



Braukmann V5012C

Kombi-DP Diaphragm Unit

Retrofit automatic DP controller

APPLICATION

The V5012C Kombi-DP diaphragm unit is installed onto a V5010 Kombi-3-plus BLUE or V5032 Kombi-2-plus return mains balancing valve and connected to a V5000 Kombi-3-plus RED or V5100 Stop Valve-3 supply mains valve with the supplied impulse tube.

It is used in systems with variable volume flows, for example two-pipe heating systems or district heating exchangers, and supports a hydronic balance by keeping the differential pressure over consumers at a constant preset level even under changing flow conditions. The V5012C Kombi-DP diaphragm unit can be fitted to the Kombi-Valves at any time, even when the system is under pressure and in operation - operation of the system does not have to be interrupted to install the V5012C Kombi-DP.

SPECIAL FEATURES

- Retrofittable without interrupting operation of the system
- Rugged design
- Two presetting ranges available: 0.1...0.3 bar or 0.3...0.6 bar differential pressure
- Suitable for V5010 Kombi-3-Plus BLUE DN10...DN40 and V5032 Kombi-2-Plus DN15...DN40



TECHNICAL DATA

Media	
Medium:	Water or water-glycol mixture, quality to VDI 2035
pH-value:	8...9.5
Pressure values	
Operating pressure:	max. 10 bar (145 psi)
Differential pressure:	max. 2.0 bar (29 psi)
Differential pressure:	
presetting range:	
V5012C0103:	0.1...0.3 bar (1.45...4.35 psi)
V5012C0306:	0.3...0.6 bar (4.35...8.70 psi)
Operating temperatures	
Operating temperature:	2...130°C (36...266°F)
Specifications	
Factory setting:	
V5012C0103:	0.1 bar (1.45 psi)
V5012C0306:	0.3 bar (4.35 psi)
k _{Vs (cv)} -values:	See chapter control characteristics

CONSTRUCTION

Overview	Components	Materials
	1 Diaphragm spring, Diaphragm housing with connections for impulse tube and valve	Stainless steel
	2 Spindle	Stainless steel
	Not depicted components:	
	Tappet	Brass
	Supply valve adapter to install impulse tube to supply mains valve (suitable for V5000 Kombi-3-plus RED and V5100 Stop Valve-3)	-
	Diaphragm and soft seals	EPDM
	Impulse tube	Copper

METHOD OF OPERATION

The V5012C Kombi-DP diaphragm unit is installed onto a V5010 Kombi-3-plus or V5032 Kombi-2-plus return mains balancing valve and connected to a supply mains valve with the supplied 4 x 1 mm copper impulse tube and compression fittings.

Suitable supply valves are the V5000 Kombi-3-plus RED or the V5100 Stop Valve-3 which are both compatible with the supply valve adapter of the V5012C Kombi-DP kit.

The pressure of the supply pipeline is led to the Kombi-DP via the impulse tube and acts onto the top of the diaphragm, the pressure of the return pipeline is led to the Kombi-DP through the return valve and acts onto the bottom of the diaphragm.

When the supply pressure increases, the diaphragm inside the Kombi-DP is pushed down against the return pressure. The diaphragm acts onto the insert of the connected return valve and the flow is throttled.

When the supply pressure decreases, the diaphragm inside the Kombi-DP is pushed open by the return pressure.

The diaphragm moves up, releasing the insert of the return valve and the flow increases.

The desired differential pressure can be preset from 0.1...0.3 or from 0.3...0.6 bar, depending on the type used.

