# ELIDENS C140

## FLOOR-STANDING GAS CONDENSING BOILERS

C140-45/65/90/115

C140-45/65/90/115 EP

C140-45/65/90/115 SH

- **C140-45 (EP/SH):** from 8 to 40.8 kW
- **C140-65 (EP/SH):** from 12 to 61.5 kW
- **C140-90 (EP/SH):** from 14.1 to 84.2 kW
- **C140-115 (EP/SH):** from 18.9 to 103.9 kW

Heating only

Condensing

GAS P All natural gases Propane

A+ WITH ROOM SENSOR *

* C140-45/65 only outdoor sensor included as standard

## OPERATING CONDITIONS

Max. working pressure: 4 bar
Maximum operating temperature: 90°C
Safety thermostat; 110°C
Power supply: 230 V/50 Hz
International Protection marking: IP X1B

### approval

$B_{23}$ - $B_{23P}$ - $B_{33}$ - $C_{13(x)}$ - $C_{33(x)}$ - $C_{43(x)}$ - $C_{53}$ - $C_{63(x)}$ - $C_{83(x)}$ - $C_{93(x)}$

### gas category

$II_{2ESi3B/P}$
NOx class: 6

The C140-... is a gas-fired condensing boiler with an aluminium-silicium alloy monobloc heat exchanger.

The C140-... range is designed for new builds and boiler room renovations. The boilers are available in 3 versions:
- boiler only
- boilers with a low-loss header kit (versions C140-...SH)
- boilers with a separation kit with a plate heat exchanger (versions C140-...EP).

The C140 boiler only can be supplied with a choice of one of the 2 following 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.

Versions C140-...EP/SH are only available with the DIEMATIC EVOLUTION panel.
Different air-flue gas connection configurations are possible; we offer connection solutions using a horizontal or vertical forced flue terminal, on a chimney.

Complete hydraulic systems for connection of a cascade of 2 to 4 boilers are also available.

CE C140-... ID number: 0085CT0009

De Dietrich
SUSTAINABLE COMFORT®

# PRESENTATION OF THE RANGE

The C140... gas condensing boilers offer a thoroughly modern aesthetic with an instantly recognisable style and meticulous finish. With compact external dimensions and a single width of 600 mm for all models, the lightweight C140... boilers are simple to install and easy to maintain.
C140... boilers are available in 3 versions:
• Boiler-only versions, C140 - 45/65/90/115
• Versions with a separation kit with low-loss header (pre-sized), C140 - 45/65/90/115 SH
• Versions with a separation kit with a plate heat exchanger (pre-sized), C140 - 45/65/90/115 EP.

## HIGH LEVELS OF PERFORMANCE

• Annual operating efficiency up to 109.5 %
• Modulating rate from 17-20 to 100% of the output (following models- see the table on page 5)
• 2 flow and return temperature sensors
• Low NOx and CO emissions (see NOx table opposite)

| MODEL C140 -... | 45 | 65 | 90 | 115 |
|---|---|---|---|---|
| NOx G20 (EN 15502); mg/kWh (Hi) | 33 | 29 | 41 | 41 |
| Class | 6 | 6 | 6 | 6 |

# DIETRICH ECO-SOLUTIONS

## ENERGY LABELLING

Boilers C140-45 and C140-65 are delivered with energy labels displaying a range of information, including energy efficiency, annual energy consumption, manufacturer name and noise level. By combining your boiler with for example a solar system, a DHW storage tank, a control system or even another generator, you can improve the performance of your installation and generate a corresponding "system" label.
**Visit our site "ecosolutions.dedietrich-heating.com"**

ECO SOLUTIONS
Eco-conception by De Dietrich

De Dietrich ECO-SOLUTIONS give you the latest generation of multi-energy products and systems: simpler, more efficient and more economical to guarantee your comfort and protect the environment.

The energy label associated with the ECO-SOLUTIONS label indicates the product performance.

**www.ecosolutions.dedietrich-heating.com**

# PRESENTATION OF THE RANGE

## STRENGTHS

**EASY MAINTENANCE**
- Full access to the boiler from the front
- Light in the boiler casing

**NEW: EASY INSTALLATION**
- Low-loss header hydraulic kit (SH)
- Plate heat exchanger hydraulic kit (EP)
- Modulating pump
- Transport roller

**CASCADE (2 TO 8 BOILERS)**
- Connection kit identical to the former Elidens DTG 130 range

**MODBUS COMMUNICATION**

**FLUE GAS SYSTEM**
- $B_{23}$, $B_{23P}$, $B_{33}$, $C_{13(x)}$, $C_{33(x)}$, $C_{43(x)}$, $C_{53}$, $C_{63(x)}$, $C_{83(x)}$, $C_{93(x)}$
- Integrated cascade flue gas valve

**NEW CONTROL SYSTEM**
- Intuitive, simple and functional
- 2 direct or 3 way valves circuits
- Domestic hot water
- 3rd circuits option

**PERFORMANCE**
- 45 to 115 kW output
- Condensing
- 107 to 110% efficiency
- NOx class 6
- Flow rate proportional to output
- ΔT 40°C (DHW production) C140-115 ΔT 35°C

**HYDRAULIC CONNECTION**
- Identical to Elidens DTG130
- **Can be replaced without the need to modify the pipework and flue**

**BURNER MODULATION**
- Range 18/100%

**COMPACT**
- Bare boiler 600 mm wide, 715 mm deep
- Weight of 1 kg per 1 kW

**NOISE OUTPUT**
- Less than 61 dB(A)

**AVAILABLE IN 3 VERSIONS**
- Boiler only
- Boiler with low-loss header (… SH)
- Boiler with plate heat exchanger (… EP)

# MODELS AVAILABLE

## BOILER ONLY C140 -...

### BOILERS

| PROJECT | | REAR VIEW | USEFUL OUTPUT IN EACH MODE | | MODEL | REFERENCE VERSION WITH PANEL | |
|---|---|---|---|---|---|---|---|
| | | | HEATING AT 50/30°C (KW) | HEATING AT 80/60°C (KW) | | INICONTROL 2 | DIEMATIC EVOLUTION |
|  C140_Q0002 | Boiler only.<br><br>To ensure the minimum irrigation flow rate, the installation must be equipped with a:<br>• variable flow pump (PWM)<br>• low-loss header<br><br>(A safety valve must be installed on the boiler flow) |  C140_Q0100 | 9.1-42.4<br>13.5-65.0 | 8-40.8<br>12-61 .5 | C140-45<br>C140-65 | 7709264<br>7709262 | 7709265<br>7709263 |
| | | | 15.8-89.5<br>21 .2-109.7 | 14.1-84.2<br>18.9-103.9 | C140-90<br>C140-115 | 7709260<br>7709158 | 7709261<br>7709159 |

