

# Centrometal

## HEATING TECHNIQUE

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ENG

## TECHNICAL MANUAL



for installation, use and maintenance  
of the hot water boiler and equipment  
for wood pellet burning



THE FIRST START-UP MUST BE DONE BY AUTHORIZED PERSON  
OTHERWISE PRODUCT WARRANTY IS NOT VALID.

CPPL 14-90 kW

*EKO-CK P + Cm Pelet-set 14-90*  
*EKO-CKB P + Cm Pelet-set 14-50*

## Technical data - EKO-CK P + Cm Pelet-set 14-50

<b>Model identifier (TYPE):</b>		EKO-CK P 20 + Cm Pelet-set 14	EKO-CK P 25 + Cm Pelet-set 35	EKO-CK P 30 + Cm Pelet-set 35	EKO-CK P 35 + Cm Pelet-set 35	EKO-CK P 40 + Cm Pelet-set 35	EKO-CK P 50 + Cm Pelet-set 50	EKO-CK P 60 + Cm Pelet-set 50	
Useful heat output at rated heat output - P <sub>n</sub>	(kW)	14	20	25	30	35	40	50	
Useful heat output at 30 % of rated heat output - P <sub>p</sub>	(kW)	4.2	6	7.5	9	10.5	12	15	
Useful efficiency at rated heat output (lower calorific value)	(%)	90.3	91.6	92.7	92.4	92.2	91.9	91.4	
Useful efficiency at 30 % of rated heat output (lower calorific value)	(%)	90.0	90.8	91.5	91.6	91.6	91.7	91.8	
Useful efficiency at rated heat output (gross calorific value „GCV“) -η <sub>n</sub>	(%)	82.6	84.1	85.4	85.2	84.9	84.7	84.2	
Useful efficiency at 30 % of rated heat output (gross calorific value „GCV“) -η <sub>p</sub>	(%)	82.3	83.4	84.3	84.4	84.4	84.5	84.6	
Heat output range	(kW)	4.2-14	6-20	7.5-25	9-30	10,5-35	12-40	15-50	
Boiler		EKO-CK P 20	EKO-CK P 25	EKO-CK P 30	EKO-CK P 35	EKO-CK P 40	EKO-CK P 50	EKO-CK P 60	
Burner		CPPL-14	CPPL-35	CPPL-35	CPPL-35	CPPL-35	CPPL-50	CPPL-50	
Feeder screw		CPPT	CPPT	CPPT	CPPT	CPPT	CPPT-50	CPPT-50	
Pellet tank		CPSP	CPSP	CPSP	CPSP	CPSP	CPSP	CPSP	
Boiler class		5							
Required chimney underpressure	(mbar)	0.11	0.12	0.13	0.14	0.15	0.20	0.22	
Required chimney underpressure at min. power	(mbar)	0.05							
Water amount in boiler	(l)	60	64	67	76	78	96	118	
Exhaust gas temperature at nominal heat output	(°C)	160							
Exhaust gas temperature at min. heat output	(°C)	130							
Exhaust mass flow at nominal heat output	(kg/s)	0.01309	0.01874	0.02345	0.02815	0.03284	0.03754	0.04694	
Exhaust mass flow at minimum heat output	(kg/s)	0.0079	0.01111	0.01381	0.01702	0.01984	0.02267	0.02757	
Standby heat losses	(kW)	0,15	0,217	0,266	0,288	0,309	0,34	0,43	
Boiler resistance on water side at nominal output *	(mbar)	2,2-0,5	4,4-1,1	6,9-1,7	10-2,5	13,6-3,4	17,7-4,4	27,7-6,9	
Burning period at nominal power	(h)	6							
Temperature setting range by help of the regulation **	(°C)	70-90 / 75-90 / 80-90							
Lowest return temperature	(°C)	55							
Maximum heat input	(kW)	15,6	22,2	27,8	33,33	38,88	44,44	55,55	
Fuel size		fi 6 x max 50							
Combustion chamber volume / pellet tank volume	(l)	75,4/370	80/370	92,5/370	105/370	116/370	161/370	167/370	
Combustion chamber dimension	(mm)	321x506x550	321x541x550	371x541x550	421x541x550	471x541x550	471x664x550	471x664x650	
Combustion chamber volume	(l)	89,3	95,5	110,3	125,2	140	172	203,2	
Combustion chamber type		overpressure							
Electrical power	(W)	250							
Voltage	(V~)	230							
Frequency	(Hz)	50							
Type of current		~							
Boiler dimensions with casing	Length (A)	(mm)	985	1020	1020	1020	1020	1142	1142
	Width (B)	(mm)	470	470	520	570	620	620	620
	Height (C)	(mm)	1255	1255	1255	1255	1255	1255	1355
Boiler body mass	(kg)	217	225	244	263	285	320	339	
Total mass - (boiler with casing and accessories)	(kg)	241	250	270	290	313	352	373	
Max. operating overpressure	(bar)	2,5							
Test pressure	(bar)	5,5							
Max. operating temperature	(°C)	90							
Uptake tube - external diameter	(mm)	150	150	160	160	180	180	180	
Boiler connections	Flow and return pipe (male thread)	(R)	5/4"						
	Charge/discharge (female thread)	(R)	1/2"						
	Heat exchanger connector (female thread)	(R)	1"						
	Connector of exchanger sensor (female thread)	(R)	1/2"						
Number of turbulators	(pcs)	3	3	4	4	5	5	5	
Minimal distance from flammable objects	(mm)	1000							
Total current	(A)	2,9							

Model identifier (TYPE):		EKO-CK P 20 + Cm Pelet-set 14	EKO-CK P 25 + Cm Pelet-set 35	EKO-CK P 30 + Cm Pelet-set 35	EKO-CK P 35 + Cm Pelet-set 35	EKO-CK P 40 + Cm Pelet-set 35	EKO-CK P 50 + Cm Pelet-set 50	EKO-CK P 60 + Cm Pelet-set 50
Stoking mode		automatic						
The boiler should be operated with a hot water storage tank of a volume of at least (l)		280	400	500	600	700	800	1000
Condensing boiler		no						
Solid fuel cogeneration boiler		no						
Combination boiler		no						
Preferred fuel		Compressed wood in the form of pellets: <b>C1</b> (EN 303-5:2012); <b>A1</b> (EN ISO 17225-2)						
Seasonal space heating energy efficiency - $\eta_s$ (%)		78	79	80	80	80	81	81
Seasonal space heating emissions for preferred fuel ***	PM mg/m <sup>3</sup> (10% O <sub>2</sub> )	21	22	23	22	21	20	18
	OGC mg/m <sup>3</sup> (10% O <sub>2</sub> )	2	4	6	5	4	3	1
	CO mg/m <sup>3</sup> (10% O <sub>2</sub> )	76	131	177	165	153	140	116
	NOx mg/m <sup>3</sup> (10% O <sub>2</sub> )	168	136	109	105	102	98	91
Auxiliary electricity consumption	At rated heat output - $e_{l_{max}}$ (kW)	0.065	0.071	0.075	0.076	0.076	0.078	0.080
	At 30 % of rated heat output - $e_{l_{min}}$ (kW)	0.030	0.036	0.040	0.040	0.040	0.040	0.040
	Of incorporated secondary emission abatement equipment (kW)	Not applicable						
	In standby mod - $P_{SB}$ (kW)	0.004						

\* (dT 10°C-dT20°C)

\*\* set temp. range depends on the selected configuration

\*\*\* PM = particulate matter, OGC = organic gaseous compounds, CO = carbon monoxide, NOx = nitrogen oxides

**Contact details:**

Centrometal d.o.o. - Glavna 12, 40306 Macinec, Croatia

## Technical data - EKO-CK P + Cm Pelet-set 90

Model identifier (TYPE):		EKO-CK P 70 + Cm pelet-set 90	EKO-CK P 90 + Cm pelet-set 90	EKO-CK P 110 + Cm pelet-set 90	
Useful heat output at rated heat output - P <sub>n</sub>	(kW)	60	70	90	
Useful heat output at 30 % of rated heat output - P <sub>p</sub>	(kW)	18	21	27	
Useful efficiency at rated heat output (lower calorific value)	(%)	91.1	90.8	90.2	
Useful efficiency at 30 % of rated heat output (lower calorific value)	(%)	91.5	91.1	90.4	
Useful efficiency at rated heat output (gross calorific value „GCV“) -η <sub>n</sub>	(%)	83.8	83.4	82.5	
Useful efficiency at 30 % of rated heat output (gross calorific value „GCV“) -η <sub>p</sub>	(%)	84.1	83.7	82.7	
Heat output range	(kW)	18-60	21-70	27-90	
Boiler		EKO-CK P 70	EKO-CK P 90	EKO-CK P 110	
Burner		CPPL-90	CPPL-90	CPPL-90	
Feeder screw		CPPT-90	CPPT-90	CPPT-90	
Pellet tank		CPSP-800	CPSP-800	CPSP-800	
Boiler class		5			
Required chimney underpressure	(mbar)	0.23	0.25	0.28	
Required chimney underpressure at min. power	(mbar)	0,05	0,1	0,1	
Water amount in boiler	(l)	135	140	160	
Exhaust gas temperature at nominal heat output	(°C)	160			
Exhaust gas temperature at min. heat output	(°C)	130			
Exhaust mass flow at nominal heat output	(kg/s)	0.05633	0.06573	0.08451	
Exhaust mass flow at minimum heat output	(kg/s)	0.03389	0.03946	0.04875	
Standby heat losses	(kW)	0,456	0,532	0,684	
Boiler resistance on water side at nominal output *	(mbar)	21,7-5,4	11,4-2,9	18,9-4,7	
Burning period at nominal power	(h)	6			
Temperature setting range by help of the regulation **	(°C)	70-90 / 75-90 / 80-90			
Lowest return temperature	(°C)	55			
Maximum heat input	(kW)	66,08	77,09	93,83	
Fuel size		fi 6 x max. 50			
Combustion chamber volume / pellet tank volume	(l)	218/800	242/800	277/800	
Combustion chamber dimension	(mm)	471x742x804	521x742x804	521x804x883	
Combustion chamber volume	(l)	280	310	370	
Combustion chamber type		overpressure			
Electrical power		250			
Voltage	(W)	230			
Frequency	(V~)	50			
Type of current	(Hz)	~			
Boiler dimensions with casing	Length (A)	(mm)	1250	1250	1350
	Width (B)	(mm)	640	690	690
	Height (C)	(mm)	1435	1435	1435
Boiler body mass	(kg)	391	426	460	
Total mass - (boiler with casing and accessories)	(kg)	432	469	506	
Max. operating overpressure	(bar)	2.5			
Test pressure	(bar)	5.5			
Max. operating temperature	(°C)	90			
Uptake tube - external diameter	(mm)	200			
Boiler connections	Flow and return pipe (male thread)	(R)	6/4"	6/4"	2"
	Charge/discharge (female thread)	(R)	1"		
	Heat exchanger connector (female thread)	(R)	1"		
	Connector of exchanger sensor (female thread)	(R)	1/2"		
Number of turbulators	(pcs)	4	5	5	
Minimal distance from flammable objects	(mm)	1000			
Total current	(A)	2.9			

Model identifier (TYPE):		EKO-CK P 70 + Cm pelet-set 90	EKO-CK P 90 + Cm pelet-set 90	EKO-CK P 110 + Cm pelet-set 90
Stoking mode		automatic		
The boiler should be operated with a hot water storage tank of a volume of at least (l)		1200	1400	1800
Condensing boiler		no		
Solid fuel cogeneration boiler		no		
Combination boiler		no		
Preferred fuel		Compressed wood in the form of pellets: C1 (EN 303-5:2012); A1 (EN ISO 17225-2)		
Seasonal space heating energy efficiency - $\eta_s$ (%)		81	80	79
Seasonal space heating emissions for preferred fuel ***	PM mg/m <sup>3</sup> (10% O <sub>2</sub> )	19	21	23
	OGC mg/m <sup>3</sup> (10% O <sub>2</sub> )	1	2	2
	CO mg/m <sup>3</sup> (10% O <sub>2</sub> )	107	97	78
	NO <sub>x</sub> mg/m <sup>3</sup> (10% O <sub>2</sub> )	110	130	168
Auxiliary electricity consumption	At rated heat output - el <sub>max</sub> (kW)	0.083	0.085	0.090
	At 30 % of rated heat output - el <sub>min</sub> (kW)	0.040	0.040	0.040
	Of incorporated secondary emission abatement equipment (kW)	Not applicable		
	In standby mod - P <sub>SB</sub> (kW)	0.004		

\* (dT 10°C-dT20°C)

\*\* set temp. range depends on the selected configuration

\*\*\* PM = particulate matter, OGC = organic gaseous compounds, CO = carbon monoxide, NO<sub>x</sub> = nitrogen oxides

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## Technical data - EKO-CKB P + Cm Pelet-set 14-50

<b>Model identifier (TYPE):</b>	<b>EKO-CKB P 20</b> + <b>Cm Pelet-set</b> <b>14</b>	<b>EKO-CKB P 25</b> + <b>Cm Pelet-set</b> <b>35</b>	<b>EKO-CKB P 30</b> + <b>Cm Pelet-set</b> <b>35</b>	<b>EKO-CKB P 35</b> + <b>Cm Pelet-set</b> <b>35</b>	<b>EKO-CKB P 40</b> + <b>Cm Pelet-set</b> <b>35</b>	<b>EKO-CKB P 50</b> + <b>Cm Pelet-set</b> <b>50</b>
Useful heat output at rated heat output - P <sub>n</sub> (kW)	14	20	25	30	35	40
Useful heat output at 30 % of rated heat output - P <sub>p</sub> (kW)	4.2	6	7.5	9	10.5	12
Useful efficiency at rated heat output (lower calorific value) (%)	90.3	91.6	92.7	92.4	92.2	91.9
Useful efficiency at 30 % of rated heat output (lower calorific value) (%)	90.0	90.8	91.5	91.6	91.6	91.7
Useful efficiency at rated heat output (gross calorific value „GCV“) -η <sub>n</sub> (%)	82.6	84.1	85.4	85.2	84.9	84.7
Useful efficiency at 30 % of rated heat output (gross calorific value „GCV“) -η <sub>p</sub> (%)	82.3	83.4	84.3	84.4	84.4	84.5
Heat output range (kW)	4.2-14	6-20	7.5-25	9-30	10,5-35	12-40
Boiler	EKO-CK P 20	EKO-CK P 25	EKO-CK P 30	EKO-CK P 35	EKO-CK P 40	EKO-CK P 50
Burner	CPPL-14	CPPL-35	CPPL-35	CPPL-35	CPPL-35	CPPL-50
Feeder screw	CPPT	CPPT	CPPT	CPPT	CPPT	CPPT-50
Pellet tank	CPSP	CPSP	CPSP	CPSP	CPSP	CPSP
Boiler class	5					
Required chimney underpressure (mbar)	0.11	0.12	0.13	0.14	0.15	0.20
Required chimney underpressure at min. power (mbar)	0.05					
Water amount in boiler (l)	81	87	90	98	106	118
Exhaust gas temperature at nominal heat output (°C)	160					
Exhaust gas temperature at min. heat output (°C)	100					
Exhaust mass flow at nominal heat output (kg/s)	0.01309	0.01874	0.02345	0.02815	0.03284	0.03754
Exhaust mass flow at minimum heat output (kg/s)	0.0079	0.01111	0.01381	0.01702	0.01984	0.02267
Standby heat losses (kW)	0,15	0,217	0,266	0,288	0,309	0,34
Boiler resistance on water side at nominal output * (mbar)	2,2-0,5	4,4-1,1	6,9-1,7	10-2,5	13,6-3,4	17,7-4,4
Burning period at nominal power (h)	6					
Temperature setting range by help of the regulation ** (°C)	70-90 / 75-90 / 80-90					
Lowest return temperature (°C)	55					
Maximum heat input (kW)	15,6	22,2	27,8	33,33	38,88	44,44
Fuel size	fi 6 x max 50					
Combustion chamber volume / pellet tank volume (l)	75,4/370	80/370	92,5/370	105/370	116/370	161/370
Combustion chamber dimension (mm)	321x506x550	321x541x550	371x541x550	421x541x550	471x541x550	471x664x550
Combustion chamber volume (l)	89,3	95,5	110,3	125,2	140	172
Combustion chamber type	overpressure					
Electrical power (W)	250					
Voltage (V~)	230					
Frequency (Hz)	50					
Type of current	~					
Boiler dimensions with casing	Length (A) (mm)	985	1020	1020	1020	1142
	Width (B) (mm)	470	470	520	570	620
	Height (C) (mm)	1255	1255	1255	1255	1255
Boiler body mass (kg)	239	249	270	289	310	341
Total mass - (boiler with casing and accessories) (kg)	271	281	303	322	343	375
Max. operating overpressure (bar)	2,5					
Test pressure (bar)	5,5					
Max. operating temperature (°C)	90					
Uptake tube - external diameter (mm)	150	150	160	160	180	180
Boiler connections	Flow and return pipe (male thread) (R)	5/4"				
	Charge/discharge (female thread) (R)	1/2"				
	Heat exchanger connector (female thread) (R)	1"				
	Connector of exchanger sensor (female thread) (R)	1/2"				
Number of turbulators (pcs)	3	3	4	4	5	5
Minimal distance from flammable objects (mm)	1000					
Total current (A)	2,9					

Model identifier (TYPE):		EKO-CKB P 20 + Cm Pelet-set 14	EKO-CKB P 25 + Cm Pelet-set 35	EKO-CKB P 30 + Cm Pelet-set 35	EKO-CKB P 35 + Cm Pelet-set 35	EKO-CKB P 40 + Cm Pelet-set 35	EKO-CKB P 50 + Cm Pelet-set 50
Stoking mode		automatic					
The boiler should be operated with a hot water storage tank of a volume of at least (l)		280	400	500	600	700	800
Condensing boiler		no					
Solid fuel cogeneration boiler		no					
Combination boiler		no					
Preferred fuel		Compressed wood in the form of pellets: C1 (EN 303-5:2012); A1 (EN ISO 17225-2)					
Seasonal space heating energy efficiency - $\eta_s$ (%)		78	79	80	80	80	81
Seasonal space heating emissions for preferred fuel ***	PM mg/m <sup>3</sup> (10% O <sub>2</sub> )	21	22	23	22	21	20
	OGC mg/m <sup>3</sup> (10% O <sub>2</sub> )	2	4	6	5	4	3
	CO mg/m <sup>3</sup> (10% O <sub>2</sub> )	76	131	177	165	153	140
	NO <sub>x</sub> mg/m <sup>3</sup> (10% O <sub>2</sub> )	168	136	109	105	102	98
Auxiliary electricity consumption	At rated heat output - el <sub>max</sub> (kW)	0.065	0.071	0.075	0.076	0.076	0.078
	At 30 % of rated heat output - el <sub>min</sub> (kW)	0.030	0.036	0.040	0.040	0.040	0.040
	Of incorporated secondary emission abatement equipment (kW)	Not applicable					
	In standby mod - P <sub>SB</sub> (kW)	0.004					

\* (dT 10°C-dT20°C)

