

# MANDÍK CPV12-H



**MANDÍK®**

# MANDÍK CPV12-H

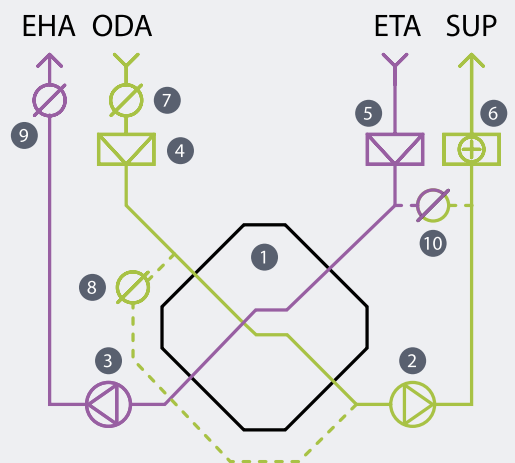
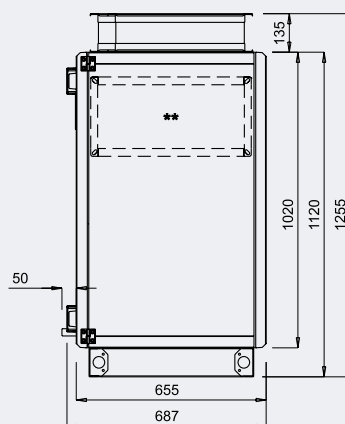
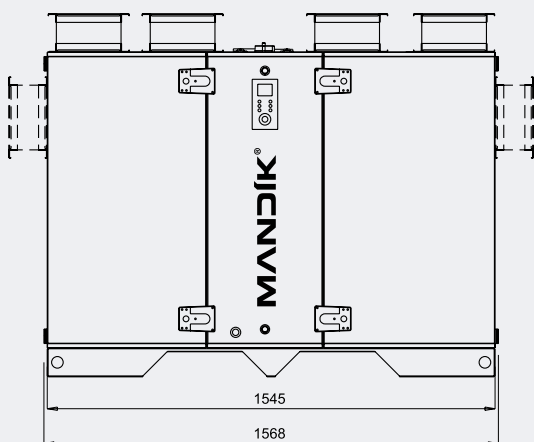
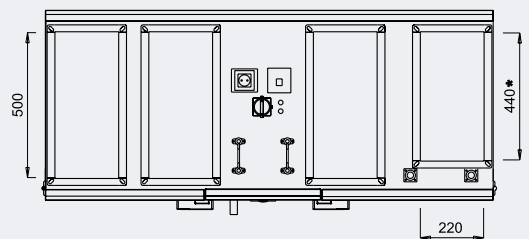


Nominal air power:	1200 [m <sup>3</sup> /h]
Input power:	1~230 V / 50 Hz – water heat / condenser
	3~400 V / 50 Hz – electric heat
The maximum operating current:	4 [A] – water heat / condenser
	13.5 / 14.5 / 16.5 [A]* – electric heat
External surface finish:	RAL 9010 + RAL 5012 (standard version)
Internal surface finish:	RAL 9010 (standard version)
Weight:	180 [kg]
Sheathing insulation:	mineral wool, 65 kg/m <sup>3</sup>

\* power grades of electric heat

## Levels of acoustic performance:

Frequency band	LwA [dB]	63	125	250	500	1000	2000	4000	8000	[Hz]
Suction inlet	76.1	75.9	66.6	83.2	69.7	65.5	61.4	60.3	57.2	[dB]
Discharge inlet	79.3	78	70.7	83.2	73.8	72.8	71.8	65.5	63.4	[dB]
Suction outlet	74.7	74.9	66.6	81.1	69.7	65.5	61.4	59.3	56.2	[dB]
Discharge outlet	78.5	77	69.7	81.1	72.8	72.8	71.8	64.5	62.4	[dB]
Noise to the ambient	62		44.4	61.3	49.4	48.3	45.6	36.1	27.1	[dB]



