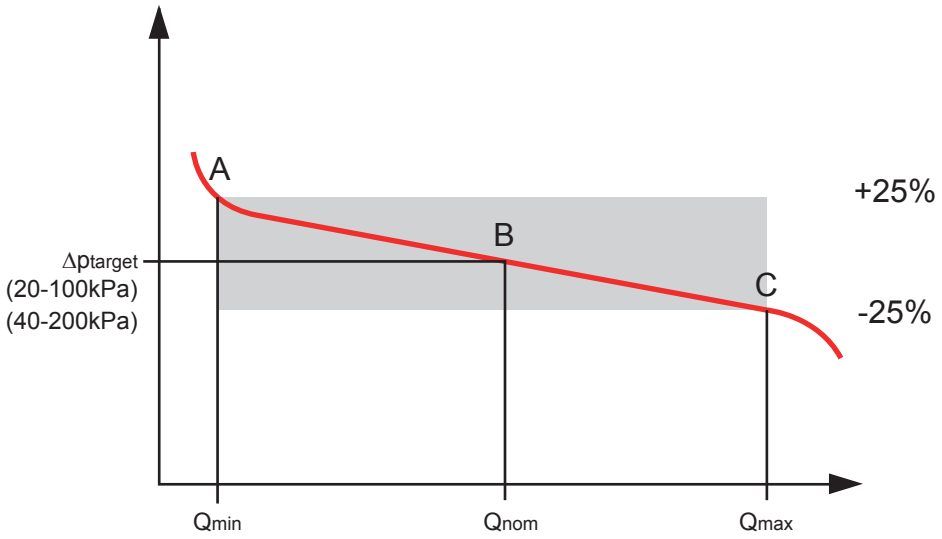
Note: Pump pressure: min. 1.5 x Δpc
max. Δpc + 350 kPa
Δpc = controlled differential pressure (e.g. 50kPa)

Control Characteristic

Control characteristic for V5001PY



Control characteristic for V5001PF



Legend

A – Q_{min}	Minimum flow where valve starts to control (Lowest control point)
B – Q_{nom}	Value where set Dp is in middle of hysteresis (Optimal control point)
C – Q_{max}	Maximum flow before flow curve drops off (Highest control point)

For more information on Honeywell Balancing and Pipeline Valves see: http://www.hydronic-balancing.info and https://products.ecc.emea.honeywell.com

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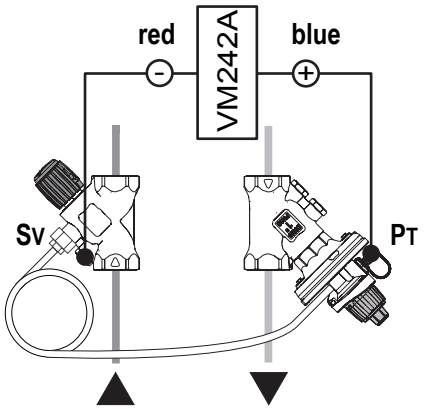
Flow and pressure measurement

The Kombi-Auto is equipped with a SafeCon™ quick connect pressure test valve on the diaphragm housing and has two additional ports on the valve housing which can be retrofitted with SafeCon™ pressure test valves to allow measurements with a differential pressure measuring computer, for example Honeywell VM242 BasicMes-2. The following measurements are possible:

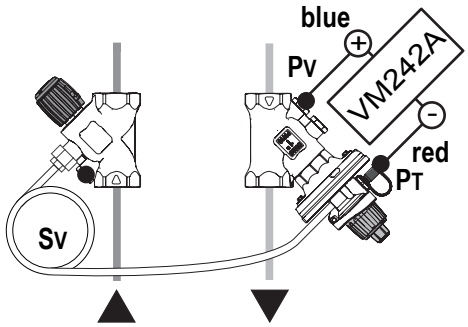
Flow



Requires pressure test connection in supply, e.g. Kombi-S with SafeCon™ pressure test valve