## BOILERS WITH A SEPARATION KIT WITH A LOW-LOSS HEADER C140-...SH

### BOILERS

| PROJECT | | REAR VIEW | USEFUL OUTPUT IN EACH MODE | | MODEL | REFERENCE VERSION WITH PANEL | |
|---|---|---|---|---|---|---|---|
| | | | HEATING AT 50/30 °C (KW) | HEATING AT 80/60 °C (KW) | | INICONTROL 2 | DIEMATIC EVOLUTION |
|  C140_Q0006 | Boilers with a hydraulic low-loss header kit comprising an insulated low-loss header with a magnetic rod and degasser with a magnetic filter and deaerator, a primary modulating pump, valve, boiler connection pipes and secondary upward pipes (boiler models without flow restrictions). |  C140_Q1002 | 9.1-42.4<br>13.5-65.0 | 8-40.8<br>12-61 .5 | C140-45 SH<br>C140-65 SH | –<br>– | 7721423<br>7721424 |
| | |  C140_Q1004 | 15.8-89.5<br>21 .2-109.7 | 14.1-84.2<br>18.9-103.9 | C140-90 SH<br>C140-115 SH | –<br>– | 7721425<br>7721426 |

## BOILERS WITH A SEPARATION KIT WITH A PLATE HEAT EXCHANGER C140-...EP

### BOILERS

| PROJECT | | REAR VIEW | USEFUL OUTPUT IN EACH MODE | | MODEL | REFERENCE VERSION WITH PANEL | |
|---|---|---|---|---|---|---|---|
| | | | HEATING AT 50/30 °C (KW) | HEATING AT 80/60 °C (KW) | | INICONTROL 2 | DIEMATIC EVOLUTION |
|  C140_Q0003 | Boilers with a hydraulic separation kit comprising an insulated plate heat exchanger, a modulating pump, expansion vessel and valve, boiler connection pipes, and secondary pipes and cleaning valves (boiler models without flow restrictions). |  C140_Q1001 | 9.1-42.4<br>13.5-65.0 | 8-40.8<br>12-61 .5 | C140-45 EP<br>C140-65 EP | –<br>– | 7721427<br>7721428 |
| | |  C140_Q1003 | 15.8-89.5<br>21 .2-109.7 | 14.1-84.2<br>18.9-103.9 | C140-90 EP<br>C140-115 EP | –<br>– | 7721429<br>7721430 |

## TECHNICAL SPECIFICATIONS AND PERFORMANCES

**Generator type:** heating only
**Boiler type:** condensing
**NOx class:** 6
**Burner:** premix burner
**Energy used:** natural gas or propane
**Combustion evacuation:** chimney or sealed
**"CE certificate" ref.:** 0085CT0009

**Approval:**
- C140-45/65/90/115:
  $B_{33}/B_{23(P)}$, $C_{13(X)}$, $C_{33(X)}$, $C_{43(X)}$, $C_{53}$, $C_{63(X)}$, $C_{83(X)}$, $C_{93(X)}$

**Gas and pressure:**
- Natural gas (G20) - 20 mbar
- Natural gas (G25) - 25 mbar
- Propane gas (G31) - 37 mbar

### FEATURES

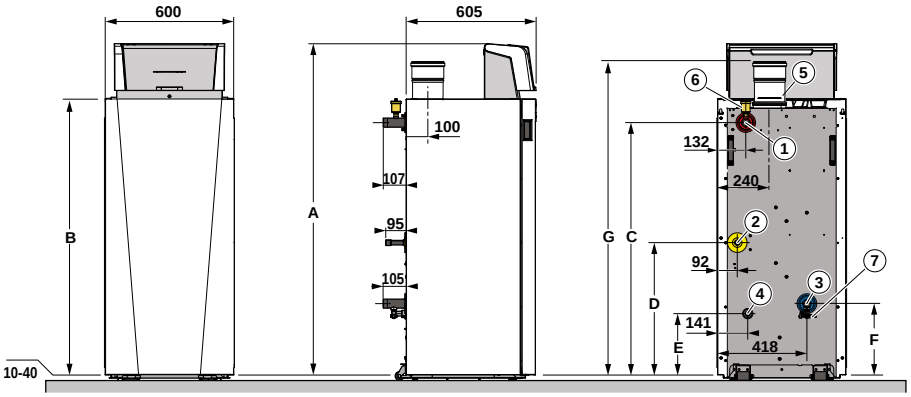
| MODELS | | C140-... | 45 | 65 | 90 | 115 |
|---|---|---|---|---|---|---|
| Useful output | • nominal determined at Qnom (1) | kW | 40.8 | 61.5 | 84.2 | 103.9 |
| | • intermediate at 30% Qnom (1) | kW | 13.7 | 20.5 | 27.9 | 34.8 |
| Nominal output Pn at 50/30°C | | kW | 42.4 | 65.0 | 89.5 | 109.7 |
| Efficiency in % LCV, load... % and water temp....°C | • 100% Pn, at ave. temp. 70°C | % | 99.1 | 99.2 | 97.9 | 97.1 |
| | • 30 % Pn, at ave. temp. 30°C | % | 110.6 | 110.4 | 108.1 | 108.0 |
| Seasonal energy efficiency: Product SEE (without control system) | | % | 95 | 94 | – | – |
| Seasonal energy efficiency: SEE (with temperature sensor as standard) | | % | 97 | 96 | – | – |
| Useful efficiency at ...% of the nominal heat output | • at 100% Eta 4 | % | – | – | 88.2 | 87.5 |
| | • at 30 % Eta 1 | % | – | – | 97.4 | 97.3 |
| Modulation rate | | % | 20 to 100 | 19 to 100 | 17 to 100 | 18 to 100 |
| Nominal water flow rate at Pn and ΔT = 20 K | | $m^3/h$ | 1.75 | 2.65 | 3.62 | 4.47 |
| Stand-by losses at ΔT = 30 K | | W | 105 | 114 | 119 | 119 |
| Electrical output of auxiliaries at Qnom (1) | | W | 68 | 92 | 124 | 180 |
| Electrical output of auxiliaries in standby | | W | 4 | 6 | 5 | 9 |
| Useful output at 50/30°C min./max. | | kW | 9.1/42.4 | 13.5/65.0 | 15.8/89.5 | 21.2/109.7 |
| Useful output at 80/60°C min./max. | | kW | 8/40.8 | 12/61.5 | 14.1/84.2 | 18.9/103.9 |
| Flue gas mass flow rate min./max. | | g/s | 3.9/19.2 | 5.8/28.9 | 7.8/38.3 | 10.0/49.4 |
| Pressure available at boiler outlet | | Pa | 150 | 100 | 160 | 220 |
| Water content | | l | 5.2 | 7.1 | 10.1 | 10.1 |
| Minimum required water flow rate | | l/h | 195 | 290 | 340 | 455 |
| Max. ΔT° | | °C | 40 | 40 | 40 | 35 |
| Maximum operating temperature | | °C | 90 | 90 | 90 | 90 |
| Maximum operating pressure (MOP) | | bar | 4 | 4 | 4 | 4 |
| Water side pressure drop at ΔT = 20 K | | mbar | 110 | 170 | 160 | 260 |
| Sound power | | dB(A) | 55 | 55 | 61 | 60 |
| Max. gas flow rate (15°C-1,013 mbar) | • natural gas H | $m^3/h$ | 4.4 | 6.6 | 9.1 | 11.7 |
| | • natural gas L | $m^3/h$ | 5.1 | 7.6 | 10.6 | 13.6 |
| | • propane | $m^3/h$ | 1.7 | 2.5 | 3.5 | 4.5 |
| Weight (empty) | | kg | 87 | 98 | 109 | 109 |