INSTALLATION GUIDELINES

Installation Example

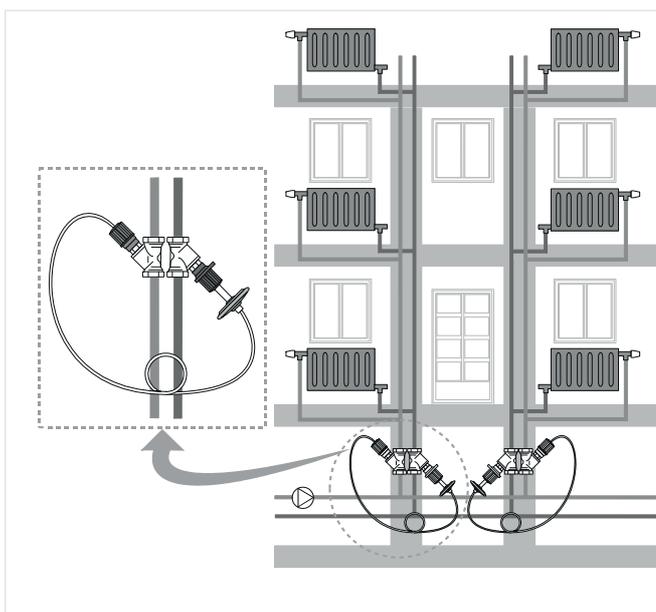


Fig. 1. V5012C Kombi-DP in a two-pipe heating system

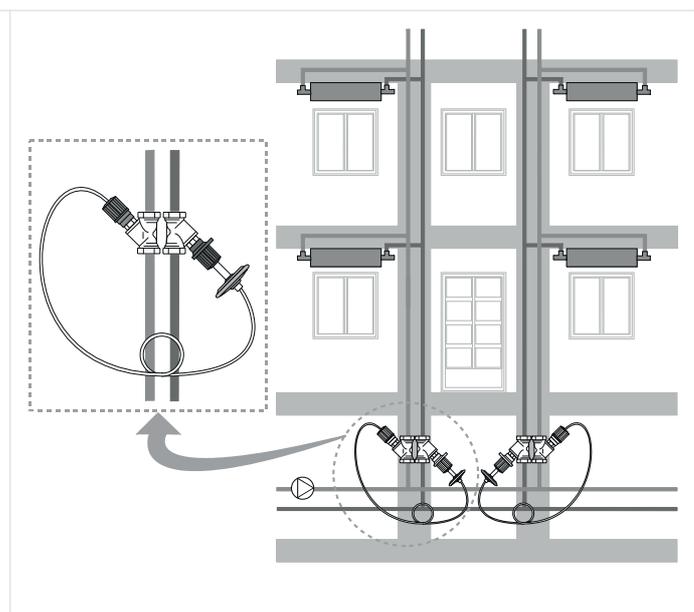
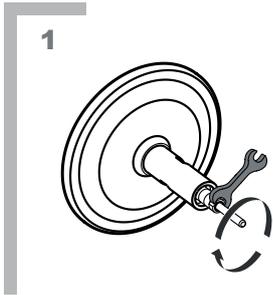


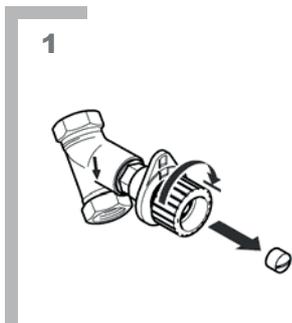
Fig. 2. V5012C Kombi-DP in a cooling system

Changing the presetting



0103 - 0.017 bar
0306 - 0.027 bar

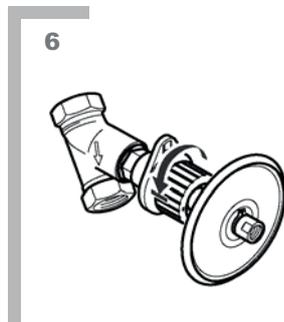
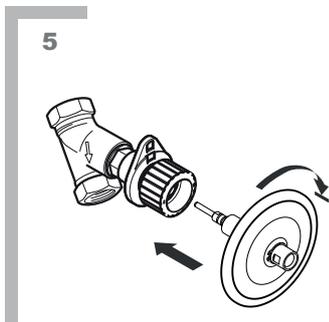
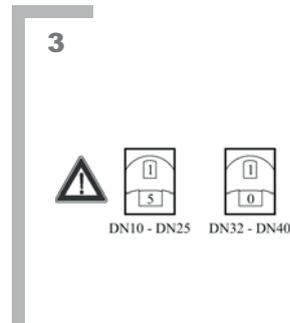
Installation



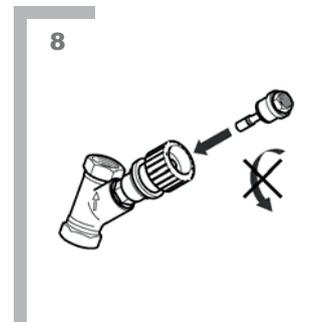
Return valve:
V5010 Kombi-3-plus BLUE
or V5032 Kombi-2-plus