ODA – fresh air  
SUP – outlet air EHA

ETA – inlet air  
EHA – waste air

- 1 Board recuperator
- 2 Inlet ventilator
- 3 Outlet ventilator
- 4 Inlet filter
- 5 Outlet filter
- 6 Post heat
- 7 Inlet flap
- 8 By-pass flap
- 9 Outlet flap
- 10 Mixing flap

\* for water heat / condenser; for electric heat = 500 mm

\*\* possible SUP/EHA outlets to lateral sides, size 500 × 220 mm

## Filtration

Supply (inlet):	F7, compact, 250 × 570 × 96 mm
Discharge (outlet):	M5, compact, 250 × 570 × 96 mm

## Recuperation

Cross-shaped exchanger (board type, counter-flow)	
Temperature efficiency in the winter:	75.6 [%] *
Temperature efficiency in the summer:	83.2 [%] **

\* in the conditions according to EN 308, ODA = 5 °C / 20 % rH, ETA = 25 °C / 20 % rH

\*\* in the conditions according to ODA = 32 °C / 45 % rH, ETA = 25 °C / 50 % rH

## Mixing

Possible installation of the flap intended for mixing the outlet condition of the air with the fresh air, including possibility to set up the minimum and maximum rate of mixing.

## Post heating

### Water re-heat CPV12

Power	STANDARD				INCREASED				HIGH			
$Q_t, t_{sup}$	6.1 kW, $t_{sup} = +22\text{ °C}$				7.3 kW, $t_{sup} = +25\text{ °C}$				8.5 kW, $t_{sup} = +28\text{ °C}$			
medium – water	80/60 °C	70/50 °C	50/40 °C	45/35 °C	80/60 °C	70/50 °C	50/40 °C	45/35 °C	80/60 °C	70/50 °C	50/40 °C	45/35 °C
Number of rows	1	2	2	2	2	2	2	3	2	2	3	4
flow of medium [m <sup>3</sup> /h]	0.26	0.26	0.52	0.52	0.26	0.26	0.52	0.52	0.37	0.37	0.74	0.74
pressure loss of medium [kPa]	2.2	4.1	14.7	15	2.2	4.1	14.7	15	7.4	7.6	7.7	4.5
Connections	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15	DN 15

material of the tube / lamella Cu/Al

### Electric re-heat CPV12

Power	STANDARD		INCREASED		HIGH	
$Q_t, t_{sup}$	6.1 kW, $t_{sup} = +22\text{ °C}$		7.3 kW, $t_{sup} = +25\text{ °C}$		8.5 kW, $t_{sup} = +28\text{ °C}$	
Heating spirals	5 × 1.5 kW		5 × 1.5 kW		6 × 1.5 kW	
Current [A]	10		11		13	

