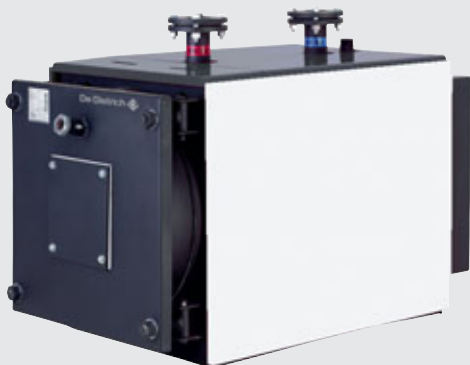


CABK 8-80, CABK PLUS 100-250

FUEL OIL / GAS STEEL BOILERS

CABK 8-80: from 98 to 930 kW

CABK PLUS 100-250: from 1210 to 2900 kW



CABK 8-80



CABK PLUS 100-250



Heating only
(DHW production by
independent tank)



Oil or Gas



CE No.:
CABK...: 1312BR4873
CABK PLUS...: 1312BS4965

EAC



CE efficiency class

CABK and **CABK PLUS** boilers are pressurised, steel boilers with 2-pathways flue gas evacuation and high combustion efficiency, to be fitted with a pressure jet oil or gas burner.

Available with different control panels which can be used to control 2-stage or modulating burners:

- **S3 standard control panel:** for installations without a control system or with a control cabinet in the boiler room.
- **B3 control panel:** heating water regulation by electronic thermostat; integrated DHW priority.
- **DIEMATIC-m3 control panel:** electronic control system to control up to 3 circuits + 1 DHW circuit, depending on the options connected. Combined with a boiler with a specific K3 control panel, this can manage cascade installations of 2 to 10 boilers.

CONDITIONS OF USE

Max. working pressure:

- CABK: 4 bar*
- CABK PLUS: 5 bar**

Max. working temperature: 100°C

Adjustable thermostat: from 55 to 85°C

Safety thermostat: 110°C

* CABK 8-80: up to 10 bar

** CABK PLUS: up to 10 bar on request, see p. 5


CABK RANGE: PRESENTATION

STRONG POINTS

- CABK are medium to high output pressurised steel boilers to be fitted with a fuel oil or gas pressure jet burner.
- Single-unit steel heating body, with 2 flue gas pathways and combustion efficiency up to 92.4%
- Combustion chamber designed for easy adaptation of all air burners, including ones with low NOx emissions.
- Second flue gas pathway in the pipes fitted with baffles for optimised heat transfer and operation with no risk of condensation (min. return temp.: 55°C).

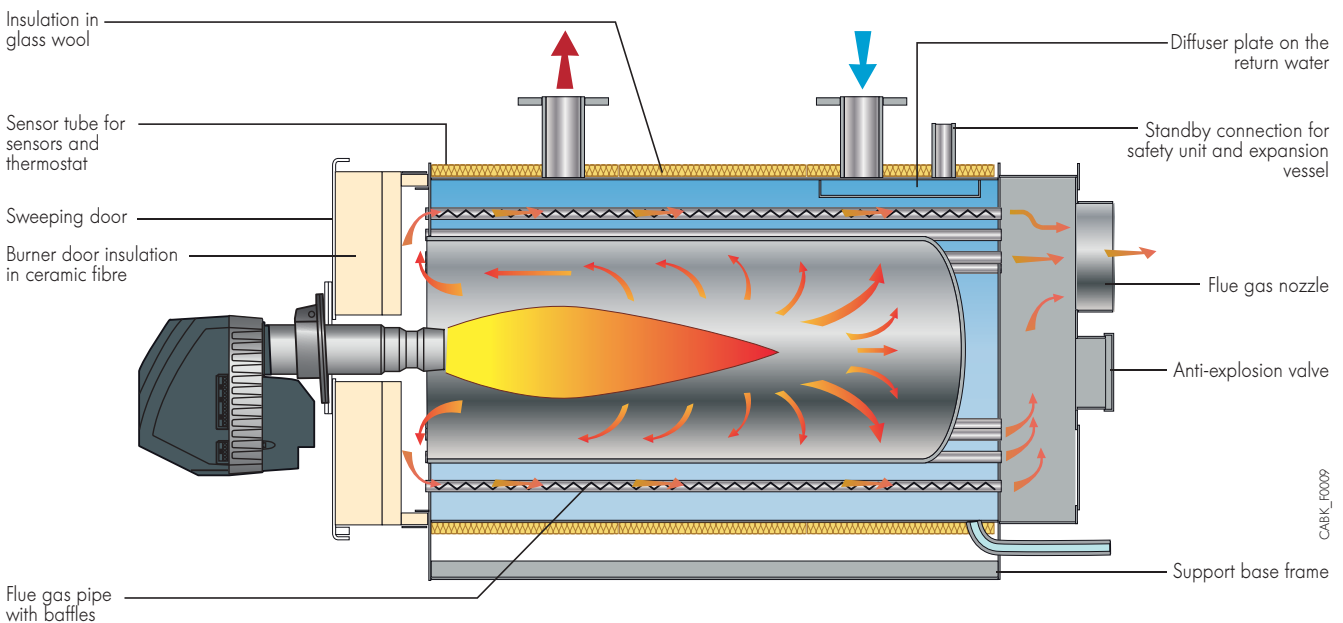
- Efficient insulation in high density glass wool covered with aluminium on the outside.
- Door giving access to the flue gas pipes and burner door with ceramic insulation mounted on reversible hinges.
- Available with different control panels: Standard S3 control panel to be placed on the boiler, B3, K3 and DIEMATIC-m3 control panels to be installed on the top cover or side panel of the boiler, all of which can be used to control 2-stage or even modulating burners: see page 6 to 10.

MODELS

Boiler	Output range kW	Control panel			
		Standard S3 (see p. 7)	B3 (see p. 7)	DIEMATIC-m3 (see p. 8)	K3 (1) (see p. 8)
	79 - 98.7	CABK - 8	CABK - 8 B3	CABK - 8 DIEMATIC-m3	CABK - 8 K3
	93 - 116	CABK - 10	CABK - 10 B3	CABK - 10 DIEMATIC-m3	CABK - 10 K3
	116 - 145	CABK - 12	CABK - 12 B3	CABK - 12 DIEMATIC-m3	CABK - 12 K3
	140 - 175	CABK - 15	CABK - 15 B3	CABK - 15 DIEMATIC-m3	CABK - 15 K3
	167 - 209	CABK - 18	CABK - 18 B3	CABK - 18 DIEMATIC-m3	CABK - 18 K3
	186 - 232	CABK - 20	CABK - 20 B3	CABK - 20 DIEMATIC-m3	CABK - 20 K3
	232 - 290	CABK - 25	CABK - 25 B3	CABK - 25 DIEMATIC-m3	CABK - 25 K3
	278 - 348	CABK - 30	CABK - 30 B3	CABK - 30 DIEMATIC-m3	CABK - 30 K3
	325 - 406	CABK - 35	CABK - 35 B3	CABK - 35 DIEMATIC-m3	CABK - 35 K3
	372 - 465	CABK - 40	CABK - 40 B3	CABK - 40 DIEMATIC-m3	CABK - 40 K3
	465 - 581	CABK - 50	CABK - 50 B3	CABK - 50 DIEMATIC-m3	CABK - 50 K3
	558 - 697	CABK - 60	CABK - 60 B3	CABK - 60 DIEMATIC-m3	CABK - 60 K3
	650 - 813	CABK - 70	CABK - 70 B3	CABK - 70 DIEMATIC-m3	CABK - 70 K3
	774 - 930	CABK - 80	CABK - 80 B3	CABK - 80 DIEMATIC-m3	CABK - 80 K3

