

INNOVENS PRO MCA 160

WALL-MOUNTED GAS CONDENSING BOILER

■ MCA 160: from 34.7 to 161.6 kW for heating only



MCA 160



MCA 160 installed in cascade



Heating and domestic hot water using an independent tank



Condensation



All natural gases
Propane



CE identification no.:
0063CQ3781

The INNOVENS PRO MCA 160 boiler can be supplied with a choice of either of the following two control panels:

- **DIEMATIC EVOLUTION**: according to the options connected, this enables command and control of up to 3 heating circuits according to the outside temperature + 1 DHW circuit. It also allows optimised management of combined systems and the control of 2 to 8 boilers in cascade configuration (see page 5) when combined with boilers with the IniControl 2 panel (or DIEMATIC EVOLUTION).
- **IniControl 2**: for operation via a 0-10V input, supplied with this panel as standard. It is used as a secondary boiler as part of an installation in cascade configuration, actuated by a boiler equipped with the DIEMATIC EVOLUTION panel or in a cascade system where each boiler is controlled via a 0-10V input.

Different air-flue gas connection configurations are possible; we offer connection solutions using a horizontal or vertical forced flue, on a chimney or bi-flow. MCA 160 units can be fitted in cascade only, or in combination with MCA 45-115 boilers.

Complete hydraulic systems for connection of a cascade of 2 to 8 boilers are available.

■ OPERATING CONDITIONS

Maximum operating pressure: 4 bar

Maximum operating temperature: 90°C

Safety thermostat: 110°C

Power supply: 230 V/50 Hz

International Protection marking: IP X1B

■ APPROVAL

B23 - B23P/B33 - C13x - C33x - C93x - C53 - C63 - C83

■ GAS CATEGORY

Equipped and preconfigured to operate using natural gas and propane (with conversion kit)

NOx class: 6 (EN 15502-1)

PROJECT

De Dietrich
SUSTAINABLE COMFORT®



PRESENTATION OF THE RANGE

The INNOVENS PRO MCA 160 gas condensing boiler is a new high-power wall-mounted boiler. It boasts an innovative design and a new aesthetic, with a sleek finish. Exceptionally compact (602 x

600 x 1 112 mm for 160 kW), is its very easy to install and maintain. It is supplied assembled and factory-tested.

ENHANCED PERFORMANCE

- Efficiency up to 108.5%
- NOx class 6, in line with EN 15502-1

- Low pollutant emissions: NOx < 39 mg/kWh.

ADVANTAGES

- **Compact packaged heating body made from aluminium/silicium alloy** with a large heat exchange surface area and moderate pressure losses, providing high resistance to corrosion and only requiring a very low irrigation flow rate (except for a flow temperature > 75°C) thanks to the burner regulator device which manages the transition phases within the installation which are the source of the very low flow rates in the boiler. The front access facilitates maintenance,
- **Stainless premix burner** with braided metal fibre surface, **modulating** the output from 18 to 100% to ensure the comfort level meets requirements, equipped with an air intake silencer. Low CO and NOx emissions, enabling optimum protection of the environment,
- Gas line with non-return valve,
- **Operates using natural gas and propane with conversion kit**
- The INNOVENS PRO MCA 160 boiler can be supplied with either of the following two control panels:
 - **DIEMATIC EVOLUTION:** suitable for all installation situations, even the most complex; in its original configuration, it can be used to control and regulate 2 direct circuits and up to 2 circuits with mixing valve (by adding 2 optional flow sensors). Add a PCB + sensor to enable a third circuit with mixing valve to be actuated. A DHW sensor can be fitted to enable regulation with the DHW circuit prioritised. It is specially designed to allow optimisation of combined systems. This control panel can also be used to control an installation in cascade configuration, where just the first boiler will be

equipped with this panel, and "slave" boilers will be equipped with an IniControl 2 control panel. To connect more than the 3 circuits available on the master boiler, it is possible to insert 1 (or several) additional boiler(s) with the DIEMATIC EVOLUTION panel into the cascade

- **IniControl 2:** this is mainly used in installations (cascade or non-cascade) with an external control cabinet to control all of the secondary circuits via a 0-10V input, which this panel is fitted with as part of its original equipment,
- **A range of equipment** such as an automatic air vent, PPS flue gas pipes, air-flue gas connection parts with measuring ports, mains connection cable, internal lighting, heating pump connector and signalling connector, wall mounting bracket, and a siphon for draining the condensates,
- **Complete cascade hydraulic systems** for 2 and up to 8 boilers for installations between 300 and 1216 kW; see page 12,
- **Complete cascade hydraulic systems** combining MCA 45/115 and MCA 160 units are also available; see page 17.
- **Multiple options** to ensure these boilers are as easy to operate as possible:
 - hydraulic connection kit comprising the flow/return valves, the gas valve, the safety valve, and the filling valve
 - primary pump, low-loss header, condensate neutralisation tray, etc.
- **Air-flue gas connection possible** via horizontal or vertical forced flue, on a chimney or bi-flow (see page 22).

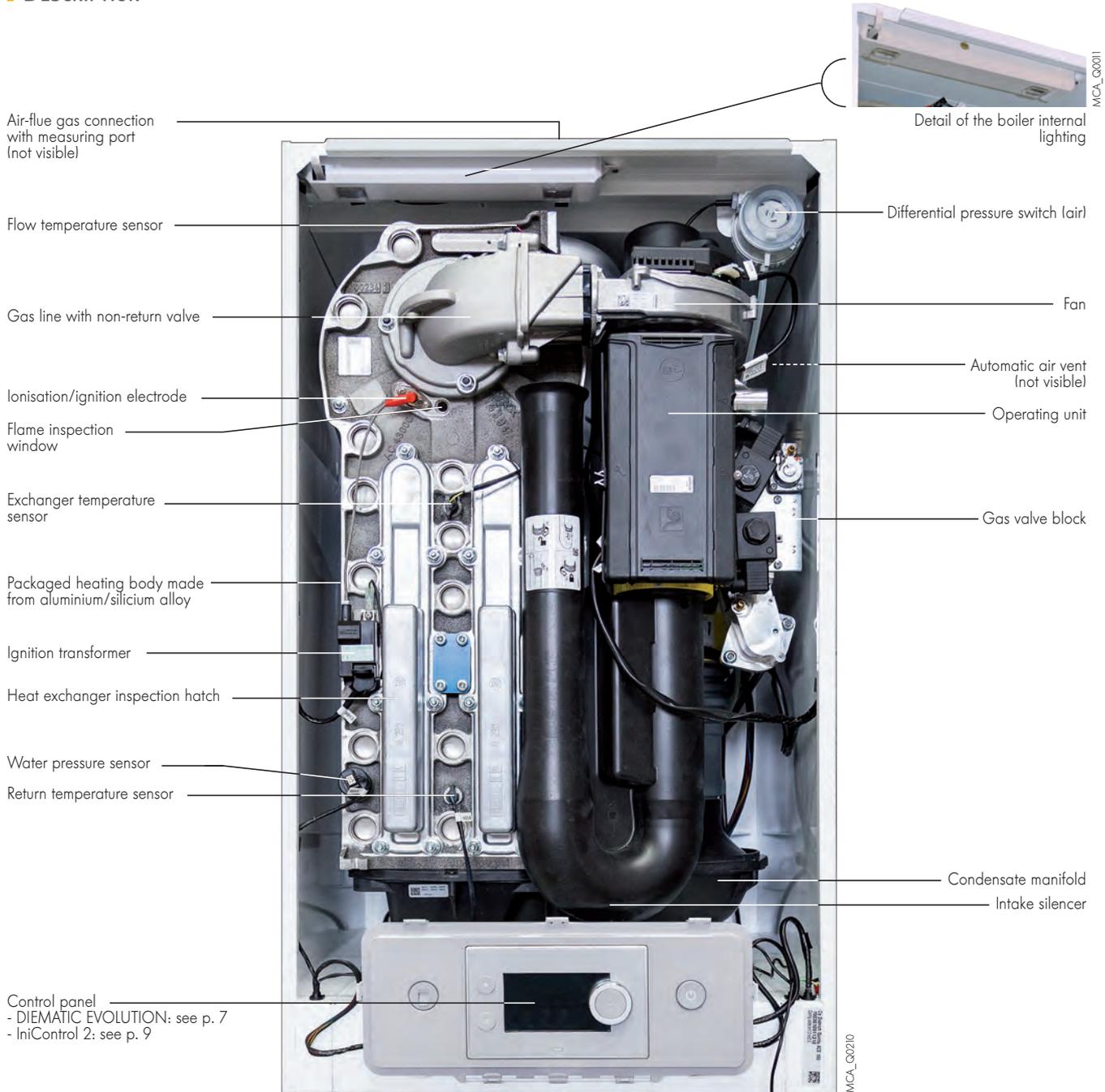
MODELS AVAILABLE

Boiler	Control panel	INNOVENS PRO model	Power range (kW)	
			at 50/30°C	at 80/60°C
 <p>For heating only (option to connect a domestic hot water tank*)</p>	DIEMATIC EVOLUTION 	MCA 160 DIEMATIC EVOLUTION	34.7 to 161.6	31.5 to 152.1
	IniControl 2 	MCA 160 IniControl 2		

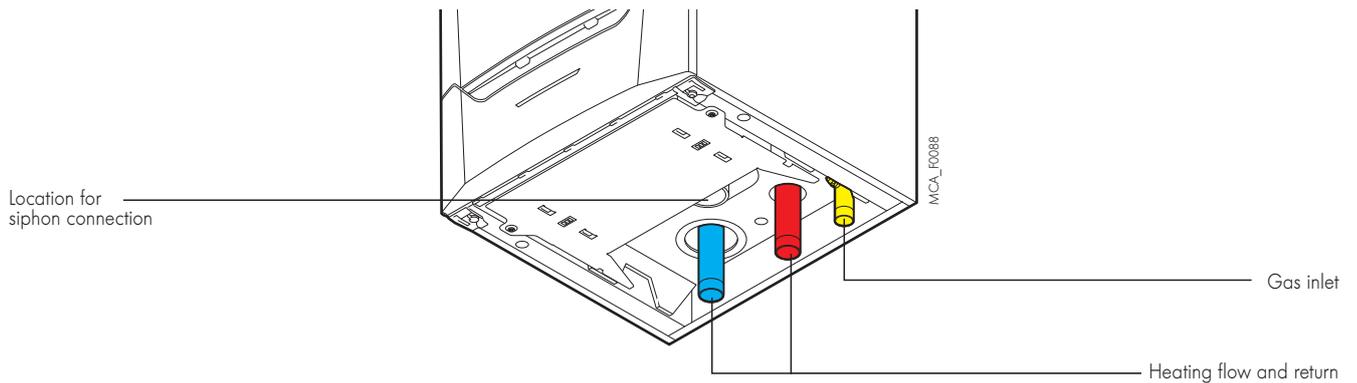
*Only in combination with the DIEMATIC EVOLUTION control panel

TECHNICAL SPECIFICATIONS

DESCRIPTION



View of the boiler from underneath



TECHNICAL SPECIFICATIONS

THE TECHNICAL SPECIFICATIONS

Boiler

Generator type: heating only
 Boiler type: condensing
 NOx class: 6
 Burner: premix burner

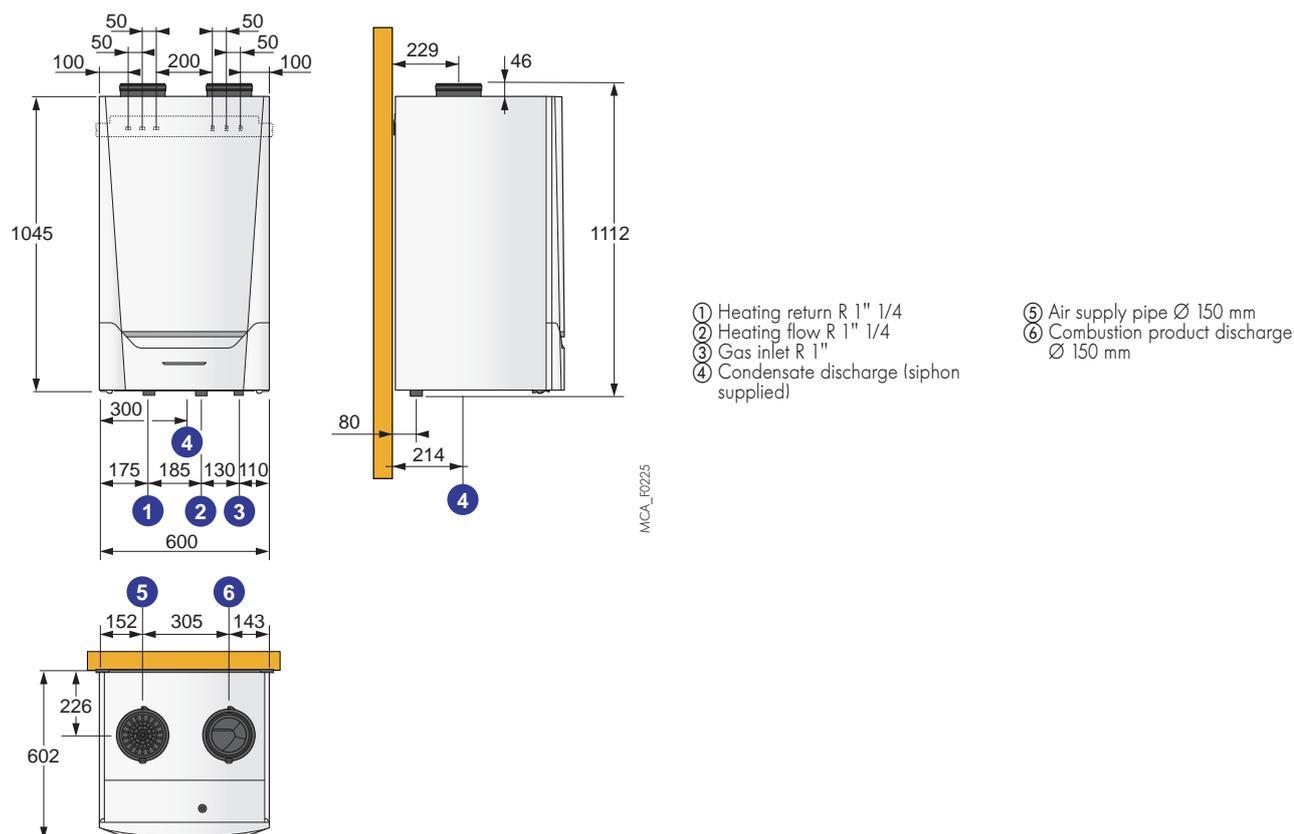
Energy used:
 natural gas or propane
 Combustion evacuation:
 chimney or sealed

Average operating temperature:
 - O_{pT_max} : 85°C
 - O_{pT_min} : 25°C
 "CE certificate" ref.: CE 0063CQ3781

Boiler type		MCA	160
Useful output	- nominal determined at Q_{nom} (I)	kW	152.1
	- intermediate at 30% Q_{nom} (I)	kW	50.8
Nominal output P_n at 50/30°C		kW	161.6
Efficiency in % LHV, load...% and water temp... °C	- 100% P_n at av. temp. 70°C	%	97.5
	- 30% P_n at return temp. 30°C	%	108.5
Useful efficiency at ...% of the rated heat output (2)	- at 30 Eta 1	%	97.8
	- at 100% Eta 4	%	87.8
Nominal water flow rate at P_n and $\Delta t = 20$ K		m ³ /h	6.5
Stand-by losses at $\Delta t = 30$ K		W	191
Electrical output of auxiliaries at P_n gen		W	275
Electrical output of auxiliaries in standby		W	5
Useful output at 50/30°C min./max.		kW	34.7-161.6
Useful output at 80/60°C min./max.		kW	31.5-152.1
Flue gas mass flow rate min./max.		kg/h	57/277
Flue gas temperature min./max.		°C	32/66
Pressure available at boiler outlet		Pa	200
Water content		l	17
Minimum required water flow rate *		m ³ /h	0.4
Water side pressure drop at $\Delta t = 20$ K		mbar	170
Max. gas flow rate (15°C-1013 mbar)	- natural gas H/L	m ³ /h	16.5/19.6
	- propane	m ³ /h	6.3
Weight (empty)		kg	147

* for operation at $> 75^\circ\text{C}$, the minimum flow rate must be calculated at $\Delta t = 45$ K
 (I) Q_{nom} = nominal heat output

MAIN DIMENSIONS (IN MM AND INCHES)



SELECTING THE CONTROL PANEL

The control panel is selected based on the installation to be created:

INSTALLATION WITH 1 SINGLE BOILER

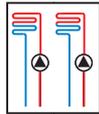
Two types of panel are possible



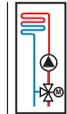
- For installations with 0-10 V control cabinet in a boiler room.