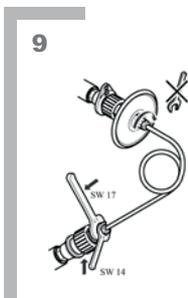
See 3



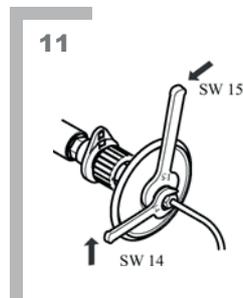
Supply valve: V5000 Kombi-3-plus RED or V5100 Stop Valve-3



Insert but do not screw in



Vent over diaphragm connection



TECHNICAL CHARACTERISTICS

Control Characteristics

Note: Below control characteristics refer to the combination of a V5012C Kombi-DP with a V5010 Kombi-3-plus BLUE or V5032 Kombi-2-plus balancing valve.

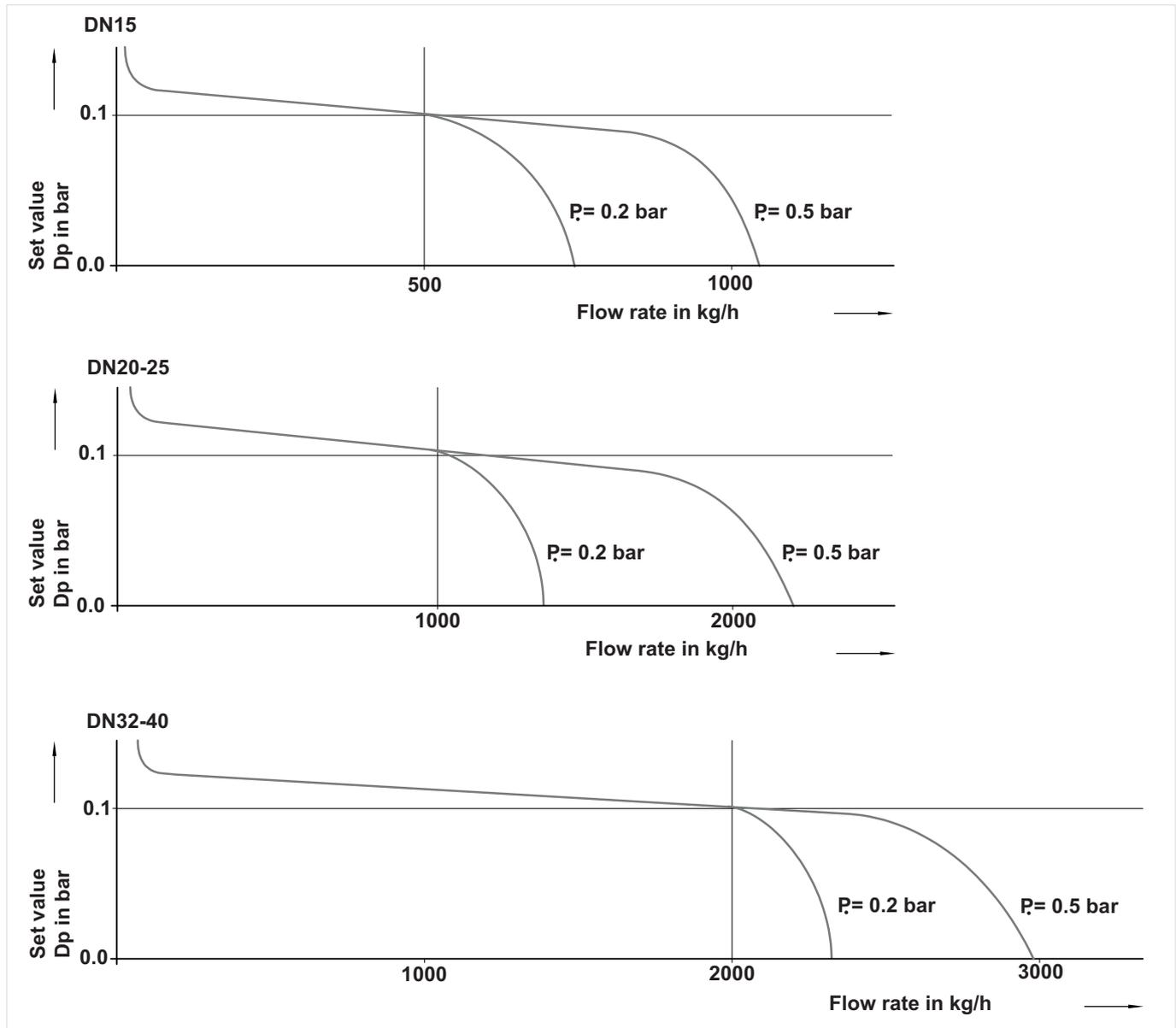


Fig. 1 Control characteristic of V5012C0103, set at 0.1 bar Dp (factory setting)

kvs-values and flow rates

DN	10	15	20	25	32	40
k_{vs}-value	1.50	1.50	3.50	3.50	5.50	5.50
cv-value	1.76	1.76	4.10	4.10	6.44	6.44
Liter/h						
Q _{min}	20	20	40	40	80	80
Q _{nom}	500	500	1.000	1.000	2.000	2.000
Q _{max}	750	750	1.500	1.500	2.500	2.500

Note: The pump pressure must be set at least 0.1 bar above the presetting value, e.g. Dp 0.3 → P₀ 0.4 bar; Dp 0.6 → P₀ 0.7 bar. The total pressure drop across supply and return valve, taking the V5012C Kombi-DP presetting into account, can be calculated with Valve Sizing Software. The V5012C0103 is factory set to 0.1 