- Blue hose: connected to Kombi-Auto (P_T)
- Red hose: connected to Kombi-S (S_V)

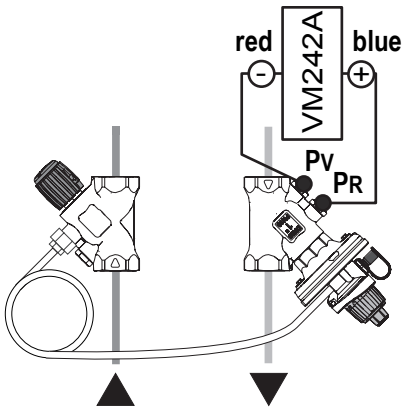
Δp loop



Requires SafeCon™ pressure test valve on lower connection of Kombi-Auto valve housing

- Red hose: connected to lower SafeCon™ pressure test valve (P_V)
- Blue hose: connected to Kombi-Auto (P_T)

Δp valve



Requires SafeCon™ pressure test valves on both ports of Kombi-Auto

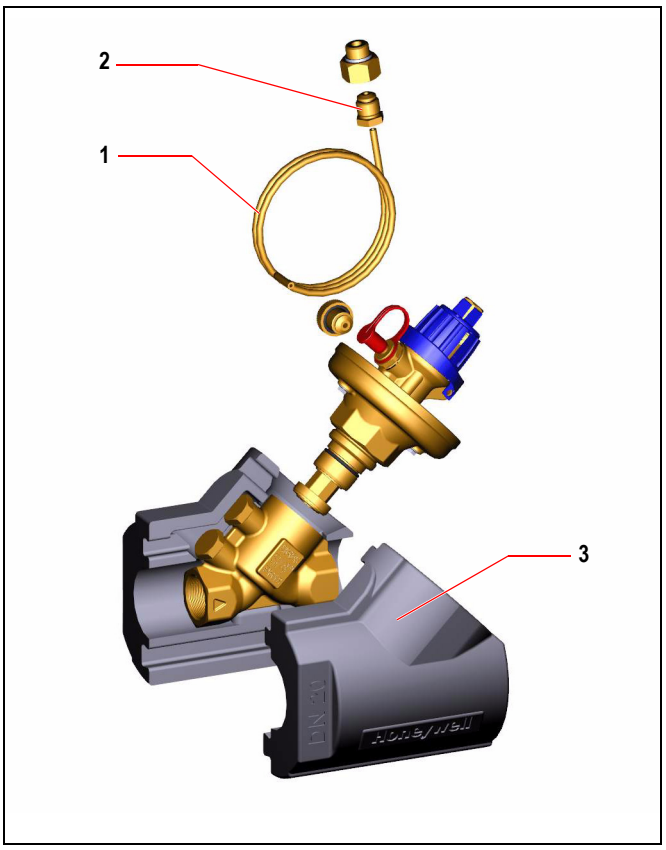
- Blue hose: connected to upper SafeCon™ pressure test valve (P_R)
- Red hose: connected to lower SafeCon™ pressure test valve (P_V)

SafeCon™ quick connect pressure test valves are available as accessory – see chapter 'Accessories' below. Depending on type of measurement desired they have to be fitted to the Kombi-Auto and/or Kombi-S respec. Kombi-2-Plus supply valve (if used). If no Kombi-S or Kombi-2-Plus is used other means for pressure testing and impulse tube connection must be provided.

The BasicMes-2 can directly connect to SafeCon™ pressure test valves for leakage free and quick measuring operations.