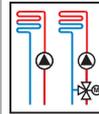
- For control of one circuit:



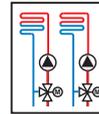
2 x direct



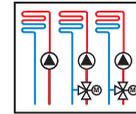
valve



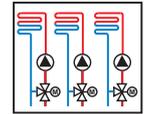
direct + 1 valve



2 x valve



direct + 2 x with valve



3 x with valve

Options:

standard

1 flow sensor AD199



1 flow sensor AD199



2 flow sensors AD199



1 flow sensor AD199 + 1 PCB AD249



2 flow sensors AD199

+ 1 PCB AD249



INSTALLATION OF 2 TO 8 BOILERS IN CASCADE

With IniControl 2 control panels



All the boilers will be connected via a 0-10 V input to a control cabinet in the boiler room which will manage all the secondary circuits (see p. 22).

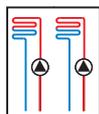
MCA 160 IniControl 2 MCA 160 IniControl 2 MCA 160 IniControl 2

0-10 V

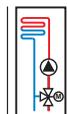
With DIEMATIC EVOLUTION control panel for the 1st boiler in the cascade (master boiler) and 1 IniControl 2 panel for each of the secondary boilers



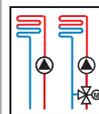
- For control of one circuit:



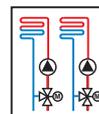
2 x direct



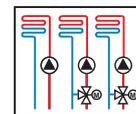
valve



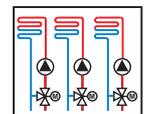
direct + 1 valve



2 x valve



direct + 2 x with valve



3 x with valve

Options:

standard

1 flow sensor AD199



1 flow sensor AD199



2 flow sensors AD199



1 flow sensor AD199 + 1 PCB AD249



2 flow sensors AD199

+ 1 PCB AD249



Boiler 1

MCA 160 DIEMATIC EVOLUTION (master)

BUS



- No additional secondary circuit may be connected to the IniControl 2 panel.

Boilers 2 to 8

MCA 160 IniControl 2 (secondary)

SELECTING THE CONTROL PANEL

INSTALLATION OF 2 TO 8 BOILERS IN CASCADE (CONTINUED)

To connect more than 3 heating circuits to a cascade installation, one of the MCA 160 IniControl 2 boilers in the cascade must be replaced with one (or several, depending on the number

of additional circuits to be managed) MCA 160 DIEMATIC EVOLUTION boiler(s) (see example in the hydraulic diagram on page 36).

With a DIEMATIC EVOLUTION control panel for the first boiler in the cascade (master boiler) and 1 or several DIEMATIC EVOLUTION panels for each of the secondary boilers



Boiler 1
MCA 160 DIEMATIC EVOLUTION
(master)

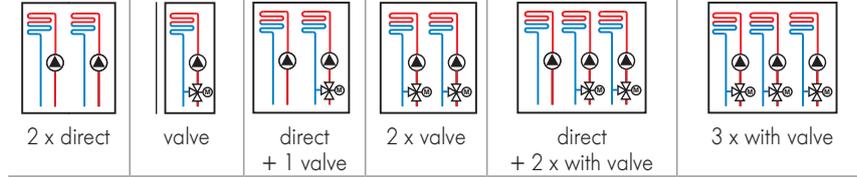
BUS



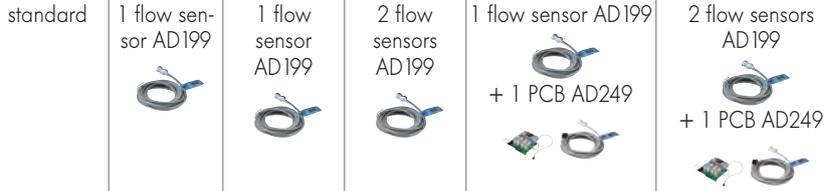
Boiler 2
MCA 160 DIEMATIC EVOLUTION
(secondary)

Boilers 3 to 8
MCA 160 IniControl 2 or
MCA 160 DIEMATIC EVOLUTION
if necessary (secondary)

- For control of one circuit:



Options:



- Management of circuits 4, 5 and 6, if applicable (see above).

- 1 or several DIEMATIC EVOLUTION panels according to the number of circuits to be managed.

DHW PRODUCTION

The DIEMATIC EVOLUTION control panel includes the "priority DHW" function, and can therefore be completed with 1 or

2 DHW sensors - package AD212 for the control of one or 2 independent tanks.

THE DIEMATIC EVOLUTION CONTROL PANEL

PRESENTATION OF THE DIEMATIC EVOLUTION control panel

The **DIEMATIC EVOLUTION control panel** is a highly advanced panel with new ergonomic controls, integrating a programmable electronic control system which modulates the boiler temperature by acting on the **modulating burner**, based on the outside temperature (outside sensor delivered) and the room temperature, where required, if an interactive remote control (supplied as an option) is connected.

As standard, the DIEMATIC EVOLUTION is able to automatically run a central heating system with a direct circuit without mixing valve and 1 circuit with mixing valve (please note: the flow sensor - package AD199 - must be ordered separately).

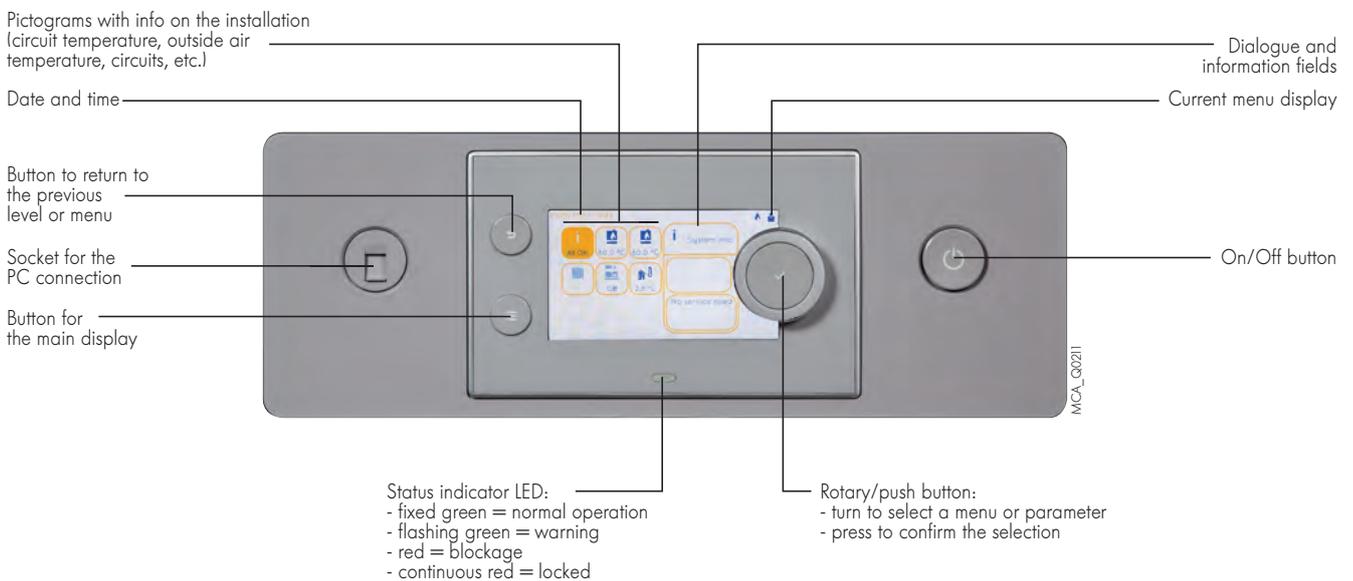
By simply adding 1 "PCB + sensor for 1 valve circuit" option (package AD249), it will be possible to control up to 3 circuits in total, with the option to equip each of these circuits with a remote control (option).

The connection of a domestic hot water sensor enables the programming and control of a DHW circuit (package AD212 - option).

This control system has been specifically developed to enable **optimal management of systems combining different heating generators** (boiler + heat pump or + solar system...). It allows the installer to configure the entire heating system, no matter how complex.

For larger installations, it is also possible to connect 2 to 7 boilers in cascade configuration.

The DIEMATIC EVOLUTION panel will then be used as the master for the installation, with the secondary boilers equipped with the IniControl 2 control panel. To connect more than the 3 circuits available on the master boiler, a second boiler (or several boilers) with DIEMATIC EVOLUTION can be included in the cascade.



THE DIEMATIC EVOLUTION control panel options



Sensor for domestic hot water (length 5 m) - Package AD212

It allows regulation with temperature prioritised and programming of domestic hot water production via an independent tank.



Flow sensor downstream of valve (length 2.5 m) - Package AD199

This sensor is necessary for connecting the first circuit with mixing valve on a boiler equipped with the DIEMATIC EVOLUTION control panel.

Can be used as a cascade flow sensor.



PCB + sensor for 1 mixing valve - Package AD249

It allows a mixing valve with an electromechanical or electrothermal motor to be controlled. The PCB is inserted in the DIEMATIC EVOLUTION panel and

is connected using plug-in connectors. DIEMATIC EVOLUTION can house 1 "PCB + sensor" option, enabling it to control 1 additional mixing valve.

THE DIEMATIC EVOLUTION CONTROL PANEL

THE DIEMATIC EVOLUTION control panel options



Wired programmable room thermostat - Package AD137
Wireless programmable room thermostat - Package AD200
Non-programmable room thermostat - Package AD140

Programmable thermostats provide weekly programming and regulation of the heating by activating the burner according to the various operating modes: "Automatic" depending on the programming, "Permanent" at a set temperature or "Holiday". The "wireless" version is delivered with

a receiver box to be mounted on the wall close to the boiler.

The non-programmable thermostat is used to regulate the room temperature based on the set point, by activating the burner.



Sensor for buffer tank - Package AD250

Comprises 1 sensor for managing a buffer tank with a boiler equipped with a DIEMATIC EVOLUTION control panel.

Can be used as a cascade flow sensor.



S-BUS cable with plugs, 1.5 m - Package AD308
S-BUS cable with plugs, 12 m - Package AD309
S-BUS cable with plugs, 20 m - Package AD310

The BUS cable enables two boilers equipped with the DIEMATIC EVOLUTION or IniControl 2 panel to be connected as part of a cascade installation.



DIEMATIC VM EVOLUTION control system (wall-mounted) - Package AD315
 (Available first quarter 2018)

The DIEMATIC VM EVOLUTION electronic control system, integrated into a wall unit, allows 3 heating circuits and 2 DHW circuits to be controlled and regulated; each of the heating circuits can be a direct circuit or a circuit with a 3-way motorised mixing valve.

It is possible to link together up to 8* DIEMATIC VM EVOLUTION control systems and to thereby create numerous combinations, regardless of the type of installation:

- DIEMATIC VM EVOLUTION can be used in relation with one or several generators equipped with DIEMATIC EVOLUTION or IniControl 2.

- DIEMATIC VM EVOLUTION can be integrated into a DIEMATIC iSystem via the Modbus as supplementary only.
- DIEMATIC VM EVOLUTION can control a cascade of boilers equipped with an IniControl 2 control panel.

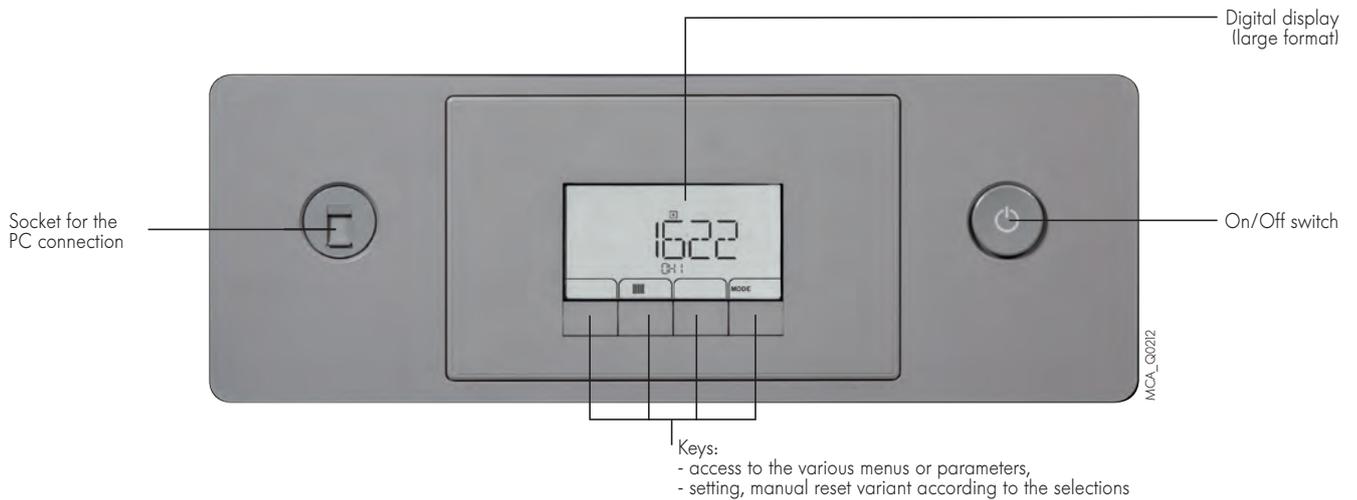
* 1 "master" control system + 7 "slave" control systems.