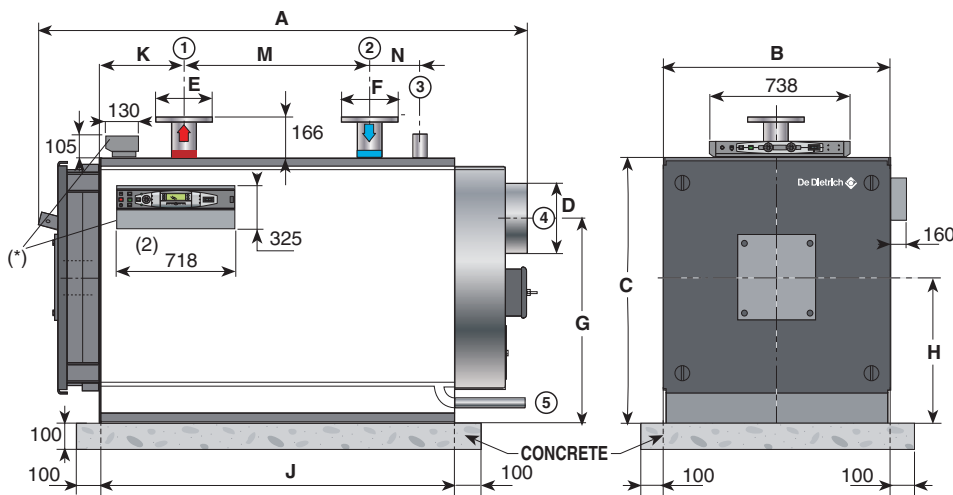
(1) The CABK... K3 operates only in combination with a CABK... DIEMATIC-m3 as part of a cascade installation

DESCRIPTION



CABK RANGE: SPECIFICATIONS

MAIN DIMENSIONS (MM)



- ① Heating flow
- ② Heating return
- ③ Safety device connections R 1" 1/2
- ④ Flue gas nozzle
- ⑤ Drain tube R 1"

- (*) Choice of 4 control panels:
 - Standard S3, to be placed on the top of the boiler (top front or top side)
 - B3, K3 or DIEMATIC-m3, to be mounted on the side panel of the boiler or placed on the top (side) of the boiler
 (2) Lateral control panel: its position on one of the lateral panels is left to the installer's discretion.

R: threading

CABK_F0001A

CABK-		8	10	12	15	18	20	25	30	35	40	50	60	70	80
A	mm	1370	1520	1520	1550	1550	1760	1760	1995	1995	2070	2070	2070	2350	2350
B	mm	700	720	720	740	740	800	800	850	850	1020	1125	1125	1125	1125
C	mm	815	815	815	890	890	930	930	950	950	1105	1200	1200	1200	1200
D Ø ext.	mm	217	247	247	247	247	247	247	296	296	296	346	346	346	346
E	mm	R 1" 1/2	DN65	DN65	DN65	DN65	DN80	DN80	DN80	DN80	DN80	DN100	DN100	DN100	DN100
F	mm	R 1" 1/2	DN65	DN65	DN65	DN65	DN80	DN80	DN80	DN80	DN80	DN100	DN100	DN100	DN100
G	mm	605	605	605	670	670	725	725	745	745	850	890	890	890	890
H	mm	440	440	440	500	500	512	512	510	510	595	640	640	640	640
J	mm	845	990	990	1030	1030	1210	1210	1460	1460	1487	1487	1487	1725	1725
K	mm	235	260	260	260	260	300	300	312	312	312	312	312	312	312
M	mm	400	510	510	530	530	665	665	850	850	850	850	850	1050	1050
N	mm	120	145	145	180	180	180	180	180	180	180	180	180	215	215

MAIN SPECIFICATIONS

Type: heating only

Energy: oil/gas

Max. working pressure: 4 bar*

* CABK 8: up to 10 bar on request

Ref. "EC certificate": CE 1312BR4873

Combustion evacuation: chimney

Max. working temperature: 100°C

Min. return temperature: 55°C

Safety thermostat: 110°C

Model	CABK-	8	10	12	15	18	20	25	30	35	40	50	60	70	80	
Nominal useful output at Pn	kW	98.7	116	145	175	209	232	290	348	406	465	581	697	813	930	
Min. useful output	kW	79	93	116	140	167	186	232	278	325	372	465	558	650	774	
Efficiency at 100% Pn and average temp. 70°C	% Pci	90.2	90.2	90.3	90.3	90.4	90.45	90.5	90.7	91	91.4	91.8	92.2	92.4	92.4	
Stand-by losses at ΔT=30 K	W	755	887	1108	1336	1595	1770	2210	2647	3078	3510	4367	5216	6071	6944	
Water content	l	105	120	120	186	186	250	250	320	320	565	635	635	690	690	
Water flow at ΔT=20 K	m³/h	3.7	4.9	5.8	7.5	8.9	10.1	12.4	15.1	17.4	19.9	24.8	29.9	35	39.6	
Water resistance at ΔT=20 K	mbar	5.1	6.4	7.8	9.1	10.5	11.8	14.5	15.9	24.4	32.9	41.4	58.4	67	80	
Flue gas circuit volume	l	188	227	227	283	283	381	381	494	494	695	788	788	872	872	
Flue gas volume flow rate	m³/h	196	232	290	349	416	461	576	691	803	916	1139	1361	1584	1811	
Flue gas mass flow rate	- oil	kg/s	0.077	0.086	0.099	0.127	0.154	0.201	0.248	0.298	0.349	0.395	0.492	0.592	0.689	0.786
	- gas	kg/s	0.077	0.088	0.100	0.128	0.156	0.203	0.244	0.294	0.344	0.39	0.486	0.586	0.682	0.778
Combustion chamber pressure	mbar	0.9	1.1	1.3	1.5	1.7	1.7	2.1	2.7	3	3.2	3.7	3.9	4	4.5	
Length of the combustion chamber	mm	800	945	945	990	990	1197	1197	1344	1344	1405	1429	1429	1642	1642	
Ø of the combustion chamber	mm	390	390	390	440	440	488	488	533	533	628	648	648	642	642	
Volume of the combustion chamber	m³	0.086	0.102	0.102	0.135	0.135	0.201	0.201	0.270	0.270	0.391	0.424	0.424	0.478	0.478	
Flue gas temperature (80-60°C)	°C	190	190	190	190	190	190	190	190	190	170	170	170	170	170	
	°C	210	210	210	210	210	210	210	210	210	190	190	190	190	190	
Net weight	kg	298	380	380	433	433	520	520	665	665	945	1087	1087	1339	1339	


Measurement conditions: Boiler flow/return temperature: 80/55°C, Fuel oil CO₂ = 13%; Gas CO₂ = 10%

CABK PLUS RANGE: PRESENTATION

STRONG POINTS

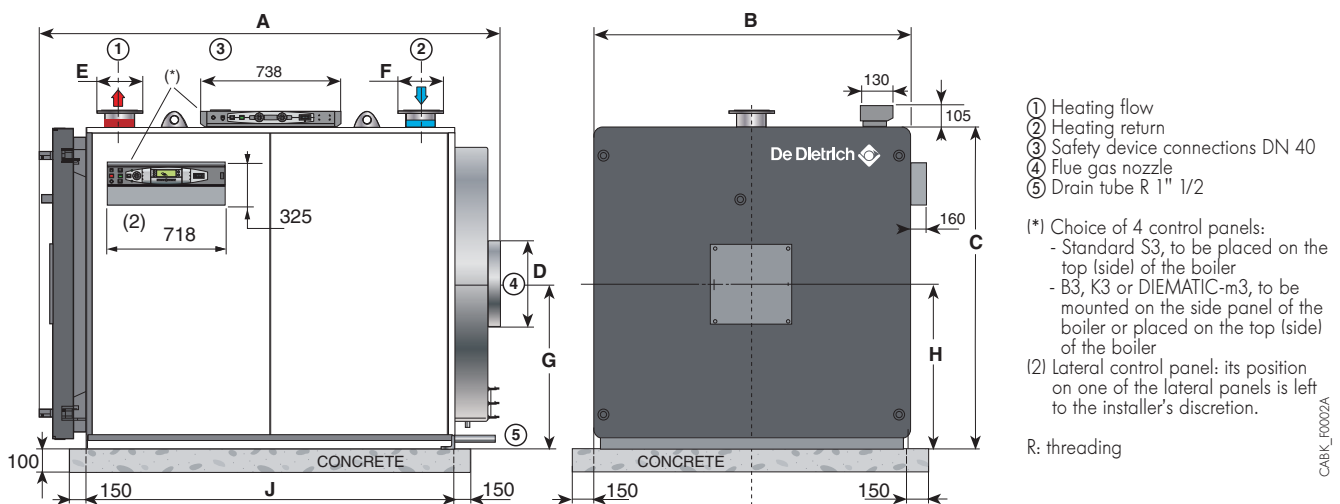
- CABK PLUS boilers are high output pressurised steel boilers to be fitted with a fuel oil or gas pressure jet burner.
- Single-unit steel heating body, with **2 flue gas pathways** and combustion efficiency > 90% at 80/60°C
- Combustion chamber designed for easy adaptation of all blown air burners, including ones with low NOx emissions.
- Second flue gas pathway in the pipes shaped in variable sections and geometries, thus optimising heat transfer and operation with no risk of condensation (min. return temp.: 55°C).
- Efficient insulation in high density glass wool covered with aluminium on the outside.
- Lifting rings in the top section used for handling for easy positioning
- Door giving access to the flue gas pipes and burner door with ceramic insulation mounted on adjustable reversible hinges.
- Top cover with textured surface taking on the role of walkway on the boiler
- Available with **various control panels**: Standard S3 control panel to be placed on the boiler, B3, K3 and DIEMATIC-m3 control panels to be installed on the side panel of the boiler, all of which can be used to control 2-stage or even modulating burners: see pages 6 to 10.