(1) Qnom : nominal head output

# MAIN **DIMENSIONS**
OF THE **C140** BOILERS

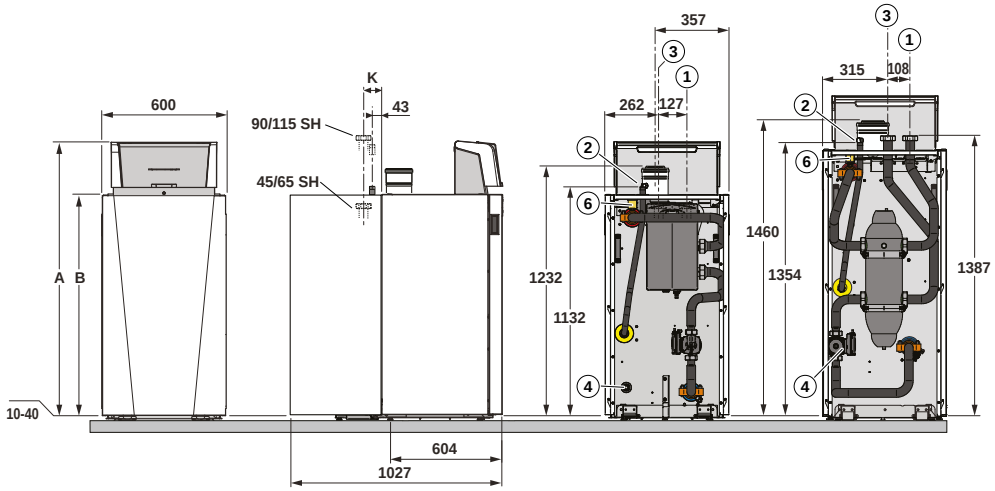
## MAIN DIMENSIONS (IN mm AND INCHES)

### **C140-45/65/90/115** (BOILERS ONLY)



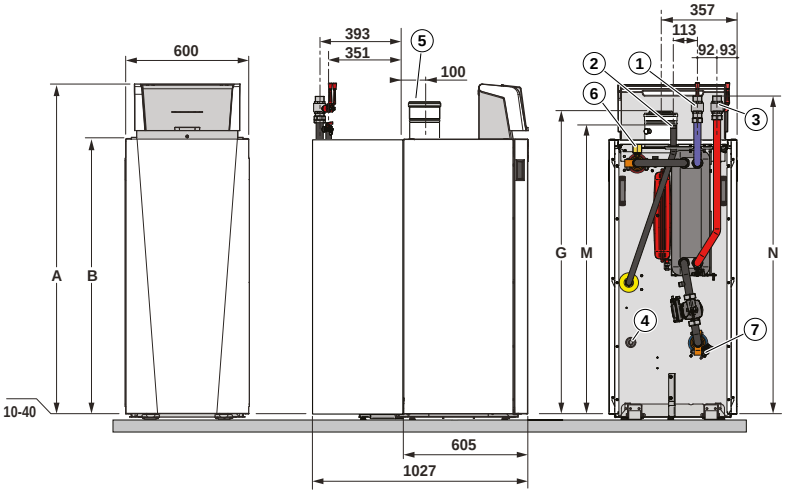

C140_F1000

### **C140-45/65/90/115 SH** (WITH SEPARATION KIT WITH LOW-LOSS HEADER)




C140_F1002

### **C140-45/65/90/115 EP** (WITH SEPARATION KIT WITH PLATE HEAT EXCHANGER)




C140_F1001

| | A | B | C | D | E | F | G | K | M | N |
|---|---|---|---|---|---|---|---|---|---|---|
| C140-45/65 | 1340 | 1083 | 961 | 400 | 150 | 118 | 1222 | 79 | 1153 | 1289 |
| C140-90/115 | 1563 | 1305 | 1183 | 622 | 352 | 340 | 1440 | 43 | 1375 | 1511 |

**KEY**

① Heating circuit flow:
- C140-…: R 1" 1/4
- C140-…EP: G 1" 1/4
- C140-…SH: G 2"

② Gas inlet G 3/4"

③ Heating circuit return:
- C140-…: R 1" 1/4
- C140-…EP: G 1" 1/4
- C140-…SH: G 2"

④ Condensate discharge (Ø 22 mm internal)