THE INICONTROL 2 CONTROL PANEL

PRESENTATION OF THE IniControl 2 control panel

The IniControl 2 control panel is used to manage the boiler (without programming) via a configurable 0 - 10 V signal. For a cascade installation, the IniControl 2 panel will be fitted to the secondary boilers linked in series to the master boiler equipped with the DIEMATIC EVOLUTION panel via the BUS cable (option).

The boiler temperature, heating network pressure, and generator operating status are displayed using alphanumeric codes and symbols on a large screen integrating a flashing alarm function. For monitoring the installation, there is an option to read the fault log and the operating timer counters.



INICONTROL 2 CONTROL PANEL options



ModBUS - OpenTherm interface - Package AD286

As part of a "mixed" cascade, this interface must be affixed to the wall close to the MCA 160 boiler,

enabling the MCA 45/115 boiler to be connected to the MCA 160.



BUS connection cable (12 m) - Package AD314

Enables a link to be created between 2 boilers equipped with DIEMATIC iSystem and IniControl/IniControl 2 panels.

THE BOILER OPTIONS



Hydraulic connection kit + gas valve - Package EH680

These kits comprise:

- 1 gas valve Rp 3/4,
- 1 heating return valve integrating the filling and drain valve Rp 1 1/4,

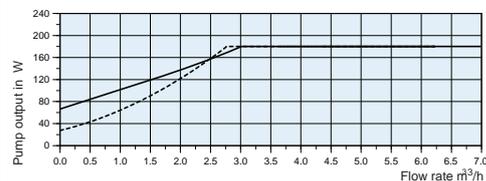
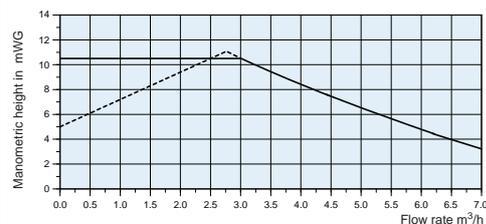
- 1 heating flow valve with 3-bar safety valve and port for connecting the expansion vessel Rp 1 1/4.

MCA_Q0206

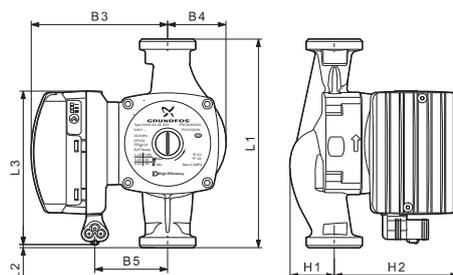


Modulating primary heating pump (EEI < 0.23) - Package EH651

Specifications for the GRUNDFOS UPMXL 25-105 130 AUTO pump



— : Constant pressure
- - - : Proportional pressure



Dimensions (mm)	L1	L2	L3	B3	B4	B5	H1	H2	Connection
UPMXL 25-105	130	22	131	117	50	64	27	112	G 1 1/2

MCA_Q0205

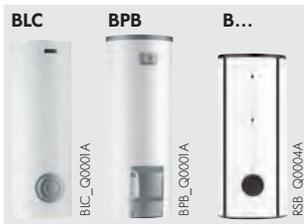
MCA_F0502



Propane conversion kit - EH693

This kit comprises a diaphragm which must be installed on the gas valve unit to enable operation with propane.

MCA_Q0204



Domestic hot water preparation

The De Dietrich independent tanks in the B... series, with a capacity of 150 to 3000 litres, enable the production of domestic hot water for individual and collective housing and industrial

and commercial premises. The specifications and performance of these tanks is given in the price catalogue and respective technical brochures.



Low-loss header, 120/80 - 2" - Package GV47

For any installations with several circuits or for cascade installations, the use of a low-loss header is strongly recommended.

The header is supplied with insulation and fitted with a wall-mounting bracket and an accessories kit comprising a plug, an air vent and a 1/2" drain valve.

MCA_Q0138

THE BOILER OPTIONS



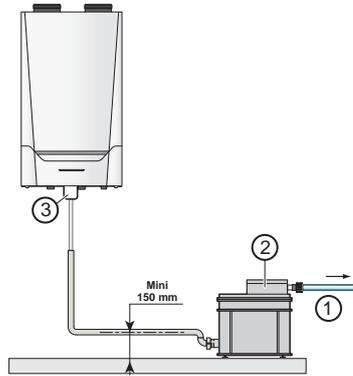
Gravity flow condensate neutralisation station (up to 450 kW) - Package SA3

Condensate neutralisation station with lift pump:

- Package SA4 for boilers or cascades of boilers up to 300 kW
- Package DU15 for boilers or cascades of boilers up to 1300 kW

The materials used for the condensate drain pipes must be appropriate. Otherwise, the condensate must be neutralised.

Principle: Acid condensates are conveyed via a reservoir filled with granulates before being sent to the wastewater network.



MCA_F0086

- ① Condensate draining
- ② Condensate neutralisation station
- ③ Siphon



Granulate recharge for neutralisation station - Ref. 9422-5601 (10 kg)

Granulate recharge for neutralisation station - Package SA7 (25 kg)

An annual inspection of the system is required, including a check of the effectiveness of the

granulates via a pH measurement. If necessary, the granulates must be replaced.



- 300 mbar gas pressure regulator:** - GDJ 20 - Package SA12
- GDJ 25 - Package AD245
- GDJ 50 - Package AD246

It is fitted on the gas inlet circuit. It is needed if the gas is supplied at a pressure of 300 mbar.

Regulator	Max. natural gas flow rate in m ³ /h	Max power consumed in kW	Connection Ø
GDJ 20	24	240	Rp 3/4"
GDJ 25	70	700	Rp 1"
GDJ 50	140	1400	Rp 2"

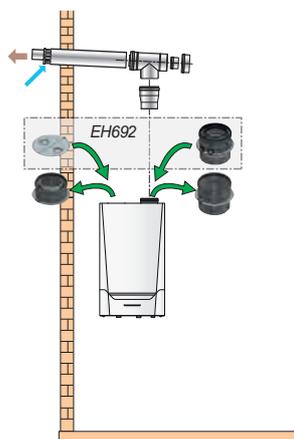
FLUE SYSTEM ACCESSORIES SPECIFIC TO THE INNOVENS PRO MCA 160 BOILER



Concentric air-flue gas connection conversion kit - Package EH692

Ø 150 mm to Ø 200 mm adapter - Package EH645

Air filter - Package EH646



MCA_F0090

MCA 160 CASCADE SYSTEMS

MCA 160 cascade systems are available in 3 versions:

- **LW**: for wall-mounted alignment of the constituent boilers,
- **LV**: for floor-mounted alignment of the constituent boilers,
- **RG**: for back-to-back floor-mounted alignment of the constituent boilers.

These systems comprise:

- the low-loss header is available in 3 versions:
 - < 350 kW: DN65,
 - 350 to 460 kW: DN65 (with reduction plate),
 - 460 kW to 1216 kW: DN100.
- the boiler connection manifold, comprising the heating return and flow connecting pipes (DN 100 mm), the gas connecting pipes (DN 65 mm),

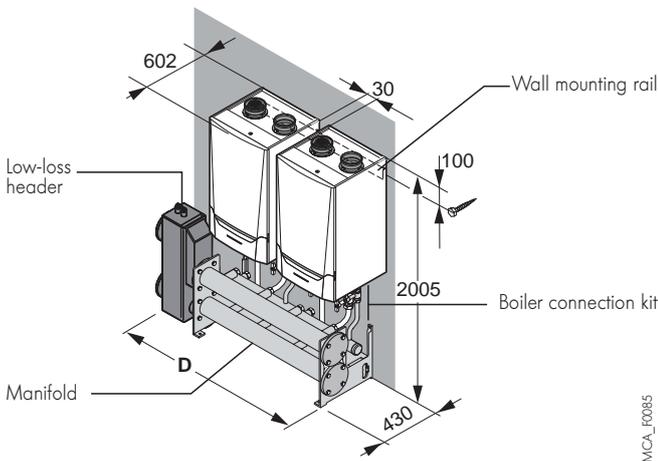
- the modulating primary injection pumps ($EEL < 0.23$),
- the boiler connection kits with the return valve, the multifunction flow valve (with the filling and drain valve, gate valve, non-return valve, safety valve and port for connecting to an expansion vessel), and the gas valve
- the wall mounting rail for the LW versions or the support uprights for LV versions, with the boiler mounting frames.
- the flow sensor + pocket sensor and the BUS cables to connect the boilers.

Note: the boilers must be ordered separately.

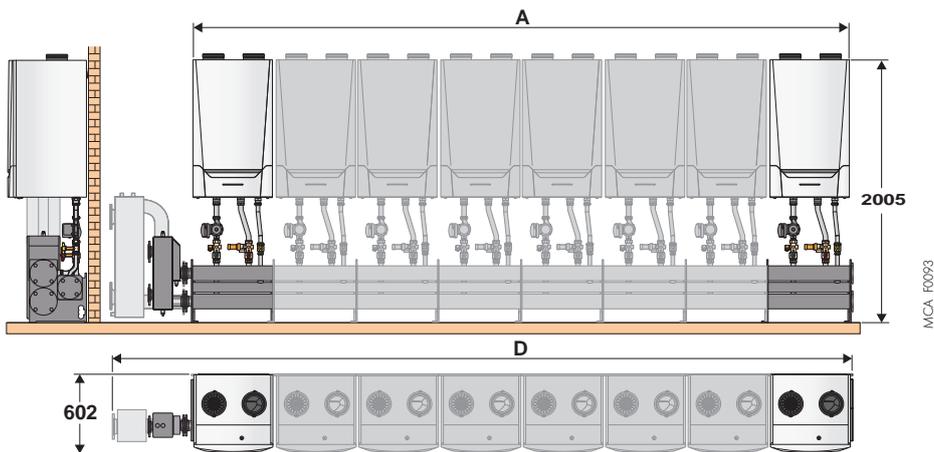
Below is a table with examples of “cascade” combinations from 304 to 1216 kW, proposed based on the total output required.

Important: other “cascade systems” are also possible: to help you identify and enter these, an “Identifying cascades” tool can be accessed on our website.

“LW” WALL-MOUNTED ALIGNMENT OF BOILERS



Wall-mounted alignment of 2 to 8 boilers

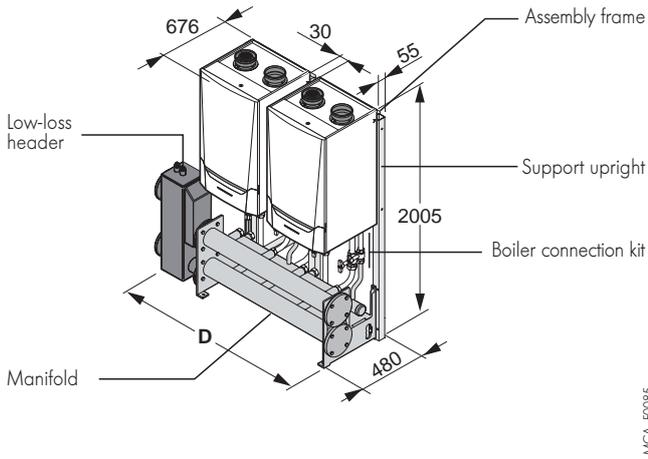


Alignment	Number of boilers	Output (80/60°C) kW	A mm	D mm	Water DN	Gas DN	Water flow $\Delta t = 20K$ m ³ /h	Description
WALL-MOUNTED LW	2	304	1230	1621	65	65	13.10	LW.0304kW00002
	3	456	1860	2591	65	65	19.65	LW.0456kW00003
	4	608	2490	3153	100	65	26.20	LW.0608kW00004
	5	760	3120	3783	100	65	32.75	LW.0760kW00005
	6	912	3750	4413	100	65	39.3	LW.0912kW00006
	7	1064	4380	5043	100	65	45.85	LW.1064kW00007
	8	1216	5010	5673	100	65	52.4	LW.1216kW00008

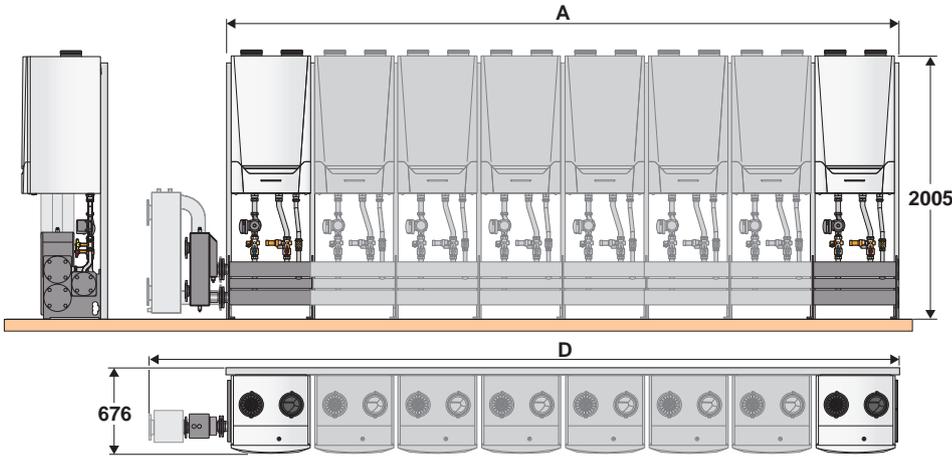
Key:
 Designation: LW 0304kW00002
 ↑ ↑ ↑
 Type of alignment (LW, LV or RG) Composition: 2 MCA 160 boilers
 Total output (at 80/60°C)

MCA 160 CASCADE SYSTEMS

“LV” FLOOR-MOUNTED ALIGNMENT OF BOILERS



Floor-mounted alignment of 2 to 8 boilers



Alignment	Number of boilers	Output (80/60°C) kW	A mm	D mm	Water DN	Gas DN	Water flow $\Delta t = 20K$ m ³ /h	Description
FLOOR-MOUNTED LV	2	304	1310	1671	65	65	13.10	LV.0304kW00002
	3	456	1940	2641	65	65	19.65	LV.0456kW00003
	4	608	2570	3203	100	65	26.20	LV.0608kW00004
	5	760	3200	3833	100	65	32.75	LV.0760kW00005
	6	912	3830	4463	100	65	39.30	LV.0912kW00006
	7	1064	4460	5093	100	65	45.85	LV.1064kW00007
	8	1216	5090	5723	100	65	52.40	LV.1216kW00008

Key:

Designation: LV 0304kW00002

Type of alignment (LV, LW or RG) ↑

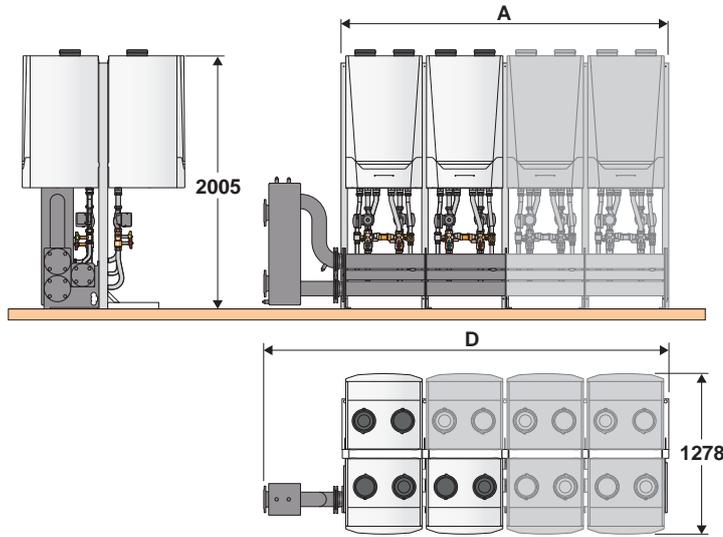
Composition: 2 MCA 160 boilers ↑

Total output (at 80/60°C) ↑

MCA 160 CASCADE SYSTEMS

“RG” BACK-TO-BACK BOILERS

Back-to-back alignment of 2 to 8 boilers



Alignment	Number of boilers	Output (80/60°C) kW	A mm	D mm	Water DN	Gas DN	Water flow $\Delta t = 20K$ m ³ /h	Description
BACK-TO-BACK RG	3	456	1310	2011	65	65	19.65	RG.0456kW00003
	4	608	1310	1943	100	65	26.20	RG.0608kW00004
	5	760	1940	2573	100	65	32.75	RG.0760kW00005
	6	912	1940	2573	100	65	39.30	RG.0912kW00006
	7	1064	2570	3203	100	65	45.85	RG.1064kW00007
	8	1216	2570	3203	100	65	52.40	RG.1216kW00008

Key:
 Designation: RG 0456kW00003
 ↑
 Type of alignment (LW, LV or RG) ↑
 Composition: 3 MCA 160 boilers
 ↑
 Total output (at 80/60°C)

CASCADES WITH MCA 45/115 AND MCA 160

The INNOVENS PRO MCA 160 boiler can be fitted in a cascade with INNOVENS PRO MCA 45/115 boilers or be added to an existing cascade of MCA 45/115 boilers.