bar. The presetting can be increased to max. 0.3 bar. In that case the control curve as displayed in chapter control characteristics moves in parallel to the presetting value. The V5012C0306 is factory set to 0.3 bar. The presetting can be increased to max. 0.6 bar. The control curve as displayed in chapter control characteristics moves in parallel to the presetting value. In some special cases, e.g. heating systems with unrestricted TRVs, the flow can additionally be throttled by reducing the presetting value of the balancing valve.

Effect of different valve presettings on kvs-value

DN	Presetting of Balancing Valve						
	1.5	1.4	1.2	1.0	0.8	0.6	0.4
10	1.50	1.45	1.35	1.25	1.15	0.95	0.70
15	1.50	1.45	1.35	1.25	1.15	0.95	0.70
20	3.50	3.40	3.30	3.10	2.80	2.45	1.80
25	3.50	3.40	3.30	3.10	2.80	2.45	1.80
32	-	-	-	5.50	5.20	4.45	-
40	-	-	-	5.50	5.20	4.45	-

Note: The V5010 Kombi-3-plus BLUE or V5032 Kombi-2-plus balancing valve has to be preset to 1.5 (sizes DN10...DN25) or to 1.0 (sizes DN32...DN40) when used with the V5012C Kombi-DP diaphragm unit. Lower presettings can be used to further throttle down the flow.