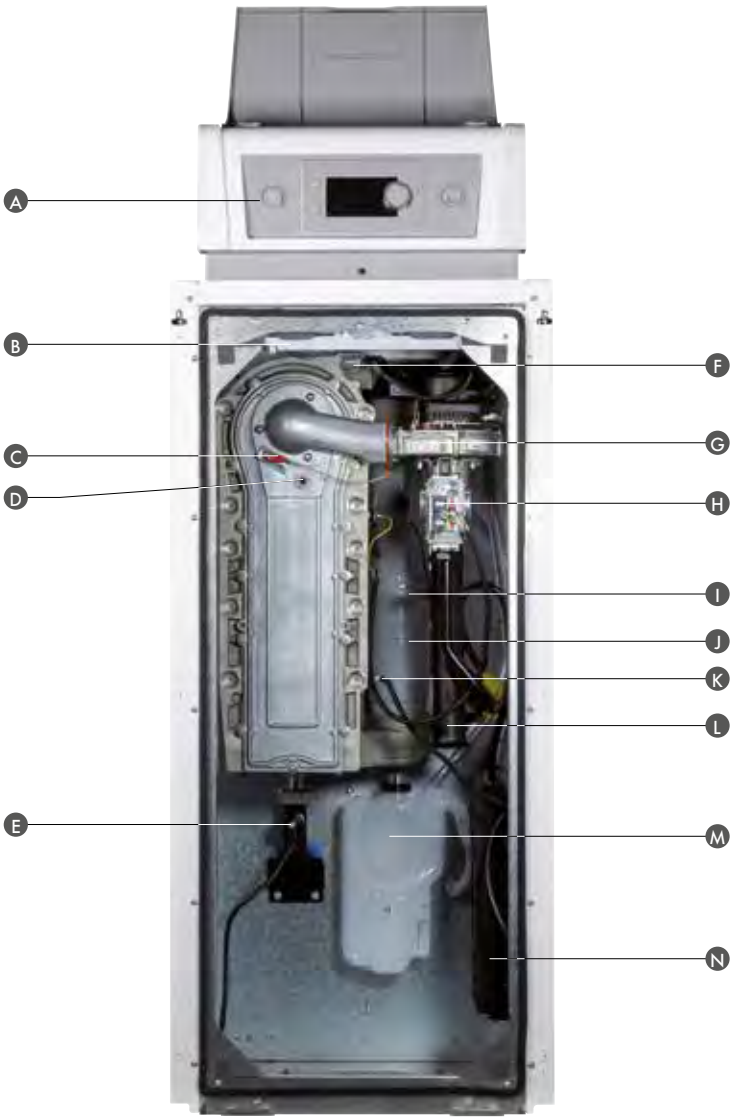
⑤ Flue gas evacuation and air supply pipe (measuring sleeve as standard):
- C140-45: Ø 80/125 mm
- C140-65/90/115: Ø 100/150 mm

⑥ Automatic air vent

⑦ Drain valve with connector

## DESCRIPTION

### MODEL SHOWN: C140-90/115




C140_Q0008

A Diematic Evolution control panel
B Light in the boiler
C Ignition electrode
D Flame inspection window
E Pressure gauge sensor
F Flow sensor
G Fan
H Gas valve
I Flue gas measuring point
J Flue gas circuit
K Return sensor
L Intake silencer
M Siphon
N Casing with printed circuit boards (PCBs)

### DETAIL OF THE BOILER INTERNAL LIGHTING

C140_Q1005

# TECHNICAL **SPECIFICATIONS**

OF BOILERS **C140...EP AND C140...SH**

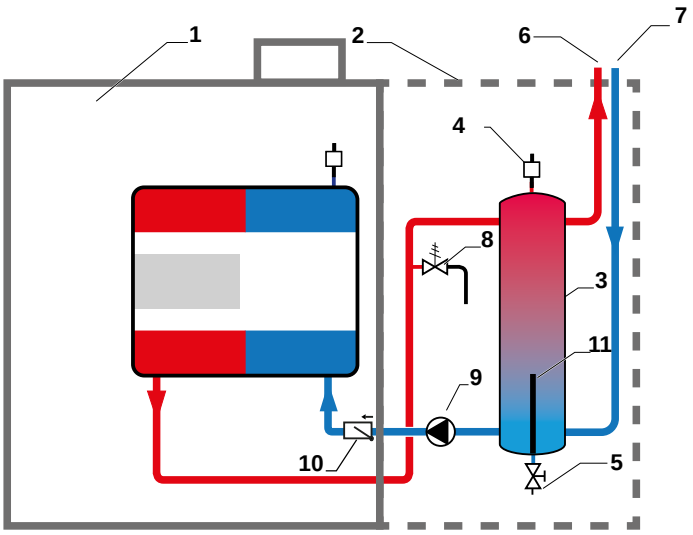
Versions C140 SH and EP are equipped with installation kits on the rear of the boilers, allowing the hydraulic separation of the primary circuit (boiler) from the secondary circuit (installation).
This separation offers the following advantages:
- The 2 versions (SH and EP) allow for operation at zero flow
- A neutral point may be set hydraulically
- It ensures a controlled flow rate for the primary circuit
- It allows for good control of the flow rate and pressures for the secondary circuit, particularly when several circuits are operating independently of each other
- It allows circuits at different temperatures for the secondary circuit
- Air may be expelled thanks to its degasser function
- Mud may be filtered and removed thanks to the filtering function (only for the version with SH kit)
- We recommend using a filter and secondary degasser (only for the version with EP kit).

In the EP versions, the main advantage of the plate heat exchanger is that it provides hydraulic insulation of the primary and secondary circuits. It therefore protects the boiler unit against impurities in the water in the secondary heating circuit (in the case of heavily rusted previous installations).

IMPORTANT NOTE
These low-loss header kits mounted on the rear of SH and EP boilers are also available as an optional extra.

## OPERATING PRINCIPLE

### MODEL C140-...SH

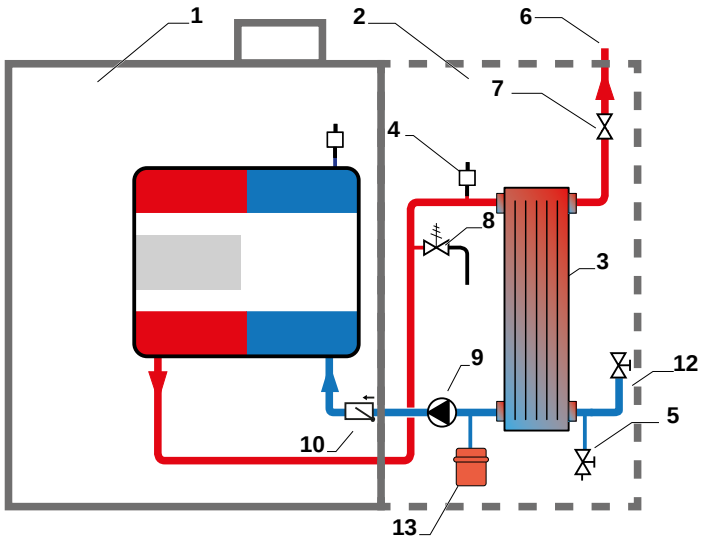



IX_F0106

C140_Q004

① Boiler
② Low-loss header kit
③ Low-loss header
④ Drain
⑤ Drain valve
⑥ Heating circuit flow
⑦ Heating circuit return
⑧ Safety valve
⑨ Modulating circulating pump
⑩ Non-return valve
⑪ Magnetic bar

### MODEL C140-...EP




IX_F0107

C140-Q1001

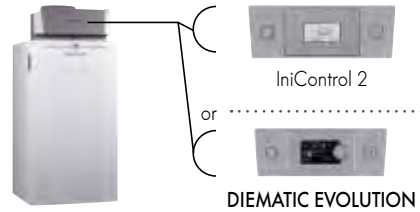
① Boiler
② Plate heat exchanger kit
③ Plate heat exchanger
④ Drain
⑤ Drain and cleaning valve
⑥ Heating circuit flow
⑦ Valve
⑧ Safety valve
⑨ Modulating circulating pump
⑩ Non-return valve
⑫ Valve
⑬ Expansion vessel