In these cascade systems, the master boiler will necessarily be the MCA 45/115 equipped with the DIEMATIC iSystem control panel,

- MCA 45/115 IniControl boilers,
- MCA 160 IniControl 2 boilers.

SELECTING THE CONTROL PANEL

MCA 160 boiler combined with a MCA 45/115 boiler or added to an existing cascade of MCA 45/115 boilers

With DIEMATIC EVOLUTION control panel for the 1st boiler in the cascade (master boiler) and 1 IniControl 2 panel for each of the secondary boilers

Boiler 1



MCA 45/115 iSystem (master)



DIEMATIC iSystem

BUS

Boiler 2 to 8



MCA 45/115 IniControl (secondary)



IniControl

BUS

Boiler 2 to 8

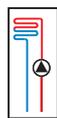


MCA 160 IniControl 2 (secondary)

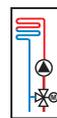


IniControl 2

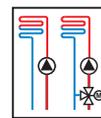
- For control of one circuit:



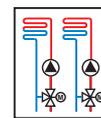
direct



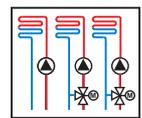
valve



direct + 1 valve



2 x valve



direct + 2 x with valve

Options:

standard

1 flow sensor AD199



1 flow sensor AD199



1 flow sensor AD199



+ 1 PCB + sensor AD249



1 flow sensor AD199



+ 1 PCB + sensor AD249



- No additional secondary circuit may be connected to the IniControl (1) panel

(1) To connect more than 3 heating circuits on a cascade installation, one of the MCA 45/115 IniControl boilers in the cascade must be replaced with one MCA 45/115 iSystem boiler (or several of these boilers, depending on the number of additional circuits to be managed).

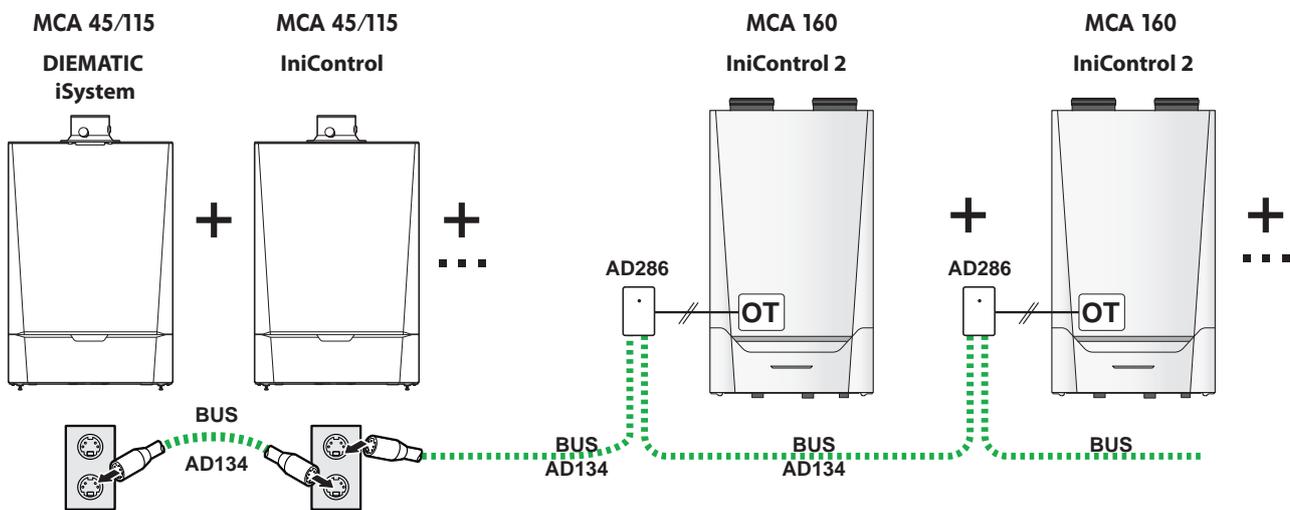
- No additional secondary circuit may be connected to the IniControl 2 panel

CASCADES WITH MCA 45/115 AND MCA 160

CONNECTING THE BOILERS

In the cascade, the MCA 45/115 boilers are linked together using the BUS cable - package AD134. The MCA 160 boiler or boilers must be equipped with the AD286 PCB (wall-mounted) to be

linked to other boilers via the BUS cable - package AD134 (see illustration below).



MCA_F0550

CASCADES WITH MCA 45/115 AND MCA 160

MCA 45/115/160 cascade systems are available in 3 versions:

- **LW**: for wall-mounted alignment of the constituent boilers,
- **LV**: for floor-mounted alignment of the constituent boilers,
- **RG**: for back-to-back floor-mounted alignment of the constituent boilers.

These systems comprise:

- the low-loss header is available in 3 versions:
 - < 350 kW: DN65;
 - 350 to 460 kW: DN65;
 - 460 kW to 1070 kW: DN100.
- The boiler connection manifold, comprising the heating return and flow connecting pipes (DN 100 mm), the gas connecting pipes (DN 65 mm),
- The modulating primary injection pumps (EEI < 0.23),

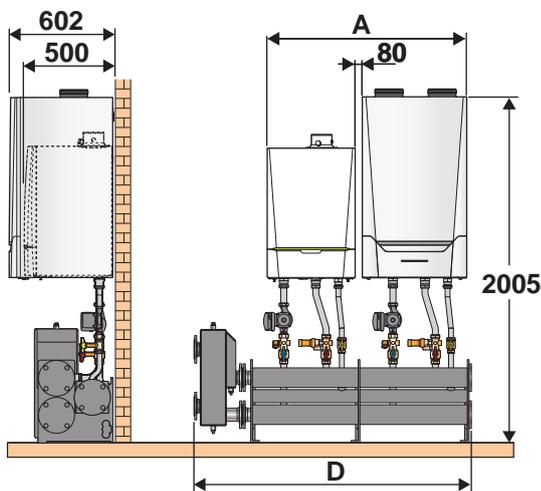
- The boiler connection kits with the return valve, the multifunction flow valve (with the filling and drain valve, gate valve, non-return valve, safety valve and port for connecting to an expansion vessel), and the gas valve
- The wall mounting rail for the LW versions or the support uprights for LV versions, with the boiler mounting frames.
- The flow sensor + pocket sensor and the BUS cables to connect the boilers.

Note: the boilers must be ordered separately.

Important: To find out the composition of the various cascades systems, an **“Identifying cascades” tool is available on our website.**

“LW” WALL-MOUNTED ALIGNMENT OF BOILERS

Wall-mounted alignment of 2 boilers



Alignment	2 to 8 boilers	A mm	D mm
WALL-MOUNTED LW	1 MCA ... + 1 MCA 160	1180	1621
	1 MCA ... + 2 MCA 160	1810	2591
	1 MCA ... + 3 MCA 160	2440	3153
	1 MCA ... + 4 MCA 160	3070	3783
	1 MCA ... + 5 MCA 160	3700	4413
	1 MCA ... + 6 MCA 160	4330	5043
	1 MCA ... + 7 MCA 160	4960	5673

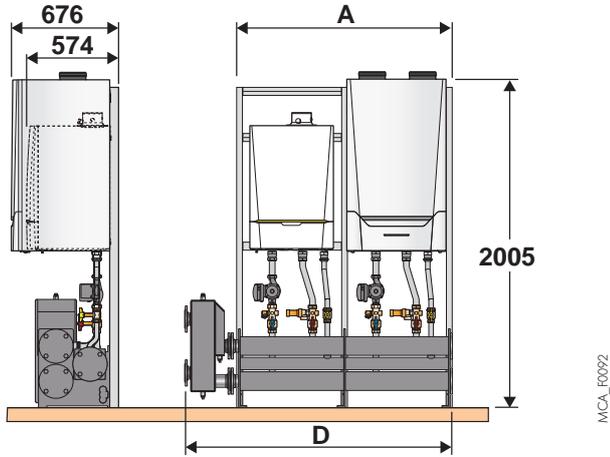
Note: between 2 and 8 MCA 45 to 160 boilers can be fitted in cascade in a wall-mounted alignment (LW). For the various combinations of boiler in the cascade and the details of the

corresponding cascades systems, please consult the **“Identifying cascades” tool available on our website.**

CASCADES WITH MCA 45/115 AND MCA 160

“LV” FLOOR-MOUNTED ALIGNMENT OF BOILERS

Floor-mounted alignment of 2 boilers



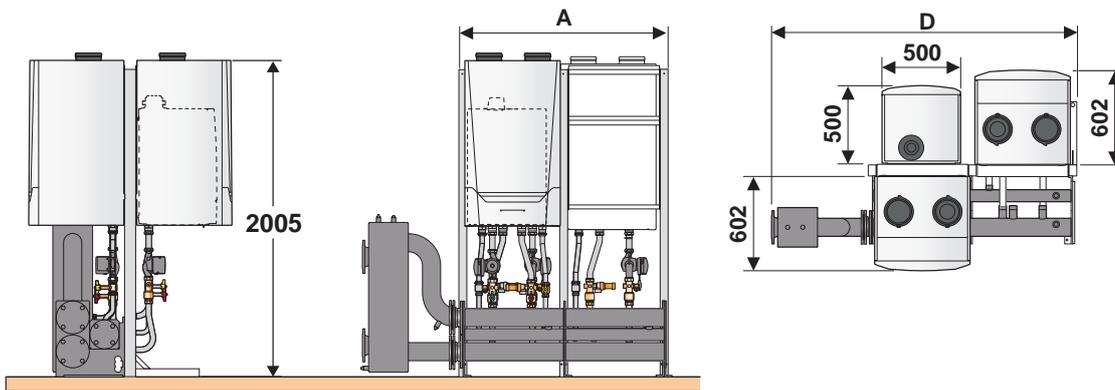
Alignment	2 to 8 boilers	A mm	D mm
ALIGNMENT FLOOR-MOUNTED LV	1 MCA ... + 1 MCA 160	1310	1671
	1 MCA ... + 2 MCA 160	1940	2641
	1 MCA ... + 3 MCA 160	2570	3203
	1 MCA ... + 4 MCA 160	3200	3833
	1 MCA ... + 5 MCA 160	3830	4463
	1 MCA ... + 6 MCA 160	4460	5093
	1 MCA ... + 7 MCA 160	5090	5723

Note: between 2 and 8 MCA 45 to 160 boilers can be fitted in cascade in a wall-mounted alignment (LV). For the various combinations of boiler in the cascade and the details of the

corresponding cascades systems, please consult the “Identifying cascades” tool available on our website.

“RG” BACK-TO-BACK BOILERS

Back-to-back alignment of 3 boilers



Alignment	3 to 8 boilers	A mm	D mm
BACK-TO-BACK RG	1 MCA ... + 2 MCA 160	1310	2011
	1 MCA ... + 3 MCA 160	1310	2011
	1 MCA ... + 4 MCA 160	1940	2573
	1 MCA ... + 5 MCA 160	1940	2573
	1 MCA ... + 6 MCA 160	2570	3203
	1 MCA ... + 7 MCA 160	2570	3203

Note: between 3 and 8 MCA 45 to 160 boilers can be fitted in cascade in a wall-mounted alignment (LV). For the various combinations of boiler in the cascade and the details of the

corresponding cascades systems, please consult the “Identifying cascades” tool available on our website.

MCA 160 CASCADE SYSTEMS

THE OPTIONS FOR CASCADE SYSTEMS



DN 65 gas filter for cascade systems from 160 to 600 kW - Package HC256



Rear insulation for boiler connection kit - Package EH649



Set of DN 65 90° elbows for cascade systems from 304 to 455 kW - Package HC209
 Set of DN 100 90° elbows for cascade systems from 460 to 608 kW - Package HC210
 Supplied with gaskets, nuts and bolts.
 Enabling the low-loss header to be connected perpendicular to the manifold.



Set of DN 65 counterflanges for cascade systems from 304 to 455 kW - Package EH669
 Set of DN 100 counterflanges for cascade systems from 460 to 608 kW - Package HC218
 Contains 3 counterflanges: 2 for the installation side of the pressure breaker (DN 65 or DN 100) and 1 for the gas line (DN65); to be replaced with a gas pipe to be welded, diam 65 mm).
 Supplied with gaskets, nuts and bolts.



Low-loss header insulation - small model for output < 350 kW - Package HC224
 - large model for output > 350 kW - Package HC215



Manifold insulation - Package EH647
 It is necessary to order 1 insulation kit per boiler.



Boiler hydraulic connection kit insulation - Package HC648
 One lot of insulation is required per boiler connection kit.



90° elbow insulation - Package HC216



DN 65 to DN 100 flange adapter insulation - Package EH650



Adjustable foot - Package HC219
 This is used for "LV" in-line installations, if the ground is not uniform.