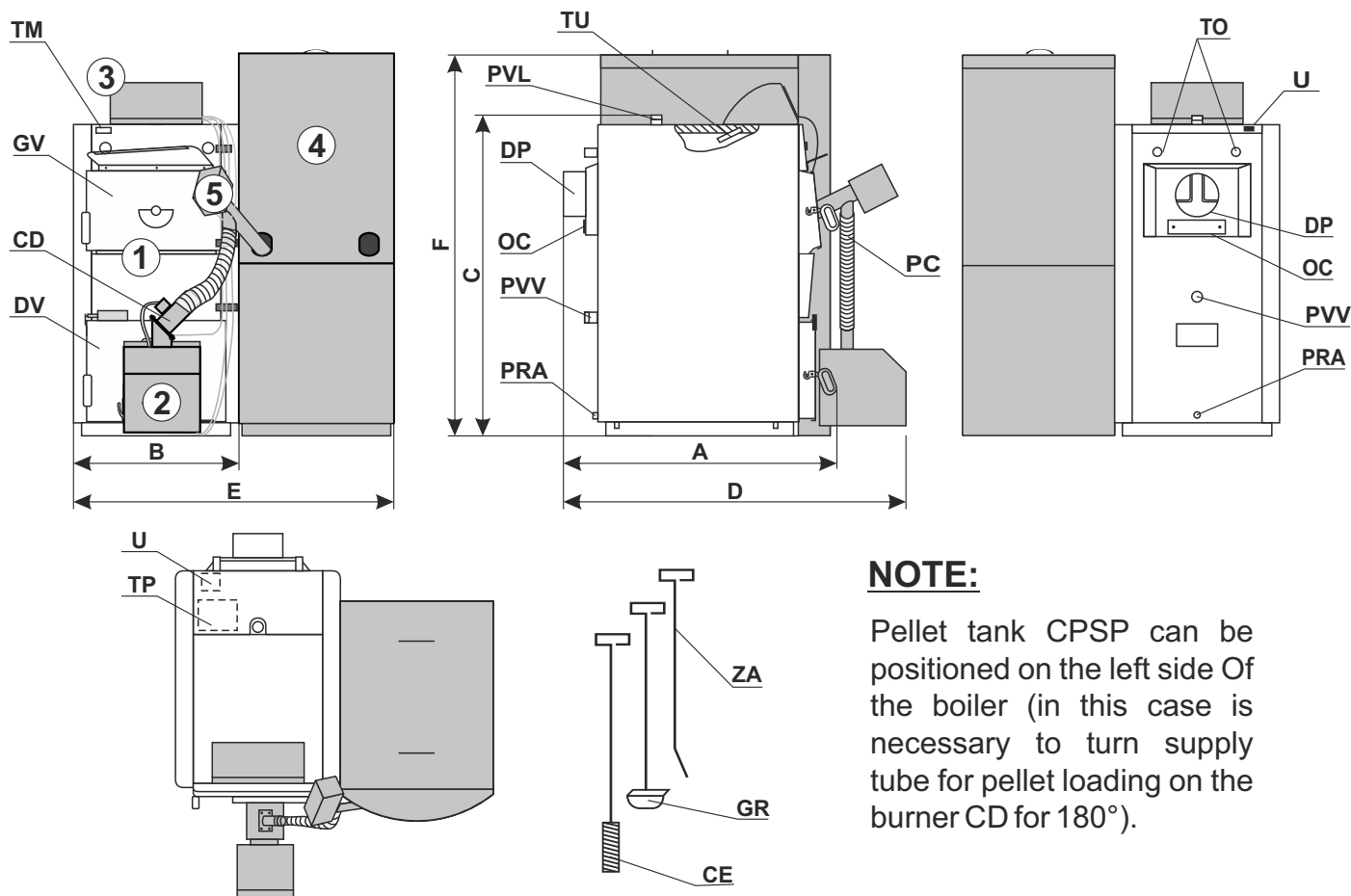
\*\* set temp. range depends on the selected configuration

\*\*\* PM = particulate matter, OGC = organic gaseous compounds, CO = carbon monoxide, NO<sub>x</sub> = nitrogen oxides

**Contact details:**

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## Boiler dimensions - EKO-CK P + Cm Pelet-set 14-50



### NOTE:

Pellet tank CPSP can be positioned on the left side of the boiler (in this case is necessary to turn supply tube for pellet loading on the burner CD for 180°).

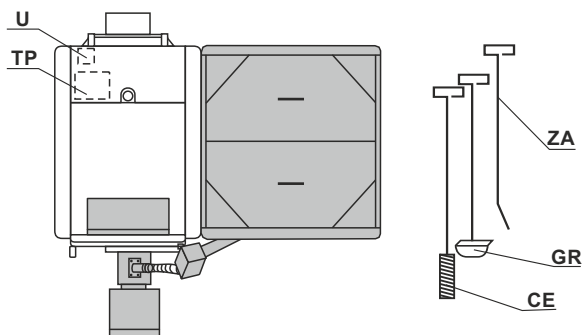
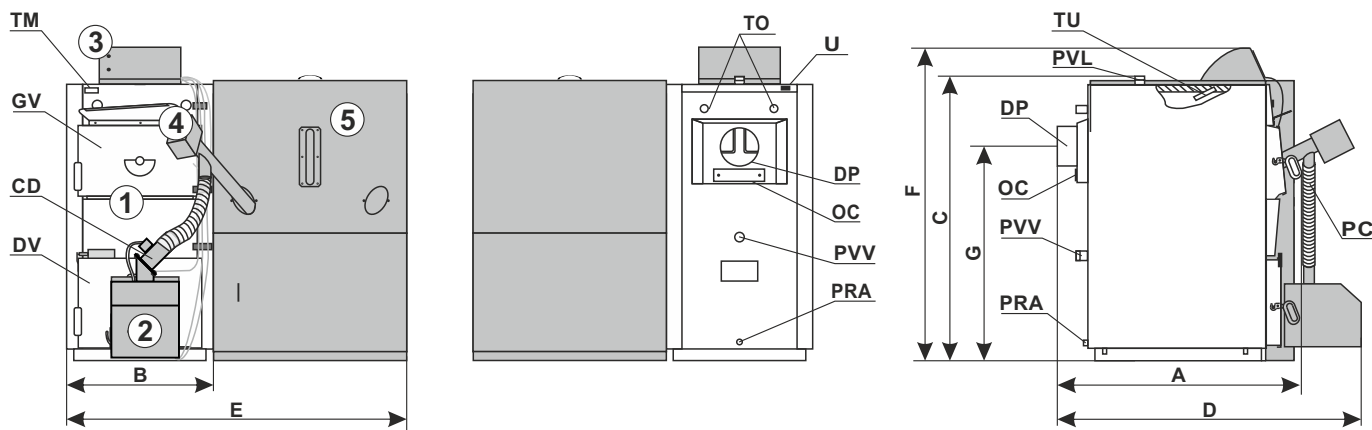
- ① - Boiler EKO-CK P 20-60
- ② - Pellet burner CPPL 14-50
- ③ - Pellet control unit CPREG / CPREG-Touch

- ④ - Pellet tank CPSP
- ⑤ - Feeder screw CPPT

### LEGEND:

DV - Lower boiler door	PC - Plastic flexible pipe
GV - Upper boiler door	U - Socket of the pump thermostat
TM - Thermometer	TO - Thermal protection connectors
PRA - Filling / drainage	TP - Pump thermostat
PVV - Outlet line	ZA - Poker
OC - Cleaning opening	GR - Scraper
DP - Chimney connection	CE - Cleaning brush
PVL - Inlet line	CD - Supply tube for pellet loading
TU - Sensor sleeve	

Overall system dimensions	EKO-CK P 20 + Cm Pelet-set 14	EKO-CK P 25 + Cm Pelet-set 35	EKO-CK P 30 + Cm Pelet-set 35	EKO-CK P 35 + Cm Pelet-set 35	EKO-CK P 40 + Cm Pelet-set 35	EKO-CK P 50 + Cm Pelet-set 50	EKO-CK P 60 + Cm Pelet-set 50
Total length (D) (mm)	1280	1280	1280	1280	1280	1440	1440
Total width (E) (mm)	1095	1095	1145	1195	1245	1245	1245
Total height (F) (mm)	1545	1545	1545	1545	1545	1545	1545



**NOTE:**

Pellet tank CPSP can be positioned on the left side of the boiler (in this case is necessary to turn supply tube for pellet loading on the burner CD for 180°).

- ① - Boiler EKO-CK P 70-110
- ② - Pellet burner CPPL-90
- ③ - Digital boiler controller CPREG / CPREG-Touch

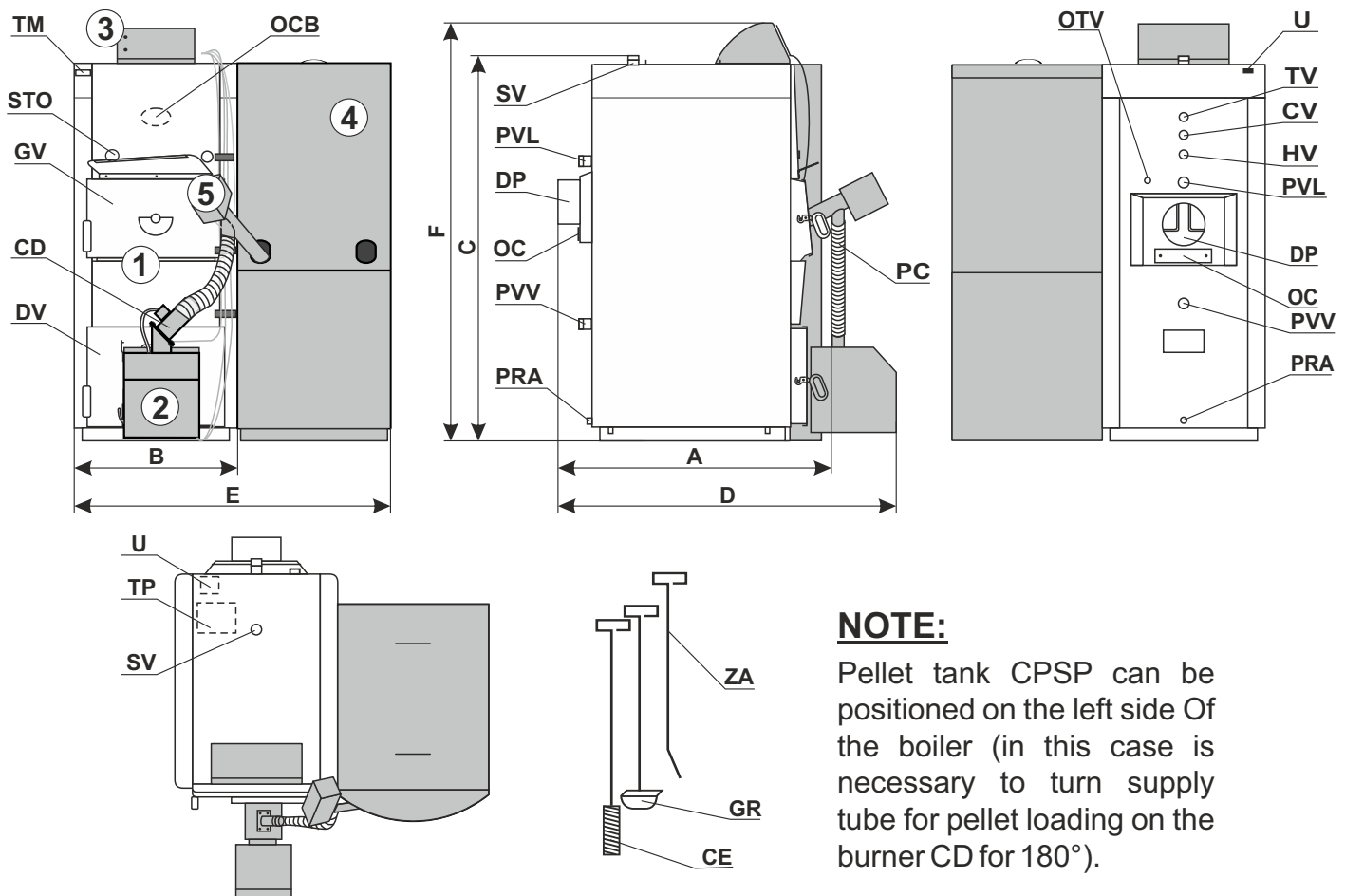
- ④ - Pellet screw CPPT-90
- ⑤ - Pellet tank CPSP-800 or CPSP 70-110

**LEGEND:**

- |                          |                                     |
|--------------------------|-------------------------------------|
| DV - Lower boiler door   | PC - Plastic flexible pipe          |
| GV - Upper boiler door   | U - Socket of the pump thermostat   |
| TM - Thermometer         | TO - Thermal protection connectors  |
| PRA - Filling / drainage | TP - Pump thermostat                |
| PVV - Outlet line        | ZA - Poker                          |
| OC - Cleaning opening    | GR - Scraper                        |
| DP - Chimney connection  | CE - Cleaning brush                 |
| PVL - Inlet line         | CD - Supply tube for pellet loading |
| TU - Sensor sleeve       |                                     |

Overall system dimensions	EKO-CK P + Cm pelet-set 60	EKO-CK P + Cm pelet-set 70	EKO-CK P + Cm pelet-set 90
Total length (D) (mm)	1610	1610	1710
Total width (E) (mm)	1650	1700	1700
Total height (F) (mm)	1600	1600	1600

## Boiler dimensions - EKO-CKB P + Cm Pelet-set 14-50



### NOTE:

Pellet tank CPSP can be positioned on the left side Of the boiler (in this case is necessary to turn supply tube for pellet loading on the burner CD for 180°).

- ① - Boiler EKO-CKB P 20-50
- ② - Pellet burner CPPL 14-50
- ③ - Digital boiler controller CPREG / CPREG-Touch

- ④ - Pellet tank CPSP
- ⑤ - Pellet feeder screw CPPT

### LEGEND:

SV	- Safety line	DP	- Flue
OTV	- Position for the installation of the thermal valve sensor	PVL	- Boiler flow
TV	- Domestic hot water	STO	- Probe for temperature and thermostat sensors
CV	- Circulation line	PC	- Plastic flexible pipe
HV	- Cold sanitary water	U	- Socket of the pump thermostat
DV	- Lower boiler door	TP	- Pump thermostat
GV	- Upper boiler door	ZA	- Poker
TM	- Termometar	GR	- Scraper
PRA	- Filling / drainage	CE	- Cleaning brush
PVV	- Outlet line	CD	- Supply tube for pellet loading
OC	- Cleaning opening	OCB	- DHW tank cleaning aperture

Overall system dimensions	EKO-CKB P 20 + Cm Pelet-set 14	EKO-CKB P 25 + Cm Pelet-set 35	EKO-CKB P 30 + Cm Pelet-set 35	EKO-CKB P 35 + Cm Pelet-set 35	EKO-CKB P 40 + Cm Pelet-set 35	EKO-CKB P 50 + Cm Pelet-set 50
Total length (D) (mm)	1280	1280	1280	1280	1280	1440
Total width (E) (mm)	1140	1140	1190	1240	1290	1290
Total height (F) (mm)	1765	1765	1765	1765	1765	1765

## 1.0. GENERAL

Boilers **EKO-CK (B) P + Cm Pelet-set** have a modern construction and design, they are made from certified materials with high quality, welded with the most modern welding technology, tested and certified according to the EN 303-5 norm and fulfill all conditions for the connection on the central heating installation.

## 1.1. DESCRIPTION

Boilers **EKO-CK (B) P + Cm Pelet-set** are hotwater pellet boilers made of steel with an automatic pellet supply.

## 1.2. DELIVERY STATUS

1. Boiler body with cover/insulation (mantle) and boiler door on a wooden palette, with turbulators in the combustion chamber, cleaning accessories (scratcher, poker, brush and the porter for this accessories) and the set (metal sheet screw, dowels, screws).

### 2a) For boilers: **EKO-CK (B) P 20 + Cm Pelet-set 14**

- pellet burner CPPL-14
- set for pellet burner installation for EKO-CK(B) P 14-25 (for CPPL 14-35)
- digital boiler controller CPREG / CPREG-Touch
- pellet tank CPSP
- pellet feeder screw CPPT

### 2b) For boilers: **EKO-CK (B) P 25 + Cm Pelet-set 35, EKO-CK (B) P 30 + Cm Pelet-set 35, EKO-CK (B) P 35 + Cm Pelet-set 35, EKO-CK (B) P 40 + Cm Pelet-set 35**

- pellet burner CPPL-35,
- set for pellet burner installation for EKO-CK(B) P (depending of boiler power) (for CPPL 14-35)
- digital boiler controller CPREG / CPREG-Touch
- pellet tank CPSP
- pellet feeder screw CPPT

### 2c) For boilers: **EKO-CK (B) P 50 + Cm Pelet-set 50 and EKO-CK P 60 + Cm Pelet-set 50**

- pellet burner CPPL-50
- set for pellet burner installation for EKO-CK(B) P (depending of boiler power) (for CPPL 50)
- digital boiler controller CPREG / CPREG-Touch
- pellet tank CPSP
- pellet feeder screw CPPT-50

### 2d) For boilers: **EKO-CK P 70 + Cm Pelet-set 90, EKO-CK P 90 + Cm Peletset 90, EKO-CK P 110 + Cm Pelet-set 90**

- pellet burner CPPL-90,
- set for pellet burner installation for EKO-CK P (depending of boiler power) (for CPPL 90)
- digital boiler controller CPREG / CPREG-Touch
- pellet tank CPSP-800
- pellet feeder screw CPPT-90

## 2.0. COMPONENTS

### 2.1. BOILER BODY

**Boiler bodies EKO-CK P and EKO-CKB P** are hotwater boilers made of steel. The combustion chamber has a big heating surface and a low resistance. The cleaning of this boilers is very simple and possible from the front side.

### 2.2. PELLET BURNER CPPL-14, CPPL-35, CPPL-50 AND CPPL-90

Pellet burner **CPPL-14** (nominal power is 14 kW, for the boilers EKO-CK (B) P 20 + Cm Pelet-set 14), **CPPL-35** (nominal power is 20-35 kW, for the boilers (EKO-CK (B) P 25/30/35/40 + Cm Pelet-set 35), **CPPL-50** (nominal power is 40-50 kW) for the boilers EKO-CK P 50/60 + Cm Pelet-set 50 and EKO-CKB P 50 + Cm Pelet-set 50), **CPPL-90** (nominal power is 60-90 kW) for the boilers EKO CK P 70/90/110 + Cm Pelet-set 90) are composed from quality components and made from certified construction materials. The burner has a high efficient fan which with the help of a special designed burner grate forms the flame as the classical burners do. In the burner also the electric heater is located which with the help of the controller when needed automatically fires the pellets. The embedded photocell serves for the detection of the flame in the burner. The special combustion chamber shape enables a quality mixing of air and fuel which result is a high combustion efficiency. Depending on the burner operation phase and the set power, the fan's rpm is changing, ie the burner air supply. The burner is designed to be mounted on the lower boiler door CPDV on the prepared apertures. The burner is factory prewired and it is necessary to connect it with the boiler controller CPREG / CPREG-Touch.