The heater is equipped with operating (+50 °C) and emergency (+80 °C) thermostat

### Condenser CPV12

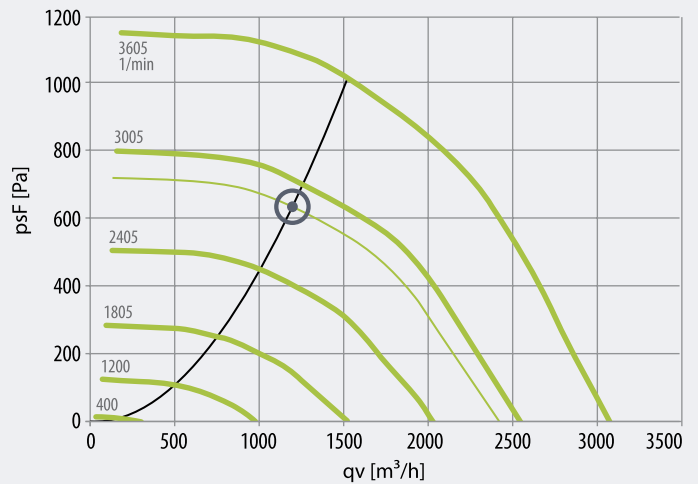
Power	STANDARD		INCREASED		HIGH	
$Q_t, t_{sup}$	6.1 kW, $t_{sup} = +22\text{ °C}$		7.3 kW, $t_{sup} = +25\text{ °C}$		8.5 kW, $t_{sup} = +28\text{ °C}$	
Cooling agent	R410A	R407C	R410A	R407C	R410A	R407C
Number of rows	2	2	3	3	4	4
flow of medium [m <sup>3</sup> /h]	0.9	1.4	1.1	1.7	1.4	2.1
Volume [l]	1.1	1.1	1.6	1.6	2.1	2.1
Connections in/out	1 × 22 / 1 × 16	1 × 22 / 1 × 16	1 × 22 / 1 × 16	1 × 22 / 1 × 16	1 × 22 / 1 × 16	1 × 22 / 1 × 16

With condensing temperature = 50 °C, one-way direction – heating only, one-circuit, material of the tube / lamella Cu/Al

## EC ventilators (inlet / outlet)

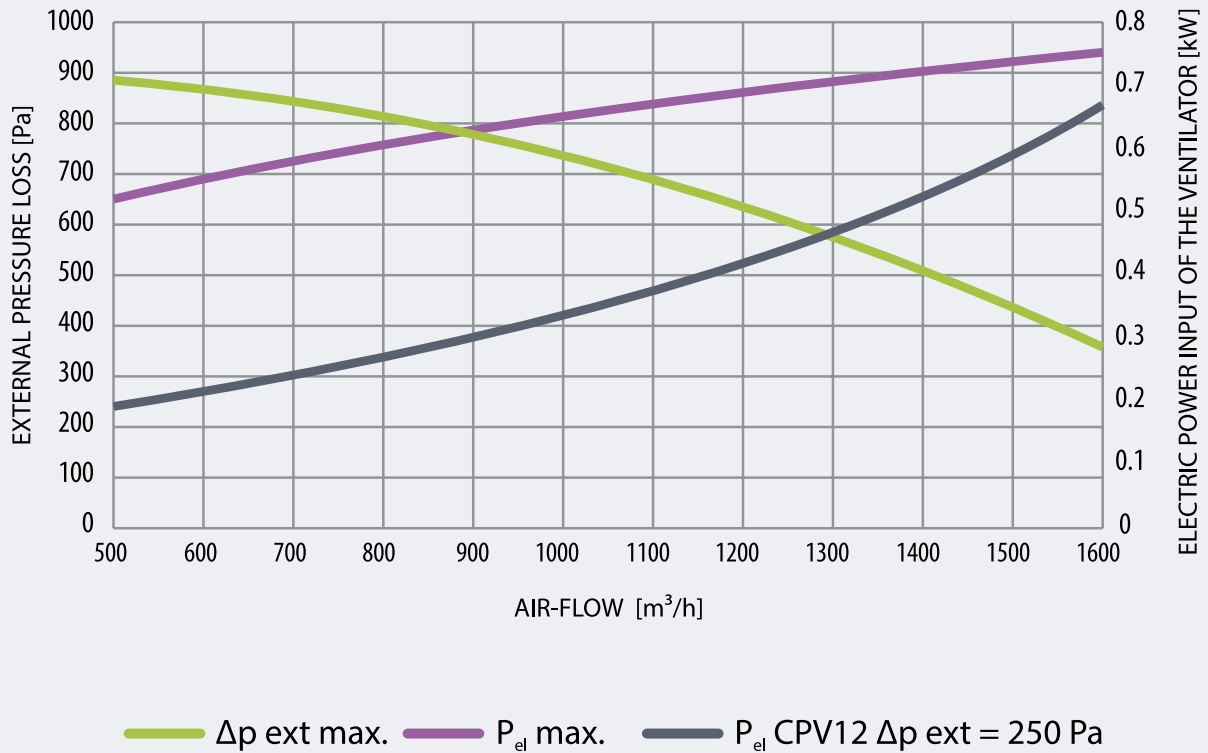
Input power:	0.4/0.38 [kW]*
Voltage:	230 [V]
Current:	1.79/1.69 [A]
RPM	2918/2857 [RPM]