Alignment	in-line, "LV" floor-mounted		
Number of boilers	2	3	4
Number of feet required	5	6	8



S-BUS cable with plugs, 1.5 m - Package AD308
 S-BUS cable with plugs, 12 m - Package AD309
 S-BUS cable with plugs, 20 m - Package AD310

IMPORTANT INFORMATION FOR INSTALLATION

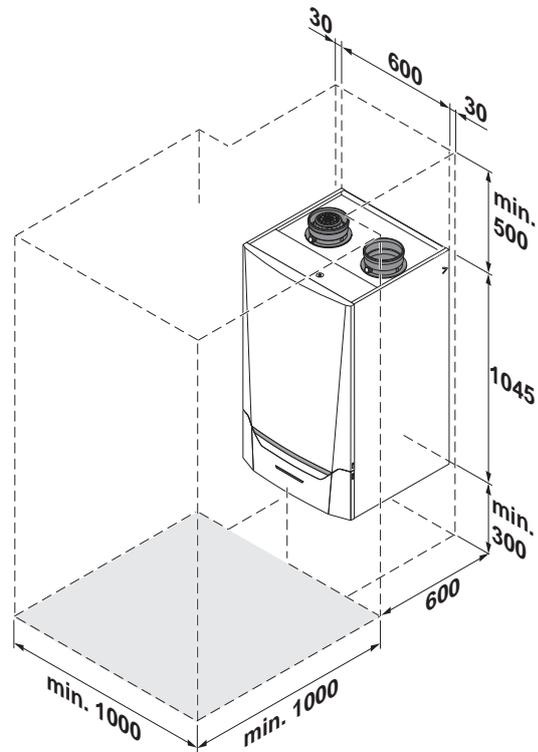
STATUTORY GUIDELINES FOR INSTALLATION AND MAINTENANCE

Installation and maintenance of the appliance must be performed by a qualified professional in accordance with the relevant statutory guidelines and good industry practice.

POSITION

The dimensions given are the minimum recommended (in mm) to ensure sufficient access around the boiler.

Note: for installations with several boilers in cascade configuration, these same dimensions must be observed for each boiler. INNOVENS PRO MCA 160 boilers are installed in accordance with the rules for installation in dedicated boiler rooms outside of the inhabited area. The installation rules for the terminals (horizontal or vertical) must also be observed - see page 29.



Room ventilation

Comply with local regulations.



In order to avoid damage to the boilers, it is necessary to prevent the contamination of combustion air by chlorine and/or fluoride compounds, which are particularly corrosive. These compounds are present, for example, in aerosol sprays, paints, solvents, cleaning products, washing products, detergents, glues, road grit, etc.

The following must therefore be ensured:

- Preventing the intake of air expelled by premises using such products: hairdressing salons, dry cleaners, industrial premises (solvents), premises containing refrigeration systems (risk of refrigerant leakage), etc.
- Preventing such products from being stored close to boilers.

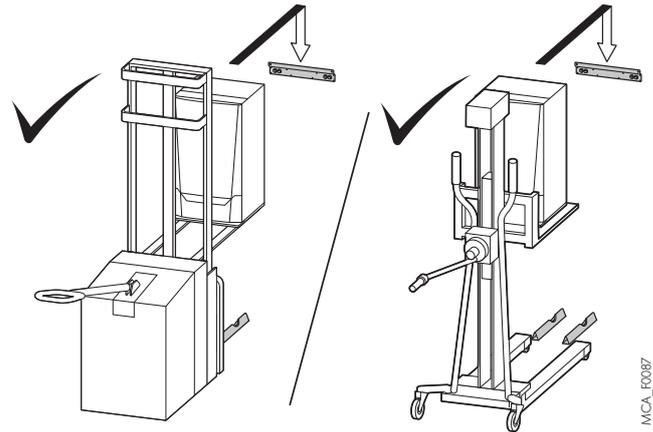
We would like to underline that, should the boiler and/or peripheral equipment be corroded by chlorine and/or fluoride compounds, the contractual guarantee will be invalidated.

MCA_F0082

IMPORTANT INFORMATION FOR INSTALLATION

Installation

If possible, the boiler's protective packaging must only be removed once the boiler has reached its final installation location. Without packaging, the boiler measures 60 cm in width, and can fit through all standard doors. The weight of the boiler exceeds the maximum weight which can be lifted by one person; use of lifting equipment is recommended.



GAS CONNECTION

The applicable regulations and provisions must be complied with. In all cases, a shut-off valve must be placed as close to the boiler as possible. A filter must be provided on the gas supply immediately downstream of the shut-off valve.

The diameters of the pipes must be defined in accordance with the local regulations.

Gas buffer tanks

Gas buffer tanks is one of the solutions used to resolve the issue of accidental triggering of the "min." or "max." pressure switches fitted to gas burners.

Triggering is linked to the inertia of the fluid-expansion system which causes pressure drops and surges in the gas supply line when burners are started up and shut down.

ELECTRICAL CONNECTION

This must comply with the local regulation.

The boiler must be supplied via an electrical circuit which includes an omnipolar switch with an opening gap distance of > 3 mm. Protect the network connection using a 6A fuse.

Gas supply pressure

- 20 mbar with H natural gas,
- 25 mbar with L natural gas,
- 300 mbar with H or L natural gas with pressure regulator to be supplied as an option.

Note

In a boiler room with a total output > 260 kW, the pressure regulator must be fitted outside of the building.

The volume of a buffer tank can be calculated using our software offering, in particular DIEMATOOLS, which can be accessed from our specific website for industry professionals.

Note:

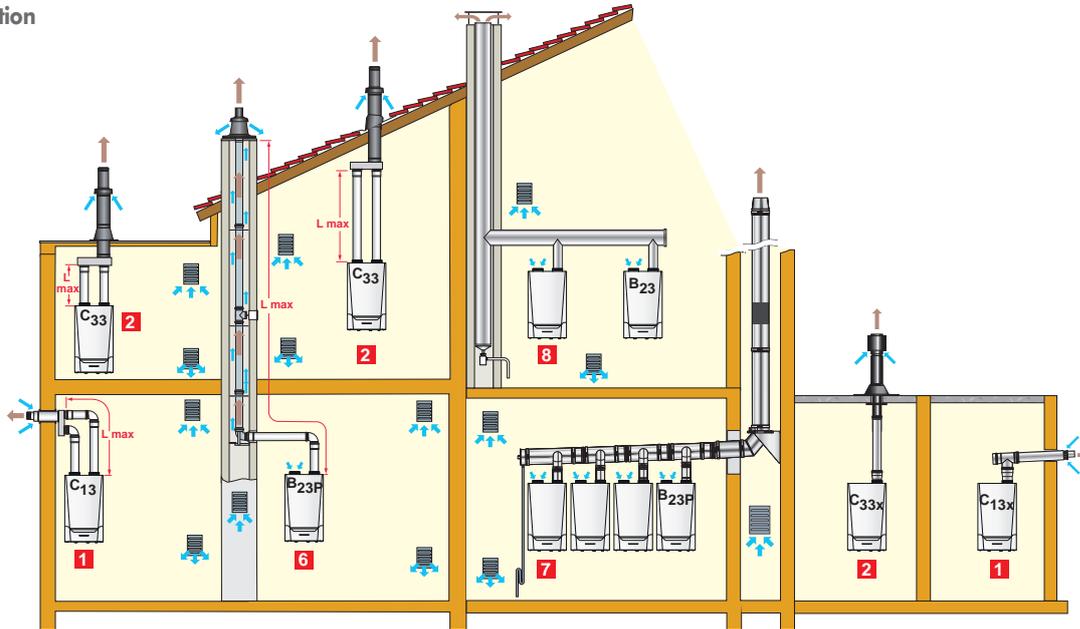
- The sensor cables must be separated from the 230 V circuits by at least 10 cm,
- To protect the antifreeze and anti-blocking functions of the pumps, we recommend that the boiler is not powered off using the mains switch.
- Based on the quality of the power supply network, we recommend that an isolation transformer is used.

AIR-FLUE GAS CONNECTION

For information on how to set up the air-flue gas connection ducts and the installation rules, see the De Dietrich "flue

system" brochure. Nevertheless the local regulations have to be respected.

Classification



- 1 Configuration C_{13(x)}:** Air-flue gas connection via concentric ducts to a horizontal terminal ("forced flue")
Note: this configuration is prohibited in establishments open to the general public.
- 2 Configuration C_{33(x)}:** Air-flue gas connection via concentric ducts to a vertical terminal (roof outlet)

- 6 Configuration B_{23P}/B₃₃:** Connection to a chimney (combustion air taken from within the boiler room)
- 7 Configuration B_{23P}:** For cascade installation
- 8 Configuration B₂₃:** Connection of a single boiler or boilers in cascade configuration to a negative pressure flue gas duct, which is not sensitive to humidity, with the combustion air being taken in the boiler room.

Table of maximum permissible air-flue gas duct lengths based on the configuration type

Type of air-flue gas connection		L _{max} = Maximum length of the connection ducts in m INNOVENS PRO MCA 160	
Concentric pipes connected to a concentric horizontal terminal	C _{13x}	Ø 110/150 mm	6
Separate pipes connected to a concentric horizontal terminal	C ₁₃	Ø 150 mm (Alu)	20
		Ø 160 mm (PPs)	20
Concentric pipes connected to a concentric vertical terminal	C _{33x}	Ø 110/150 mm	6
Separate pipes connected to a concentric vertical terminal	C ₃₃	Ø 150 mm (Alu)	20
		Ø 160 mm (PPs)	20
In chimney (combustion air taken from within the premises)	B _{23P} /B ₃₃	Ø 150 mm (Alu)	40
		Ø 160 mm (PPs)	50

Important:

Please be reminded that page 29 gives the installation rules for sealed appliance terminals (type C) with total output ≥ 70 kW installed in a boiler room and using gas type fuels.

Reminder: For type B₂₃ and B_{23P} configurations mixed use of materials is prohibited

Note:

Configuration B_{23P} (7): it is not necessary to fit a shut-off damper for the flue gas as this is already integrated into the INNOVENS PRO MCA 160 boiler.

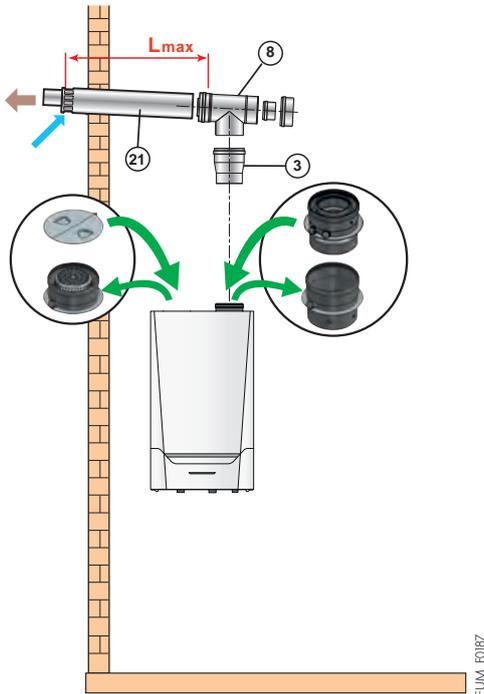
Note: L_{MAX} is measured by adding the lengths of the straight air/flue gas pipes and the equivalent lengths of the other components:

- Ø 110/150 mm (PPs): 1 elbow at 87° = 3.7 m, elbow at 45° = 1 m,
1 inspection T = 2.5 m, 1 straight inspection tube = 1 m
- with Ø 150 mm (PPs): 1 elbow at 87° = 6.4 m, 1 elbow at 45° = 1.7 m
1 inspection T = 6.4 m, 1 straight inspection tube = 0.5 m
- with Ø 160 mm (PPs): 1 elbow at 87° = 5 m, 1 elbow at 45° = 1.4 m
1 inspection elbow = 5 m, 1 inspection tube = 0.9 m

AIR-FLUE GAS CONNECTION

1 CONFIGURATION C_{13X} - ALU/PPs CONCENTRIC HORIZONTAL FORCED FLUE (CONNECTION TO OUTSIDE WALL OR WITH ROOF OUTLET)

Configuration prohibited in establishments open to the general public



Boiler type	Conn. Ø (mm)	Lmax (m)
INNOVENS PRO MCA 160	110/150	6

conn. Ø (mm)	Equivalent length (m)
110/150	110/150
87° elbow	3.7
45° elbow	1.0
30° elbow	-
15° elbow	-
Inspection tube	1.0
Inspection T	2.5
Inspection elbow	-
Condensate manifold	0.6

Alu/PPs flue system accessories required as a minimum and compulsory for connection to a horizontal forced flue:

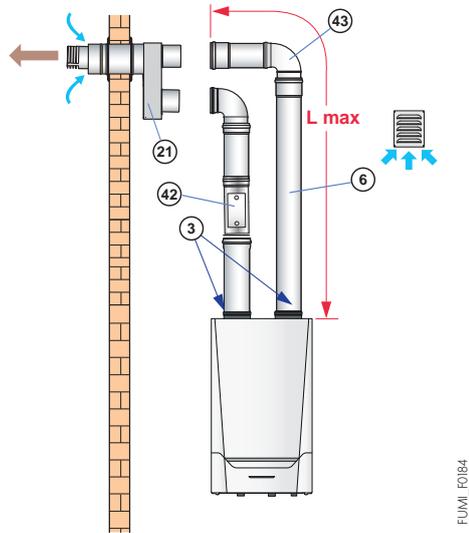
Description	Dimension/reference no. diagram	Boiler type	INNOVENS PRO MCA 160
		conn. Ø (mm)	110/150
Package/Ref.			
Ø 150 mm air-flue gas connection conversion kit to Ø 100/150 mm concentric nozzle		EH692 7619539	X
Ø 110/150 mm horizontal terminal with inspection T and Ø 100/150 to 110/150 mm adapter		DY881 100011364	X

⇒ For other flue gas system accessories, see "Flue gas system" technical sheet

AIR-FLUE GAS CONNECTION

1 CONFIGURATION C₁₃ - ALU/GALVA OR PPS/GALVA CONCENTRIC HORIZONTAL FORCED FLUE (CONNECTION TO OUTSIDE WALL)

Configuration prohibited in establishments open to the general public



Boiler types	Conn. Ø (mm)	Lmax (m)
		150 or 160
INNOVENS PRO MCA 160		20

conn. Ø (mm)	Equivalent length (m)	
	150 (Alu)	160 (PPs)
87° elbow	6.4	5
45° elbow	1.7	1.4
Inspection elbow	-	5
Inspection tube	0.5	0.9
Inspection T	6.4	-

Alu/PPs flue system accessories required as a minimum and compulsory for connection to a horizontal forced flue:

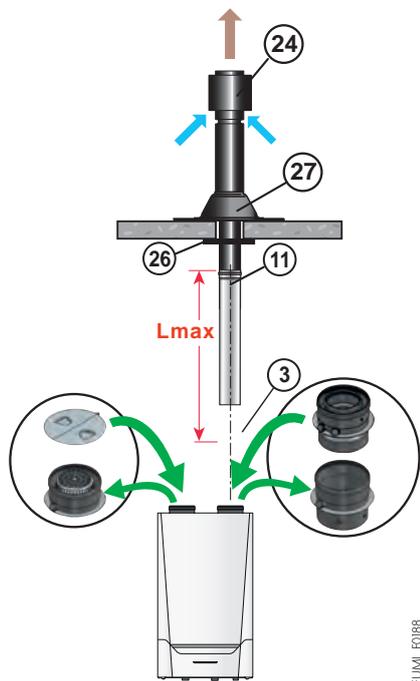
Description	Dimension/reference no. diagram	Boiler type	INNOVENS PRO MCA 160	
		conn. Ø (mm)	150 (Alu)	160 (PPs)
		Package/Ref.		
Alu/Galva Ø 150/220 mm horizontal forced flue	(21)	DY831 100002469	X	
PPs/Galva Ø 160/220 mm horizontal forced flue	(21)	DY827 100002401		X
Ø 150 to 160 mm adapter	(3)	DY825 100002399		X

For other flue gas system accessories, see "Flue gas system" technical sheet

AIR-FLUE GAS CONNECTION

2 CONFIGURATION C_{33X} - ALU/PPs CONCENTRIC VERTICAL FORCED FLUE (CONNECTION TO SLOPING OR FLAT ROOF)

For installation in an establishment open to the general public, this configuration is only permitted if the boiler is installed on the lowest floor.