MODELS

Boiler	Output range kW	Control panel			
		Standard S3 (see p. 7)	B3 (see p. 7)	DIEMATIC-m3 (see p. 8)	K3 (I) (see p. 8)
	968 - 1210	CABK PLUS 100	CABK PLUS 100 B3	CABK PLUS 100 DIEMATIC-m3	CABK PLUS 100 K3
	1232 - 1540	CABK PLUS 130	CABK PLUS 130 B3	CABK PLUS 130 DIEMATIC-m3	CABK PLUS 130 K3
	1452 - 1815	CABK PLUS 160	CABK PLUS 160 B3	CABK PLUS 160 DIEMATIC-m3	CABK PLUS 160 K3
	1848 - 2310	CABK PLUS 200	CABK PLUS 200 B3	CABK PLUS 200 DIEMATIC-m3	CABK PLUS 200 K3
	2320 - 2900	CABK PLUS 250	CABK PLUS 250 B3	CABK PLUS 250 DIEMATIC-m3	CABK PLUS 250 K3

(I) The CABK PLUS-... K3 operates only in combination with a CABK PLUS-... DIEMATIC-m3 as part of a cascade installation

MAIN DIMENSIONS (MM)



CABK PLUS-		100	130	160	200	250
A	mm	2380	2760	2760	2980	3425
B	mm	1450	1750	1750	1900	2400
C	mm	1466	1800	1800	1970	2350
D Ø ext.	mm	500	550	550	600	650
E	mm	DN125	DN125	DN125	DN150	DN200
F	mm	DN125	DN125	DN125	DN150	DN200
G	mm	766	925	925	1020	1225
H	mm	766	925	925	1020	1225
J	mm	1804	2330	2330	2400	2739

CABK PLUS RANGE: SPECIFICATIONS

MAIN SPECIFICATIONS

Type: heating only

Energy: oil/gas

Max working pressure: 5 bar*

- * On request:
- CABK PLUS 100-130-160: up to 10 bar
 - CABK PLUS 200: up to 9 bar
 - CABK PLUS 250: up to 6 bar

Ref. "CE certificate": CE 1312BS4965

Combustion evacuation: chimney

Max. working temperature: 100°C

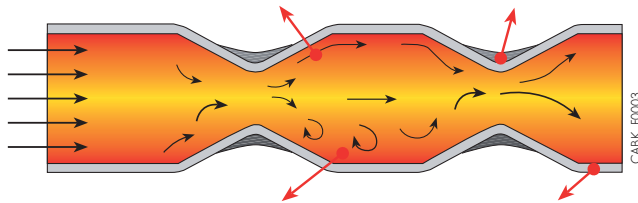
Min. return temperature: 55°C

Safety thermostat: 110°C

Model	CABK PLUS -	100	130	160	200	250	
Nominal useful output at Pn	kW	1210	1540	1815	2310	2900	
Min. useful output	kW	968	1232	1452	1846	2320	
Efficiency at 100% Pn and average temperature 70°C	%	90.6	90.6	90.6	90.6	90.6	
Stand-by losses at $\Delta T = 30K$	W	9215	11728	13823	17593	22086	
Water content	l	1327	2281	2377	3047	4700	
Water flow at $\Delta T=20K$	m ³ /h	49.1	64.8	79.2	98.7	126.2	
Water resistance at $\Delta T=20 K$	mbar	85	92	95	102	110	
Flue gas circuit volume	l	846	1439	1439	1970	2400	
Flue gas volume flow rate	m ³ /h	1515	1929	2271	2907	3444	
Flue gas mass flow rate	- oil	kg/s	1.022	1.300	1.532	1.949	2.446
	- gas	kg/s	1.012	1.288	1.518	1.932	2.425
Combustion chamber pressure	mbar	5.0	5.5	6.1	6.1	6.1	
Length of the combustion chamber	mm	1690	2030	2030	2242	2590	
Ø of the combustion chamber	mm	780	930	930	1030	1405	
Volume of the combustion chamber	m ³	0.726	1.240	1.240	1.680	3.612	
Flue gas temperature (80-60°C)	°C	190-220	190-220	190-220	190-220	190-220	
Net weight	kg	2500	2900	3250	4000	5500	

Measurement conditions: Boiler flow/return temperature: 80/55°C. Fuel oil CO₂ = 13%; Gas CO₂ = 10%

DESCRIPTION



Flue gas pipe in shaped steel generating surface turbulence assisting with heat transfer from the combustion gases to the heating water.

CONTROL PANEL SELECTION

The control panel is chosen according to the required installation:

INSTALLATION WITH ONE SINGLE BOILER

3 types of control panels are possible:

Standard S3
For installations without control system or for ones with a control cabinet in the boiler room

B3
For controlling a single direct circuit

DIEMATIC-m3
for controlling one direct circuit (without mixing valve)

or depending on the optional equipment connected, for:

One single circuit with mixing valve	2 circuits (one with mixing valve)	2 circuits with mixing valve	3 circuits (2 with mixing valve)	3 circuits with mixing valve
option: —	1 x flow sensor AD 199	1 x PCB FM 48	1 x flow sensor AD 199 + 1 x PCB FM 48	2 x PCBs FM 48
			2 x PCBs FM 48	1 x flow sensor AD 199 + 2 x PCBs FM 48

CASCADE INSTALLATION OF 2 TO 10 BOILERS

2 types of control panel are required:

- 1 DIEMATIC-m3 control panel for the first boiler in the cascade (master boiler)
- and 1 K3 control panel for each of the slave boilers.

Boiler 1 (master)
DIEMATIC-m3
for controlling one direct circuit (without mixing valve)

Or depending on the optional equipment connected, for:

One single circuit with mixing valve	2 circuits (one with mixing valve)	2 circuits with mixing valve	3 circuits (2 with mixing valve)	3 circuits with mixing valve
option: —	1 flow sensor AD 199	1 x PCB FM 48	1 x flow sensor AD 199 + 1 x PCB FM 48	2 x PCBs FM 48
			2 x PCBs FM 48	1 x flow sensor AD 199 + 2 x PCBs FM 48

Boiler 2
K3

option:

1 circuit with mixing valve	2 circuits with mixing valve	3 circuits with mixing valve
1 x AD 220	1 x AD 220 + 1 x PCB FM 48	1 x AD 220 + 2 x PCBs FM 48

Boiler 3
K3

Up to 10 boilers: for each additional slave boiler connected, it is possible to control up to 3 additional mixing valve circuits

DHW PRODUCTION

The B3 and DIEMATIC-m3 control panels include the "DHW priority" function and can therefore be complemented with

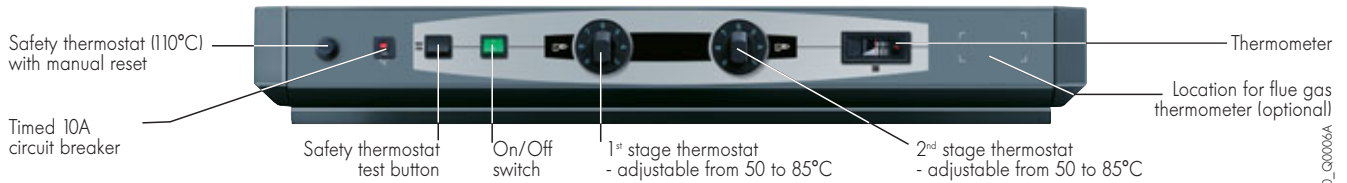
1 DHW sensor - Package AD 212 - to control an independent calorifier.