# CONTROL PANEL
FROM **C140-...**

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

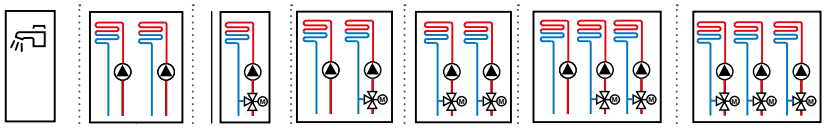
## INSTALLATION WITH ONLY 1 BOILER

### 2 TYPES OF PANEL ARE POSSIBLE

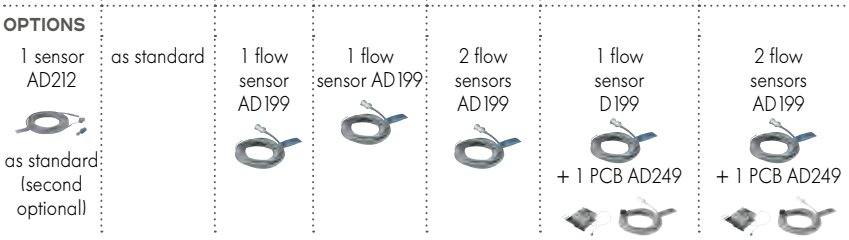



• For installations with 0-10 V control cabinet in a boiler room

• For zone controlling:




**OPTIONS**

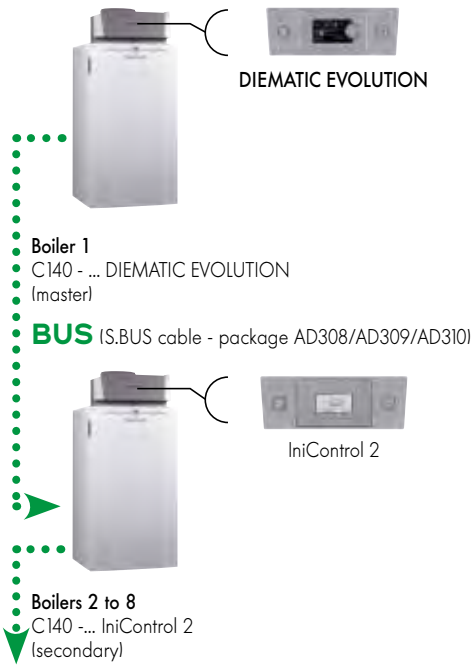



## CASCADE INSTALLATION OF 2 TO 8 BOILERS

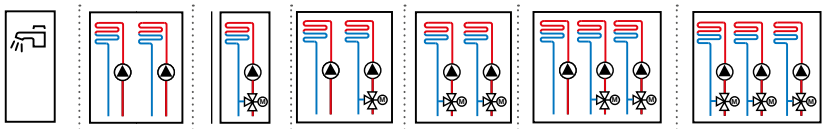
### WITH INICONTROL 2 CONTROL PANELS


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.

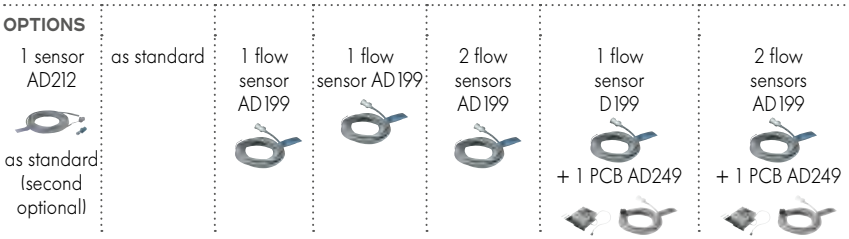
### WITH DIEMATIC EVOLUTION CONTROL PANEL FOR THE 1ST BOILER IN THE CASCADE (MASTER BOILER) AND 1 INICONTROL 2 PANEL FOR EACH OF THE SECONDARY BOILERS




• For zone controlling:




**OPTIONS**

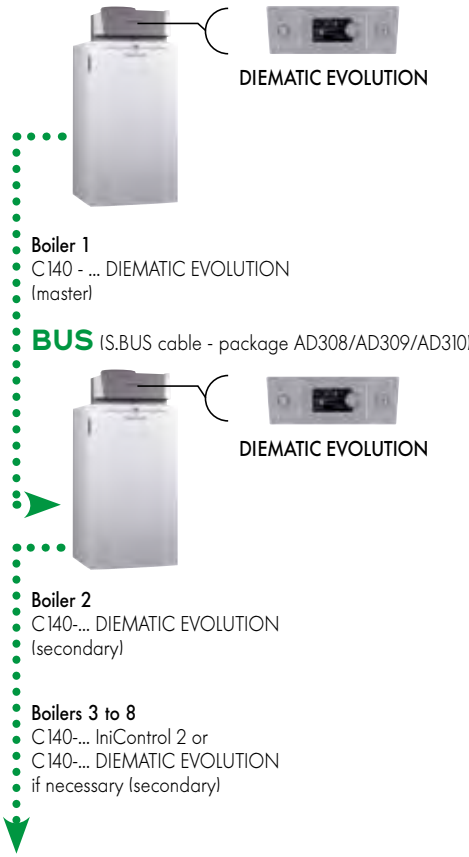



No additional secondary circuit may be connected to the IniControl 2 panel

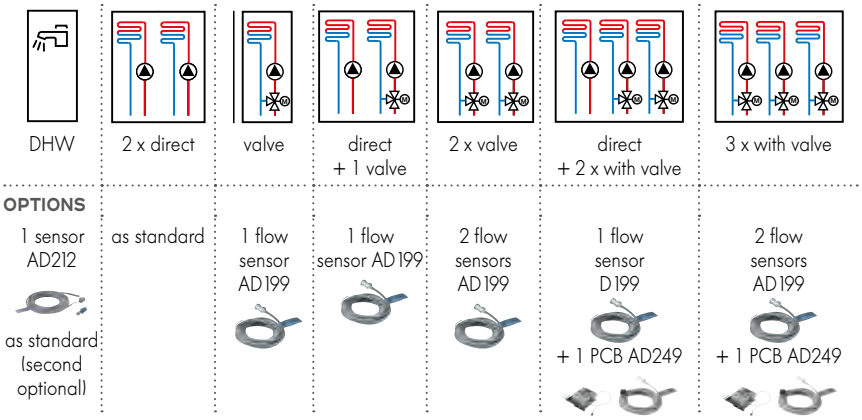
## INSTALLATION OF 2 TO 8 BOILERS IN CASCADE (CONTINUED)

To connect more than 3 heating circuits to a cascade installation, one of the C140-... IniControl 2 boilers in the cascade must be replaced with one (or several, depending on the number of additional circuits to be managed) C140-... DIEMATIC EVOLUTION boiler(s) (see example in the hydraulic diagram on page 32).