### 2.3. DIGITAL BOILER CONTROLLER CPREG / CPREG-Touch

Sophisticated digital boiler controller CPREG / CPREG-Touch steers the burner according to the need for heating and production of domestic hot water. The characteristics of the boiler controller CPREG / CPREG-Touch: microprocessing controller, safety thermostat, safety pressure switch, microswitch for the lower boiler door, the controller starts and stops the burner according to the set temperatures and operation regimes, regulates the pellet supply via the pellet feeder, operation according to (heating and DHW) or (only DHW) regime, boiler protection from condensing, notes the current boiler status on the screen, error writings on the screen. For a detailed operation description and the setting mode of the individual parameters look into the "Technical instructions EKO-CK(B) P + Cm pelet-set\_BOOK 2/2"

### 2.4. PELLET FEEDER CPPT, CPPT-50 AND CPPT-90

The transport of pellets from the tank towards the burner is done with the help of the pellet feeder CPPT/CPPT- 50/CPPT-90. In the tube (pellet feeder) an " Archimedean " spiral is located which by the help of the electric gearmotor transports the pellets from the tank over the flexible tube into the pellet burner. The electric motor is factory prewired and it is necessary to connect it with the connector on the back side of the boiler controller CPREG / CPREG-Touch. In case the power cable is damaged, the replacement of it needs to be done by an authorized serviceman or by a trained person in order to avoid the danger of a power (electric) stroke or damage.

### 2.5. PELLET TANK CPSP / CPSP-800

The pellet tank CPSP / CPSP 800 is positioned on the right side (recommendation) or on the left side next to the EKO-CK P or EKO-CKB P boiler. After positioning it is needed to mount the pellet feeder. Before filling the tank it is needed to open the lid which is located on the top of the tank and to check for possible rigid objects or other foreign bodies which may not be present here. The pellet tank mounting mode is described in the installation manual for the pellet tank.

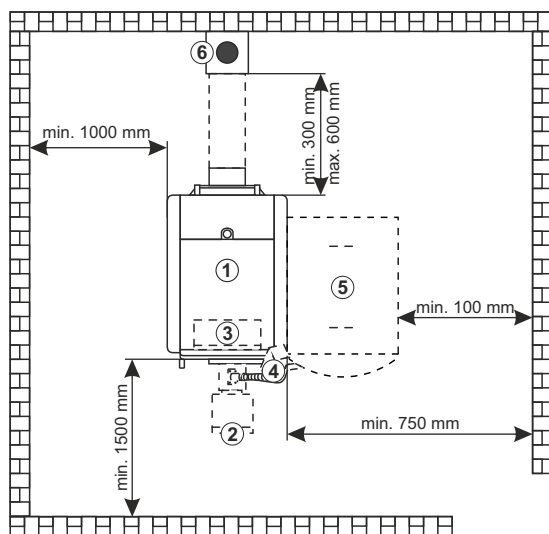
### 3.0. BOILER POSITIONING AND ASSEMBLY

The boiler positioning and assembly must be done by an expert. The boiler needs to be positioned on a solid and horizontal surface. We recommend the positioning on a concrete surface / base with the height of between 50 and 100 mm. The boilerroom must be safe from freezing and good ventilated. The boiler must be positioned in the way to enable its correct connection with the chimney (see point 3.5.), and in the same time to allow the normal work with the boiler and the additional equipment, monitoring during the operation, boiler cleaning and its maintenance (Picture 1a and 1b).

**WARNING:**

**Flammable objects may not be situated in the boiler and within the minimal distances shown on the figures 1a and 1b.**

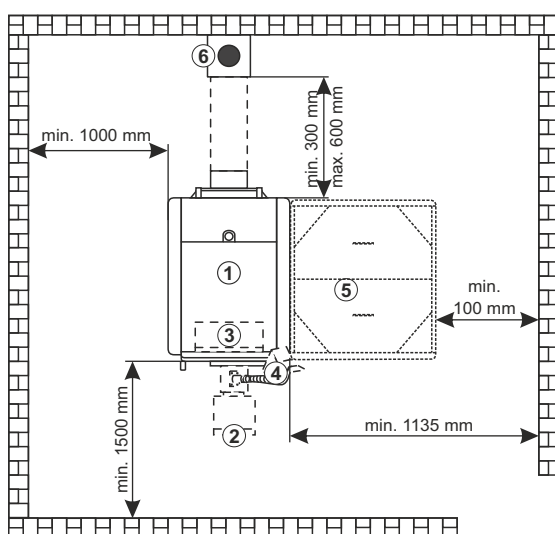
**Picture 1a.** Minimum distance from the room walls



**Legend:**

- ① - Boiler EKO-CK (B) P + Cm Pelet-set 14-50
- ② - Pellet burner CPPL
- ③ - Digital boiler controller CPREG / CPREG-Touch
- ④ - Pellet feeder screw CPPT
- ⑤ - Pellet tank CPSP
- ⑥ - Chimney

**Picture 1b.** Minimum distance from the room walls



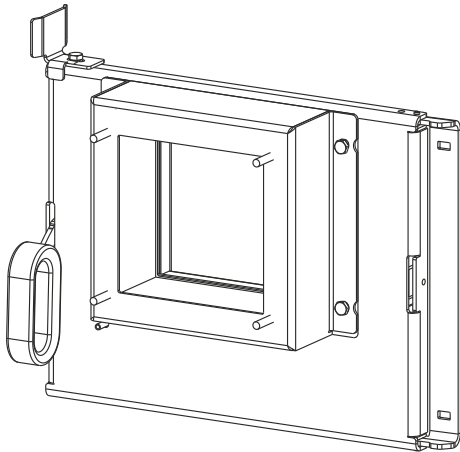
**Legend:**

- ① - Boiler EKO-CK P + Cm Pelet-set 60-90
- ② - Pellet burner CPPL-90
- ③ - Digital boiler controller CPREG / CPREG-Touch
- ④ - Pellet feeder screw CPPT-90
- ⑤ - Pellet tank CPSP-800
- ⑥ - Chimney

### 3.1 CHANGING OF DOOR OPENING DIRECTION

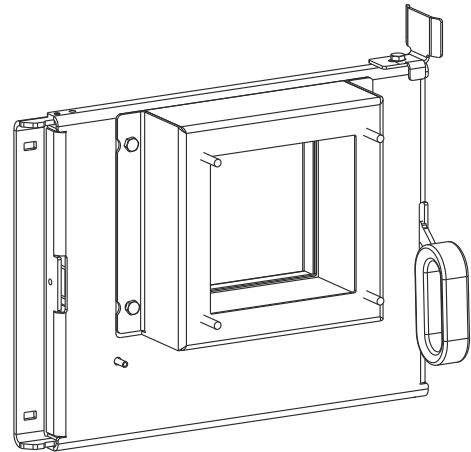
Upper and lower boiler door are factory designed so that it can be changed opening direction to left or right side. Opening direction can be changed. It is necessary to change positions of universal parts responsible for direction of door opening. Universal parts are shown in picture 4. Handle, hinge and handle latch holder are universal parts which hold upper and lower boiler door. Lower boiler door has one additional piece (microswitch breaker) which position must be changed. Door is default mounted to open on right side. On page 15 are shown how to change direction of door opening on left side. Procedure is the same for upper and lower boiler door except microswitch on lower boiler door.

Picture 2



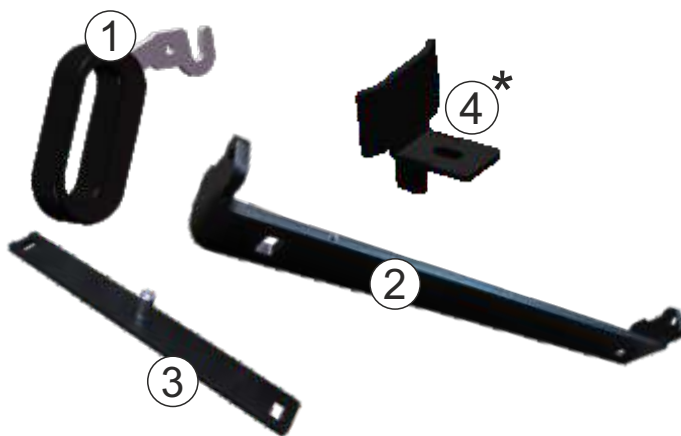
Lower boiler door which opens to the right side (default).

Picture 3



Lower boiler door readjusted for opens to the left side.

Picture 4 Universal door parts needed to install on opposite side to change the door opening direction.

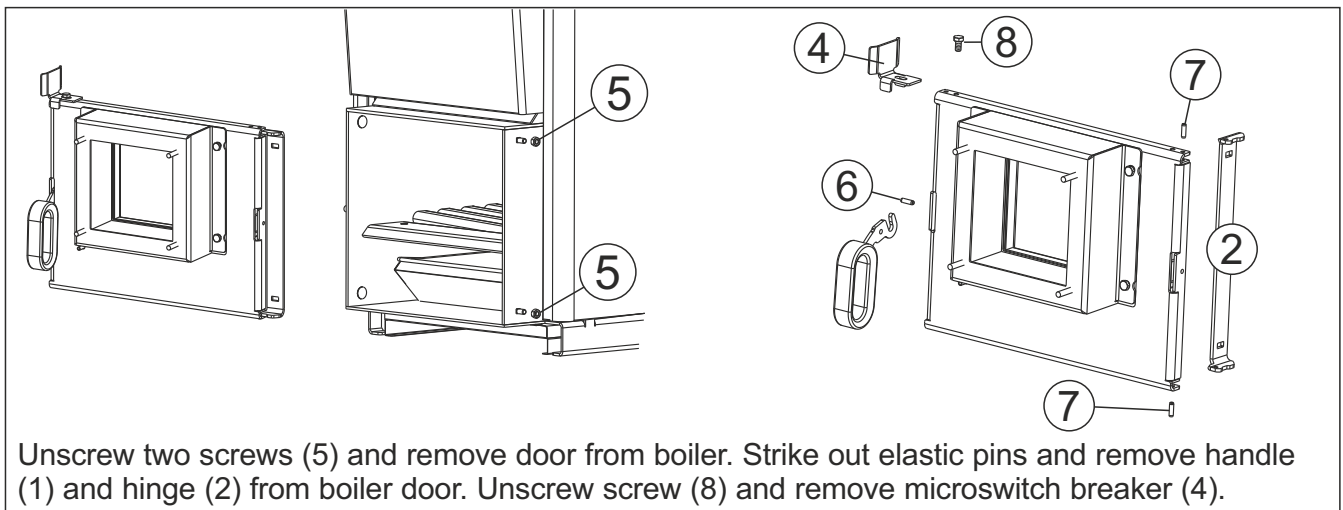


- ① Handle
- ② Hinge
- ③ Handle latch holder (on the boiler)
- \* ④ Microswitch breaker

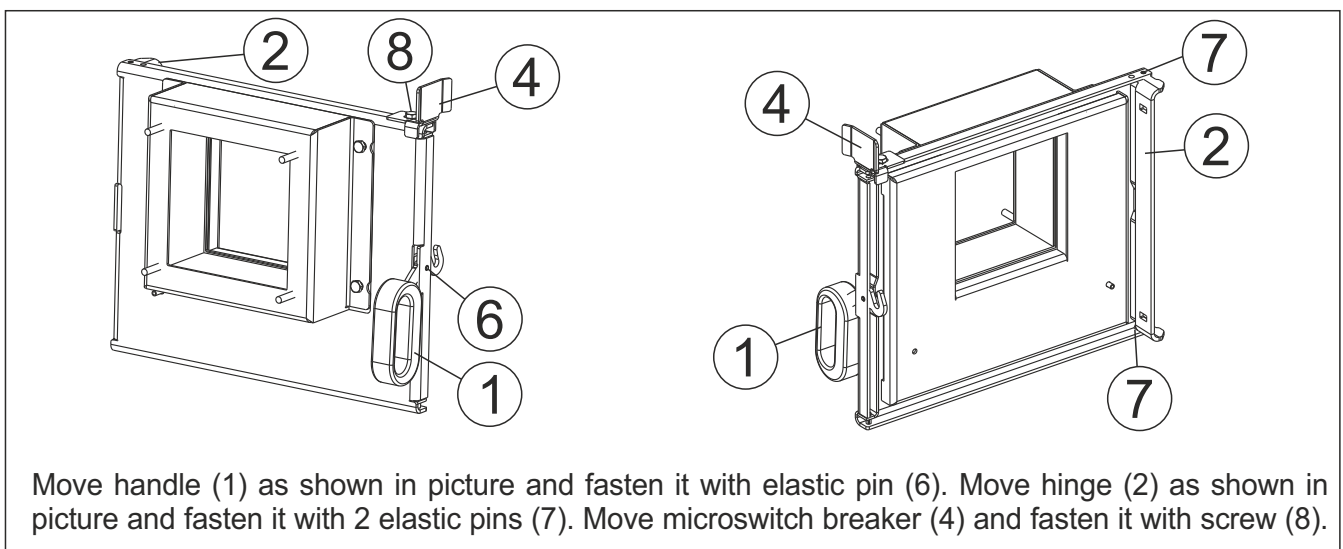
\* Only on lower boiler door.

The process of converting factory delivered lower boiler door with right opening direction (default) to door with left opening direction.

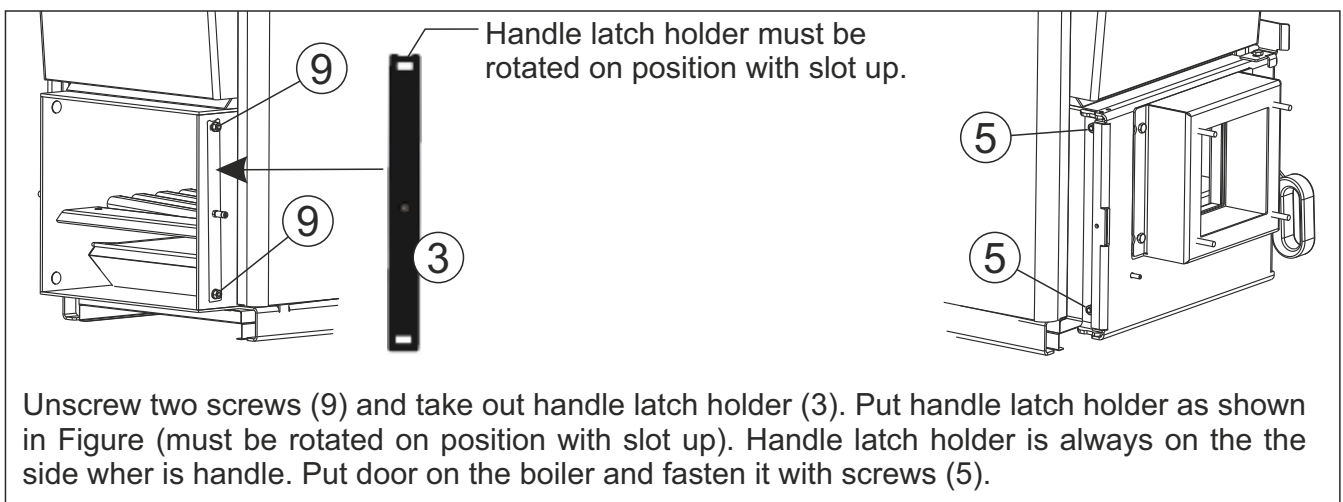
### 1. Removing door from boiler and remove universally parts from door



### 2. Installing universally parts to the other side



### 3. Installing of handle latch holder and door to boiler



### 3.2. INSTALL. OF THE EXTENSION FOR THE INSTALL. OF PELLET BURNER

In order to install a pellet burner on the lower boiler door, it is necessary to install a set for installing a pellet burner on the lower boiler door.

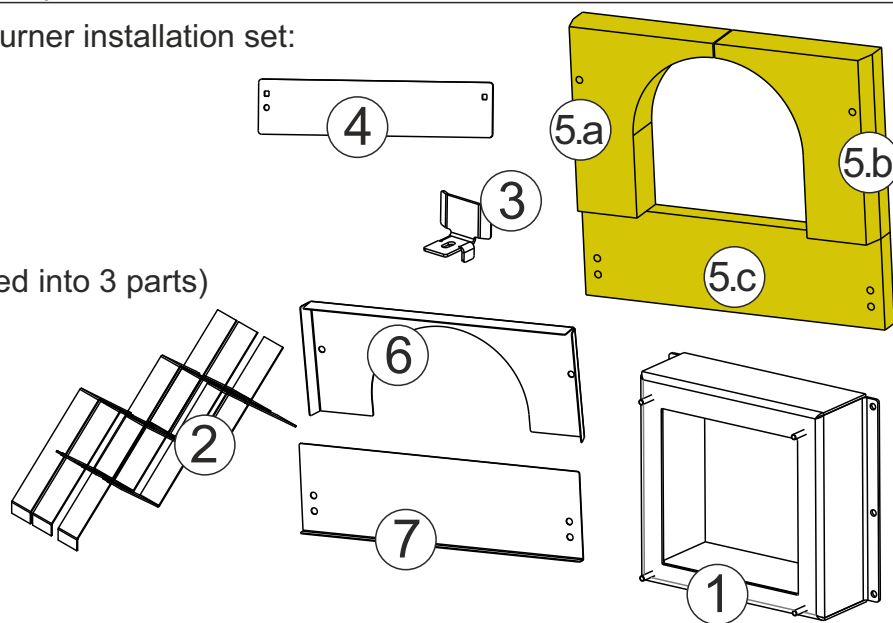
**Set 70 for installation of pellet burner contains:** two fireclay plates 400x200\*40, 4 turbulators, pellet burner extension for CPPL 90, microswitch breaker, air vent cover, door insulation, insulation protection upper and lower, set of screws.

**Set 90-110 for installation of pellet burner contains:** two fireclay plates 400x200\*40, 5 turbulators, pellet burner extension for CPPL 90, microswitch breaker, air vent cover, door insulation, insulation protection upper and lower, set of screws.