CONTROL PANELS

STANDARD S3 CONTROL PANEL

The CABK... and CABK PLUS... boilers are delivered with an "Standard S3" control panel to control 1 or 2-stage burners.

The "Standard S3" control panel is designed for heating installations without control unit or for ones with a control cabinet in the boiler room.



GT1330_Q0006A

"Standard S3" control panel options



Flue gas thermometer - Package BP 28

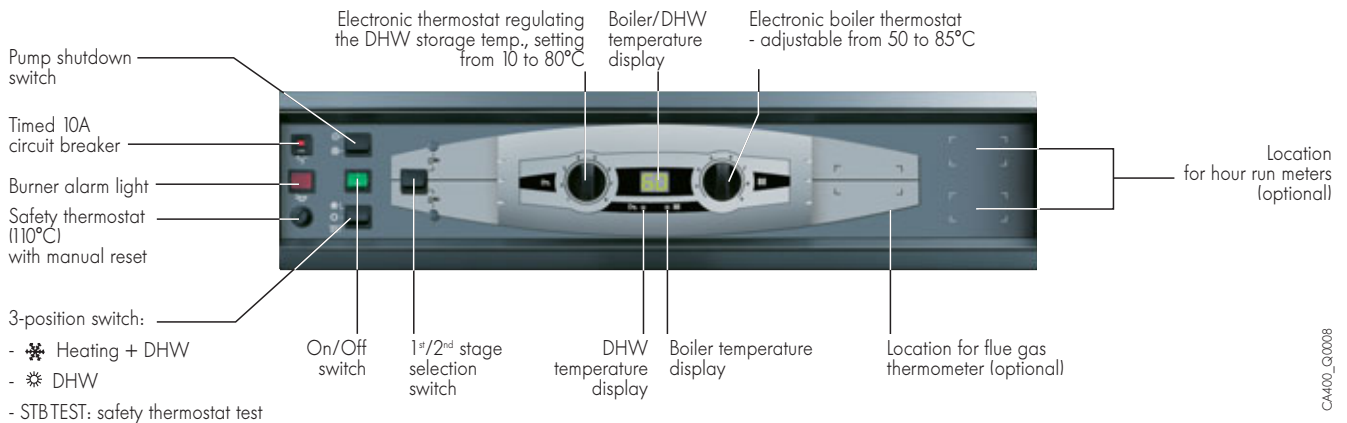
Can be clipped into the position provided on the control panel.

8358Q014

B3 CONTROL PANEL

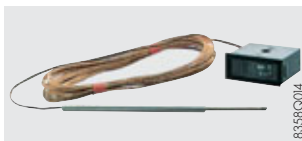
The CABK... B3 and CABK PLUS... B3 are fitted with the B3 control panel. The B3 control panel is used to control 1- or 2-stage burners. It includes control and safety devices used to operate the installation by regulating its temperature with the

boiler thermostat. It includes DHW production priority (optional DHW sensor: AD 212) for CABK... B3 and CABK PLUS... B3 connected to an independent calorifier.



CA400_Q0008

B3 control panel options



Flue gas thermometer - Package BP 28

Can be clipped into the position provided on the control panel.

8358Q014



Hour run meter - Package BG 40

Used to display the number of hours of burner operation. If using a 2-stage burner, 2 hour run meters displaying the number of hours of operation

8199Q059

for each stage are required. Can be clipped into the locations provided in the control panel.



Domestic hot water sensor - Package AD 212

This is used to regulate the boiler with domestic hot water temperature priority.

8518Q022



AD 200

Programmable wire-controlled room thermostat - Package AD 137

Programmable wireless room thermostat - Package AD 200

Non programmable room thermostat - Package AD 140

These thermostats handle the regulation or weekly heating programme on a direct circuit

8666Q120A

(models AD 137 and AD 200) by activating the burner.

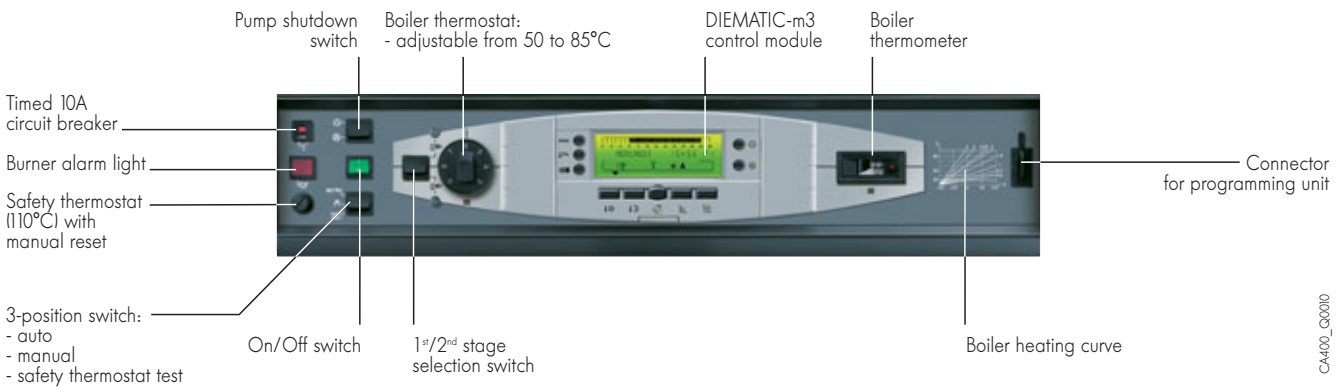
CONTROL PANELS

DIEMATIC-m3 AND K3 CONTROL PANELS

The **DIEMATIC-m3 control panel** is a very advanced control panel, which includes electronic programmable regulation as standard to modulate the boiler temperature by activating the burner (1, 2 stages or modulating) according to the outside temperature and the room temperature if a CDI D. or CDR D. iSystem interactive remote control is connected (optional). As standard, DIEMATIC-m3 is capable of automatically operating a central heating installation with a direct circuit without mixing valve or a circuit with mixing valve (the flow sensor – package AD 199 – must be ordered separately, however). By connecting another 1 or 2 “PCB + sensor for 1 valve circuit” options (package FM 48), it is therefore possible to control up to 3 circuits with mixing valve and each of these circuits can be fitted with a CDI D. or CDR D. iSystem remote control (optional). Connection of a domestic hot water sensor enables the programming and regulation of a DHW circuit by activating a control system on the load pump; DHW looping can be

handled thanks to the auxiliary contact which includes its own programming. DIEMATIC-m3 also provides antifreeze protection for the installation and the living space if the home is unoccupied and can be programmed 1 year in advance for a period of up to 99 days. Furthermore, the control system includes an “anti-legionella” protection option. **Moreover, in the context of larger installations,** it is possible to connect from 2 to 10 boilers in cascade: only the first of these boilers will be fitted with the DIEMATIC-m3 control panel, whilst the others will be fitted with the K3 control panel. Each of these CABK... K3 or CABK PLUS... K3 boilers can in turn be complemented with PCBs (AD 220 + 1 or 2 x FM 48) to control up to 3 circuits with mixing valve (see p. 5) with or without CDI D. or CDR D. iSystem remote control.

DIEMATIC-m3 control panel



CA400_Q0010

DIEMATIC-m3 control module

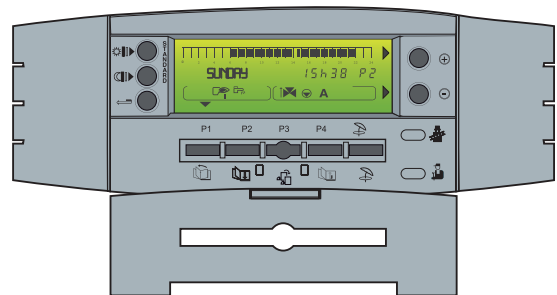
The control module integrated into the DIEMATIC-m3 control panel enables the installer to set the parameters for the entire heating installation, whatever its degree of complexity. It can be used to manage equally well:

- a CABK DIEMATIC-m3 or CABK PLUS DIEMATIC-m3 boiler installed on its own,
- or a cascade of boilers in which only the first will be fitted with the DIEMATIC-m3 control panel, all the others being fitted with the K3 control panel.