### 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




• For zone controlling:




• 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

# CONTROL PANEL
FROM **C140-...**

## PRESENTATION OF THE DIEMATIC EVOLUTION CONTROL PANEL

**The DIEMATIC EVOLUTION control panel** is a highly advanced panel with new ergonomic controls, with a built-in programmable electronic control system as standard which modulates the boiler temperature by acting on the **modulating burner**, based on the outdoor temperature and possibly the room temperature 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, with or 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).
Connecting a domestic hot water sensor can be used to program and regulate 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.


## DIEMATIC EVOLUTION CONTROL PANEL OPTIONS


### SENSOR FOR DOMESTIC HOT WATER - PACKAGE AD212 - REF. 100000030

It allows to control a domestic hot water tank, with priority and time programm functions.


### FLOW SENSOR DOWNSTREAM OF MIXING VALVE (LENGTH 2.5 m) - PACKAGE AD199 - REF. 88017017

This sensor is necessary for connecting the 1st circuit with mixing valve on a boiler equipped with the DIEMATIC EVOLUTION control panel.


### SENSOR FOR BUFFER TANK - PACKAGE AD250 - REF. 100013305

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


### PCB + SENSOR FOR 1 MIXING VALVE - PACKAGE AD249 - REF. 100013304

It is used to control a mixing valve with an electromechanical or electrothermal motor. The PCB is integrated 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.

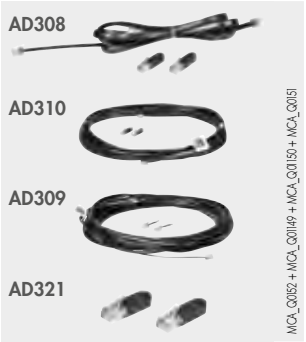
## DIEMATIC EVOLUTION CONTROL PANEL OPTIONS (CONTINUED)


### WIRED PROGRAMMABLE ROOM THERMOSTAT - PACKAGE AD137 - REF. 88017855

### WIRELESS PROGRAMMABLE ROOM THERMOSTAT - PACKAGE AD200 - REF. 88017018

### NON-PROGRAMMABLE ROOM THERMOSTAT - PACKAGE AD140 - REF. 88017859

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.




### S.BUS CABLE WITH PLUGS, 1.5 m - PACKAGE AD308 - REF. 7663618

### S.BUS CABLE WITH PLUGS, 12 m - PACKAGE AD309 - REF. 7663561

### S.BUS CABLE WITH PLUGS, 20m - PACKAGE AD310 - REF. 7663619

### BUS TERMINAL - PACKAGE AD321 - REF. 7688305

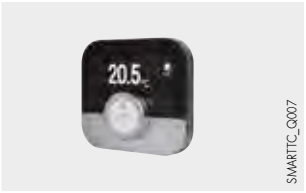
The BUS cable enables two boilers equipped with the DIEMATIC EVOLUTION or IniControl 2 panel to be connected as part of a cascade installation.


### DIEMATIC VM EVOLUTION - PACKAGE AD315 - REF. 7676561

Electronic control system, built into a wall unit, used to control and regulate 3 heating circuits and 2 DHW circuits; each of the heating circuits can be a direct circuit or a circuit with a 3-way motorised mixing valve.


### GTW08 L-BUS-MODBUS GATEWAY - PACKAGE AD332 - REF. 7721982

Many boiler room networks use the Modbus as communication protocol for Building Management System (BMS). Despite being a non-proprietary protocol, the Modbus has parameters that may differ from one application to another. This is why our communication gateways that transform our proprietary buses into standard ModBus RTU RS485 have adjustable parameters such as speed, parity and stop bit.

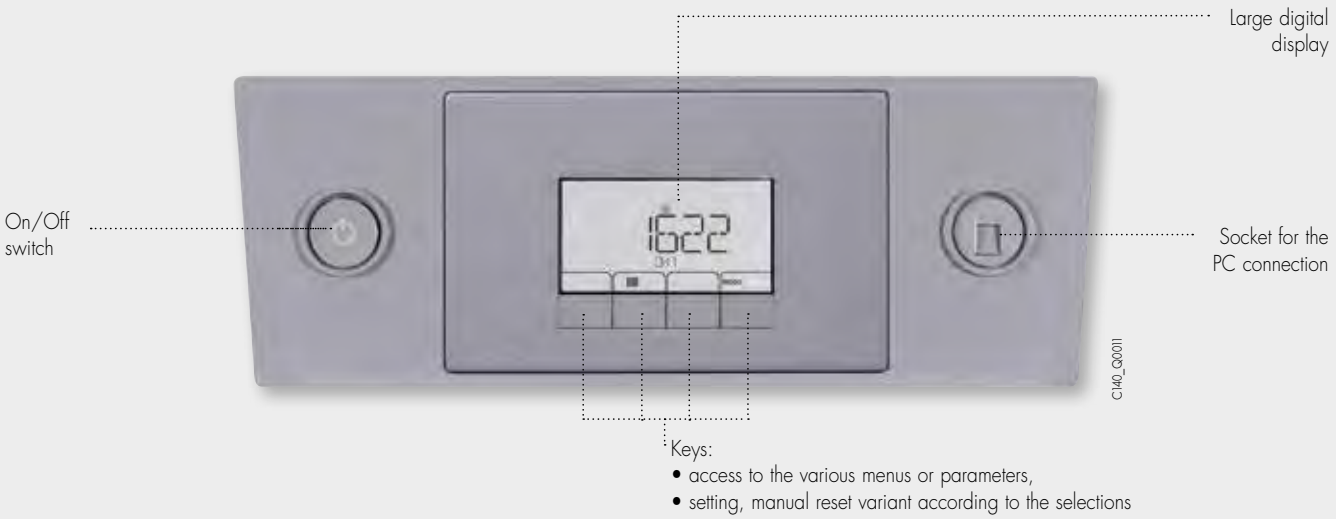



### SMART TC° CONNECTED ROOM THERMOSTAT (WIRED) - PACKAGE AD324

SMART TC° enables remote control of the heating and domestic hot water via a free to download application easy for the user to learn, with the option of providing a professional with access to their installation.
It enables a precise remote temperature and modulation control, integrates several timer programs with programming help, gives access to the installation parameters including energy consumption indicators with data saving.
If the SMART TC° can operate as a classic remote control, without Wifi or application, it is recommended to connect it to the internet to benefit from the latest updates.

