

# V5005T

## Kombi-FCU

Pressure independent balancing and control valve

### APPLICATION

The V5005T Kombi-FCU is a Pressure Independent Control Valve (PICV). It combines a flow controller and a full stroke, full authority temperature controller in one valve.

Equipped with an actuator Kombi-FCU provides a full stroke modulating temperature control.

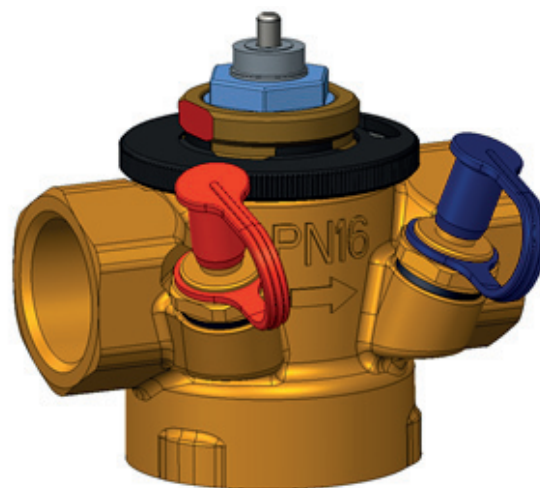
It is suitable for use in variable and constant flow systems.

They may be used as constant flow limiter in constant flow systems (without an actuator) or as a Pressure Independent Control Valve in variable flow systems.

V5005T Kombi-FCU is typically used for balancing and temperature control of fan coil units, chilled ceilings and one-pipe heating systems.

### SPECIAL FEATURES

- Automatic pressure independent balancing and control
  - Precise pressure independent flow performance
  - Highest energy saving potential due to efficient energy transfer and minimised pump speed
  - Measuring possibility to find the optimal setpoint for the pump
  - Versions with or without measuring connections available
  - Reduced movements of actuators as pressure fluctuation do not influence the required temperature
  - No complex calculation needed for selection
  - No balancing method needed for commissioning
- Wide range of application
  - Sizes DN15 to DN25 cover all popular sizes on FCUs
  - Various versions to support standard flow rates as well as low flow and high flow needs
  - Covers hydronic balancing and temperature control in one valve thus reducing mounting costs
- Easy commissioning
  - Presetting with visual flow scale indicating directly the preset liters per hour
  - Presetting by hand without the need of tools
  - Can balance a system even if only some parts of a building are in operation



- Maintenance friendly
  - Emergency shut-off function with plastic cap – not for permanent use
  - Measuring possibility for problematic applications (only with versions having measuring connections)
  - Dirt resistant – no dead zones in the valves. Continuous flow assures self cleaning effects

### VALVE EFFICIENCY

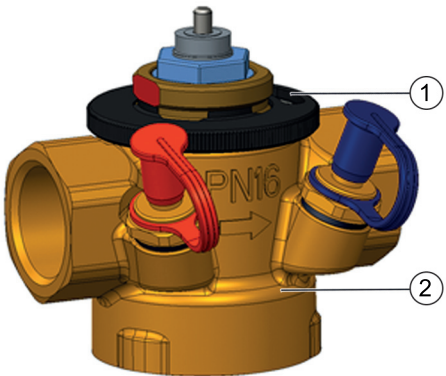
	low				high
<b>Energy efficiency</b>	●	●	●	●	●
<b>Commissioning effort</b>	●	●	○	○	○
<b>Calculation effort</b>	●	●	○	○	○

## TECHNICAL DATA

Media	
Medium:	Water or water-glycol mixture, quality to VDI 2035 (up to 50 % Glycol)
pH-value:	8...9.5
Pressure values	
Max. operating pressure:	max. 16 bar (232 psi)
Differential pressure range:	
$\Delta p_{min}$	see table on page 3
$\Delta p_{max}$	400 kPa (4 bar)
Operating temperatures	
Max. operating temperature medium:	-10...120 °C (-25...248°F)