\* in case of external pressure loss 250 Pa, air performance 1200 m<sup>3</sup>/h, water heat – standard performance

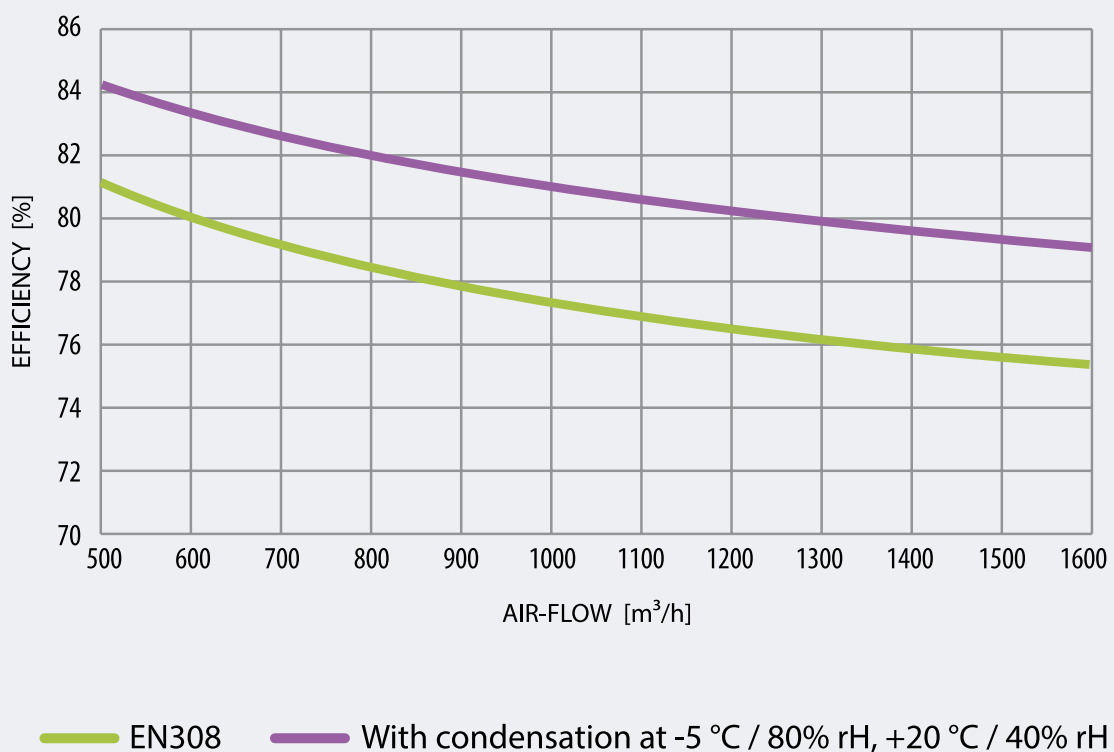


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## Maximum external pressure CPV12 standard – inlet part



## Efficiency of the heat exchanger ZZT



## STANDARD EQUIPMENT

### SURFACE TREATMENT:

- Outer surface and end element – powder paint
- Inner surface and in-building – powder paint