Boiler type	Conn. Ø (mm)	Lmax (m)
INNOVENS PRO MCA 160	110/150	6

conn. Ø (mm)	Equivalent length (m)	
	110	150
87° elbow	3.7	-
45° elbow	1.0	-
30° elbow	-	-
15° elbow	-	-
Inspection tube	1.0	-
Inspection T	2.5	-
Inspection elbow	-	-
Condensate manifold	0.6	-

⇒ Alu/PPs flue system accessories required as a minimum and compulsory for connection to a horizontal forced flue:

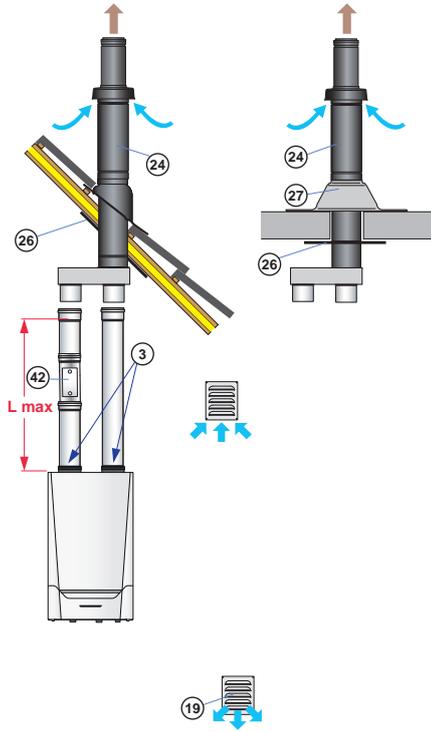
Description	Dimension/reference no. diagram	Boiler type	INNOVENS PRO MCA 160
		conn. Ø (mm)	110/150
		Package/Ref.	
Ø 110/150 mm vertical terminal black	24	DY845 100002734	X
Ø 110/150 to 100/150 mm adapter	3	DY817 100002357	X
Ø 150 mm air-flue gas connection conversion kit to Ø 100/150 mm concentric nozzle	75	EH692 7619539	X

⇒ For other flue gas system accessories, see "Flue gas system" technical sheet

AIR-FLUE GAS CONNECTION

2 CONFIGURATION C₃₃ - ALU/GALVA OR PPS/GALVA CONCENTRIC HORIZONTAL FORCED FLUE (CONNECTION TO SLOPING OR FLAT ROOF)

For installation in an establishment open to the general public, this configuration is only permitted if the boiler is installed on the lowest floor.



FUMI_F0185

Boiler type	Conn. Ø (mm)	L _{max} (m)
		150 to 160
INNOVENS PRO MCA 160		20

conn. Ø (mm)	Equivalent length (m)	
	150 (Alu)	160 (PPs)
87° elbow	6.4	5
45° elbow	1.7	1.4
Inspection elbow	-	5
Inspection tube	0.5	0.9
Inspection T	6.4	-

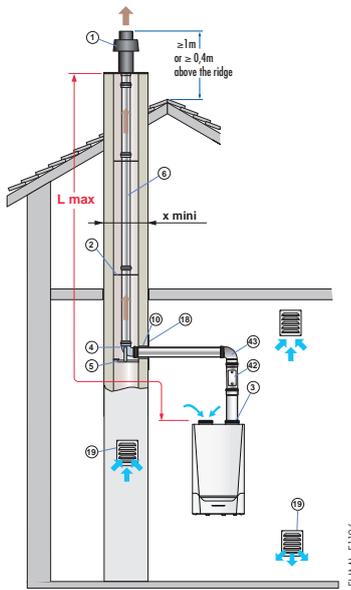
⇒ Alu/PPs flue system accessories required as a minimum and compulsory for connection to a horizontal forced flue:

Description	Dimension/reference no. diagram	Boiler type	INNOVENS PRO MCA 160	
		conn. Ø (mm)	150 (Alu)	160 (PPs)
		Package/Ref.		
Alu/Galva Ø 150/220 mm vertical forced flue	(24)	DY835 100002473	X	
PPs/Galva Ø 160/220 mm vertical forced flue	(24)	DY826 100002400		X
Ø 150 to 160 mm adapter	(3)	DY825 100002399		X

⇒ For other flue gas system accessories, see "Flue gas system" technical sheet

AIR-FLUE GAS CONNECTION

6 CONFIGURATION B23P - CONNECTION TO A CHIMNEY VIA "RIGID" ALU OR PPS PIPES IN A BOILER ROOM AND IN THE CHIMNEY (COMBUSTION TAKEN FROM WITHIN THE BOILER ROOM)



Boiler type	Conn. Ø (mm)	Lmax (m)	
		150 Alu	160 PPS
INNOVENS PRO MCA 160		40	50
min. x	□ (mm)	220	220
	∅ (mm)	240	240

conn. Ø (mm)	Equivalent length (m)	
	150 (Alu)	160 (PPs)
87° elbow	6.4	5
45° elbow	1.7	1.4
Inspection elbow	-	5
Inspection tube	0.5	0.9
Inspection T	6.4	-

Reminder: For type B₂₃ and B_{23p} configurations, mixed use of materials is prohibited.

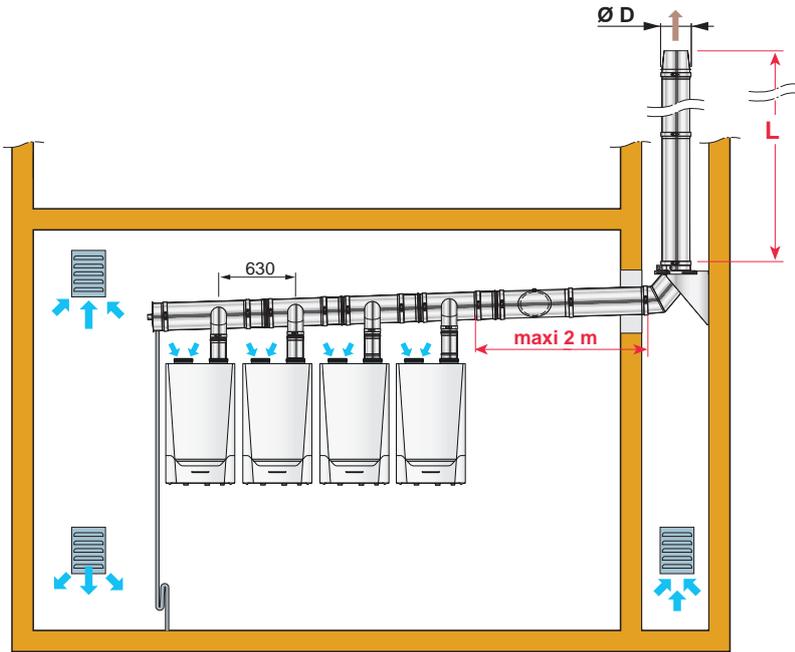
⇒ Alu or PPs flue system accessories required as a minimum and compulsory for connection to the chimney:

Description	Dimension/reference no. diagram	Boiler type	INNOVENS PRO MCA 160		
		conn. Ø (mm)	150 (Alu)	160 (PPs)	
		Package/Ref.			
∅ 150 mm Alu terminal with flashing	DY780 ①	DY837 ①	DY780 84887780	X	
∅ 160 mm PPs terminal with flashing			DY837 100002475		X
Elbow at 87° with ∅ 150 mm Alu support	DY855 ④ + ⑤	DY836 ④ + ⑤	DY855 100003968	X	
Elbow at 87° with ∅ 160 mm PPs support			DY836 100002474		X
∅ 150 mm Alu chimney finishing plate	DY856 ⑱	DY838 ⑱	DY856 100003969	X	
∅ 160 mm PPs chimney finishing plate			DY838 100002476		X
∅ 165 mm sleeve	⑩		DY773 84887773	X	X
Adapter ∅ 150 to 160 mm	③		DY825 100002399		X
87° elbow, ∅ 150 mm Alu	④③	④③	DY649 84887649	X	
87° elbow, ∅ 160 mm PPS			DY823 100002397		X

⇒ For other flue gas system accessories, see "Flue gas system" technical sheet

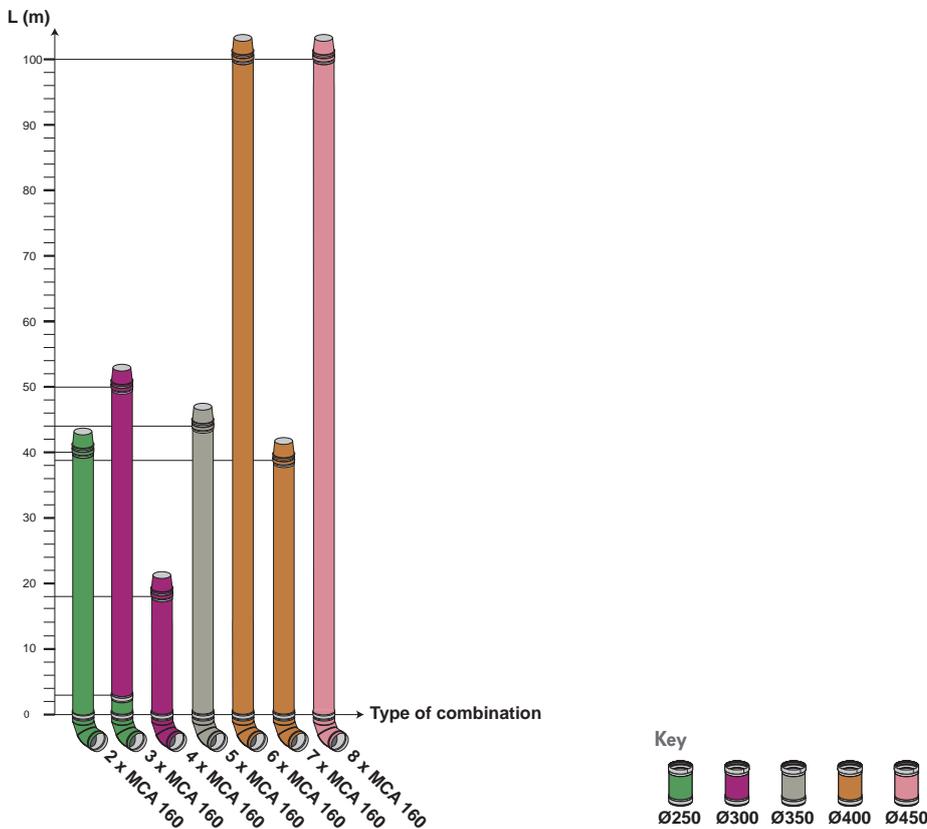
AIR-FLUE GAS CONNECTION

7 CONFIGURATION B23P - CONNECTION TO A CHIMNEY FOR CASCADE INSTALLATION



MCA_F070

Maximum permissible length L (in m) based on the Ø of pipe D (in mm) for the various "cascade" combinations (These lengths have been defined based on the dimensional constraints given in the diagram above. For different dimensional constraints, please contact us).



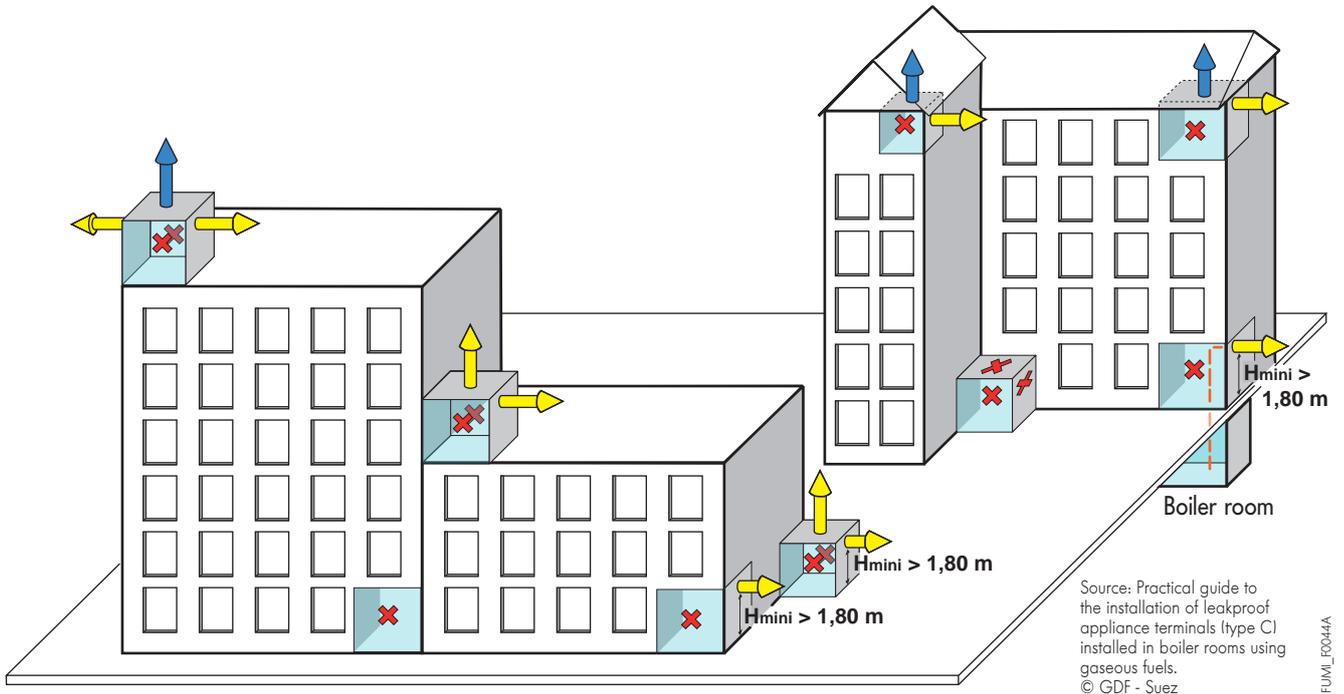
MCA_FT10

• INNOVENS PRO MCA 160 boilers, operating at 40/30°C

Note: These lengths are given as a guide. De Dietrich cannot be held liable in this matter. For different assembly configurations, please contact us to receive a specific calculation.