Connections/Sizes	
Nominal size:	DN15 - DN25
Specifications	
Flow values:	see table on page 4
Leakage:	According to Class IV IEC 60534-2-3 (up to 3.5 bar differential pressure) According to Class III IEC 60534-2-3 (up to 4 bar differential pressure)
$k_{vs}$ ( $c_{vs}$ )-value:	see table on page 4

## CONSTRUCTION

Overview	Components	Materials
	<b>1</b> Hand wheel with l/h scale for presetting the valve	High performance polymer
	<b>2</b> Valve housing with internal threads to DIN EN 10226-1 for threaded pipe and two G <sup>1/4</sup> \" equipped with SafeCon™ pressure test valves or with brass blind stops	Dezincification-resistant brass
<b>Not depicted components:</b>		
Valve insert with diaphragm assembly	High resistant polymer with EPDM diaphragm and stainless steel components	
Sealings	EPDM	
Presetting parts	High resistant polymer and brass	
Inner parts	Brass, stainless steel, high resistant polymer and EPDM	
Installation and setup instructions	-	

## METHOD OF OPERATION

The V5005T Kombi-FCU combines the functionality of a dynamic balancing valve and a control valve in one product.

The dynamic balancing function maintains a constant differential pressure over the control valve.

The control valve regulates the flow by means of a variable orifice which is controlled by the actuator.

The constant differential pressure across the control valve ensures accurate control and full valve authority, independent of the pressure conditions in the system.

To adjust the maximum flow setting:

- 1) disengage actuator by removing actuator from valve or loosening the actuator nut while securing actuator
- 2) turn the hand-wheel to required flow setting
- 3) remount the actuator

## TRANSPORTATION AND STORAGE

Keep parts in their original packaging and unpack them shortly before use.

The following parameters apply during transportation and storage:

Parameter	Value
Environment:	clean, dry and dust free
Min. ambient temperature:	5 °C
Max. ambient temperature:	60 °C
Min. ambient relative humidity:	5 %*
Max. ambient relative humidity:	90 % *