It also enables the user to programme each of the circuits in the installation independently, including those connected to the slave boilers with K3 control panel in a cascade installation. It makes it possible to select the appropriate operating mode for heating (Auto mode depending on programming, “Day”, “Night” or “Antifreeze” temperature mode, whether temporary or permanent), and for domestic hot water production (Auto, temporary or permanent forced load). It also makes it possible to access the various settings parameters and measurements in the installation to modify them or simply consult them, etc.



Control module, flap closed

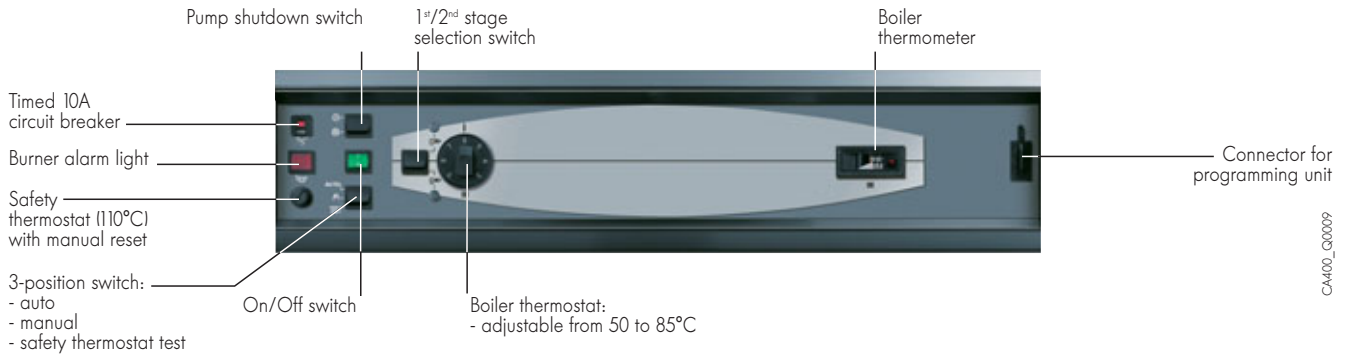


Control module, flap open

GT330_F0017

CONTROL PANELS

K3 control panel



CA400_Q0009

Note: all settings and measurement parameters on each cascade boilers fitted with the K3 control panel can be accessed on the DIEMATIC-m3 control panel on the master boiler

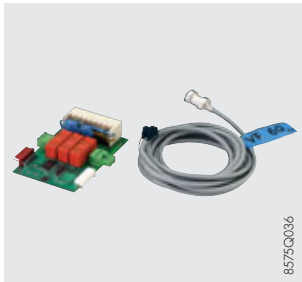
DIEMATIC-m3 and K3 control panel options



Flow sensor downstream of the valve - Package AD 199

This sensor is required in installations which have only circuits with mixing valve (no direct

circuit) to connect the first of these circuits to the DIEMATIC-m3 control panel – see page 8.



PCB + sensor for 1 mixing valve - Package FM 48

This is used to control a mixing valve with a 2-direction electrothermal or electromechanical motor. The valve circuit and its circulating pump can be programmed independently.

Note:

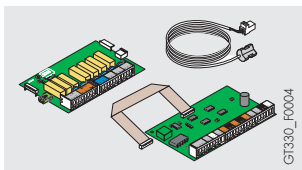
- In addition to sensor AD 199 for the first valve circuit, DIEMATIC-m3 can be fitted with 1 or 2 additional “PCB + sensor for 1 mixing valve” options – see p. 8.
- K3 can also be fitted with these PCBs in addition to the AD 220 PCB required for the first valve circuit connected to a CABK/CABK PLUS... K3.



Domestic hot water sensor - Package AD 212

This is used for priority temperature regulation and programming domestic hot water production

It handles the **boiler sensor function for CABK/CABK PLUS... K3** in a modulating cascade installation.

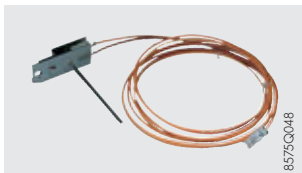


Relay PCB + sensors for the first valve circuit on a CABK/CABK PLUS... K3 - Package AD 220

This PCB is required to connect the first valve circuit with mixing valve to a **CABK/CABK PLUS... boiler with K3 control panel** as part of a cascade installation.

Note:

1 “relay PCB + sensors for first valve circuit” per CABK/CABK PLUS... K3 boiler can be connected.



Flue gas sensor - Package FM 47

This can be fitted to a **CABK/CABK PLUS... DIEMATIC-m3 boiler** or, in cascade installations, to each of the CABK/CABK PLUS... DIEMATIC-m3 or CABK/CABK PLUS... K3 boilers in this cascade.

It enables the user to read the flue gas temperature and thus check the cleanliness of the heat exchange surfaces in the boiler body.



Radio outside temperature sensor - Package AD 251

Boiler radio module (radio transmitter) - Package AD 252

The radio outside temperature sensor can be delivered as optional equipment for systems in which the installation of the external wire connection sensor delivered with DIEMATIC-m3 control panel would be too complex.

If this sensor is used:

- with a wire connection remote control (AD 285 or FM 52), it is necessary to order the “Boiler radio module” (AD 252).
- with a wireless connection remote control (AD 284), it is also necessary to order the “Boiler radio module” (AD 252).

THE VARIOUS CONTROL PANELS

DIEMATIC-m3 and K3 control panel options

AD 284/285



CALENTA_Q0005

CDI D. iSystem interactive remote control - Package AD 285

CDR D. iSystem interactive "radio" remote control (without transmitter/receiver radio) - Package AD 284

Radio boiler module DIEMATIC iSystem (transmitter/receiver) - Package AD 252

These are used to override all instructions from the DIEMATIC-m3 control panel from the room in which they are installed. In addition, they enable the self-adaptability of the heating regime for the circuit concerned (one CDI D. or CDR D. iSystem per circuit).

In the case of the CDR D. iSystem, the data are transmitted by radio waves from the place where the CDR D. iSystem is installed to the transmitter/receiver box (package AD 252) placed close to the boiler.

AD 252



8666Q172A

Simplified remote control with room sensor - Package FM 52

The connection of a simplified remote control is used to override certain instructions from the DIEMATIC m3 or K3 control panel from the room in which it is installed: programme override (permanent comfort

or low) and set room temperature override ($\pm 3.5^{\circ}\text{C}$). It is also used to enable the self-adaptability of the heating curve for the circuit concerned (1 simplified remote control per circuit).



8575Q037

Room sensor - Package AD 244

A room sensor is connected to activate the comfort period start-up optimisation function from the room in which it is installed. It is also used to enable the

self-adaptability of the heating curve for the circuit concerned (1 sensor per circuit).



8666Q174



8227Q026

BUS connecting cable (length 12 m) - Package AD 134

This cable is used to make the connection between the DIEMATIC-m3 control panel and the transmitter

on a remote management network or a DIEMATIC VM iSystem control system.

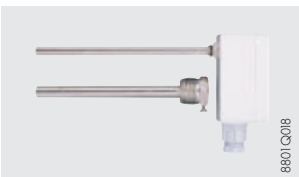


8199Q063

BUS connecting cable (length 40 m) - Package DB 119

This armoured cable is intended to replace the BUS cable delivered with the CABK... K3 (length 12 m)

or the 12 m BUS cable (package AD 134) presented above, when these turn out to be too short.



8801Q018

Dip sensor with sensor tube - Package AD 218

This dip sensor (NTC 147) is delivered with an IP54 junction box and a 1/2" sensor tube, length under head 120 mm. It is used instead of the attachable

sensors provided with the valve PCB options. It can also be used on the decoupling tank in the context of a cascade installation, for example.



VM_Q0001

DIEMATIC VM iSystem - Package AD 281

With the addition of a BUS cable, the DIEMATIC-m3 control panel can be completed with one or more DIEMATIC VM iSystem modules (up to 20), making it possible to control 2 additional hydraulic circuits each.