### COMPONENTS:

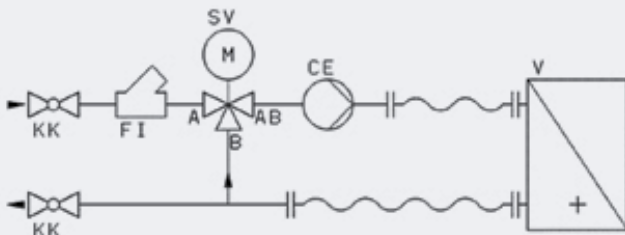
- ZZT – counter-flow recuperation exchanger (aluminium)
- by-pass recuperation
- EC ventilators (free impellers) – inlet / outlet
- filtration – F7 inlet, M5 outlet
- lamella hot-water heater / electric heater / condenser
- suction flap of fresh air
- discharge flap of waste air
- by-pass flap
- mixing flap / circulation
- buffering inserts, square shape, 2× suction, 2× discharge
- base frame of the unit

### CONTROL, ELECTRO EQUIPMENT:

- switchboard, in-built
- PLC, display (possible parametrization), web interface (possible parametrization)
- servo-drives of flaps – inlet / outlet / by-pass / mixing
- switching the pressure difference of filters – inlet / outlet
- temperature sensors – fresh / behind recuperation / inlet / outlet / recuperation frost
- capillary thermostat (anti-frost) of the hot-water heater
- control of performance of electric heat (PWM, SSR)
- service switch
- socket 230 V
- socket RJ45
- probes to measure pressure difference of the ventilator – inlet / outlet

## ACCESSORIES

### MIXING KNOTS:

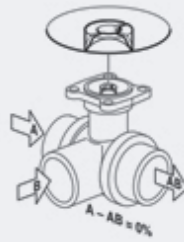
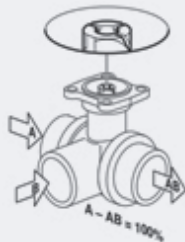


- KK – closing ball valve
- FI – filter
- SV – regulation ball valve with servo-drive
- CE – pump
- V – water exchanger

- Mixing knot of the hot-water heater CPV12,  $Q_t = 6.1$  kW
  - Heat-bearing medium: water 80/60 °C USJR 25-60-1.0-SR Rp 3/4" Rp 3/4", 0.38 m<sup>3</sup>/h
  - Heat-bearing medium: water 70/50 °C USJR 25-60-1.0-SR Rp 3/4" Rp 3/4", 0.38 m<sup>3</sup>/h
  - Heat-bearing medium: water 50/40 °C USJR 25-60-1.6-SR Rp 3/4" Rp 3/4", 0.6 m<sup>3</sup>/h
  - Heat-bearing medium: water 45/35 °C USJR 25-60-1.6-SR Rp 3/4" Rp 3/4", 0.6 m<sup>3</sup>/h
- Mixing knot of the hot-water heater CPV12,  $Q_t = 7.3$  kW
  - Heat-bearing medium: water 80/60 °C USJR 25-60-1.0-SR Rp 3/4" Rp 3/4", 0.38 m<sup>3</sup>/h
  - Heat-bearing medium: water 70/50 °C USJR 25-60-1.0-SR Rp 3/4" Rp 3/4", 0.38 m<sup>3</sup>/h
  - Heat-bearing medium: water 50/40 °C USJR 25-60-2.5-SR Rp 3/4" Rp 3/4", 1.28 m<sup>3</sup>/h
  - Heat-bearing medium: water 45/35 °C USJR 25-60-2.5-SR Rp 3/4" Rp 3/4", 1.28 m<sup>3</sup>/h
- Mixing knot of the hot-water heater CPV12,  $Q_t = 8.5$  kW
  - Heat-bearing medium: water 80/60 °C USJR 25-60-1.0-SR Rp 3/4" Rp 3/4", 0.38 m<sup>3</sup>/h
  - Heat-bearing medium: water 70/50 °C USJR 25-60-1.0-SR Rp 3/4" Rp 3/4", 0.38 m<sup>3</sup>/h
  - Heat-bearing medium: water 50/40 °C USJR 25-60-2.5-SR Rp 3/4" Rp 3/4", 1.28 m<sup>3</sup>/h
  - Heat-bearing medium: water 45/35 °C USJR 25-60-2.5-SR Rp 3/4" Rp 3/4", 1.28 m<sup>3</sup>/h