\*non condensing

## TECHNICAL CHARACTERISTICS

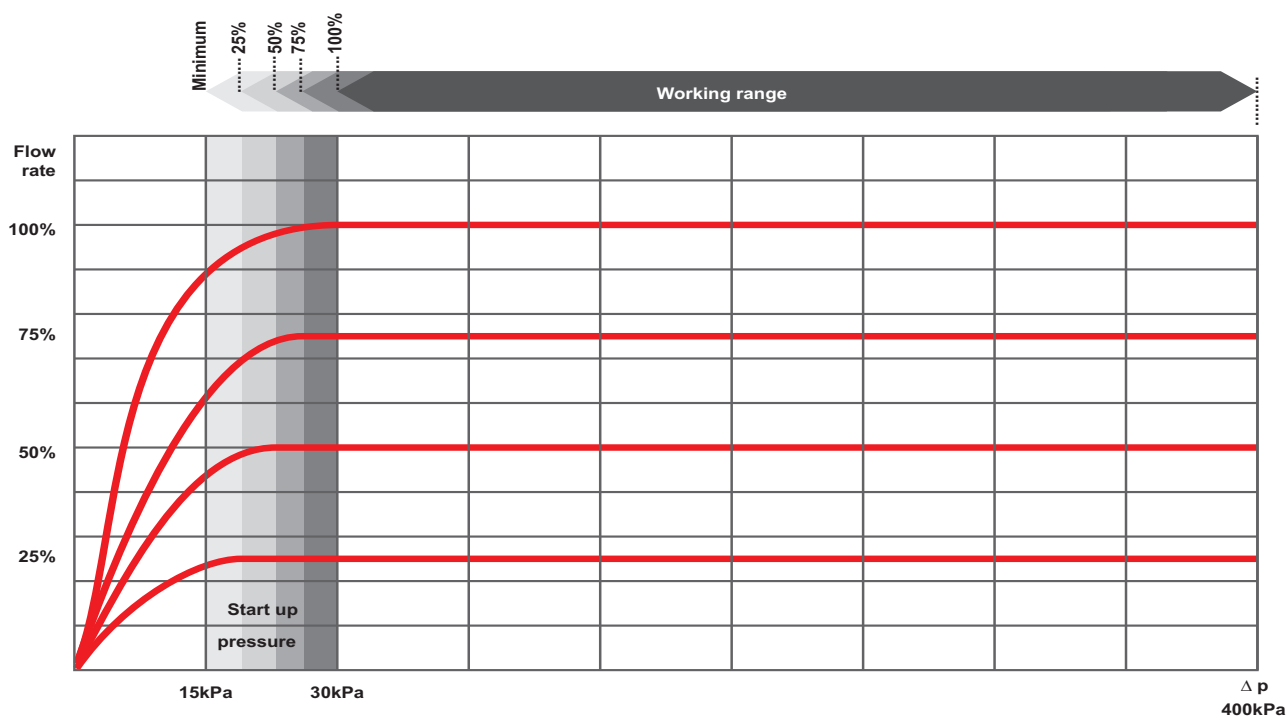
### Flow Data

Differential pressures required for operating the valves at different presettings.

OS -No.	Flow [l/h]	Valve stroke [mm]	Startup Pressure - required min. $\Delta p$ [kPa]					Pressure $\Delta p$ [kPa]
			At min. flow	At 25 % flow	At 50 % flow	At 75 % flow	At 100 % flow	
V5005TY10150350	20 - 350	2.5	14	16	17	19	20	400
V5005TY10151000	100 - 1000	2.5	15	19	23	26	30	400
V5005TY10201000	100 - 1000	2.5	15	19	23	26	30	400
V5005TY10201500	200 - 1500	2.5	20	26	33	39	45	400
V5005TY10251000	100 - 1000	2.5	15	19	23	26	30	400
V5005TY10251500	200 - 1500	2.5	20	26	33	39	45	400
V5005TY20150350	20 - 350	2.5	14	16	17	19	20	400
V5005TY20151000	100 - 1000	2.5	15	19	23	26	30	400
V5005TY20201000	100 - 1000	2.5	15	19	23	26	30	400
V5005TY20201500	200 - 1500	2.5	20	26	33	39	45	400
V5005TY20251000	100 - 1000	2.5	15	19	23	26	30	400
V5005TY20251500	200 - 1500	2.5	20	26	33	39	45	400

### Flow Rate

Example of valve's behavior for different settings (minimum, 25%, 50%, 75% 100%)



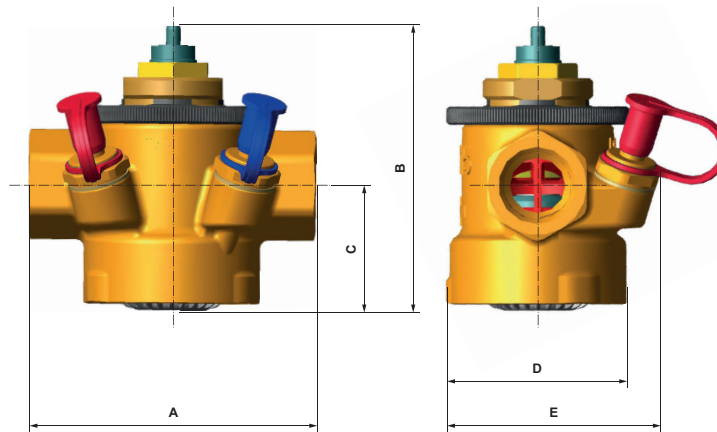
#### Example for V5005TY10201000:

When the valve is set to 100 % of nominal flow, the curve begins to remain constant at 30 kPa, therefore the working range at 100 % setting is 30 - 400 kPa.