- Additional equipment for burning wood pellets

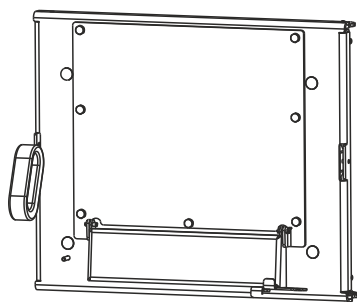
Contents of delivery of the pellet burner installation set:

1. Pellet burner extension
2. Turbulators (set 70 - 4 pcs.  
set 90/110 - 5 pcs.)
3. Microswitch breaker
4. Air vent cover
5. Door insulation (comes separated into 3 parts)
  - 5.a Left (vermiculite)
  - 5.b Right (vermiculite)
  - 5.c Lower (vermiculite)
6. Insulation protection (up)
7. Insulation protection (down)
8. Two fireclay plates 400x200\*4
- Set of screws



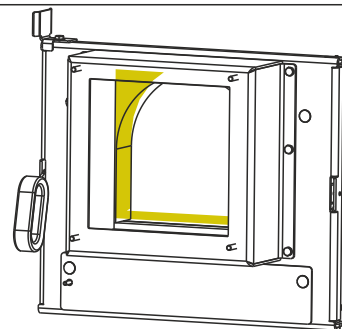
#### Lower boiler door

(heating solid fuel)

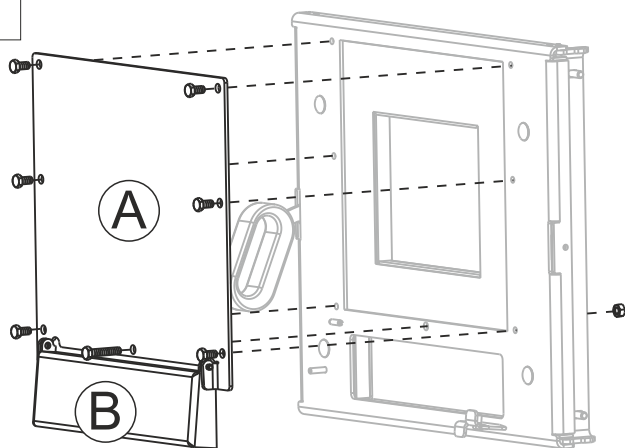


#### Lower boiler door

(heating with wood pellets)

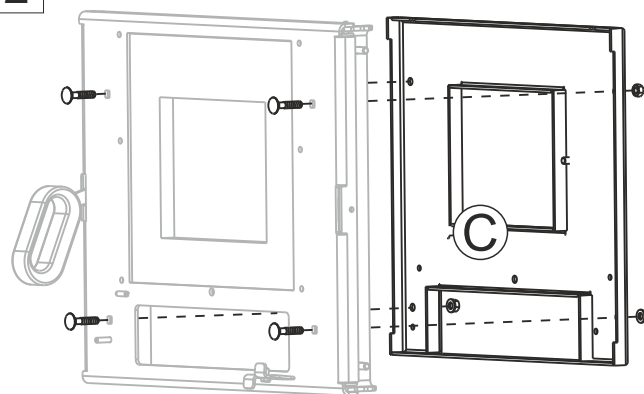


1



Unscrew 6 screws (M8x15) and one M8 nut with screw (M8x40) and remove the blank plate (A) with the primary air door (B)

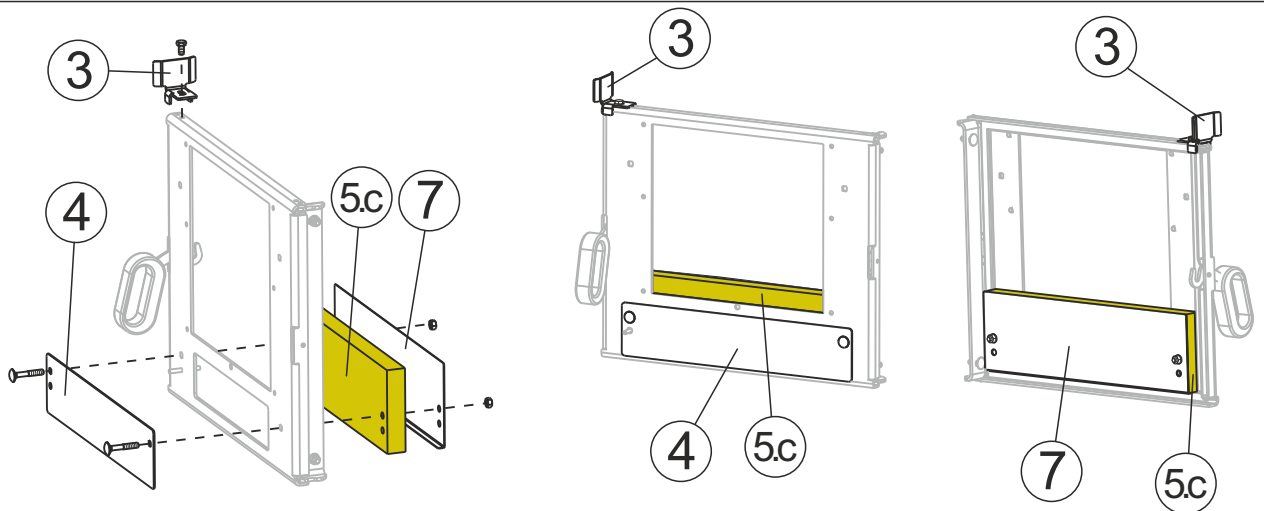
2



Unscrew the 4 nuts and remove the stone wool bumper and blind plate (C)

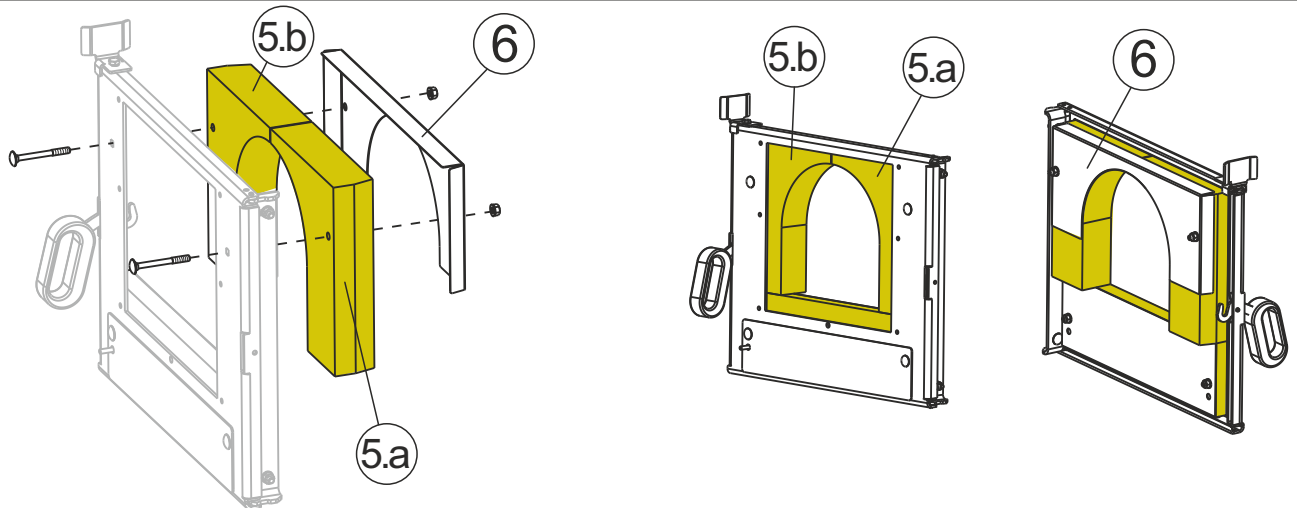
Install. of the extension on the lower boiler door for the install. of pellet burners

3



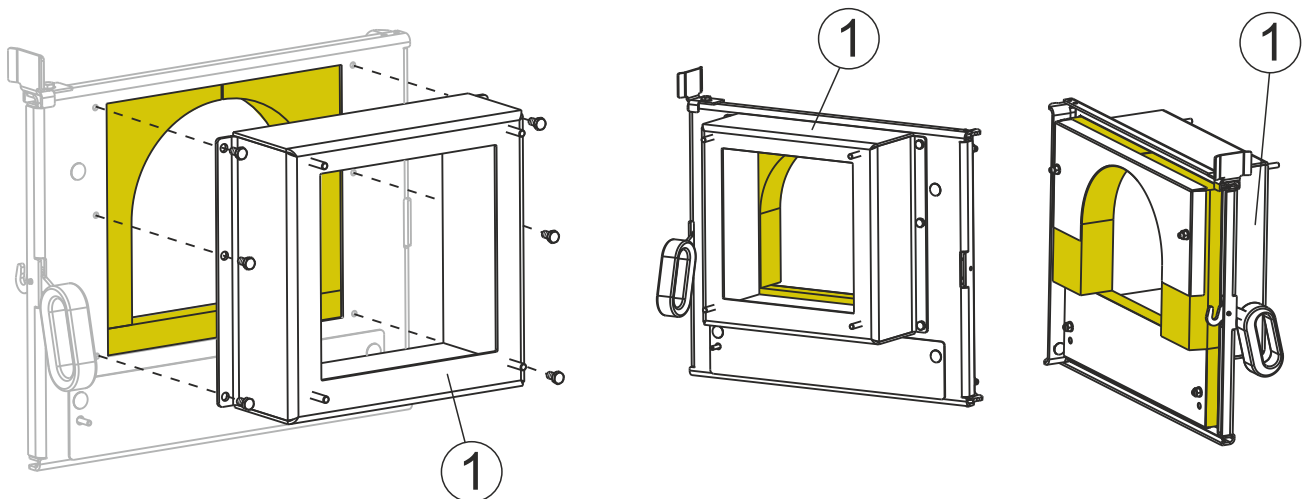
Install the air vent cover (4), the lower door insulation (6) and the lower insulation protection (7) and all fasten together with a nut M8 screw (M8X50). Install the microswitch L-profile (3) and fasten it with a screw (M8X15).

4



Install the left (5a) and right (5b) door insulation and the upper insulation protection (6) and fasten all together using an M8 nut with a screw (M8X80).

5



Install the pellet burner extension (1) and fasten it with 6 screws (M8X15)

### **3.3. PLACING FIRECLAY BOARDS ON THE FIREBOX GRATE**

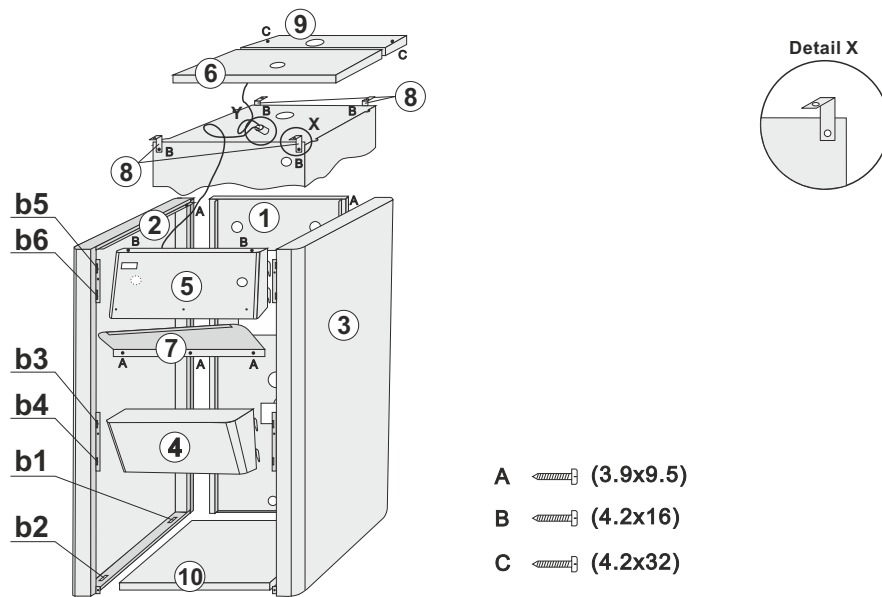
Fireclay plates measuring 400x200\*4 should be placed on top of the water-cooled grate to the end towards the back of the firebox as in picture 5.

- Additional equipment for burning wood pellets

**Picture 5:** Position of fireclay plates on top of the grate in the firebox.

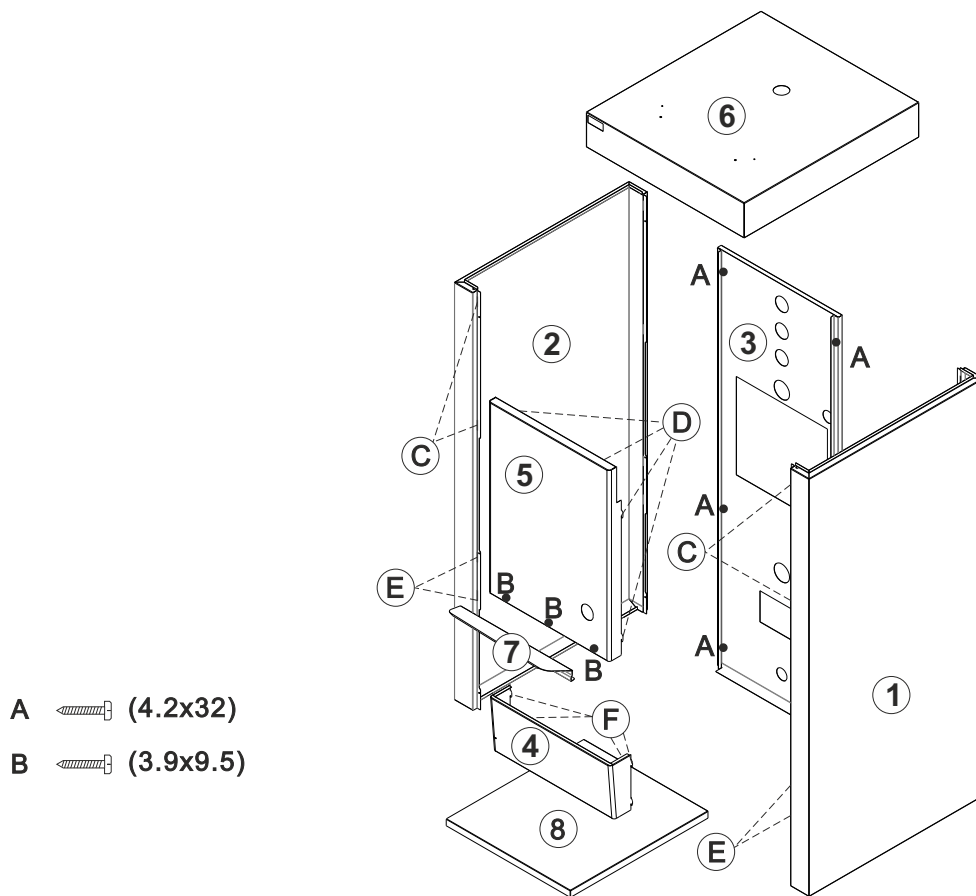


**Picture 6a.** Installation of casing to boiler EKO-CK P



1. Fasten insulation support (8) with screws 4,2 x 16 into wholes at the upper side of the boiler body.
2. Fix the lateral sides (2) and (3) on girders on the lateral sides of the boiler mount into rectangular opening of the casing lateral sides (b1) and (b2), hook them up on casing supports (8), and fix them with two screws on sheet metal 3.9 x 9,5 on the rear casing supports (8).
3. The front upper casing side (5) has to be hooked up with hooks into rectangular openings of the lateral left and lateral right side of the casing (b5) and (b6), and fixed with one screw on sheet metal 4,2 x 16 into the front casing support (8) through the lateral side (2) and with one screw for sheet metal 4,2x16 into the front casing support (8) through the lateral side (3).
4. The front bottom casing side (4) has to be hooked up with hooks into rectangular openings of casing lateral sides (b3) and (b4).
5. We insert the thermometer sensor at the front upper side of the casing (5) and pump thermostat sensor at the rear casing cover (9) into the probe at the upper side of the boiler, and secure the sensors with wire delimiter supplied in the set (Detail Y).
6. We position the front casing cover (6) on the groove of the front upper casing side, and the rear casing cover (9) on the groove of the front casing cover (6).
7. We hook the rear casing side (1) on the connecting pipe and fix it with 2 screws for sheet metal 4,2 x 32 on the lateral side (2) and 2 screws for sheet metal 4,2 x 32 on the lateral side (3).
8. We fix the rear casing cover (6) from the upper side with 2 screws for the sheet metal 4,2 x 32 on lateral casing sides (2) and (3).
9. At the end, we fix the draught regulator protection (7) on the front upper casing side (5) on the prefabricated holes with three sheet metal screws 3,9 x 9,5.
10. Finally, we take the base protection (10) and insert it under the boiler between the supports holding the boiler.

**Picture 6b.** Installation of casing to boiler EKO-CKB P



1. Place the lateral cover (1) and the lateral cover (2) on the factory-prepared brackets located on the top of the boiler.
2. Place the back cover (3) on the pipe at the back of the boiler. Back cover (3) closer to the left lateral and right lateral cover secure it with the six 4.2 x 32-thread screws in the lateral left and right cover
3. Attach the front lower (4) cover hook the hooks to the prepared holes (E) on the lateral left (2) and lateral right cover (1) the bonnet.
4. Before placing the upper side of the upper cover (5), the thermostat and thermometer sensors must be placed at the intended location (Technical Instructions EKO - CKB P, page 3, STO).
5. Attach the front upper cover (5) hook the hooks (D) to the prepared holes (C) on the lateral left (2) and lateral side cover (1) on the prepared holes (C).
6. Place the lid (6) so that it sits on the grooves of the lateral left (2) and the lateral right (1) cover and on the back cover (3).
7. Attach the draught regulator protection (7) to 3,9 x 9,5 with 3 screws for sheet metal in front upper cover (5).
8. Finally, the flooring 8 is protected and pushed underneath the boiler between the supports on which the boiler is mounted.

### 3.4. OPENING FOR FRESH AIR (FRESH AIR SUPPLY)

Each boiler room must be equipped with an opening for supply of fresh air which is dimensioned in accordance with boiler output (minimum opening area according to the below shown equation). Such opening must be protected with a net or grate. All installation works have to be performed in accordance with valid national and European standards. Boiler must not operate in flammable and explosive environment.

$$A = 6,02 \cdot Q$$

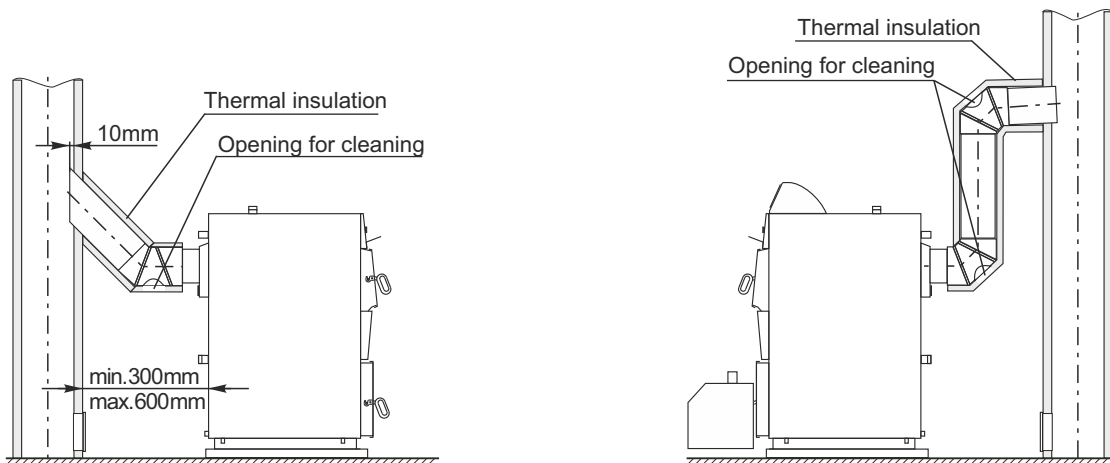
A - opening area in cm<sup>2</sup>

Q - boiler output in kW

### 3.5. CONNECTION TO CHIMNEY

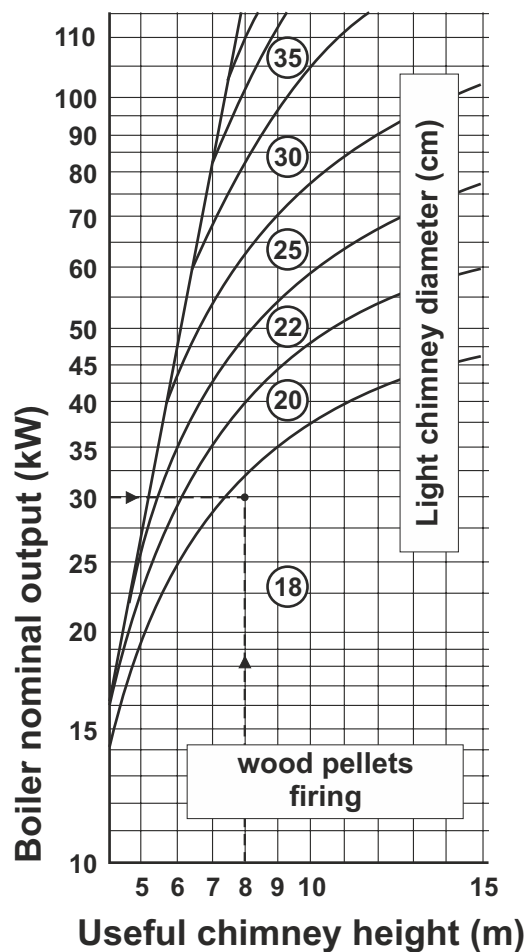
Properly dimensioned and built chimney is a precondition for safe boiler operation and heating efficiency. A chimney must be thermally insulated, gas-tight and smooth. Cleaning door must be made in the lower part of a chimney. Chimney made of bricks must include 3 layers with central insulation layer made of mineral wool. Thickness of thermal insulation should be min. 30 mm of chimneys is built against to interior wall, and min. 50 mm if it is built on the outer side. **Internal dimensions of the chimney light diameter depend on chimney height and boiler output and they have to be selected in accordance with diagram shown in picture 8.** The chimney usable height is the measure from connection spot of smoke pipe to the chimney top. As these boilers can be fired with wooden pellets at any time, chimney has to be selected according to the wooden pellets diagram. Fuel gas temperature at the chimney exist must be min. 30° higher than condensation temperature of combustion gases. Selection and building of a chimney must be made by a professional. Required maximum distance from boiler to chimney is 600 mm, and minimum distance is 300 mm. Uptake tube must be installed at an angle (min. 5°) with a gradient from chimney to boiler (Picture 7). In order to prevent condensate from chimney to enter the boiler, uptake tube must be placed 10 mm deeper into chimney. Connecting uptake tube between boiler and chimney must be thermally insulated with a mineral wool layer having thickness of 30 to 50 mm. All installation works must be made in accordance with valid national and European standards.