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## 3-WAY VALVES



- 3-way valve of the water heater CPV12,  $Q_t = 6.1 \text{ kW}$ 
  - Heat-bearing medium: water 80/60 °C BELIMO, R3015-P4-S1,  $kvs = 0.4 \text{ m}^3/\text{h}$ , DN = 15.5 Nm
  - Heat-bearing medium: water 70/50 °C BELIMO, R3015-P4-S1,  $kvs = 0.4 \text{ m}^3/\text{h}$ , DN = 15.5 Nm
  - Heat-bearing medium: water 50/40 °C BELIMO, R3015-P63-S1,  $kvs = 0.63 \text{ m}^3/\text{h}$ , DN = 15.5 Nm
  - Heat-bearing medium: water 45/35 °C BELIMO, R3015-P63-S1,  $kvs = 0.63 \text{ m}^3/\text{h}$ , DN = 15.5 Nm
- 3-way valve of the water heater CPV12,  $Q_t = 7.3 \text{ kW}$ 
  - Heat-bearing medium: water 80/60 °C BELIMO, R3015-P4-S1,  $kvs = 0.4 \text{ m}^3/\text{h}$ , DN = 15.5 Nm
  - Heat-bearing medium: water 70/50 °C BELIMO, R3015-P4-S1,  $kvs = 0.4 \text{ m}^3/\text{h}$ , DN = 15.5 Nm
  - Heat-bearing medium: water 50/40 °C BELIMO, R3015-1P6-S1,  $kvs = 1.6 \text{ m}^3/\text{h}$ , DN = 15.5 Nm
  - Heat-bearing medium: water 45/35 °C BELIMO, R3015-1P6-S1,  $kvs = 1.6 \text{ m}^3/\text{h}$ , DN = 15.5 Nm
- 3-way valve of the water heater CPV12,  $Q_t = 8.5 \text{ kW}$ 
  - Heat-bearing medium: water 80/60 °C BELIMO, R3015-P4-S1,  $kvs = 0.4 \text{ m}^3/\text{h}$ , DN = 15.5 Nm
  - Heat-bearing medium: water 70/50 °C BELIMO, R3015-P4-S1,  $kvs = 0.4 \text{ m}^3/\text{h}$ , DN = 15.5 Nm
  - Heat-bearing medium: water 50/40 °C BELIMO, R3015-1P6-S1,  $kvs = 1.6 \text{ m}^3/\text{h}$ , DN = 15.5 Nm
  - Heat-bearing medium: water 45/35 °C BELIMO, R3015-1P6-S1,  $kvs = 1.6 \text{ m}^3/\text{h}$ , DN = 15.5 Nm

## SERVO DRIVES FOR 3-WAY VALVES

- BELIMO LR24A-SR, AC/DC 24 V, 0–10 V, 5 Nm

## CO<sub>2</sub> SENSOR

- PROTRONIX AS CO2-DG, 0–10 V, 400–2000 ppm

## REMOTE CONTROL

- DIGICONTROL ROOM4D  
*Temperature adjustment, control of rotational speed of the ventilator, integrated temperature sensor, 2× DO (0 V / 24 V DC) CAN-Bus, DALI, KNX, Modbus*

## VISUALIZATION

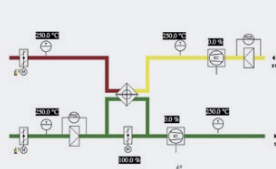
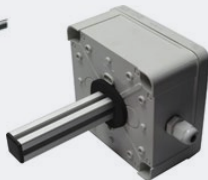
- License for visualization Webservice  
*Overall graphic view of the unit with the current condition of action elements and sensors of MaR system (measuring and regulation)*