## 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.



## SEPARATION KITS WITH LOW-LOSS HEADER (SH) FOR C140-45/65/90/115

Pre-sized hydraulic low-loss header kits mounted on the rear of the boiler, comprising:
- A modulating pump controled via PWM signal
- An insulated low-loss header, flushing valves for the filters and degasser, magnetic rod and 4-bar safety valve
- Primary connection pipes to the boiler with a non-return valve and a safety valve
- Secondary side pipes leading to the top of the boiler
- Gas pipes leading to the top of the boiler (for easy connection to the boiler network)
- Casing panels.

### LOW-LOSS HEADER KIT

· for C140-45/65 - package JJ409 - ref. 7709269
(Total kit capacity: 3.3 litres)

C140_Q5000

C140_Q1002

· for C140-90/115 - package JJ410 - ref. 7709270
(Total kit capacity: 8.1 litres)

C140_Q5002

C140_Q1004

## SEPARATION KITS WITH PLATE HEAT EXCHANGER (EP) FOR C140-45/65/90/115

Pre-sized separation kits with plate heat exchanger mounted on the rear of the boiler, comprising:
- A modulating pump controled via PWM signal
- An insulated plate heat exchanger
- An expansion vessel
- Primary connection pipes to the boiler with a non-return valve and a safety valve, exchanger drain valve and air vent
- Secondary and gas side pipes leading to the top of the boiler for easy connection to the boiler network, drain and cleaning valve
- Casing panels.

· for C140-45/65 - package JJ407 - ref. 7720938
(total primary kit capacity: 11.6 litres - secondary exchanger kit capacity: 2.7 litres)

C140_Q5001

C140_Q1001

· for C140-90/115 - package JJ408 - ref. 7720939
(total primary kit capacity: 13.4 litres - secondary exchanger kit capacity: 4.4 litres)

C140_Q5003

C140_Q1003

**EXCHANGER PRESSURE DROP** (to be taken into account when sizing secondary pumps)

| C140- | | 45 | 65 | 90 | 115 |
|---|---|---|---|---|---|
| ▶ With primary temperature ΔT = 20 °C | | | | | |
| Secondary flow rate | $m^3/h$ | 1.935 | 2.84 | 3,945 | 5.04 |
| Secondary pressure drop | kPa | 3.38 | 7.31 | 5.55 | 9.07 |
| Maximum secondary operating pressure | bar | 16 | 16 | 16 | 16 |

## DESCRIPTION OF THE DIFFERENT PACKAGES


MCA_Q0035

### HYDRAULIC CONNECTION KIT (AS AN OPTION) - PACKAGE HC139 - REF. 100002310

This kit includes:
- 1 Rp 1" 1/4 heating flow valve integrating the filling and drain valve
- 1 Rp 1" 1/4 heating return valve with 3-bar safety valve and port for connecting the expansion vessel
- 1 gas tap Rp 3/4".


MC35E_Q0012

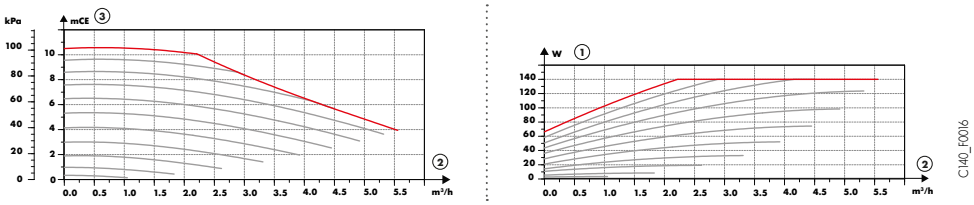
### GAS TAP 3.4" RIGHT - PACKAGE HC158 - REF. 100004641


C140_Q0012

### UPML HEATING PUMP 25-105 PWM - PACKAGE JJ416 - REF. 7723290
(supplied with two "1/2 union" 1" 1/2 - 1" connectors)

This pump can also function as an injection pump in cascade installations.

UPML 25-105 PWM pump specifications



C140_F0016

① Power (W) ② Flow rate (m³/h) ③ Manometric delivery head (mCE)


MCA_Q0138

### LOW-LOSS HEADER:

- **60/60 - 1" FOR DTG 130-45 AND DTG 65 - PACKAGE GV45 - REF. 100019346**
- **80/60 - 1" 1/4 FOR DTG 130-90 AND DTG 130-115 - PACKAGE GV46 - REF. 100019347**

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

C330_Q0008/C210_Q0014/C330_Q0007/C330_Q0006/C330_Q0005/DN1_Q0001

### GRAVITY FLOW CONDENSATE NEUTRALISATION STATIONS:

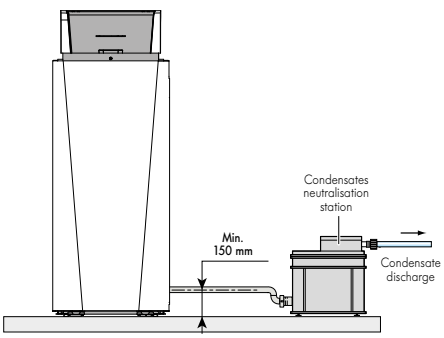
- **DN1 (UP TO 75 KW) - PACKAGE SA1 - REF. 7613605**
- **DN2 (UP TO 450 KW) - PACKAGE SA3 - REF. 7613609**
- **DN3 (UP TO 1,300 KW) - PACKAGE SA9 - REF. 7622188**

### CONDENSATE NEUTRALISATION STATION WITH LIFT PUMP FOR BOILERS OR BOILERS IN A CASCADE INSTALLATION:

- **UP TO 120 KW - PACKAGE DU13 - REF. 83877009**
- **UP TO 300 KW - PACKAGE SA4 - REF. 7613610**
- **UP TO 1,300 KW - PACKAGE DU15 - REF. 83877011**

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.



C140_F0011

# BOILER **OPTIONS**


### GRANULATE RECHARGE FOR NEUTRALISATION STATION:

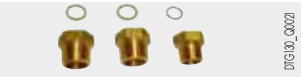
- **REF. 9422-5601 (10KG)**
- **PACKAGE SA7 (25KG) - REF. 7613613**

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.


### BOILER/TANK CONNECTION KIT BP... - PACKAGE EA121 - REF. 100007827

The connection kit allows an independent domestic hot water tank BP… to be placed to the right or left of the boiler. It comprises an air vent, valve and booster pump, as well as the pipes and parts required to connect the boiler and tank hydraulically.
**NB**: don't forget to order the DHW sensor package AD212.