**Picture 7.** Possible ways of connections of boilers **EKO-CK (B) P + Cm Pelet-set** to chimney



Possible way of connection of boilers EKO-CK (B) P + Cm Pelet-set to chimney  
**(recommendation)**

**Picture 8.** Chimney dimensioning for boilers **EKO-CK (B) P+ Cm Pelet-set**



### 3.6. AN EXAMPLE OF SELECTION OF A CHIMNEY (diagram on picture 8)

- BOILER HEAT OUTPUT - 30 kW
- FUEL - WOOD PELLETS
- REQUIRED USABLE CHIMNEY HEIGHT -  $H = 8$  m
- REQUIRED CHIMNEY LIGHT DIAMETER - 18 cm
- **Usable chimney height** - chimney height from connection spot of smoke pipe to the chimney top.
- **Light chimney diameter** - interior chimney diameter.

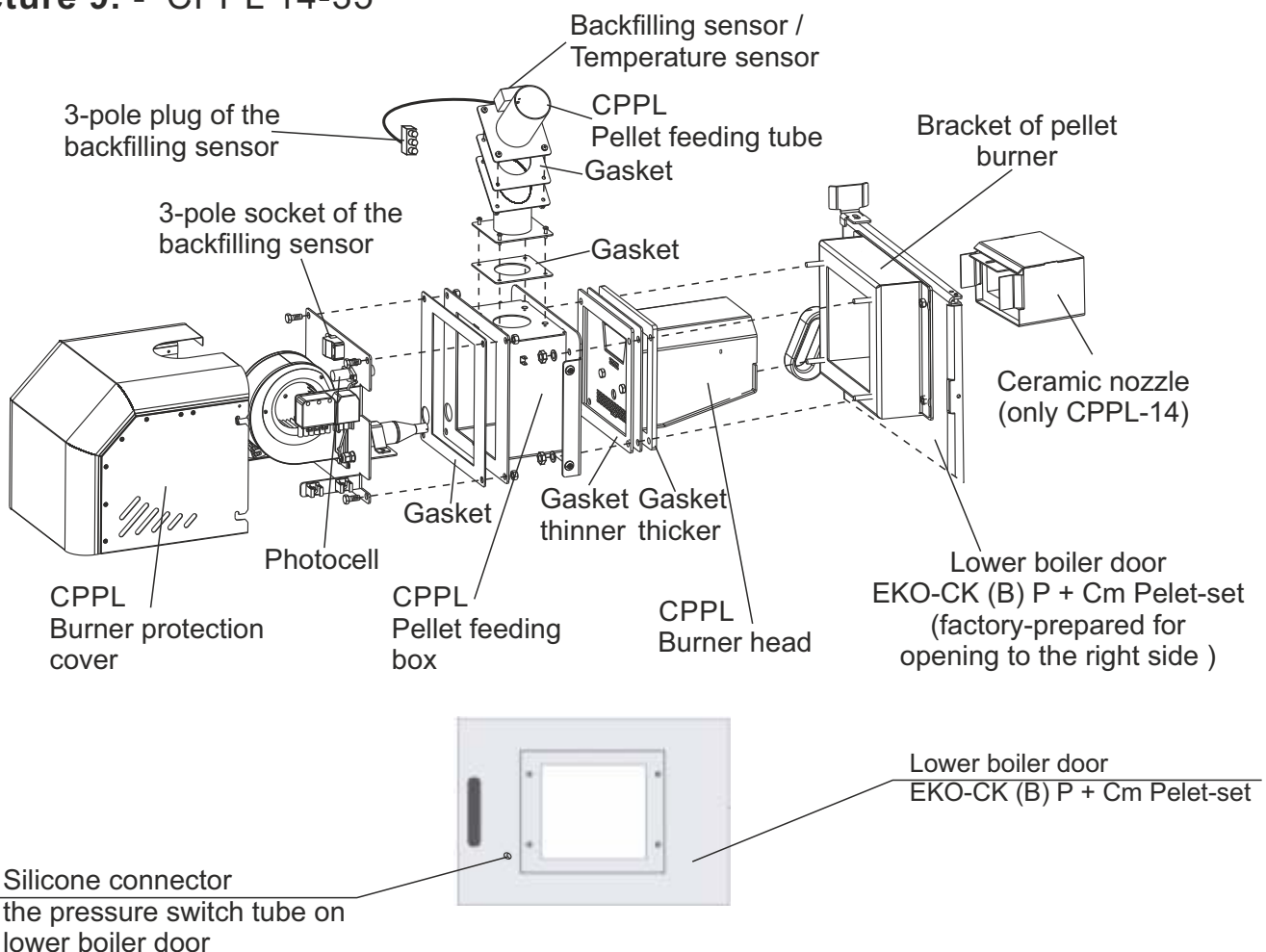
### 3.7. PELLET BURNER MOUNTING

#### 3.7.1 CPPL 14-35

- remove burner protection cover, place burner head (with fixed thicker gasket toward door and thinner gasket on the side away from door) onto prepared screw on the door, then place a feeding box and tighten the screws with enclosed nuts M8. Put a gasket onto the feeding box and put a feeding tube onto it (faced toward the pellet tank, either on the left or on the right side and tighten it firmly using enclosed screws M4 x 15. Connect 3-pin plug of the backfilling sensor / temperature sensor the supply pipe in 3-pin connre cw tohich is attached to the feeding box. PVC and silicone pipe, which is at its one end fix ed to the pressure switch at the burner, should be placed (and shorten if necessary) onto approp riate connector on the boiler door. Place cover onto preinstalled screws and tighten them firmly.

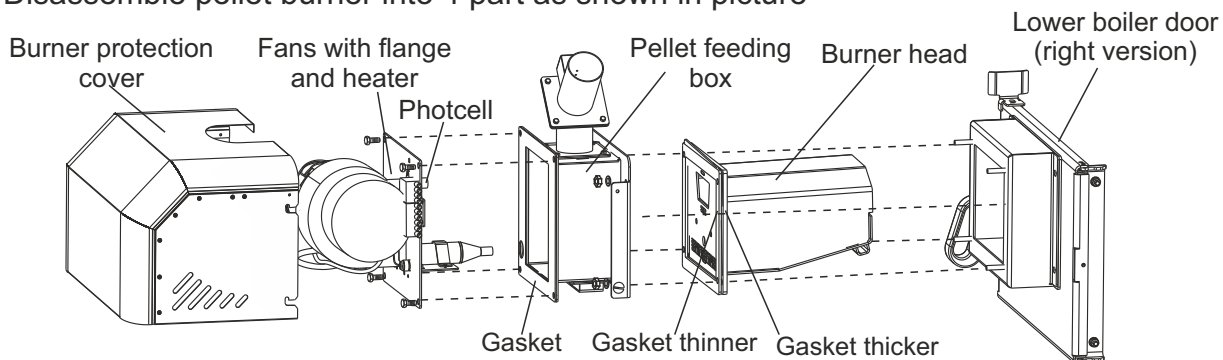
- only CPPL-14: put ceramic nozzle onto holder located on the top of burner head.

**Picture 9. - CPPL 14-35**

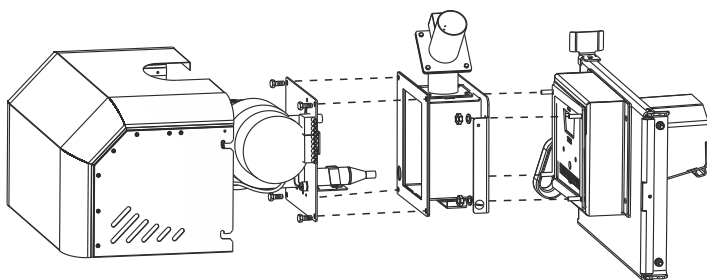


**3.7.2 CPPL 40-50**

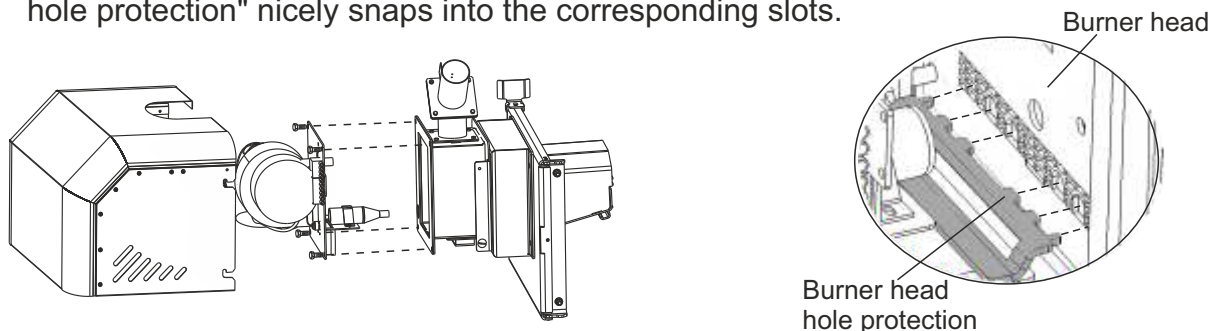
1. Disassemble pellet burner into 4 part as shown in picture



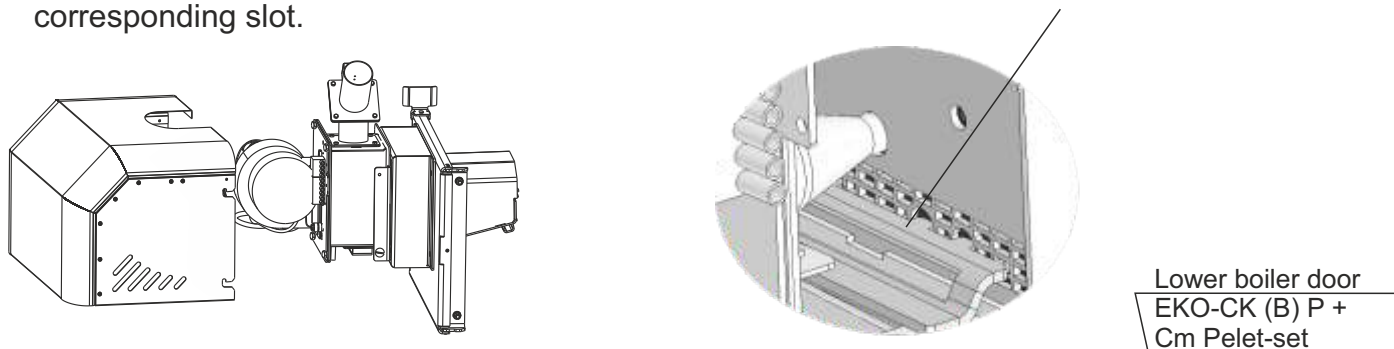
2. Set burner head at lower boiler door



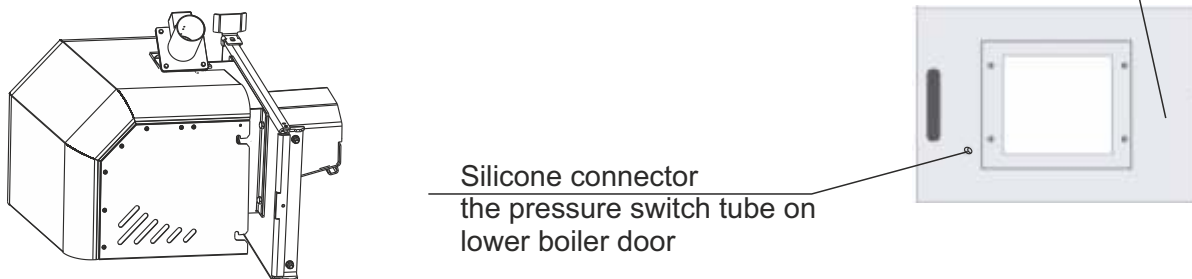
3. Add a pellet feeding box and attach all together with four bolts. Make sure the "Burner head hole protection" nicely snaps into the corresponding slots.



4. Add a fan and heater and attach them with four screws. Make sure the heater nicely snaps into corresponding slot.



5. Add a protection cover and fasten with four screws.



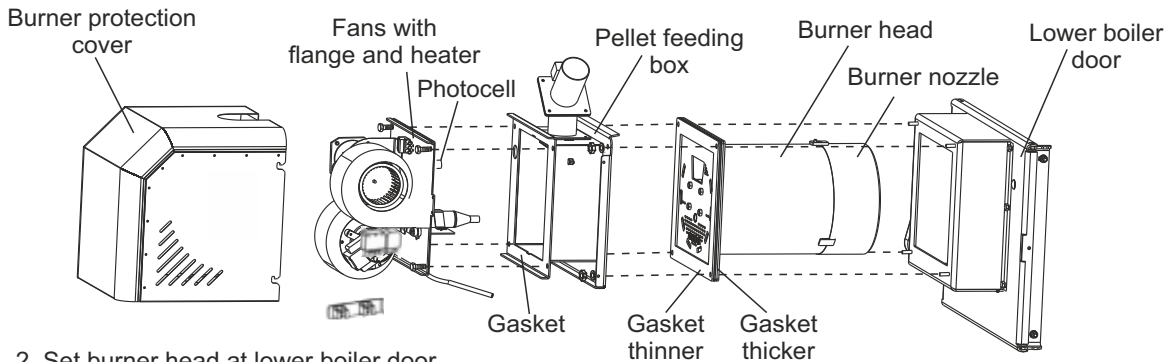
**3.7.3 CPPL-90**

Disassemble the burner into 4 parts as shown figure below (point 3.7.4.). Place burner head (with fixed thicker gasket toward door and thinner gasket on the side away from door) onto prepared screws on the door, then place a feeding box and tighten the screws with enclosed nuts M8. Put a gasket onto the feeding box and put a feeding tube onto it (faced toward the pellet tank, either on the left or on the right side and tighten it firmly using enclosed screws M4x30. Connect 3-pin plug of the backfilling sensor / temperature sensor the supply pipe in 3-pin connector which is attached to the feeding box. PVC and silicone pipe, which is at its one end fixed to the pressure switch at the burner, should be placed (and shorten if necessary) onto appropriate connector on the boiler door. Place cover onto preinstalled screws and tighten them firmly. In the end it is necessary to put the nozzle of the burner which is attaches to the prepared screw on the burner head.

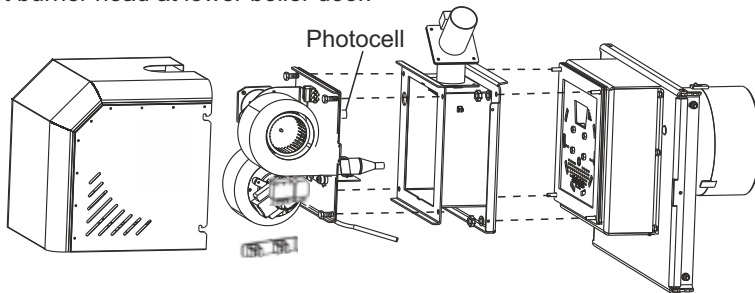
**3.7.4 CPPL 90**

**The order of operations for installing a pellet burner at lower boiler door**

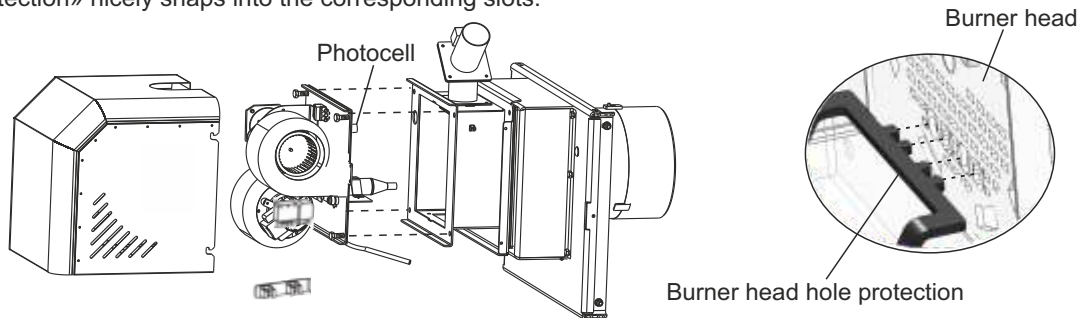
1. Disassemble pellet burner into 4 parts as shown in Figure



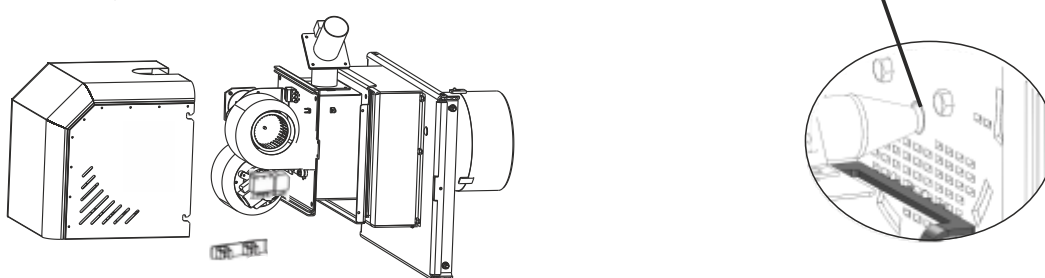
2. Set burner head at lower boiler door.