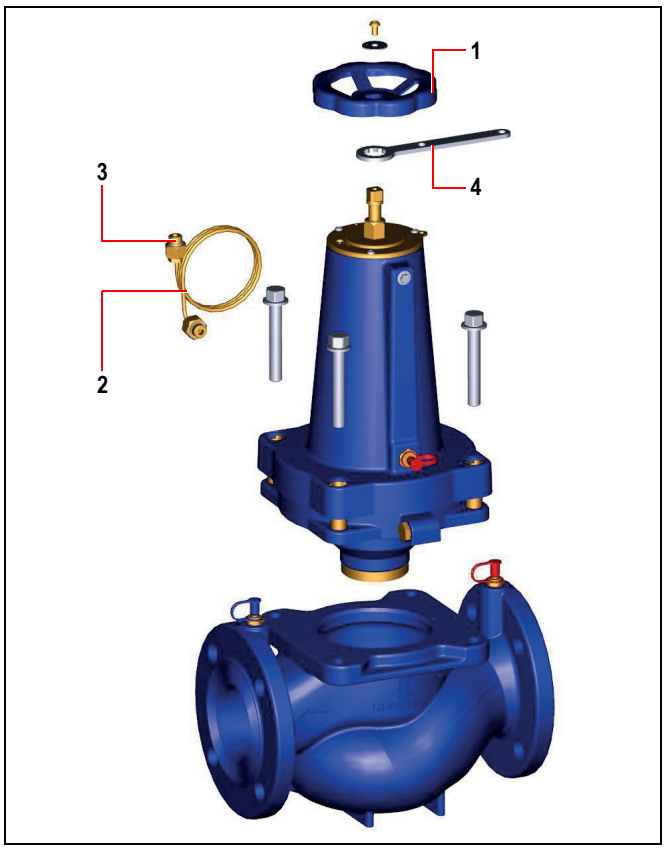
Spare parts

Sizes DN15-DN50



No.	Description	Dimension	Part No.
1	**Replacement impulse tube**		
	For all V5001PY		VA2500CU04
2	**Compression fittings for impulse tube**		
	For copper pipe	4 x 1mm	VS5500A004
3	**Insulation shells**		
		for DN15	VA2510D015
		for DN20	VA2510D020
		for DN25	VA2510D025
		for DN32	VA2510D032
		for DN40	VA2510D040
		for DN50	VA2510D050

Sizes DN65-DN100



No.	Description	Dimension	Part No.
1	**Replacement Handwheel**		
	For all V5001F		VS5001A001
2	**Replacement impulse tube (6 x 1mm)**		
	For all V5001PF	1m	VS5001A002
		2m	VS5001A003
3	**Compression fittings for impulse tube**		
	For copper pipe	6 x 1mm	VS5500A008
4	**Pre-Setting lever**		
	For all V5001PF		VS5001A004

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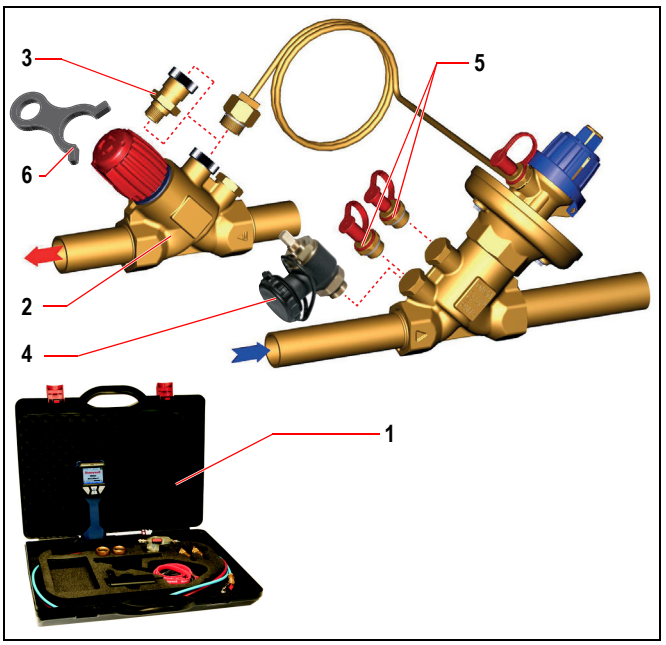
Accessories