Each of these circuits may be either:

- a heating circuit with motorised 2-way valve
- or a domestic hot water preparation circuit
- or an auxiliary circuit. See specific instruction booklet for the "DIEMATIC VM iSystem".

BOILER OPTIONS



M... oil or G... gas burners

The oil or gas pressure jet burners available are particularly compact burners, especially designed to obtain optimum performance in combination with

each of the De Dietrich boilers to which they can be fitted: high efficiency and combustion quality.

Burner recommendations per boiler type:

Model	Type	Output max. (kW)	Output min. (kW)	Modulating/ 2 stages (2)	Gas burner			Oil burner	
					Gas pressure min.			1 stage	2 stages
CABK	8	99	76	G203/2N	170			M201/2S	M202/2S
		99	76	G303/2S	11.0				
CABK	10	115	92	G303/2S	13.6			M301/2S	M302/1S
CABK	12	145	116	G303/2S	19.0			M301/3S	M302/2S
CABK	15	175	140	G303/3S	20.8			M301/3S	M302/3S
CABK	18	205	164	G303/5S (I) 20 mbar	10.2			M301/4S	M302/4S
CABK	20	235	188	G303/5S (I) 20 mbar	11.7			M301/4S (94 %)	M302/4S
CABK	25	290	232	G303/5S (I) 20 mbar	16.5				M302/5S
					Gas train MB-VEF 415	Gas train MB-VEF 420	Gas train MB-VEF 425		
CABK	30	350	280	G43-1S	22.1				M302/5S
CABK	35	410	328	G43-1S	15.0	13.3	11.1		M302/6S (94 %)
CABK	40	465	372	G43-1S	17.9	15.7	12.8		M42-2/3S
CABK	50	580	464	G43-2S	24.4	21.0	16.9		M42-4S
CABK	60	700	560	G43-3S	26.1	20.9	15.9		M42-5S
CABK	70	815	652	G43-3S	33.0	26.0	18.5		M42-5S
CABK	80	930	744	G43-3S (94 %)	42.3	33.2	23.2		M42-5S (97 %)
					Gas train MBD 420	Gas train VGD 40.065			
CABK	80	930	744	G53-1S	24	7			M52-1S
CABK PLUS	100	1210	968	G53-1S	42	12			M52-1S
CABK PLUS	130	1540	1232	G53-2S	63	17			M52-2S
CABK PLUS	160	1815	1452	G53-2S	81	25			M52-2S
CABK PLUS	200	2310	1848	G53-2S (89 %)	99	31			M52-2S (90 %)
CABK PLUS	250	2900	2320	/					

- (1) For G 303-5 S specify 20/25 mbar or 300 mbar version.
 G 40/G 50 burners should be completed with a gas train adapted to the mains gas pressure.
 (2) G 300 and G 40 are:
 - 2 stage-burners when associated with a standard S3 or B3 control panel,
 - modulating-burners when associated with a DIEMATIC-m3 or K3 control panel.

Note: a butane/propane conversion kit can be ordered for the burners G 203/2N, G 303/2S, G 303/3S and G 53.

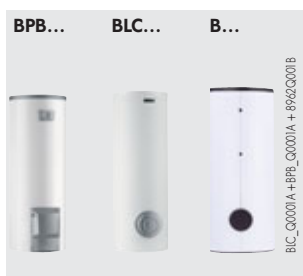
The specifications and performances of these burners are given in the various technical leaflets which cover them.



Burner relay box 230 V - Package BP 51

By using simple plug-in connectors, this box is used to relay a 230 V burner with specifications higher than the values admitted by the control panel: mechanical output higher than 450 W and a start-up intensity higher than 16 A.

The values admissible are then 1500 W mechanical and 50 A max. for 0.5 seconds.



DHW production

De Dietrich BPB or BLC independent hot water tanks with a capacity of 150 to 500 litres or the B 650/800/1000 can be used for domestic hot water production for individual and collective dwellings as well as for industrial and commercial premises. They are lined with food quality standard high quartz content vitrified enamel and protected by

an anode (magnesium for BPB/BLC... and B 650, "Correx[®]" imposed current for B 800/1000). The specifications and performances of these tanks are given in the technical leaflets - BPB/BLC 150 to 500 and B 650-800-1000 Independent Hot Water Tanks. The specifications and performances of these tanks are given in the product catalogue and the technical leaflets.

INSTALLATION INFORMATION

INSTALLATION IN BOILER ROOMS

Ventilation

This must comply with prevailing national regulations.

Examples (valid in France)

Top and bottom ventilation mandatory

- Top ventilation:

Cross section equal to half of the total cross section of the flue gas conduits with a minimum of 2.5 dm²

- Bottom ventilation:

Direct air inlet: $S \text{ (dm}^2) \geq \frac{0.86 P}{20}$

P = Installed output in kW

The air inlets must be located in such a way in relation to the top ventilation vents that air is renewed in the entire volume of the boiler room.



In order to avoid damage to boilers, it is necessary to prevent the contamination of combustion air by chloride and/or fluoride compounds, which are particularly corrosive.

These compounds are present, for example, in aerosol spray cans, paints, solvents, cleaning products, washing powders/liquids, detergents, glues, snow clearing salts, etc.

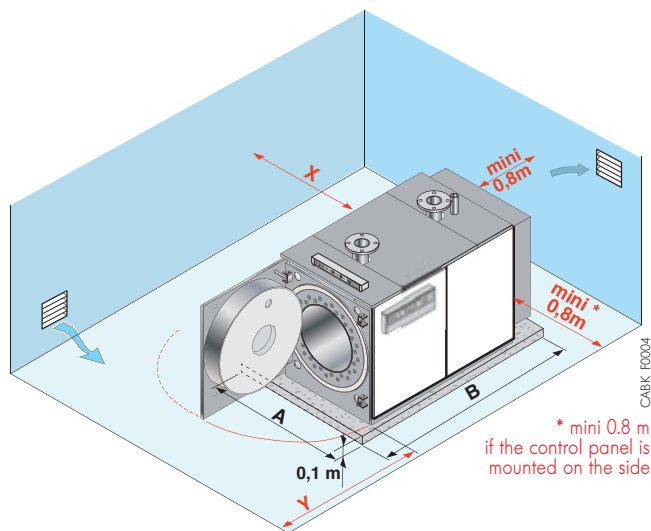
It is therefore necessary:

- To avoid sucking in air discharged from premises using such products: hairdressers, dry cleaners, industrial premises (solvents), premises containing refrigeration systems (risk of leaking refrigeration fluid), etc.
- To avoid the storage of such products close to boilers.

Please note that, if the boiler and/or its peripherals become corroded by chloride and/or fluoride compounds, our contractual warranty cannot be invoked.

Installation

The dimensions shown in red are the minimum recommended dimensions for providing adequate access around the boiler. They are given in meters.



Bear in mind the minimum clearance required to open the door when the burner is fitted.

CABK-	8	10	12	15	18	20	25	30	35	40	50	60	70	80	100	130	160	200	250
A m	0.9	0.92	0.92	0.94	1.0	1.0	1.0	1.05	1.05	1.22	1.325	1.325	1.325	1.325	1.75	2.05	2.05	2.20	2.70
B m	1.045	1.19	1.19	1.23	1.23	1.41	1.41	1.66	1.66	1.687	1.687	1.687	1.925	1.925	2.10	2.63	2.63	2.70	3.04
X m	0.6	0.6	0.6	0.6	0.6	0.75	0.75	0.75	0.75	1.0	1.0	1.0	1.0	1.0	1.0	1.2	1.2	1.4	1.5
Y m	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.2	2.3	2.3	2.5	3.0

Minimum door (T) and corridor (K) widths necessary for clearance of the boiler

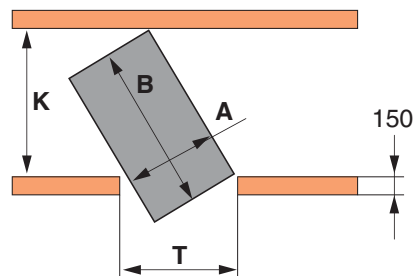
(These are minimum calculated values)

$$K = \frac{A}{T} \times B \quad \text{and} \quad T = \frac{A}{K} \times B$$

Example:

Calculation of the min. width of a corridor (K) necessary for the clearance of a CABK 50 boiler through a door width T = 1000 mm

$$K = \frac{1125}{1000} \times 2070 = 2328 \text{ mm minimum}$$



INSTALLATION INFORMATION

CHIMNEY CONNECTION

The high performances of modern boilers, their use in particular conditions connected with the development of burner technologies (operation at 1st stage or at the lower end of the modulation range) provide low, or even very low flue gas temperatures. This necessitates the use of flues designed to enable the flow of the condensates which may result from such operating modes, thus preventing the risk of damage to the chimney.