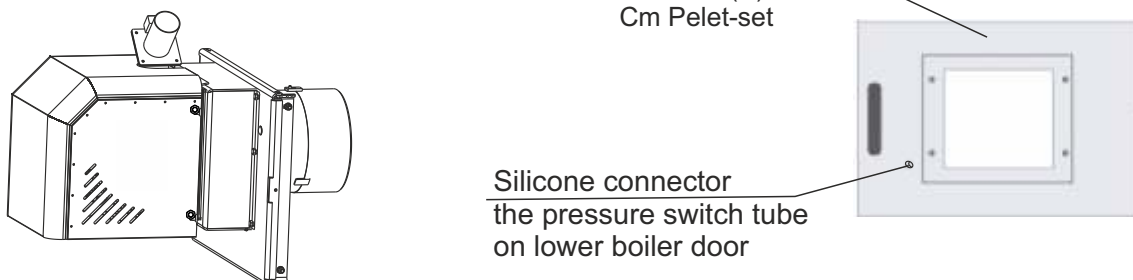
3. Add a pellet feeding box and attach all together with four bolts. Make sure the «Burner head hole protection» nicely snaps into the corresponding slots.



4. Add a fan and heater and attach them with four screws. Make sure the heater nicely snaps into corresponding slot.



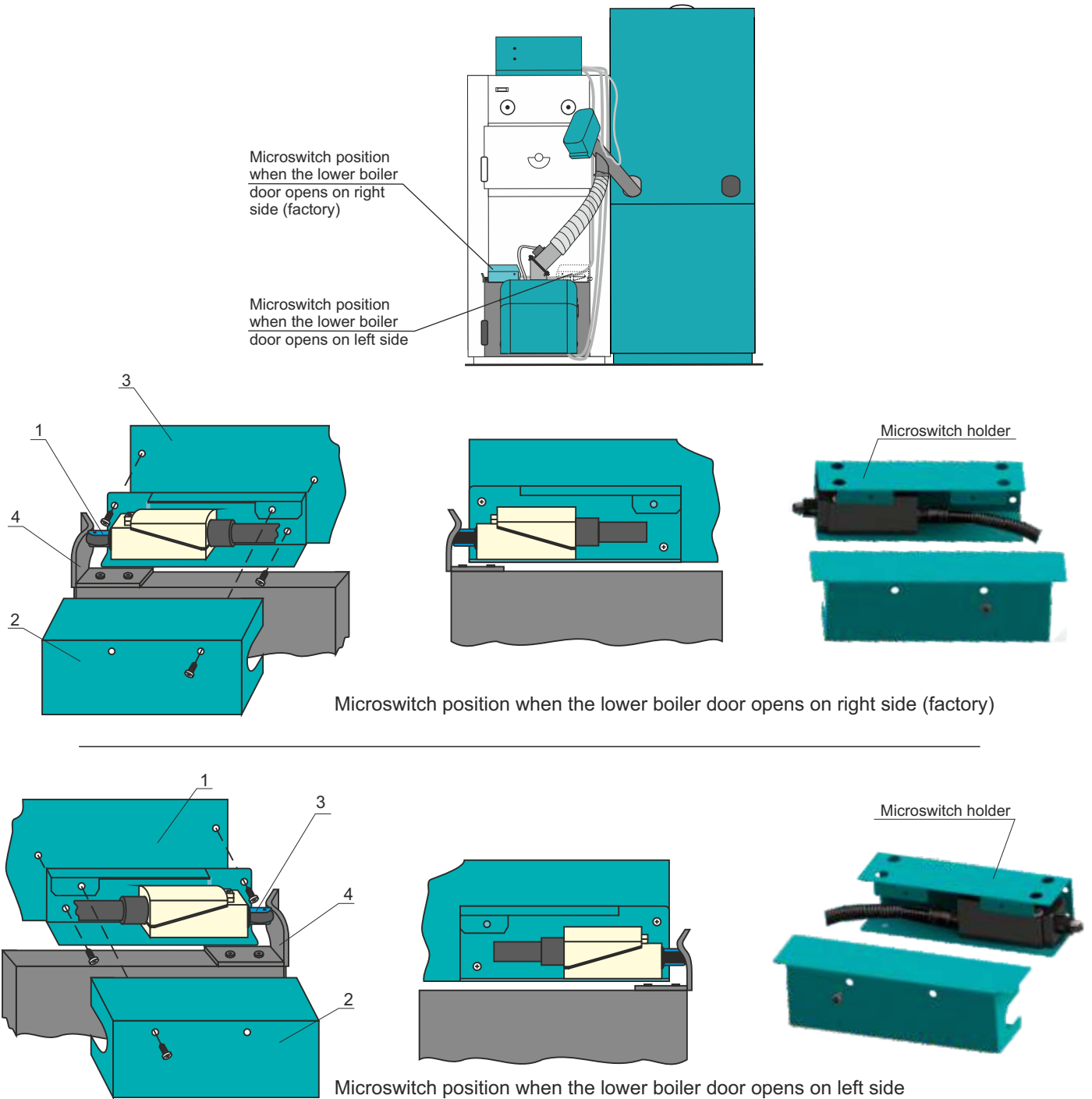
5. Add a protection cover and fasten with four screws.



### 3.8. INSTALLATION OF THE PELLET CONTROLLER

- remove the perforated part of the upper boiler cover and through the hole place the safety thermostat sensor and boiler temperature sensor (regulation) in the boiler sleeve (on EKO-CK P + Cm Pelet-set on upper part of the boiler, on the EKO-CKB P + Cm Pelet-set from the front side of the boiler - run the sensors to the sleeve on the lateral side of the boiler).
  - connect the 4-pole and 6-pole connectors to the burner and fasten the connectors to the burner body bolts. Attach the wire cable between the regulation and the burner to the boiler with the supplied plastic retainers (secure the cable holder to the boiler using the 3,9 x 16 mm lattice bolts).
  - in the lower left or right corner of the front lower boiler cover Insert the microswitch (1) (depending on the direction of opening the lower boiler openings) (3), fasten it with 2 screws, adjust the microswitch cover (2) as shown and tighten it with the screw. Check that the microswitch switch (4) on the lower boiler door is closed by pressing the microswitch (see picture below).
  - according to the technical instructions for the assembly of the pellet tank and pellet transporter prepare the pellet tank CPSP and place it on the right or left side of the boiler on the horizontal surface. The boiler and the tank must be set to the same level and you need to align the front side cover of the tank with the front side cover of the boiler.
  - in the pellet tank place the pellet transporter for feeding of the pellet CPPT and with a transparent flexible tube connect it with the pellet burner CPPL. One end of the transparent flexible tube is touched to the burner (to the feeding tube) to the filling sensor / temperature gauge on the inlet pipe in the burner, and the other end to the transporter so that the tube can not fall off. The transparent tube must be as flat as possible between the transporter and the burner so that the pellets can freely descend from the transporter to the burner (in case the pellets are retained in the tube, the tube must be leveled or if necessary, shorten the PVC tube).
  - cable for power supply of the pellet transporter CPPT connect to appropriate outlet on the PCB board in the controller CPREG / CPREG-Touch.
  - connect the power supply of the regulation CPREG / CPREG-Touch on the appropriate inlet on the PCB board in the regulation unit CPREG / CPREG-Touch. The power supply of the controller MUST NOT be connected via the factory-installed pump thermostat on the back side boiler cover.
  - connect the installed pumps and accessories to the corresponding outlets on the PCB board by el. connection scheme (connection of certain elements to certain outlets depends on the selected configuration and accessories) - see "Technical Instructions EKO-CK(B) P + Cm pelet-set\_BOOK 2/2"
- Safety elements of the CPREG / CPREG-Touch controller:
- safety thermostat via controller CPREG / CPREG-Touch switch off the fan operation of the burner and pellet transporter when temperature in the boiler goes over 110°C (+0°C / -9°C).

**Picture 10. - Microswitch installation**

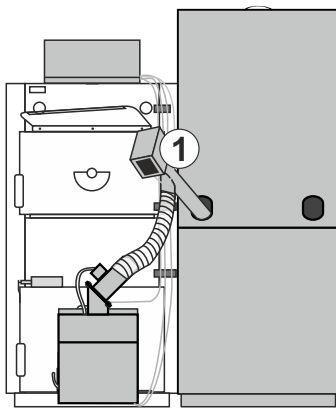


At standard delivery (lower boiler door opens on right side) microswitch is installed on front lower side of boiler casing cover (casing cover side have prepared holes for installing microswitch with holder).

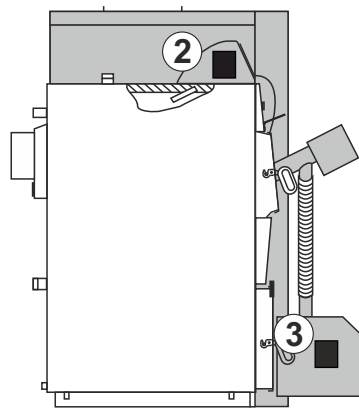
At installation on boiler on which is changed lower boiler door opening direction (lower boiler door opens on left side) is necessary to dismantle microswitch from holder (it's fasten to holder with two screw and two nuts), rotate it on opposite direction and fasten it with same screws and nuts.

After that, microswitch is install to lower front right side of boiler casing cover (casing cover side have prepared holes for installing microswitch).

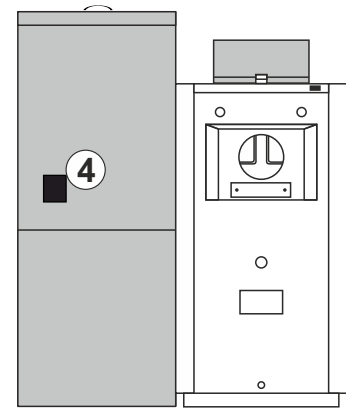
### 3.9. LABEL POSITION (authorized service technician)



1. Pellet feeder screw



2. Controller  
3. Burner



4. Pellet tank back side

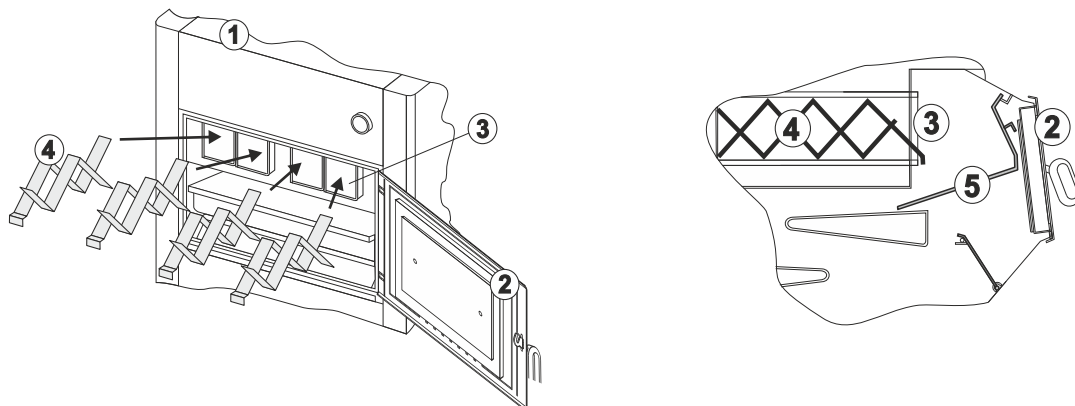
### 3.10. INSTALLATION OF THE PELLETTANK AND PELLETTANSPORTER

The description of the INSTALLATION of pellet tank and pellet transporter can be found in the "Technical instructions for mounting, use and maintenance of pellet and feeder screw", which are enclosed in the package in addition to the CPSP or CPSP-800 pellet tank and the CPPT pellet transporter, CPPT-50 or CPPT-90.

### 3.11. MOUNTING OF THE TURBULATORS

By wooden pellets firing turbulators must be mounted in the flue gas pipes. To mounting the turbulators is necessary to open upper boiler door, take out upper lid (position 1) (Picture 11.). Then, insert the turbulators into the flue gas pipes and push to the end. After that back in upper lid.

**Picture 11.** Mounting of the turbulators



- ① - Boiler EKO-CK (B) P + Cm Pelet-set
- ② - Upper boiler door
- ③ - Flue gas pipe
- ④ - Turbulators
- ⑤ - Upper lid

## **4.0. CONNECTING THE BOILER TO THE HEATING SYSTEM**

All work when installed needs to be performed according to the important national and European norms. The boiler EKO-CK (B) P + Cm Pelet-set is possible to install in closed and open central heating systems. In both cases the boiler can operate fired with wood pellets. The installation must be performed according to the technical norms by an expert/authorized person which takes the full responsibility for a proper work of the boiler. Before the connection of the boiler with the central heating system it is necessary to wash the system properly from impurities which remained after the installation of the system. Hereby we prevent the boiler overheating, noise in the system, disturbances on the pump and the mixing valve. The connection with the central heating systems is done by union pieces, by no means by welding. On the picture 1. safety distances needed for boiler cleaning and its maintenance are shown.

## **4.1. POSSIBLE CONFIGURATIONS OF HYDRAULIC SCHEMES**

See "Technical instructions EKO-CK(B) P + Cm pelet-set\_BOOK 2/2"

## **4.2. BOILER INSTALLATION TO THE CLOSE HEATING SYSTEM**

When installing a closed heating system (example as in Schema 1, page 31), installation **is obligatory** of the atested safety valve with 2.5 bar opening pressure, minimum seat diameter 15 mm, minimum supply connection to 1/2 "valve, minimum drain connection 3/4" and membrane expansion vessels. The safety valve and the expansion vessel must be installed according to the rules of the profession and there must be no closure element between the safety valve or the expansion vessel and the boiler. **It is obligatory** to connect the heating pump to all boiler variants through the CPREG / CPREG-Touch control pellet (see Technical Instructions EKO-CK(B) P + Cm pelet-set\_BOOK 2/2").

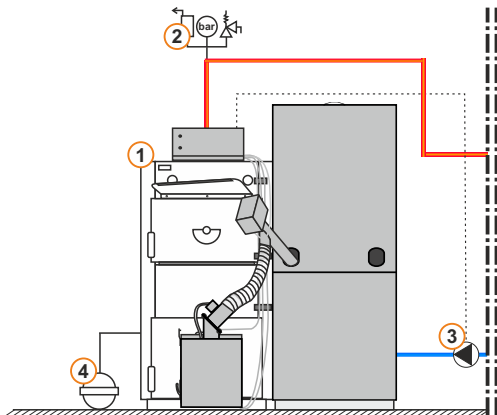
## **4.3. BOILER INSTALLATION TO THE OPEN HEATING SYSTEM**

If the boiler is installed on an open central heating system, it is recommended that the system be made according to scheme 2 (page 31). When the open system is open, it is necessary to place an open expansion vessel above the height of the highest set of heating elements. If the expansion vessel is in a not heated space, it is necessary to isolate it. The pump system can be installed on the boiler flow or backflow. **It is obligatory** to connect the system pump via CPREG / CPREG-Touch pellet controller (see Technical Instructions EKO-CK(B) P + Cm pelet-set\_BOOK 2/2").

#### 4.4. TYPE OF HEATING SYSTEMS - CLOSED AND OPEN HEATING SYSTEMS

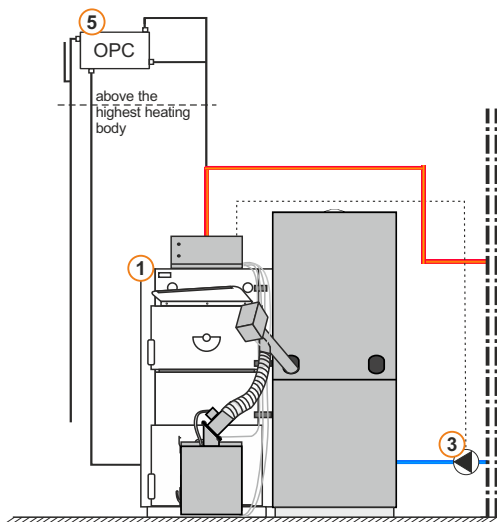
Basic scheme of EKO-CK (B) P + Cm Pelet-set boiler installation on **closed heating system**

Scheme 1)



Basic scheme of EKO-CK boiler installation (B) P + Cm Pelet-set on **open heating system**

Scheme 2)



**Legend:**

1. Boiler EKO-CK P + Cm Pelet-set (14-90) or boiler EKO-CKB P + Cm Pelet-set (14-50)
2. Safety-vent group (safety valve 2,5 bar)
3. Pump P1
4. Closed expansion vessel (approximately 10% of the total volume of the installation)
5. Open expansion vessel (approximately 7% of the total volume of the installation)

**NOTE:**

Boilers EKO-CKB P + Cm Pellet-set must have a install expansion vessel and safety valve for DHW. The manual shut-off valves are not shown on the schemas.

All boilers can be installed on a close or open heating system. Below the instructions, all schemes are shown with installation on an close heating system..

#### 4.4.1. THERMAL PROTECTION IN AN CLOSED HEATING SYSTEM

According to European EN standards, boiler thermal protection must be installed in closed heating system. Boiler is factory prepared for installation of thermal protection - Picture a) and b). In case of any damage of boiler installed in the closed heating system due to its overheating, and boiler or system are not equipped with any thermal protection at all, or do not have properly installed thermal protection, guarantee will not be applied.

#### **IMPORTANT:**

Thermal protection must be connected to the water supply installation of the premises supplied from the public water supply line and not from hydrophor. Namely, in case of failure of power supply, boiler could be overheated, and then hydrophor is not able to ensure required water supply.

#### **(A) EKO-CK P + Cm Pelet-set**

##### **THERMAL PROTECTION:**

Thermal protection for boiler EKO-CK P consists of a HEAT EXCHANGER (1) and THERMAL VALVE (2) (Picture a and b).

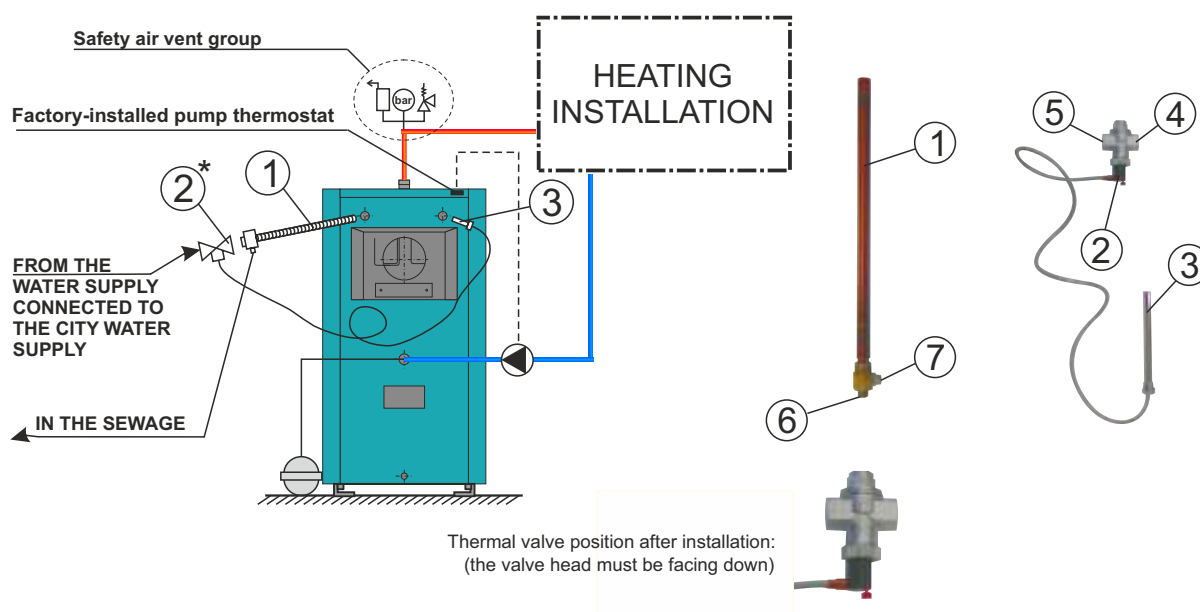
Installation of parts (1) and (2) is performed on the prepared connections (internal thread 1"), on the upper part of the back side of the boiler, along the boiler flow line.