When the valve is set to min of nominal flow, the curve begins to remain constant at 15 kPa, therefore the working range at 25 % setting is 15 - 400 kPa.

## DIMENSIONS

### Overview



Parameter		Values			
Nominal size diameter:	DN	15	20	25	
Thread:		Rp <sup>1/2</sup> "	Rp <sup>3/4</sup> "	Rp1"	
Dimensions:	A	78	79	84	
	B	77	77	77	
	C	34	34	34	
	D	49	49	49	
	E	60	60	60	

## ORDERING INFORMATION

The following tables contain all the information you need to make an order of an item of your choice. When ordering, please always state the type, the ordering or the part number.



### Options

Order text:	DN:	Flow range:		Differential pressure range:		Weight: kg	OS-No.:
		Min. flow (l/h)	Max. flow (l/h)	$\Delta p^*$ (kPa)	$\Delta p$ (kPa)		
Linear valve V5005 Kombi-FCU with internal threads to DIN EN 10226-1 (ISO7) with measuring connections	DN15	20	350	14	400		V5005TY10150350
	DN15	100	1000	15			V5005TY10151000
	DN20	100	1000	15			V5005TY10201000
	DN20	200	1500	20			V5005TY10201500
	DN25	100	1000	15			V5005TY10251000
	DN25	200	1500	20			V5005TY10251500
Linear valve V5005 Kombi-FCU with internal threads to DIN EN 10226-1 (ISO7) without measuring connections	DN15	20	350	14	400		V5005TY20150350
	DN15	100	1000	15			V5005TY20151000
	DN20	100	1000	15			V5005TY20201000
	DN20	200	1500	20			V5005TY20201500
	DN25	100	1000	15			V5005TY20251000
	DN25	200	1500	20			V5005TY20251500

Note: \*Valve is set to minimum opening. Please refer to table on page 3 for other presettings.

## Accessories

	Description	Dimension	Part No.
	<b>MT4</b> <b>Actuator thermoelectric</b>		
	4.0 mm effective stroke, 90N, on/off		MT4-024-NO
			MT4-024-NO-2.5M
			MT4-024S-NO
			MT4-024-NC
			MT4-024-NC-2.5M
			MT4-024S-NC
			MT4-230-NO
			MT4-230-NO-2.5M
			MT4-230S-NO
			MT4-230-NC
			MT4-230-NC-2.5M
		MT4-230S-NC	
	<b>M100</b> <b>Actuator thermoelectric</b>		
	4.0 mm effective stroke, 90N, on/off		M100-BO
			M100-BG
			M100-AO
			M100-AG
	<b>M7410A</b> <b>Actuator 3-point</b>		
	Note: By use of this actuator series the max. flow of the valve is reduced by 15 %		
	4.0 mm effective stroke, 90N, on/off		M7410A1001
			M7410A1001-3M
	<b>M4410</b> <b>Actuator thermoelectric 0 - 10 V</b>		
	Note: Closes when power fails		
	4.0 mm effective stroke, 100N, modulating		M4410E1510
			M4410K1515
	Cable for M4410 actuator, 1 m, 10 pcs		M44-MOD-1M
	<b>M7410E</b> <b>Actuator 0/2 - 10 V</b>		
	2.9 mm effective stroke, 90N, modulating		M7410E5001
	<b>T750120</b> <b>Radiator Thermostat Thera-2080WL</b>		
	With remote sensor for water and air		T750120
	<b>VM242A</b> <b>BasicMes-2 handheld measuring computer</b>		
	Computer is supplied with case and accessories	for all sizes	VM242A0101

	<b>VA3401A Draining valve</b>		for all sizes	VA3401A008
	<b>VS2600 Spare set of 2 pressure test cocks G<sup>1</sup>/<sub>4</sub>"</b>		for all sizes	VS2600C001

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