## ROUTER

- TP-LINK TL-WR841ND  
*WiFi router 802.11b/g/n až 300 Mbps, 1× WAN, 4× LAN*

## SIPHON FOR CONDENSATE OUTLET

- HL136NGG, DN32, vacual with ball



# ORDER CODE FOR THE COMPACT UNITS OF CPV SERIES

Type of unit	Size of unit	Post heating	Cooling	Filtration	Equipment of flaps	Outlets
<b>CPV</b>	<b>12</b>	<b>XXX</b>	<b>XXX</b>	<b>XXXX</b>	<b>XXX</b>	<b>XXX</b>
<b>1<sup>st</sup> sign C</b> = compact <b>2<sup>nd</sup> sign P</b> = board recuperation <b>3<sup>rd</sup> sign V</b> = vertical	<b>1<sup>st</sup>-, 2<sup>nd</sup> sign</b> = * 100 = Vn [m <sup>3</sup> /h] 12 = 1200 m <sup>3</sup> /h 24 = 2400 m <sup>3</sup> /h 36 = 3600 m <sup>3</sup> /h 48 = 4800 m <sup>3</sup> /h 60 = 6000 m <sup>3</sup> /h	<b>1<sup>st</sup> sign</b> = type of post heat 1 = water heater 2 = condenser 3 = electric heater <b>2<sup>nd</sup> sign</b> = medium 0 = no (electric heater) 1 = water 80/60 °C 2 = water 70/50 °C 3 = water 50/40 °C 4 = water 45/35 °C 5 = cooling agent R410A 6 = cooling agent R407C <b>3<sup>rd</sup> sign</b> = heat power 1 = LOW (SUP = +22 °C) 2 = MEDIUM (SUP = +25 °C) 3 = HIGH (SUP = +28 °C)	<b>XXX</b> = none	<b>1<sup>st</sup> sign</b> = type of inlet filtration <b>3<sup>rd</sup> sign</b> = type of outlet filtration 2 = M5 3 = F7 <b>2<sup>nd</sup> sign</b> = type of inlet filter <b>4<sup>th</sup> sign</b> = type of outlet filter 1 = frame with thickness 96 mm	<b>1<sup>st</sup> sign</b> = mixing flap 0 = mixing flap not installed 1 = mixing flap installed* <b>2<sup>nd</sup> sign</b> = inlet flap 0 = mixing flap not installed 1 = inlet flap installed* <b>3<sup>rd</sup> sign</b> = outlet flap 0 = outlet flap not installed 1 = outlet flap installed*	<b>1<sup>st</sup> sign</b> = right* <b>2<sup>nd</sup> sign</b> = location of SUP and EHA outlets 1 = top wall* 2 = lateral walls <b>3<sup>rd</sup> sign</b> = type of outlets 1 = rectangular outlets*

## CPV12-121-XXX-3121-111-111

1200 m<sup>3</sup>/h  
 Water heater, medium 80/60 °C, heat performance LOW (6.1 kW)  
 no  
 inlet = F7 frame with thickness 96 mm, outlet: M5 frame with thickness 96 mm  
 mixing: installed, inlet: installed, outlet: installed  
 to the right -> right version  
 on the top wall  
 rectangular shape

## Example of the unit:

Nominal air power:  
 Post heating:  
 Cooling:  
 Filtration:  
 Flaps:  
 Flow direction SUP:  
 Outlets SUP and EHA:  
 Type of outlets:

**Note:**  
 \* standard version Paint:  
 In case of requirement for a version other than standard, this should be noted in the purchase order.  
 Painting is divided into 2 parts (as standard)  
 1) RAL colour of the cabinet (outer) + inner + in-building: RAL9010 (standard version)  
 2) RAL colour of the central panel + buffering inserts + base frame RAL9006 (standard version)  
 Optionally, the parts of the unit may be combined in various ways; such as the overall outer surface (sheathing, buffering inserts, base frame) in one colour; inner surface (sheathing, in-building) in another colour, etc.

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