Depending on the installation of cold sanitary water in the building, it is possible to choose the installation of a thermal exchanger or thermal valve on the left or right side.

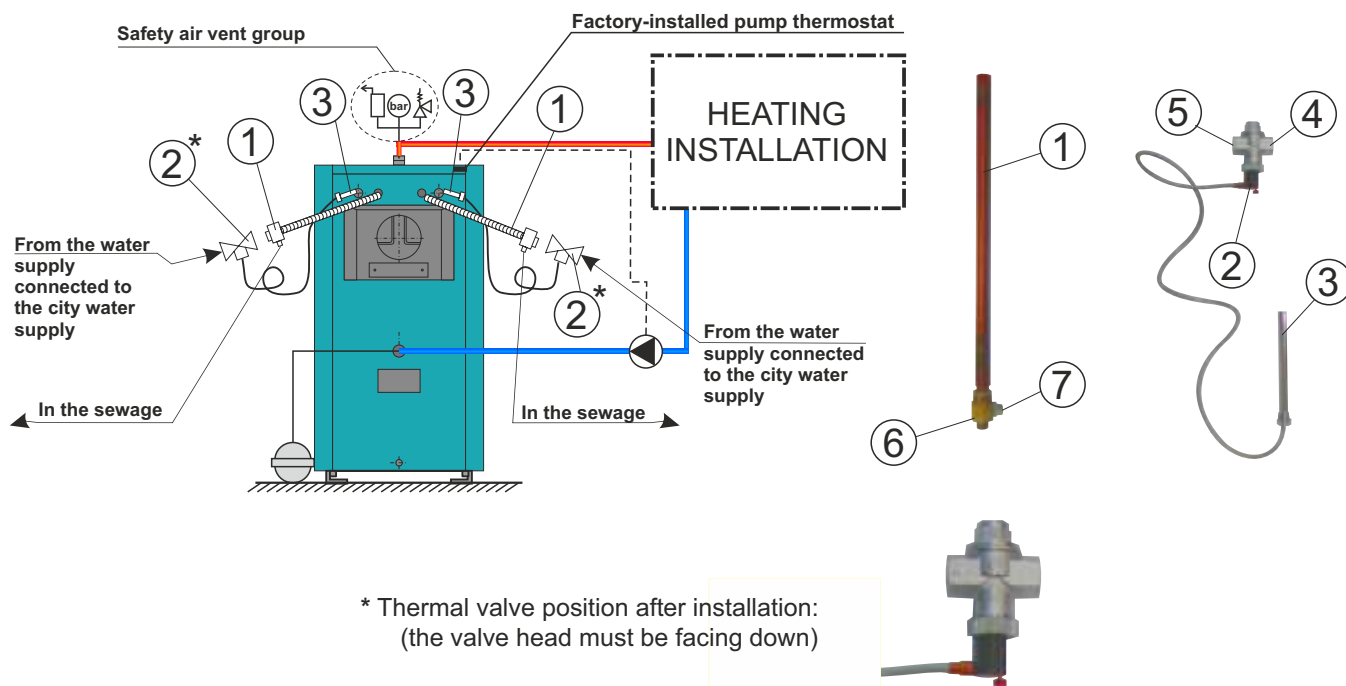
##### **INSTALLATION** (see scheme a and b)

- screw the heat exchanger into the selected pin (internal thread 1"), (left or right - depending on which side the water connection is).
- screw sleeve (inner thread 1") reduction 1/2" - 1" and screw the sensor thermal valve into it (3) (outer thread 1/2").
- fix the connection (4) (inner thread 3/4") of the thermal valve to the sanitary cold water inlet and the connection (5) (inner thread 3/4") of the thermal valve to the connection (6) (external thread 1/2") heat exchanger.
- fix the connection (7) (outer thread 1/2") heat exchanger to the sewer.

**Picture a)** Installation of thermal protection of a boiler installed on a closed heating system EKO-CK P + Cm Pelet-set 14-50



**Picture b)** Installation of thermal protection of a boiler installed on a closed heating system  
EKO-CK P + Cm Pelet-set 90

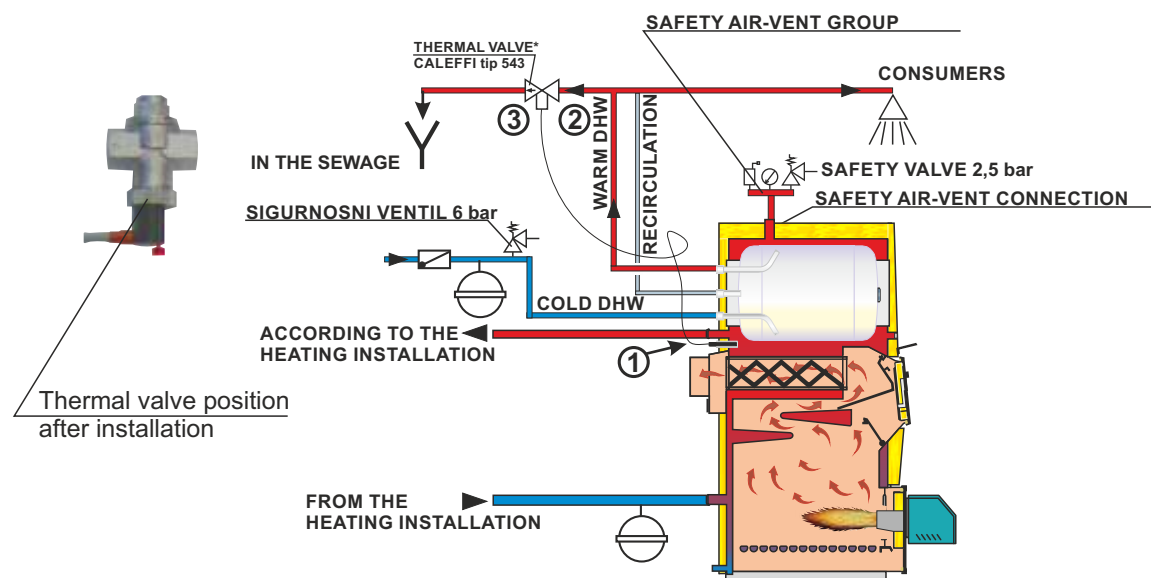


**(B) EKO-CKB P + Cm Pelet-set**

**Thermal protection installation procedure**

- install a safety-vent group on the safety-vent connection on the boiler (internal thread 1")
- a T-piece should be installed at the domestic hot water outlet, one of which goes to the domestic hot water installation, while a thermal valve is connected to the other line.
- the connection (2) of the thermal valve (internal thread 3/4 ") is connected to the hot sanitary water outlet, while the connection (3) (internal thread 3/4 ") is connected to the sewer.
- screw the thermal valve sensor into the sleeve (internal thread 1/2 ", located on the left side of the boiler supply line).

**Picture c)** Installation of thermal protection connection EKO-CKB P + Cm Pelet-set



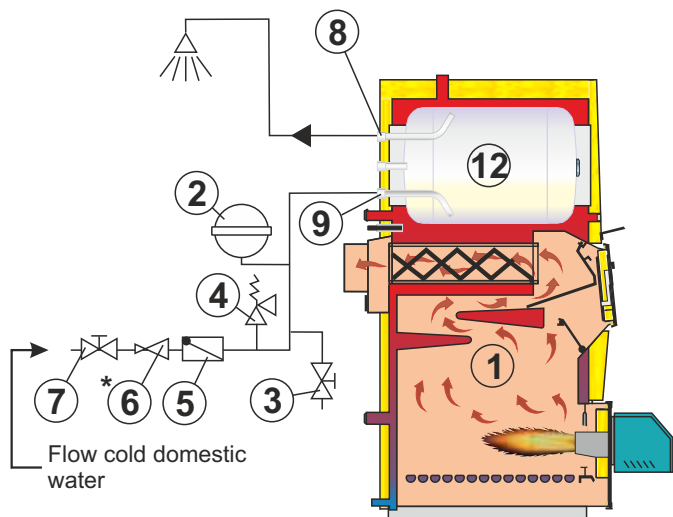
#### 4.5. BOILER CONNECTION EKO - CKB P + CM PELET-SET (SINK DHW TANK IN THE BOILER) TO WATER SUPPLY INSTALLATION

The connection of the stainless steel DHW tank in the boiler to the water supply installation must be carried out according to the valid technical standards by the authorized service person (Schemes a and b). The cold water flow is connected to the lower connection pipe (3/4 "sleeve ) and the upper connecting pipe (3/4" sleeve) is used for the domestic hot water backflow (DHW). The connection of the circulating water (3/4 "sleeve) is between the hot and cold water connections.

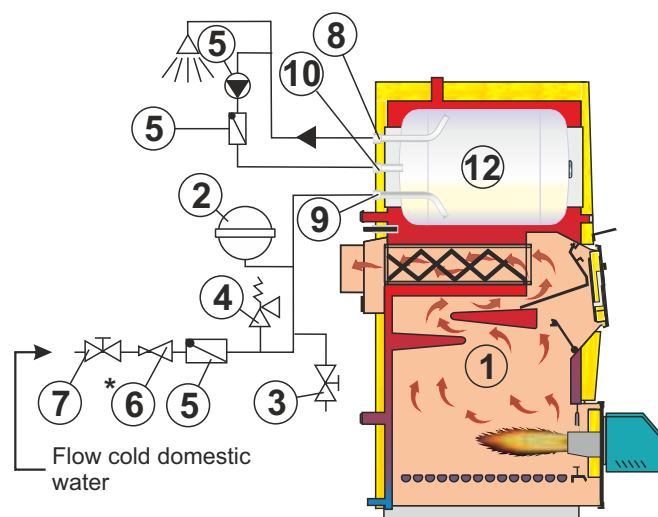
The cold water flow to the tank **is obligatory to install**:

- expansion vessels for DHW;
- taps for draining water from the tank (obligatory over T - pieces);
- safety valve with 6 bar opening pressure;
- a reduction valve which reduces the flow water consumption pressure to 4 bar (if its pressure is higher);
- non-return valve.

Scheme a) CONFIGURATION X7Z  
\_7\_ DHW tank install in the boiler



Scheme b) CONFIGURATION X8Z  
\_8\_ DHW tank install in the boiler and recirculation DHW



Legend:

- 1 - Hot water boiler EKO-CKB P + Cm Pelet-set (14-50)
- 2 - Expansion vessel for DHW
- 3 - Taps for filling - draining water from the tank obligatory over T-pieces
- 4 - Safety valve with opening pressure 6 bar
- 5 - Non-return valve
- 6 - \*Draught regulator
- 7 - Shut-off valve
- 8 - DHW
- 9 - Cold domestic water
- 10 - Recirculation DHW
- 11 - Pump for recirculation DHW
- 12 - DHW tank (sink in the boiler water)

\* Must be installed if the flow water pressure is greater than 4 bar

**NOTE:**

All boilers can be installed on an closed or open central heating system.

## 5.0. TEMPERATURE REGULATION

For temperature REGULATION, CPREG / CPREG-Touch digital boiler regulation is used. To adjust and use the CPREG / CPREG-Touch control, see Book 2/2 "Technical Instructions EKO-CK(B) P + Cm pelet-set\_BOOK 2/2"

## 6.0. BOILER CONNECTION TO THE ELECTRICAL INSTALLATION

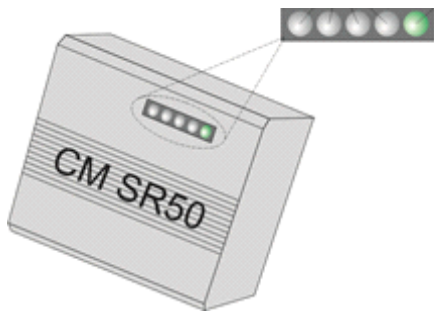
All electrical work must be carried out according to the applicable national and European standards by the authorized person. The disconnection device for all poles of electrical power must be installed on electrical installation in accordance with national electro-installation regulations. If the power supply guide of Cm Pelet-set controller (CPREG / CPREG-Touch) between the Cm Pelet-set controller (CPREG / CPREG-Touch) and pellet transporter (CPPT) between the Cm Pelet-set controller (CPREG / CPREG-Touch) and Burner (CPPL) is damaged, it can be replaced only by the manufacturer, authorized service person, or other qualified personnel to prevent possible danger.

## 7.0. SAFETY EQUIPMENT

The burner has several protective mechanisms:

- Filling / temperature sensor on the inlet tube of the pellet in the burner that is mounted on the pellet filling burner feeding tube. In case of too high a temperature in the feeding tube or when filling the feeding tube with the pellets, a fault is printed.
- The safety pressure switch installed in the burner controls the pressure in the boiler burner. When overrunning the preheated boiler in the boiler, overturn the pellet release, the burner stops working, and a fault is output on the control.
- With the opening of the lower boiler openings during the burner operation, the microswitch on the lower boiler door interrupts the supply. current (only on the transporter and burner), and after closing the lower boiler controls, the regulator continues to operate according to the power failure regime.
- In the event of a flame escalation (the built-in photocell does not record the flame in the set time), the control stops the burner operation and an error is printed, and if the flame disappears in the stage it goes into the blowout and prints the error.
- Regulation has built-in protective function to protect the overheating boiler. When the boiling temperature exceeds 93 °C, irrespective of the need for heating or sanitary water, the boiler and / or sanitary water pump falls and runs for as long as the boiling temperature does not fall below 93 °C.
- Sigure thermostat switches off the supply via regulation. energy (only on transporter and burner) when the temperature in the boiler exceeds 110 °C (+ 0 °C / -9 °C).
- Thermal protection built-in in the winding of the fan el .motor on the burner and the pellet transporter motor prevents them from overheating due to tampering or blocking.
- The flexible tube connecting the pellet burner and the pellet tank is made of metal-reinforced plastic material which, due to eventual return of the flame from the burner to the tank, mumps and prevents flame entry into the pellet tank.

Filling sensor / temperature gauge:



**Normal operation:** a green LED is lit while the other flashes depending on the amount of pellet falling through the feeding tube.

**Feeding tube filled with pellets:** all LED-s are lit for 10 seconds without flickering

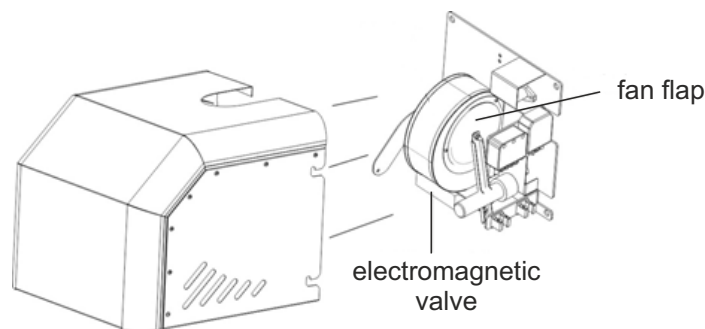
## 8.0. ADDITIONAL EQUIPMENT

### 8.1. FAN FLAP (ADDITIONAL EQUIPMENT) FOR BURNERS CPPL-14, CPPL-35, CPPL-50

Possibility of later mounting of fan (additional equipment) for burners CPPL-14, CPPL-35, CPPL-50:

- The burner have electrical connection connectors installed under the burner box and the electrical guides in the protective conductor to the connector come from the underside of the burner (as shown in the sketches in these instructions) are predictably foreseen for possible later mounting of the burner flap.
- The fan valve should only be retrofitted by an authorized servicer for this type of boiler.
- The subsequent burner flap mounting includes mounting the burner housing assembly, electric burner wiring, and wiring in the control. Installation can be done at the location of the built-in burner or in the factory. By purchasing a vent fan for subsequent installation, it is supplied in the package of all the components that need to be built up

The authorized service person must configure the controller for operation with burner with fan – additional equipment.



Installed fan flap - elements that are installed in the burner (below the protective box)

## 9.0. COMMISSIONING

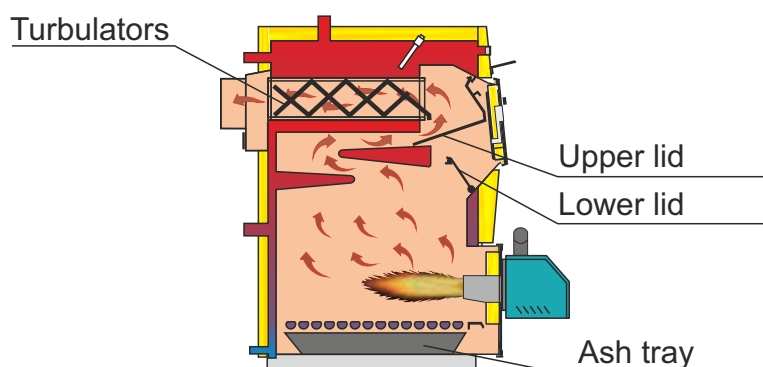
The boiler must not be operated in a flammable and explosive atmosphere. The product should not be used by children or persons with reduced mental or physical abilities, and persons with a lack of knowledge and experience unless supervised or trained by a person in charge of their safety. Use protective gloves is obligatory (pic. 12). Check that the boiler and equipment are installed and connected in accordance with these technical instructions. Check that the chimney meets the requirements in this manual. Check that the boiler complies with all the requirements in this manual. Check that the fuel meets all the requirements in this manual. Check that the boiler and the entire heating system are filled with water and vented. Make sure that the safety elements are properly positioned and correct (see the preceding points of the instruction). Check that the flue tube is well sealed and heat insulated. Make sure that the moving parts of the firing furnace are located at the foreseeable locations (top flap, lower flap, turbulators in flue gas tubes, burner grilles, ashtrays) Pic. 13. Check that all the components of the pellet firing equipment are properly assembled and installed. Check that the CPREG / CPREG-Touch boiler control is connected to the el. energy and whether all openings on the boiler are well closed. For proper boiler operation, it is necessary to properly configure the CPREG / CPREG-Touch control according to the size of the boiler and the required power and actual configuration and to select the pellets of the same or similar characteristics as given in chapter 10.0. Commissioning of the Cm-Pelet-set must be done by a qualified service person for this boiler.

**Picture 12.** Protective gloves

**Protective gloves are obligatory!**

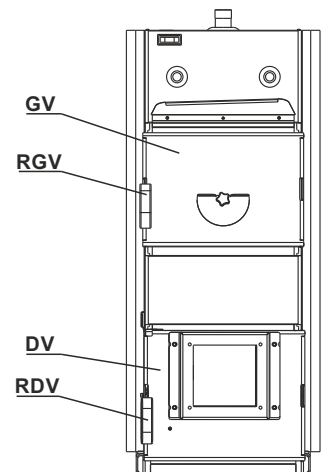
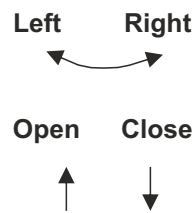


**Picture 13.** Movable parts of the boiler



**Picture 14. Boiler door opening method**

- GV - Upper boiler door
- DV - Lower boiler door
- RGV - Handles of upper boiler door
- RDV - Handles of lower boiler door



**PROCESS OF OPENING BOILER DOOR:**

**UPPER BOILER DOOR:**

1. Pull the handle of the upper boiler door RGV in direction of the arrow "OPEN".
2. Open the upper boiler door GV in direction of the arrow "RIGHT".