IMPORTANT INFORMATION FOR INSTALLATION

I INSTALLATION RULES FOR A BOILER WITH AN OUTPUT ≥ 70 kW OPERATING USING NATURAL GAS OR PROPANE GAS (FRENCH REGULATIONS); FOR YOUR INSTALLATION, YOU MUST ENSURE COMPLIANCE WITH THE REGULATIONS WHICH APPLY IN YOUR COUNTRY



Key

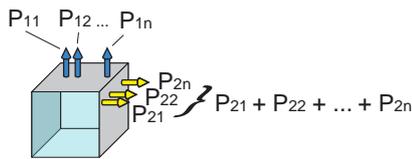
$P_u \leq 250$ kW

Boiler room

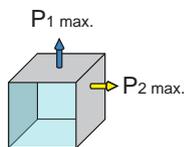
Blind frontage

$P_u \leq 2000$ kW

Scenario where a sealed appliance terminal outlet is prohibited



	Multiple horizontal and vertical outlets	
	in the upper section of buildings	at the base of the building
$P_{11} + P_{12} + \dots + P_{1n}$	≤ 2000 kW and ≤ 2000 kW - $(P_{21} + P_{22} + \dots + P_{2n})$	≤ 250 kW - $(P_{21} + P_{22} + \dots + P_{2n})$
$P_{21} + P_{22} + \dots + P_{2n}$	≤ 250 kW	≤ 250 kW



	Horizontal and vertical outlets	
	in the upper section of buildings	at the base of the building
P_1 max.	$= 2000$ kW - P_2	$= 250$ kW - P_2
P_2 max.	$= 250$ kW	$= 250$ kW

In summary:

- No emissions are permitted on a frontage which has opening elements and air intakes.

- The maximum permitted outputs have been reduced to 2:
 • 250 kW max. in horizontal outlet,
 • 2000 kW max. in vertical outlet.

IMPORTANT INFORMATION FOR INSTALLATION

WATER CONNECTIONS

Important: Condensing boilers are based on a principle of recovering the energy contained in the steam from the combustion gases (latent heat from vaporisation). As a result, to achieve an annual operating efficiency of around 108%,

the heating surfaces must be sized so as to obtain low return temperatures, below the dewpoint (for example, underfloor heating, low temperature radiators, etc.). This must be ensured throughout the heating period.

Condensate discharge

The installation must be connected to the wastewater drainage system. It must be possible to remove the connector, and the flow of condensates must be visible. The connectors and pipes

must be made from corrosion-resistant material. A condensate neutralisation system is available as an option: see p. 11.

Connection to the heating circuit

The MCA 160 boiler must only be used in closed circuit heating systems. Before final filling, new installations must be cleaned to remove debris (copper, caulking, soldering flux) resulting from the set-up of the distribution networks and transmitter to prevent any deposits which could lead to a malfunction (noises in the installation, chemical reaction between the metals). If a new boiler is set up in a renovated boiler room, it is strongly

recommended that cleaning/flushing of the installation is performed before it is put in place. It may be necessary to install appropriate filters in some cases (see the leaflet BOILER ROOM EQUIPMENT). After such interventions, particular attention must be paid to the quality of the water used to fill the installation to ensure the new boiler can produce the expected performances.

Requirements relating to heating water

Total installation calorific output (kW)		70-200	200-550	> 550
Degree of acidity (untreated water)	pH	7-9	7-9	7-9
Degree of acidity (treated water)	pH	7-8.5	7-8.5	7-8.5
Conductivity at 25°C	µS/cm	≤ 800	≤ 800	≤ 800
Chlorides	mg/l	≤ 150	≤ 150	≤ 150
Other components	mg/l	<1	<1	<1
Total water hardness (l)	°f	1-20	1-15	1-5
	°dH	0.5-11.2	0.5-8.4	0.5-2.8
	mmol/l	0.1-2.0	0.1-1.5	0.1-0.5

(l) For installations heated at constantly high temperatures with a total installed calorific output of up to 200 kW, a maximum total water hardness of 8.4 °dH (1.5 mmol/l, 15°F) applies: for outputs exceeding 200 kW, a maximum total water hardness of 2.8 °dH (0.5 mmol/l, 5°F) applies.

Water treatment

If, however, it is necessary to have the water treated to ensure it respects the filling water quality requirements, please consult:

- The Technical Specifications from the CSTB no. 3114, annex II.

- Contact a water treatment specialist who should be able to ensure that the water quality complies with the mix of materials present in the installation, ensuring all its components are taken into account.

Minimum water flow rate

The maximum temperature difference between the flow water and the return water and the speed of the increase in flow temperature are limited by the boiler's microprocessor; as a result, the boiler requires a flow rate proportional to its output/ T° delta.

The standard operating T° delta of 25°C can be increased to 40°C. However, this is limited to an output of 102 kW. It is necessary that the min. flow rate of 0.4 m³/h is respected.

Maximum water flow rate

Flow speeds within the heating body which are too high reduce the transfer of heat. For this reason, the water flow rate must be reduced to the value obtained using the following formula:

$$Q_{max} (m^3/h) = \frac{\text{Effective rated output}}{9.3}$$

INSTALLATION EXAMPLES

The examples show below cannot include all of the possible installation scenarios that may be encountered. They are intended to draw attention to the basic rules to be respected. A certain number of safety and control components (including some integrated into the MCA 160 boiler as standard) are shown, but final responsibility for which safety and control components should definitively be provided in the boiler room, based on its individual requirements, lies with the planners, consultant

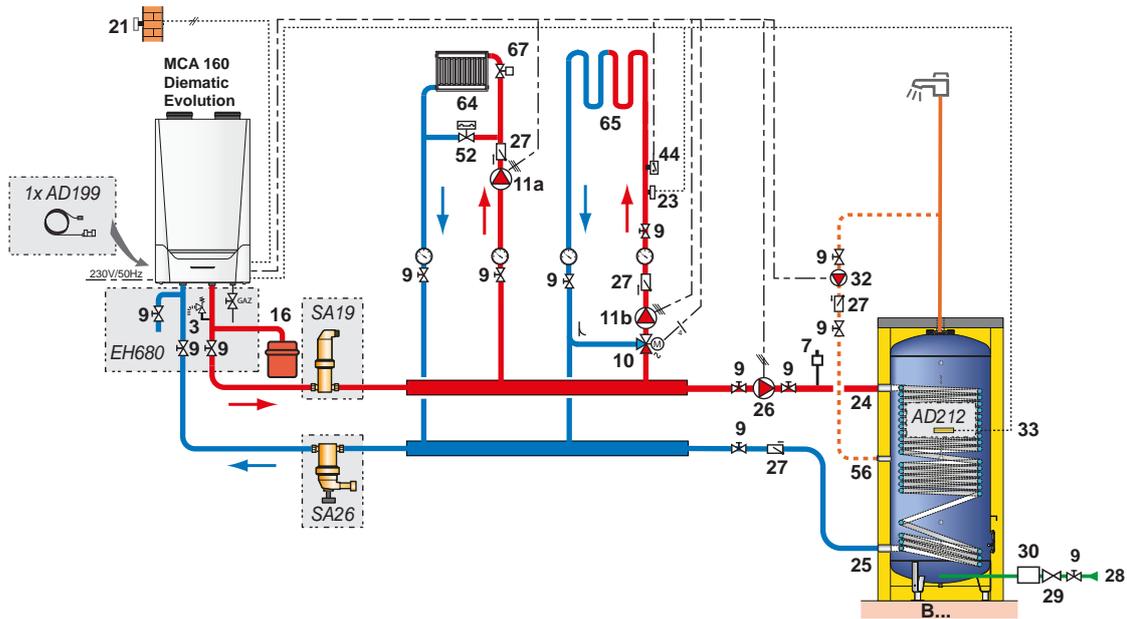
engineers and design offices. In all cases, it is important to comply with the applicable regulations and adhere to good industry practice.

Important: When connecting on the domestic hot water side, if the distribution pipes are made of copper, a sleeve made of steel, cast iron or any other insulating material must be placed between the hot water outlet and these pipes in order to prevent any corrosion to the connections.

EXAMPLES OF INSTALLATIONS WITH A SINGLE BOILER

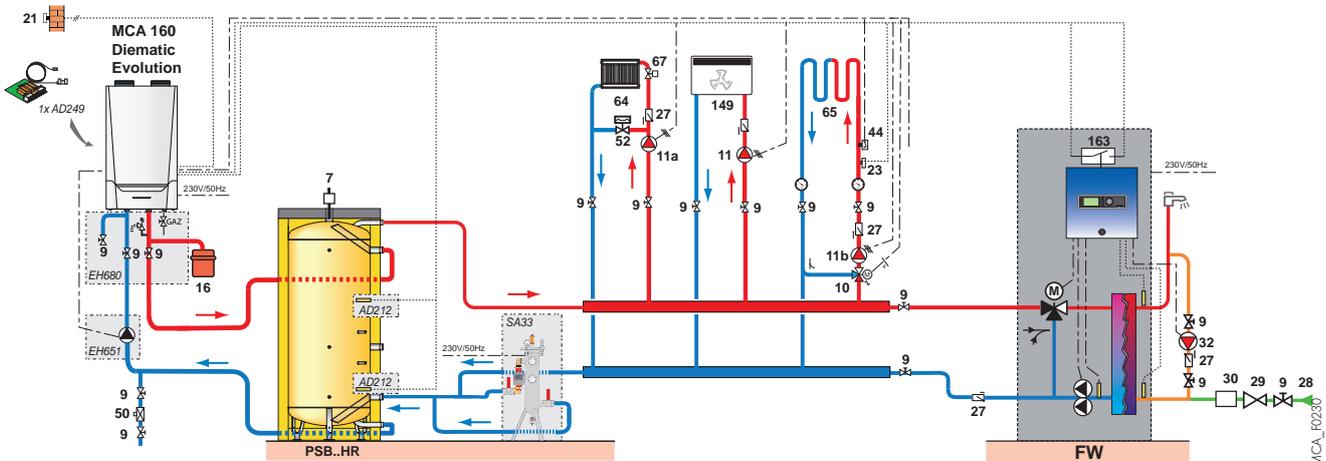
WITH DIEMATIC EVOLUTION control panel

Installation of an MCA 160 DIEMATIC EVOLUTION with 1 direct circuit, 1 circuit with mixing valve + 1 domestic hot water tank



MCA_F0229

Installation of an MCA 160 DIEMATIC EVOLUTION with 3 circuits (including a circuit with a mixing valve), 1 buffer tank, 1 instant DHW tank

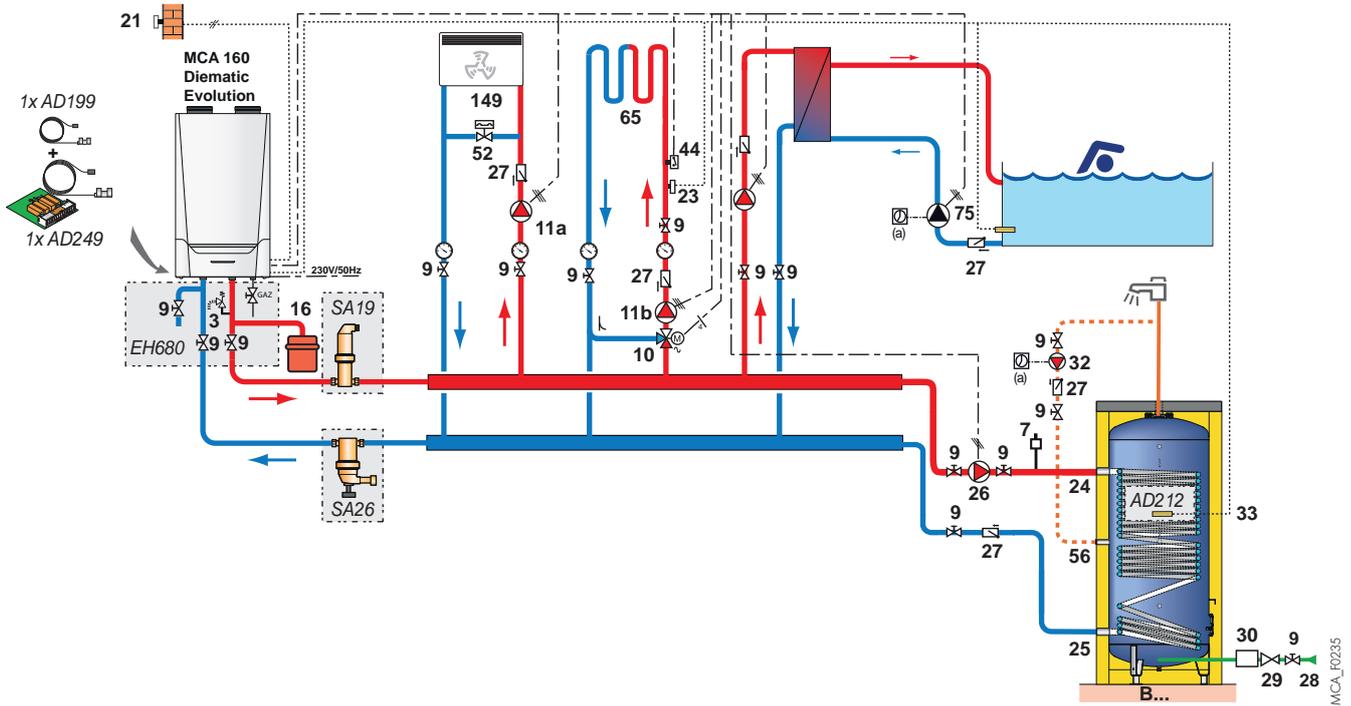


MCA_F0230

Key: see page 35

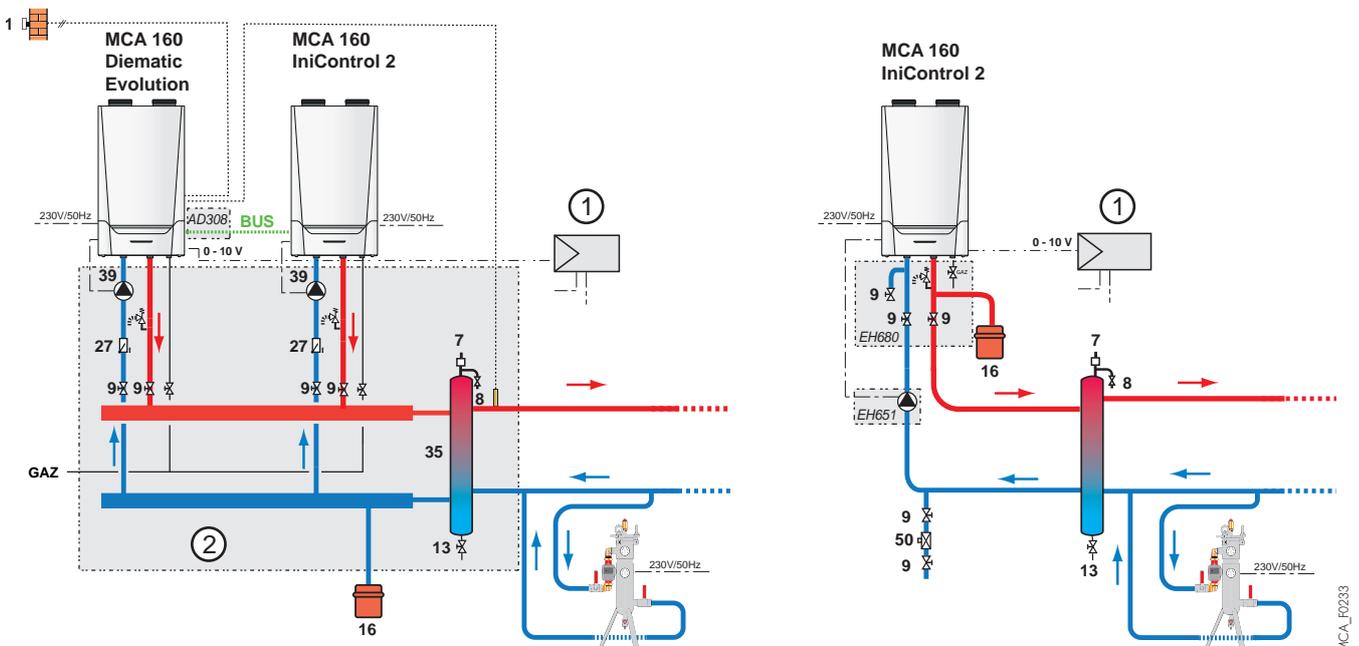
INSTALLATION EXAMPLES

Installation of an MCA 160 DIEMATIC EVOLUTION with 3 circuits (including 1 circuit with a mixing valve and swimming pool circuit) and DHW tank