DIMENSIONS

Overview

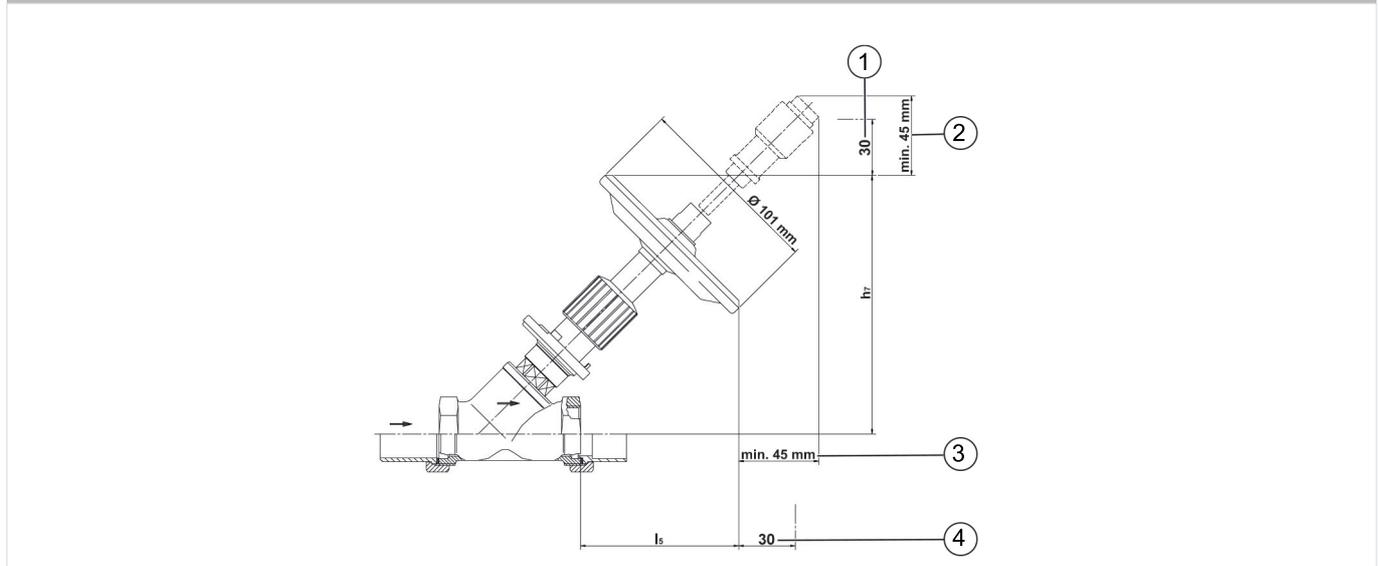


Fig. 1. V5012C Kombi-DP diaphragm unit with V5010 Kombi-3-plus BLUE or V5032 Kombi-2-plus

- 1 Installation space required
- 2 Additional space required for optional VA2503B001
- 3 Additional space required for optional VA2503B001
- 4 Installation space required

Valve size	V5012C0103		V5012C0306		
	DN	h ₇	l ₅	h ₇	l ₅
10		135	95	145	102
15		135	95	146	103
20		150	100	161	111
25		150	90	161	101
32		185	105	196	116
40		185	100	196	111

Note: The V5012C is not supplied with valve.
All dimensions in mm.

ORDERING INFORMATION

Options

Order text:	Presetting range:	OS-No.:
V5012C Kombi-DP diaphragm unit	0.1...0.3 bar (1.45...4.35 psi)	V5012C0103
	0.3...0.6 bar (4.35...8.70 psi)	V5012C0306

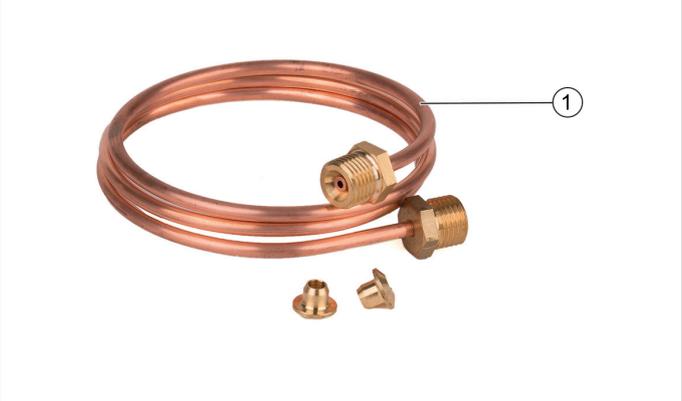
Box contents

- Diaphragm unit
- Supply valve adapter
- Copper impulse tube 4 x 1 mm, length 800 mm
- Suitable compression fittings
- Installation and operating instructions

Accessories

	Description	Dimension	Part No.
	VA2502 Spring to reduce differential pressure presetting by 0.05 bar (0.73 psi) for V5012C0103 only		VA2502A002
	VA2503 External presetting device for installation between Kombi-Diaphragm Unit and impulse tube for V5012C0103 only (not with VA2504A001)		VA2503A001
	VA2504 Angle adapter for all V5012 Kombi-DP		VA2504A001
	VS5500 Compression fitting for 6 x 1 mm copper impulse tube for all V5012 Kombi-DP		VS5500A008
	VS5501 Shut-off fitting R 1/4" for all V5012 Kombi-DP		VS5501A008

Spare Parts

Overview	Description	Dimension	Part No.
	1 Impulse tube		
			VS5001A006



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