To define the cross section and height of the chimney, refer to the prevailing regulations.

Note:

Depending on the configuration of the chimney, it may be necessary to add a draft moderator to ensure a partial vacuum of zero at the boiler nozzle.

HEATING CIRCUIT CONNECTION

CABK and CABK PLUS boilers must only be used in closed circuit heating installations. The central heating systems must be cleaned to eliminate the debris (copper, strands, brazing flux) linked to the installation of the system and deposits that can cause malfunctions (noise in the system, chemical reaction between metals). More particularly, if fitting a boiler to an existing installation, it is strongly recommended that you clear sludge

out of the system before installing the new boiler. After carrying out this work, particular monitoring of the installation may be necessary both in respect of the water in the network and the quality of the water used for topping it up in order to be in full control of the consequences. Suitable filters may be necessary in some cases

Heating water requirements

- Total hardness: TH < 25 °F

Water treatment

- When the heating water is treated (antifreeze product), it must be compatible with the various materials used in the boiler and the system circuits.

- Every precaution should be taken to prevent the formation of oxygen in the various parts of the system.

Additional instructions for connecting boilers with an output equal to or higher than 116 kW

The levels of heat exchange, which are high in efficient boilers, mean carefully constructing boiler room systems in line with the codes of practice.

Operating in cascade

After stopping the burner:

- time delay required before the order to close a gate valve: 3 min.

- order to stop the shunt pump (located between the boiler and the gate valves) using the limit switch contact on the gate valve.

Operation in 2 stages with an oil or gas pressure jet burner

- boiler temperature maintained at 65°C or higher; the first stage must be set to a minimum of 30% of the nominal output.

Operating with a modulating gas pressure jet burner

- boiler temperature maintained at 65°C or higher; the burner can modulate down to 30% of the nominal output.

Water flow rate in the boiler

When the burner is operating, the water flow rate in the boiler must be between 1/3 of the nominal flow rate and 3 times the nominal flow rate.

$$\text{Nominal flow } Q_n = \frac{0.86 P_n}{15}$$

$$\text{Minimum flow } Q_{\min} = \frac{Q_n}{3} = \frac{0.86 P_n}{45}$$

(this flow rate also corresponds to the minimum shunt flow rate in the boiler)

$$\text{Maximum flow } Q_{\max} = 3 \times Q_n = \frac{0.86 P_n}{5}$$

Q_n in m^3/h

P_n Nominal output (maximum boiler output) in kW

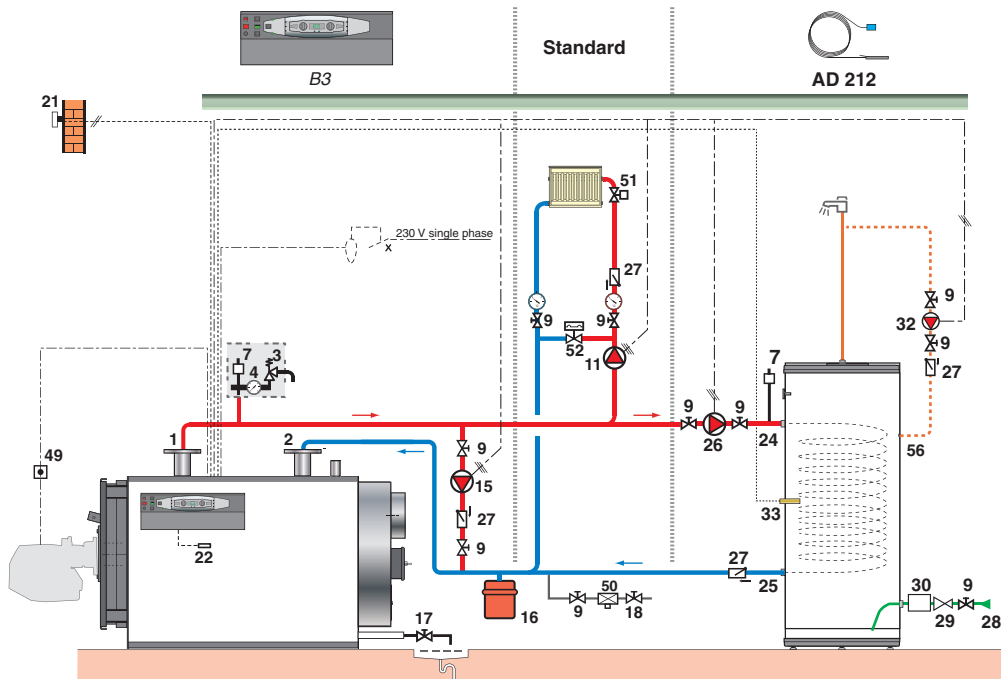
INSTALLATION EXAMPLES

The examples presented below cannot cover the full range of installation scenarios which may be encountered. Their purpose is to draw the attention to the basic rules to be followed. A certain number of control and safety devices are represented but, in the last resort, it is up to the experts, consultant engineers and design departments to make the final decision on the control and safety devices to be used in the boiler room, depending on its specificities. In all events, it is necessary to abide by the codes of practice and the prevailing local and national regulations.

Note:

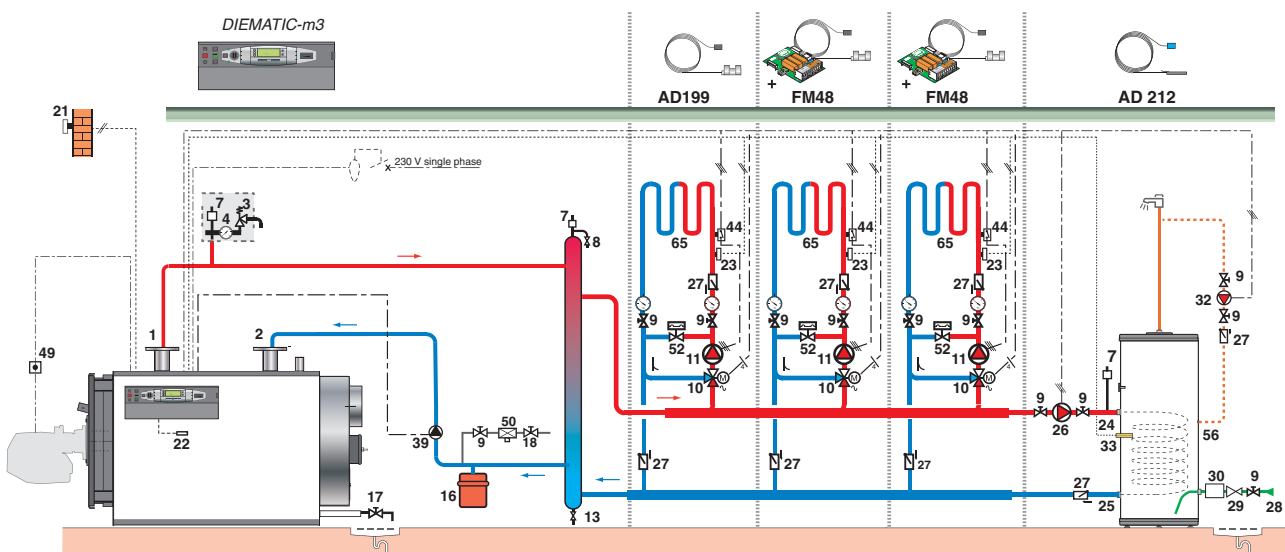
For the connection of domestic hot water, a sleeve made of steel, cast iron or any other insulating material must be interposed between the hot water outlet and these pipes to prevent any corrosion to the connections, if the distribution pipes are made of copper.