Sizes DN15-DN50

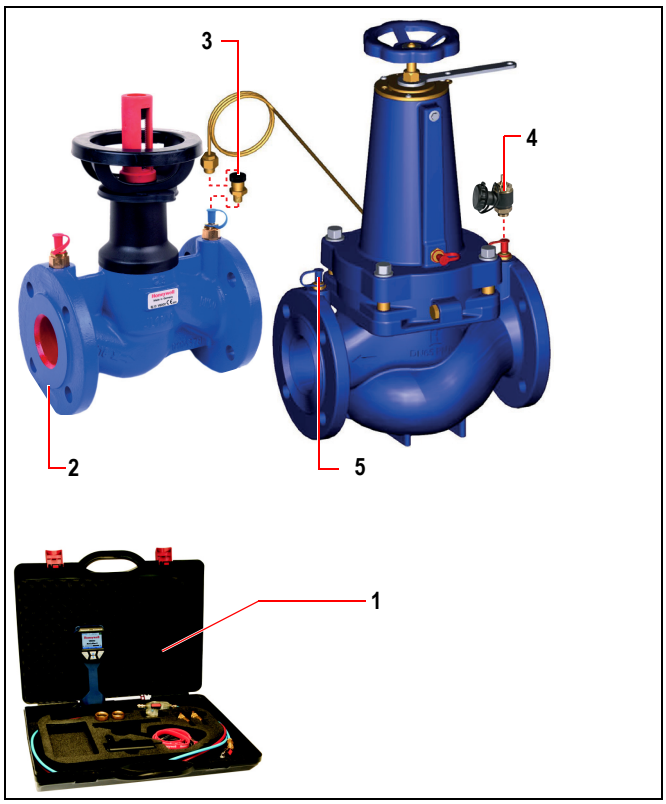


No.	Description	Dimension	Part No.
1	**BasicMes-2 handheld measuring computer**		
	For quick and easy measurement of flow and pressure	For all sizes	VM242A0101
2	**Kombi-S Stop Valve**		
	Partner valve for connection of included impulse tube to extend measuring possibilities	DN15	V5001SY2015
		DN20	V5001SY2020
		DN25	V5001SY2025
		DN32	V5001SY2032
		DN40	V5001SY2040
		DN50	V5001SY2050
2	**Kombi-2-Plus Balancing Valve**		
	Partner valve for connection of included impulse tube to extend measuring possibilities	DN15	V5032Y0015A
		DN20	V5032Y0020A
		DN25	V5032Y0025A
		DN32	V5032Y0032A
		DN40	V5032Y0040A
		DN50	V5032Y0050A
3	**Shutoff valve for impulse tube**		
		For all sizes	VS5501A008
4	**Draining valve**		
		For all sizes	VA3401A008
5	**Spare set of 2 pressure test cocks G1/4"**		
		For all sizes	VS2600C001
6	**Measuring adapter for low volume flows**		
	To increase the measuring signal at low flow rates	DN15-DN25	VA5001A001
		DN32-DN50	VA5001A002

NOTE:
For flow rates below the min. flow rates in table we recommend to use the VA5001A measuring adapter. It is to close the partner valve V5001SY.... to a defined low flow measuring position.

DN	DN15	DN20	DN25	DN32	DN40	DN50
min flow rate [l/h]	**500**	**875**	**1150**	**2500**	**3800**	**5250**

Sizes DN65-DN100



No.	Description	Dimension	Part No.
1	**BasicMes-2 handheld measuring computer**		
	For quick and easy measurement of flow and pressure	For all sizes	VM242A0101
2	**Kombi-F**		
	Partner valve for connection of included impulse tube to extend measuring possibilities	DN65	V6000D0065A
		DN80	V6000D0080A
		DN100	V6000D0100A
3	**Shutoff valve for impulse tube**		
		For all sizes	VS5501A008
4	**Draining valve**		
		For all sizes	VA3401A008
5	**Spare set of 2 pressure test cocks G1/4"**		
		For all sizes	VS2600C001

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EN0H-2325GE23 R1014
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