⇒ WITH INICONTROL 2 CONTROL PANEL AND 0 - 10 V CONTROL

Installation of an MCA 160 IniControl 2 and cascade of 2 MCA 160 with 0 - 10 V control per control cabinet



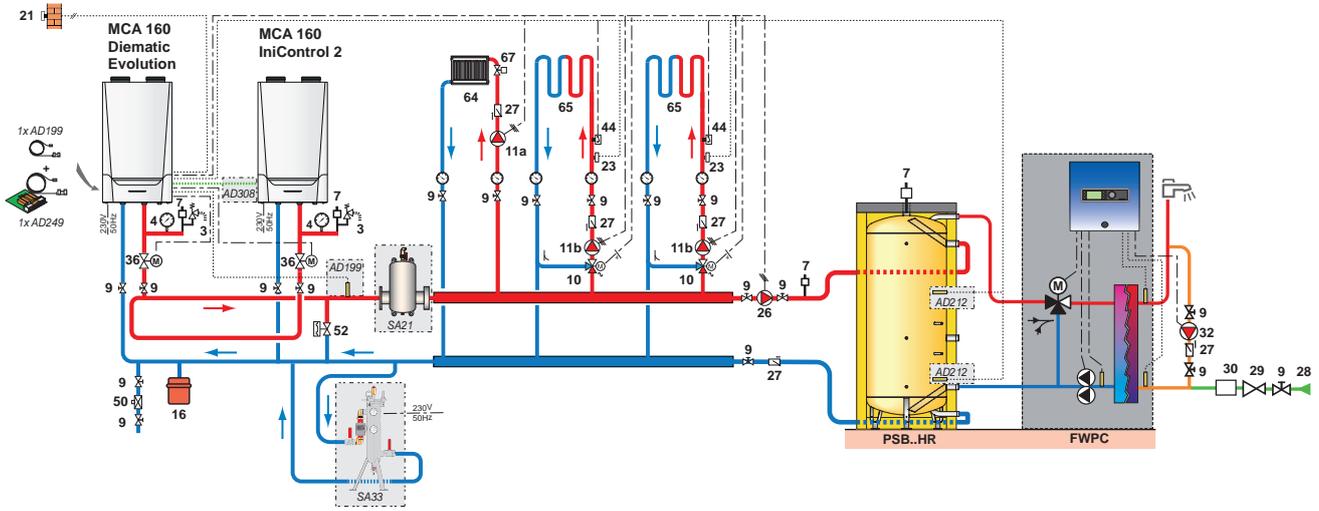
- ① Control cabinet in boiler room
- ② LV floor-mounted alignment of boilers

Key: see page 35

INSTALLATION EXAMPLES

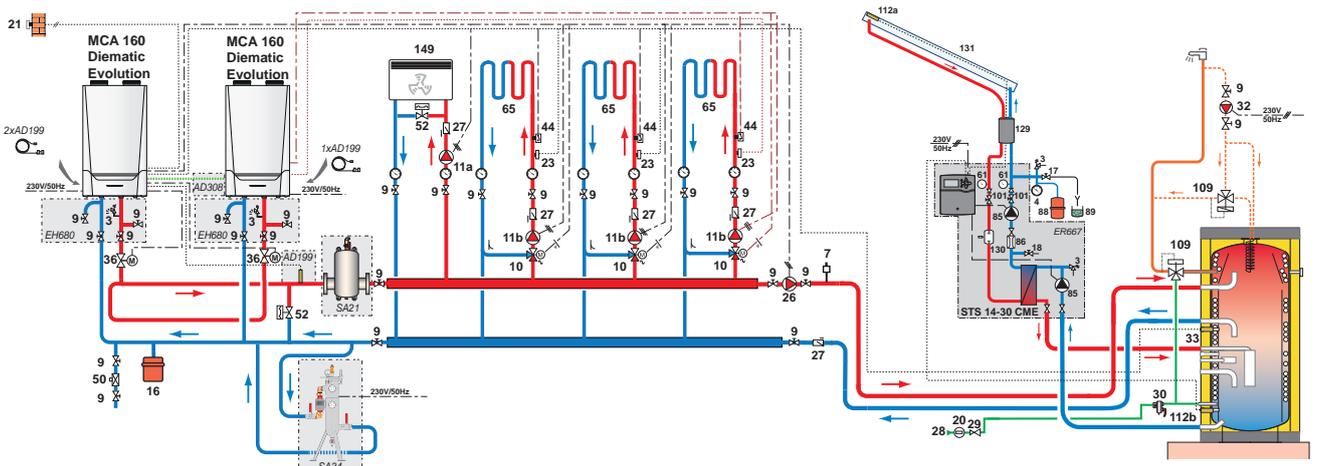
EXAMPLES OF INSTALLATIONS IN CASCADE

Cascade of 2 MCA 160 (DIEMATIC EVOLUTION and IniControl 2) with 3 circuits (including 2 with a mixing valve), a buffer tank and an instant DHW tank



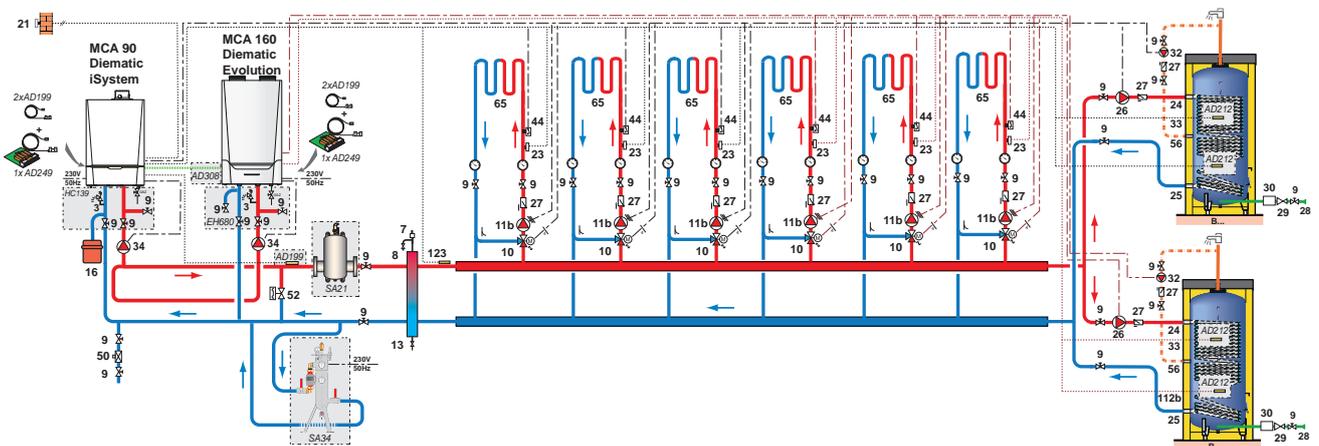
MCA_E0228

Cascade of 2 MCA 160 DIEMATIC EVOLUTION with 4 circuits: 3 with a mixing valve and a circuit with convection fan, 1 solar circuit with DHW tank



MCA_E0234

Mixed cascade with 1 MCA 90 iSystem + 1 MCA 160 DIEMATIC EVOLUTION with 6 circuits with mixing valves and 2 DHW tanks.



MCA_E0249

Key: see page 35

INSTALLATION EXAMPLES

Key

- 1 Heating flow
 - 2 Heating return
 - 3 3-bar safety valve
 - 4 Pressure gauge
 - 7 Automatic air vent
 - 8 Manual air vent
 - 9 Isolation valve
 - 10 Three-way mixing valve
 - 11 Electronic heating accelerator
 - 11a Electronic heating accelerator for direct circuit
 - 11b Heating accelerator for circuit with mixing valve
 - 13 Flush valve
 - 16 Expansion vessel
 - 17 Drain valve
 - 21 Outside sensor
 - 23 Flow temperature sensor downstream of mixing valve
 - 24 DHW tank exchanger primary inlet
 - 25 DHW tank exchanger primary outlet
 - 26 Booster pump
 - 27 Non-return valve
 - 28 Domestic cold water inlet
 - 29 Pressure reducer
 - 30 Safety unit calibrated and sealed to 7 bar
 - 32 DHW circulation loop pump (optional)
 - 33 DHW temperature sensor
 - 34 Primary pump
 - 35 Low-loss header (can be supplied as an option - see page 10)
 - 36 Motorised gate valve
 - 39 Injection pump
 - 44 65°C limiter thermostat with manual reset for underfloor heating (DTU 65.8, NFP 52-303-1)
 - 46 3-way directional valve with reversal motor
 - 50 Disconnect
 - 52 Differential valve
 - 56 DHW circulation loop return
 - 61 Thermometer
 - 64 Radiator circuit (e.g. gentle heat radiators)
 - 65 Low temperature circuit (e.g. underfloor heating)
 - 67 Manual valve
 - 68 Condensate neutralisation system (optional)
 - 75 Pump for DHW use
 - 79 Solar exchanger primary outlet
 - 80 Solar exchanger primary inlet
 - 81 Immersion heater
 - 84 Stop valve with releasable non-return valve
 - 85 Solar circuit pump (to be connected to the solar control system)
 - 86 Solar primary flow rate setting
 - 87 Safety valve calibrated and sealed to 6 bar
 - 88 Supplied 18-L expansion vessel
 - 89 Container for heat-transporting fluid
 - 90 Anti-thermosiphon loop ($\approx 10 \times \varnothing$ tube)
 - 101 Ball valve with non-return valve
 - 109 Thermostatic mixing valve
 - 112a Solar sensor probe
 - 112b Solar tank sensor
 - 114 Solar circuit drain valve (Caution: propylene glycol)
 - 123 Cascade flow sensor (to be connected to the slave boiler)
 - 126 Solar control system
 - 129 DUO Tubes
 - 130 Manual air vent degasser (Airstop)
 - 131 Battery of flat or tubular collectors
 - 149 Convection fan
 - 163 Dry contact to be provided by the customer
- (a) External clock

DESCRIPTION

MCA 160

WALL-MOUNTED GAS CONDENSING BOILER, WITH MODULATING BURNER WITH TOTAL PREMIX

Brand: De Dietrich
Model: MCA 160
Useful output: 152 kW
Gas used: Natural gas L – H, propane
Gas flow rate: 19.6 m³/h
Operating pressure: 4 bar
Water content: 1.7 litres

Max. temperature: 110°C
Dimensions: 1112 (H) x 600 (L) x 602 (D) mm
Gas inlet: R 1"
Flue gas nozzle diameter: 150 mm
Flow/return diameter: R 1" 1/4
Shipping weight: 147 kg

DESCRIPTION

- Complies with the requirements of European directives
- Certifications: B₂₃, B_{23P}, C_{13x}, C_{33x}, C_{93x}, C₅₃, C₆₃, C₈₃
- Very high annual efficiency up to 108.5 % on LHV,
- Compact packaged heating body made from cast aluminium/silicium alloy with a large heat exchange surface area and low pressure losses, with front access to facilitate maintenance
- Stainless steel premix burner made from braided metal fibres, output modulation from 18 to 100%, with air intake silencer
- Very clean combustion with pollutant NO_x emissions < 39 mg/kWh
- Ignition and flame monitoring using ionisation electrode
- Flue gas temperature sensor
- Integrated condensate manifold box, equipped with a siphon as standard
- Choice of control panel:
 - Diematic Evolution according to the outside temperature, enabling management of a direct circuit, DHW production and with an option of up to 2 valve circuits.
 - IniControl 2 for installation in a cascade or installation with an external control cabinet
- Cascades of up to 8 boilers

Boiler options

- Hydraulic connection kit + gas valve
- Modulating primary heating pump
- Propane conversion kit
- Low-loss header, 120/80 – 2"
- Gravity flow condensate neutralisation station (< 450 kW)
- Condensate neutralisation station with lift pump (< 300 kW)
- Condensate neutralisation station with lift pump (< 1300 kW)
- Granulate recharge (25 kg) for station
- Granulate recharge (10 kg) for station
- 300 mbar gas pressure regulator
- Concentric air-flue gas connection conversion kit
- 150 mm to 200 mm adapter
- Air filter
- Wall-mounted or free-standing cascade system (in-line or back-to-back) of 2 to 8 boilers, including the boiler brackets, 1 low-loss header, the boiler connection manifold, the injection pumps, and the boiler connection hydraulic kits; insulating shells available as an option.

Control system options

- **For DIEMATIC EVOLUTION**
 - Wired programmable room thermostat
 - Wireless programmable room thermostat
 - Non-programmable room thermostat
 - DIEMATIC VM EVOLUTION control system
 - DHW sensor
 - S-BUS cable
 - Buffer tank sensor
 - Three-way valve flow sensor
 - PCB + sensor for mixing valve
- **For IniControl 2**
 - ModBUS-OpenTherm interface.

DE DIETRICH THERMIQUE

S.A.S. with corporate capital of 22 487 610 d
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