Installation of a CABK... B3 with 1 direct circuit + 1 DHW circuit
(Schematic valid by analogy for a CABK PLUS... B3)



CABK_IF0006B

Installation of a CABK... DIEMATIC-m3 with 3 circuits with mixing valve + 1 DHW circuit, all behind a decoupling cylinder
(Schematic valid by analogy for a CABK PLUS... DIEMATIC-m3)

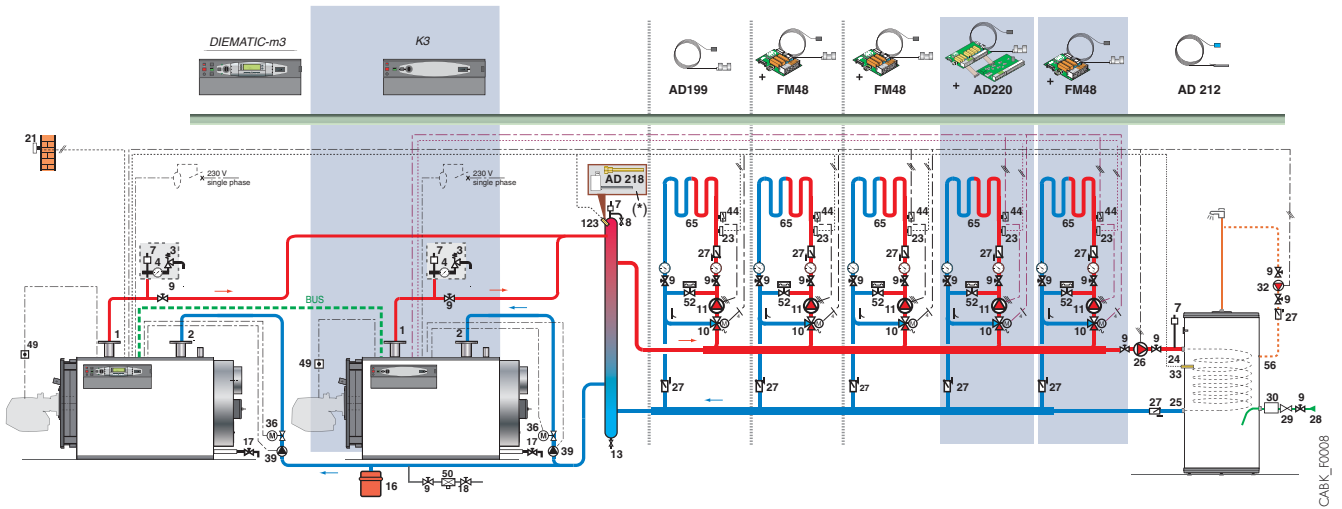


CABK_IF0007A

Key: see page 15

INSTALLATION EXAMPLES

Installation of 2 boilers in cascade with 3 circuits with mixing valve + 1 DHW circuit connected to the CABK or CABK PLUS DIEMATIC-m3 master boiler, and 2 circuits with mixing valve connected to boiler no 2: CABK or CABK PLUS K3, all of these circuits behind a decoupling cylinder



Key

- | | | | |
|-------------------------------|---|---|--|
| 1 Heating flow | 22 Boiler control system sensor | 39 Injection pump | 61 Thermometer |
| 2 Heating return | 23 Flow temp. sensor downstream of mixing valve | 44 Thermostat limiting the temperature to 65°C with manual reset for underfloor heating | 65 Low temperature circuit (radiator or underfloor heating) |
| 3 Safety valve | 24 Primary inlet on the DHW tank exchanger | 49 Contactor mandatory if the burner is powered with three-phase current or if the specifications of the 230 V burner are higher than those admissible by the control panel | 123 Cascade flow sensor |
| 4 Pressure gauge | 25 Primary outlet on the DHW tank exchanger | 50 Disconnecter | (*) In this kind of system, the installation of a dip sensor (package AD 218) in the decoupling cylinder is recommended. However, it is also possible to use the boiler sensor provided with the CABK/ CABK PLUS DIEMATIC-m3 |
| 5 Flow rate controller | 26 DHW load pump | 51 Thermostatic valve | * mandatory, in compliance with safety directives: we recommend hydraulic safety units with membranes. |
| 7 Automatic air vent | 27 Non-return valve | 52 Differential valve (only with module fitted with a 3-speed pump) | |
| 8 Manual air vent | 28 Domestic cold water inlet | 56 DHW circulation loop return | |
| 9 Valve | 29 Pressure reducer | | |
| 10 3-way mixing valve | 30 Sealed safety unit calibrated to 7 bar* | | |
| 11 Heating pump | 32 DHW loop pump (optional) | | |
| 13 Flush valve | 33 DHW temperature sensor | | |
| 15 Shunt pump | 36 Motorised gate valve | | |
| 16 Expansion tank | | | |
| 17 Drainage valve | | | |
| 18 Heat circuit filling | | | |
| 21 Outside temperature sensor | | | |

TECHNICAL DESCRIPTION

CABK... - CABK PLUS...

Pressurized steel boilers with high combustion efficiency

Brand: De Dietrich
Model: CABK ____ / CABK PLUS ____
Useful output: ____ kW
Water content: ____ litres
Max. operating pressure: 4 or 5 bar
Max. operating temperature: 110°C

Pressure in combustion chamber: ____ mbar
Footprint: ____ (L) x ____ (l) mm
Net weight: ____ kg
Ø Flue gas nozzle: ____ mm
Ø Departure/return: ____ / ____

DESCRIPTION

- Complies with the requirements of European Directives.
- Monobloc heating body in steel, with a wet pressurized open (unstoppered) combustion chamber having a built-in 2-way flue, modulated down to 55°C.
- The combustion chamber design ensures a low NOx level.
- Operating efficiency up to 90%; efficiency class ★★ CE
- Convection turbulators are fitted as standard to all flues ways.
- Total insulation of the heating body with glass wool.
- Reversible burner door (left or right opening) with thick ceramic insulation.
- CABK and CABK PLUS are available with 4 control panels which can be used to control 2-stage or modulating burners:

Standard S3 control panel:

Control panel for controlling 1- or 2-stage burners. These configurations are recommended for heating installations without a control system or with a control cabinet in the boiler room.

Options

- Flue gas thermometer

B3 control panel:

The B3 control panel is used to control 1- or 2-stage burners. It includes control and safety devices used to operate the installation by regulating its temperature with the boiler thermostat. It is fitted as standard with domestic hot water production priority (optional DHW sensor).

Options

- Flue gas thermometer, hour run meter, domestic hot water sensor
- Non-programmable room thermostat
- Programmable wire-controlled room thermostat
- Programmable wireless room thermostat.

K3 control panel:

The K3 control panel is fitted only in association with a boiler fitted with a DIEMATIC-m3 control panel as part of a cascade installation. DHW regulation and programming is handled by the DIEMATIC-m3 control panel on the master boiler. The K3 control panel includes a boiler thermostat, a thermometer and a safety thermostat, a USB connection to update the program and for the monitoring of the temperatures.

DIEMATIC-m3 control panel:

Advanced control panel which includes electronic programmable regulation according to the outside temperature to control up until 3 circuits with mixing valve, enables the programming and regulation of a DHW circuit and the connection from 2 to 10 boilers in cascade.

DIEMATIC-m3 and K3 control panel options

- Flow sensor downstream of the valve,
- Domestic hot water sensor
- Dip sensor with sensor tube
- PCB + sensor for 1 mixing valve,
- Flue gas sensor
- Relay box for burners with powers > 450 kW or start up intensity > 16 A
- Relay PCB + sensor for 1st mixing valve
- Radio outside temperature sensor
- Boiler radio module (radio transmitter), interactive remote control CDI D. iSystem
- Radio remote control (without radio transmitter) CDR D. iSystem
- Simplified remote control with room sensor
- BUS connecting cable (length 12 m)
- BUS connecting (length 40 m)
- Extension BUS cable,
- DIEMATIC VM iSystem.

DE DIETRICH THERMIQUE

S.A.S. with corporate capital of 22 487 610 €
57, rue de la Gare - F - 67580 MERTZWILLER
Tel. +33 3 88 80 27 00 - Fax +33 3 88 80 27 99
www.dedietrich-heating.com

De Dietrich 