**LOWER BOILER DOOR:**

**Lower boiler door** - allowed to open only when the burner is not working (OFF is displayed in the upper display or control unit is OFF on main switch (0)).

1. Pull the handle of the lower boiler door RDV in direction of the arrow "OPEN".
2. Open the lower boiler door DV in direction of the arrow "RIGHT".

**PROCESS OF CLOSING BOILER DOOR:**

**UPPER BOILER DOOR:**

1. Pull the handle of the upper boiler door RGV in direction of the arrow "OPEN".
2. Press upper boiler door GV in direction of the arrow "LEFT".
3. Press the handle of the upper boiler door RGV in direction of the arrow "CLOSE".

**LOWER BOILER DOOR:**

1. Pull the handle of the lower boiler door RDV in direction of the arrow "OPEN".
2. Press lower boiler door DV in direction of the arrow "LEFT".
3. Press the handle of the upper boiler door RDV in direction of the arrow "CLOSE".

## 10.0. PROPERTIES OF WOODEN PELLETS

Wooden pellets are used as fuel in boilers with built-in pellet burner CPPL. Wooden pellets are biofuel made of wooden wastes. Pellets can be packed in different packaging: in bags (15 kg or 1000 kg), or as bulk in large (underground) tanks ( 4 - 15 m<sup>3</sup>) or in basement spaces. Recommended properties of pellets for firing in EKO-CK P + Cm Pelet-set boilers are the following:

- heating value  $\geq 5$  kWh/kg (18 MJ/kg)
- diameter = 6 mm
- max. moisture content = 12 %
- max. dust content = 1,5 %

## 11.0. BOILER USE

The boiler must not be operated in a flammable and explosive atmosphere. The product should not be used by children or persons with reduced mental or physical abilities, and persons with a lack of knowledge and experience unless supervised or trained by a person in charge of their safety. Children must be supervised near the product. The use of protective gloves is obligatory (Picture 12). Check that the boiler and equipment are installed and connected in accordance with these technical instructions. Check that the chimney meets the requirements in this manual. Check that the boiler complies with all the requirements in this manual. Check that the fuel meets all the requirements in this manual. Check that the boiler and the entire heating system are filled with water and vented. Make sure that the safety elements are properly positioned and correct (see the preceding points of the instruction). Check that the flue tube is well sealed and heat insulated. Make sure that the moving parts of the firing furnace are located at the foreseeable locations (top flap, lower flap, flue gas turbines, burner grilles, ashtrays). Picture 13. Check that all the components of the pellet firing equipment are properly assembled and installed. Check that the CPREG / CPREG-Touch boiler control is connected to the el. energy and whether all openings on the boiler are well closed. For proper boiler operation, it is necessary to properly adjust the CPREG / CPREG-Touch control according to the boiler size and the required power (use "Technical Instructions EKO-CK(B) P + Cm pelet-set\_BOOK 2/2") and select pellets of the same or similar characteristics as given in chapter 10.0.

## 12.0. CLEANING AND MAINTENANCE OF THE BOILER AND ACCESSORIES FOR BURNING WITH WOOD PELLETS

The ash that remained in the boiler after being fired with wooden pellets should be disposed of in metal containers with a lid. Use of protective gloves is obligatory. (Picture 12).

Care should be taken to:

- deposit in the boiler furnace and, if necessary, clean it;
- clamps on the burner grate and clean them as needed;
- the amount of ashes in ash ashtray and, if necessary, empty it

Cleaning procedure (use "Technical instructions EKO-CK(B) P + Cm pelet-set\_BOOK 2/2"):

- First, make sure that the burner does not work and turn off the main switch on the boiler controller.
- There are upper and lower boiler doors for cleaning the boiler
- Open the upper boiler door, remove the upper end, remove the turbulator and clean the boiler tubes using the enclosed scatcher.
- Open the lower boiler door on which the burner is located and clean the boiler, empty the ashtray and clean the burner grill (Picture a and b).
- It is recommended to clean the burner and boiler combustion chamber after one pellet tank is consumed (approx. 200 kg).
- Intervals between cleaning can be increase or decrease in relation to the recommended ones, as needed, and it depends on quality of used pellets (see 10.0) and turning on/off frequency of the burner.

For maintenance and cleaning of equipment for pellet firing see Technical instructions for use and maintenance of EKO-CK (B) P + Cm pelet-set\_BOOK 2/2 and Technical instructions for pellet tank and screw feeder.

Figure a) Removing the burner grate to clean and correct grate position - CPPL-14/35/50  
(For CPPL-14, first remove the burner extension)

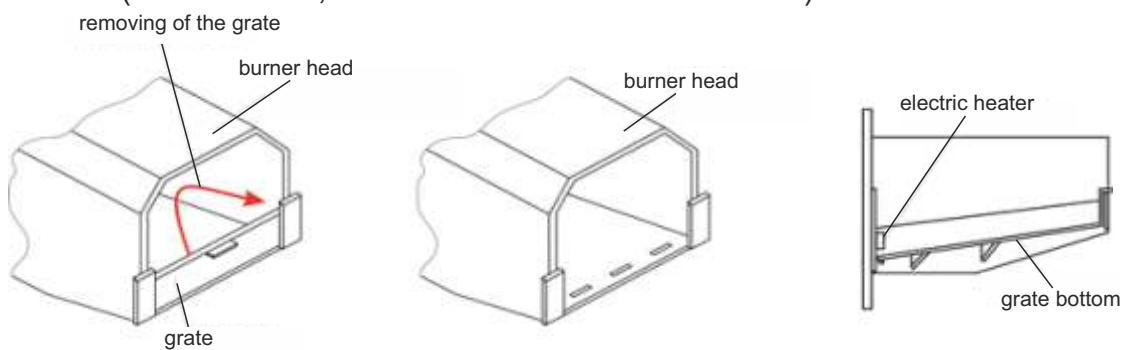
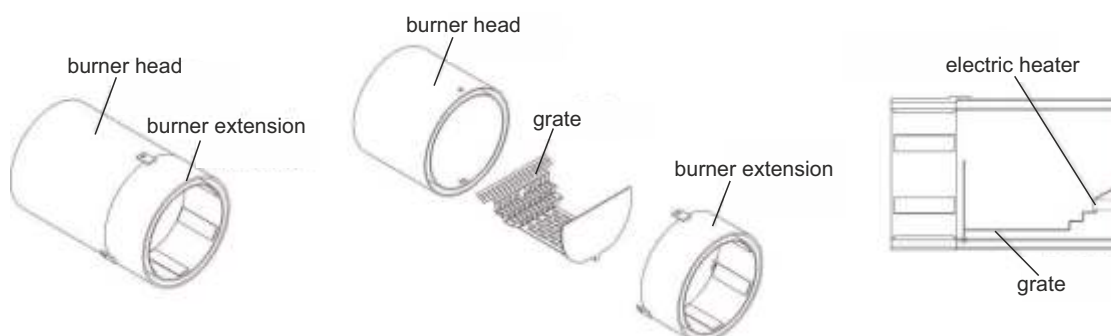


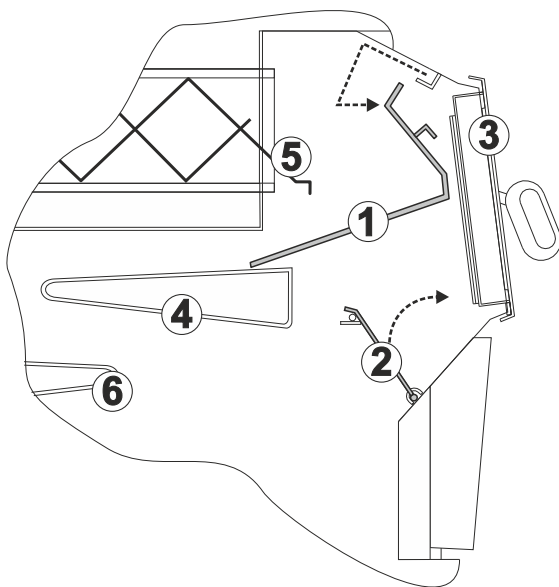
Figure b) Removing the burner grate to clean and correct grate position - CPPL-90



Once a year (at least) it is necessary to in detail check / clean up the following components:

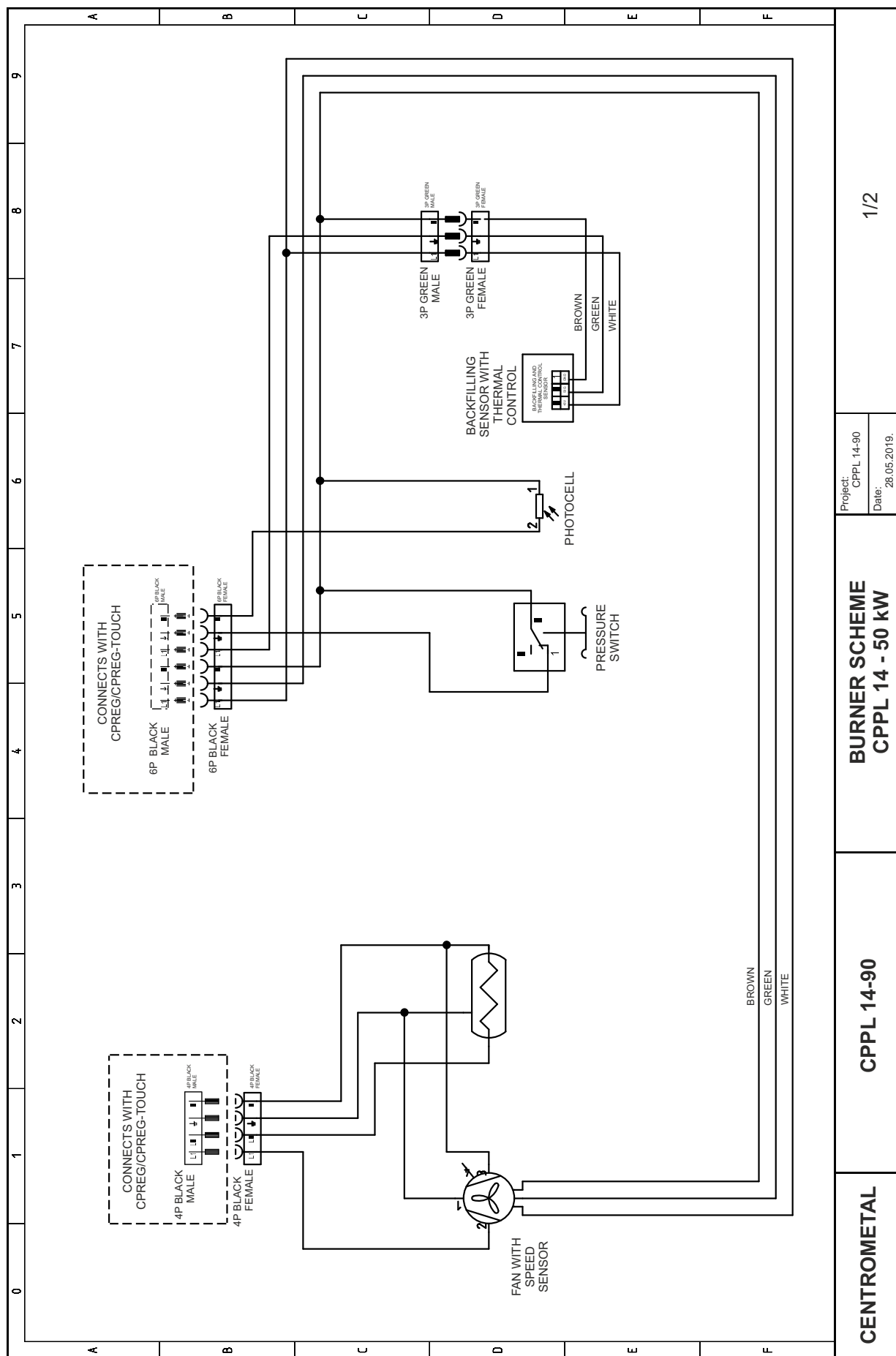
- clean thoroughly burner, grate...
- clean photocell
- empty and clean pellet tank
- remove and clean pellet screw feeder (Cleaning frequency of above items depends on pellet quality and it should be adjusted accordingly)
- Check flexible connecting tube and place it so that flexible pellet feeding tube is inclined toward the burner so that pellets can fall freely into the burner,
- Check wires and connections and replace them when required.

**Picture 15. - Take of movable lids from combustion chamber**



- ① - Upper lid
- ② - Lower lid
- ③ - Upper boiler door
- ④ - Upper register
- ⑤ - Flue gas pipe
- ⑥ - Lower register

### 13.0. ELECTRICAL WIRING SCHEME



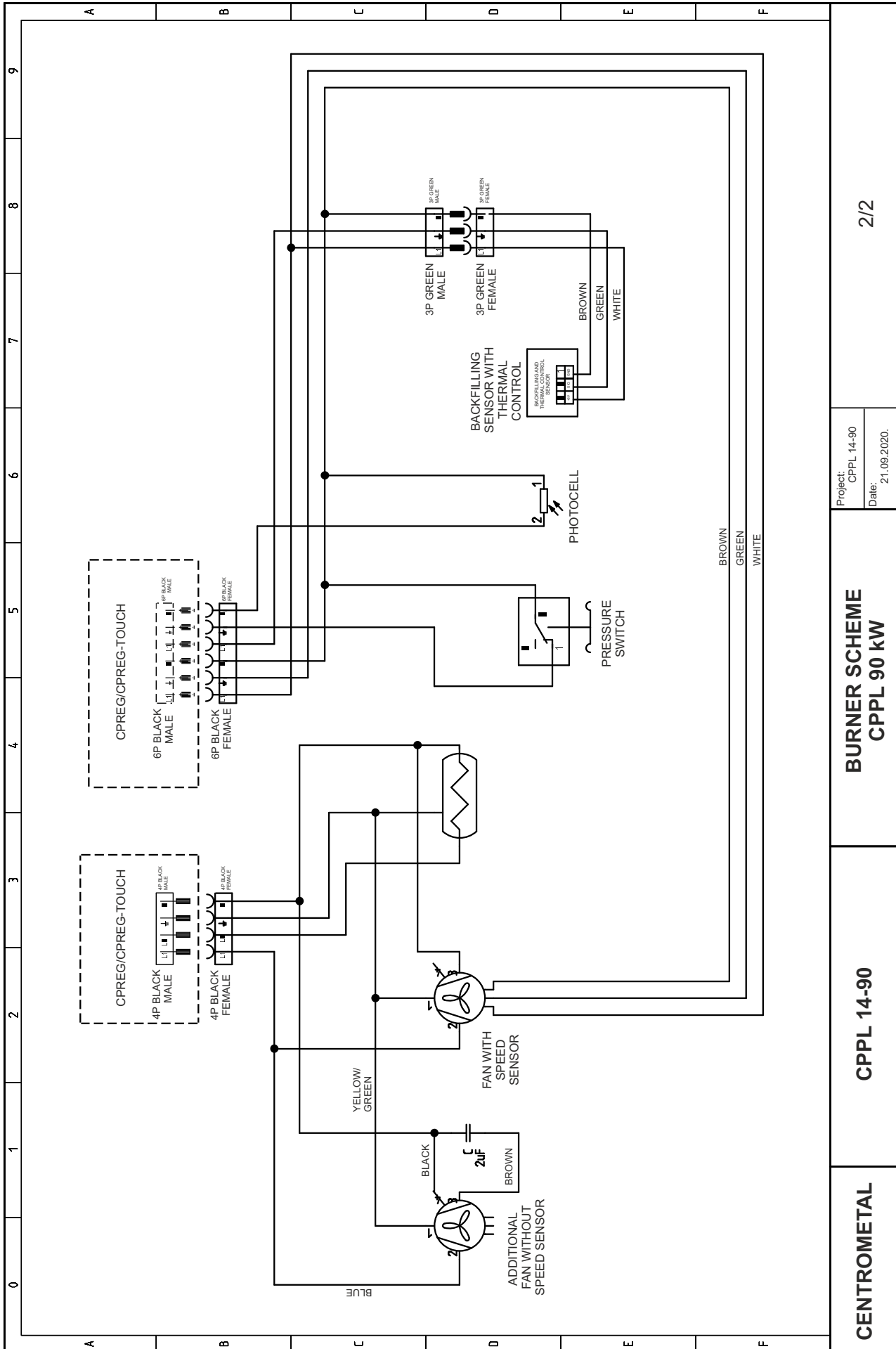
Project: CPPL 14-90  
Date: 28.05.2019.

**BURNER SCHEME**  
**CPPL 14 - 50 kW**

**CPPL 14-90**

**CENTROMETAL**

1/2



2/2

Project: CPPL 14-90  
Date: 21.09.2020.

**BURNER SCHEME**  
**CPPL 90 KW**

**CPPL 14-90**

**CENTROMETAL**



## EC IZJAVA O SUKLADNOSTI EC DECLARATION OF CONFORMITY

Proizvođač  
Manufacturer: **Centrometal d.o.o.**  
Naziv i adresa  
Name and address: **HR-40306 Macinec, Glavna 12, Croatia**

**punom odgovornošću izjavljuje, da**  
**We declare under our sole responsibility that**

proizvod  
Product designation: **Toplovodni kotao na drvene pelete (sa automatskom dobavom peleta)**  
**Hot-water boiler burning wood pellets (with automatic fuel supply)**  
tip / model  
Type / model: **EKO-CK (B) P + Cm Pelet-set (14-90 kW)**

**odgovara zahtjevima slijedećih**  
**propisa**  
**is in conformity with the provisions of the following regulations**

- |    |   |
|----|---|
| 1. | <i>MD Direktiva 2006/42/EC</i><br>MD Directive 2006/42/EC   |
| 2. | <i>LVD Direktiva 2014/35/EU</i><br>LVD Directive 2014/35/EU |
| 3. | <i>EMC Direktiva 2014/30/EU</i><br>EMC Directive 2014/30/EU |

**i također zadovoljava zahtjeve slijedećih standardi**  
**and also complies with the following standards**

<i>LVD Direktiva 2014/35/EU</i> LVD Directive 2014/35/EU	EN 60335-1:2012/AC:2014; EN 60335-2-102:2006/A1:2010; EN 62233:2008
<i>EMC Direktiva 2014/30/EU</i> EMC Directive 2014/30/EU	EN 55014-1:2017; EN 61000-3-2:2014; EN 61000-3-2:2014; EN 61000-6-2:2005; EN 61000-6-3:2007
<i>MD Direktiva 2006/42/EC</i> MD Directive 2006/42/EC	EN 303-5:2012

**Godina izdavanja CE oznake** 2007.  
**Year of affixing of CE marking**

Mjesto i vrijeme izdavanja  
Place and date of issue

Macinec, 31.10.2017.

*Ime, prezime i potpis ovlaštene osobe*  
Name, surname and signature of authorized person  
**Tihomir Zidarić**

**Centrometal** d.o.o.  
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**Centrometal**  
HEATING TECHNIQUE

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