### IMPRESSED CURRENT ANODE - PACKAGE AJ38 - REF. 89757752




### G IN R CONNECTION KIT (1" AND 3/4") - PACKAGE BH84 - REF. 89557009


### BPB "PERFORMANCE" TANKS:

- **BPB 150 L - PACKAGE EC609 - REF. 100018093**
- **BPB 200 L - PACKAGE EC610 - REF. 100018094**
- **BPB 300 L - PACKAGE EC611 - REF. 100018095**


### BLC "COMFORT" TANKS:

- **BLC 150 L - PACKAGE EC604 - REF. 100018088**
- **BLC 200 L - PACKAGE EC605 - REF. 100018089**
- **BLC 300 L - PACKAGE EC606 - REF. 100018090**

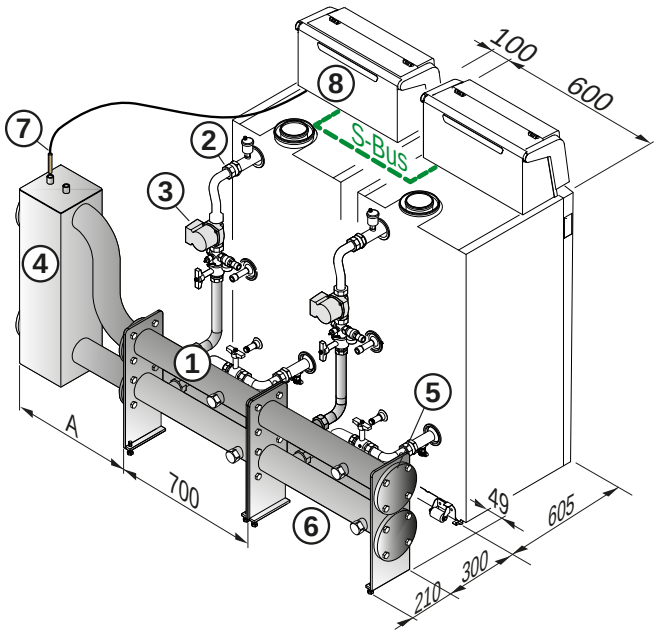
### GAS VALVE FOR PROPANE OPERATION FOR C140-90 - REF. 7606993


### 300 MBAR GAS PRESSURE REGULATOR GDJ 15 - PACKAGE SA11 - REF. 7628752

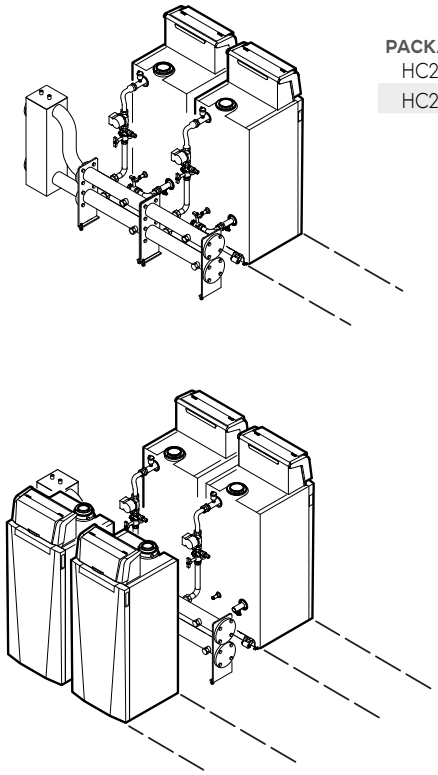
It is fitted on the gas inlet circuit. It is needed if the gas is supplied at a pressure of 300 mbar.

C140-... cascade systems are to be built by the installer using the elements listed below.
It is possible to create cascade systems with 2 to 4 boilers installed back-to-back.
The boilers must be ordered separately.

## DIAGRAMS OF A CASCADE SYSTEM WITH MAIN DIMENSIONS (mm)




| PACKAGE | ITEM ④ A (mm) |
|---|---|
| HC222 | 279 |
| HC200 | 619 |



C140_F0010

## PACKAGE LIST TO BE ORDERED BASED ON THE REQUIRED COMBINATION

| ITEM | DESCRIPTION | PACKAGE | REF. NO. |
|---|---|---|---|
| ① | DN 65 collector (installation ≤ 460 kW) | HE35 | 100011703 |
| ② | Hydraulic connection kit: | | |
| | • C140-45 and 65 | HE32 | 100011490 |
| | • C140-90 and 115 | HE33 | 100011491 |
| ③ | UPML 25-105 PWM heating pump | JJ416 | 7723290 |
| ④ | Low-loss header: | | |
| | • DN 65 (installation ≤ 350 kW) | HC222 | 114311 |
| | • DN 65 (installation > 350, ≤ 460 kW) | HC200 | 111712 |
| ⑤ | Set of 2 blind flanges for water collector: | | |
| | • DN 65 | HC198 | 111701 |
| | • DN 100 | HC199 | 111703 |
| ⑥ | Set of 2 caps (in-line assembly) | HC195 | 111708 |
| ⑦ | Cascade flow sensor + sensor tube: | | |
| | • for low-loss header HC222 | HC223 | 100013027 |
| | • for HC200 low-loss headers | HC206 | 100008701 |
| ⑧ | S.BUS cable to connect boilers, lg 12 m | AD309 | 7663561 |

## DESCRIPTION OF THE DIFFERENT PACKAGES


### DN 50 GAS FILTER FOR CASCADE SYSTEMS - PACKAGE HC255 - REF. S101655

### DN 65 GAS FILTER FOR CASCADE SYSTEMS - PACKAGE HC256 - REF. S101656


### SET OF DN 50 FLANGES FOR GAS FILTER - PACKAGE HC261 - REF. S103345

Supplied with gaskets, nuts and bolts.


### SET OF 90° ELBOWS:

- **DN 65 FOR CASCADE SYSTEMS - PACKAGE HC209 - REF. 111788**
- **DN 100 FOR CASCADE SYSTEMS - PACKAGE HC210 - REF. 111790**

Supplied with gaskets, nuts and bolts.
Enabling the low-loss header to be connected perpendicular to the manifold.


### SET OF COUNTER FLANGES:

- **DN 65 FOR CASCADE SYSTEMS - PACKAGE HC217 - REF. 112632**
- **DN 100 FOR CASCADE SYSTEMS - PACKAGE HC218 - REF. 112633**

Contains 3 counter flanges: 2 for the installation side of the pressure breaker (DN 65) and 1 for the gas line (DN 50).
Supplied with gaskets, nuts and bolts.


### LOW-LOSS HEADER INSULATION

- **SMALL MODEL FOR OUTPUT ‹ 350 KW - PACKAGE HC224 - REF. 115269**
- **LARGE MODEL FOR OUTPUT › 350 KW - PACKAGE HC215 - REF. 111067**


### 90° ELBOW INSULATION DN 65 OR DN 90 - PACKAGE HC216 - REF. 111167


### ADJUSTABLE FOOT - PACKAGE HC219 - REF. 111807

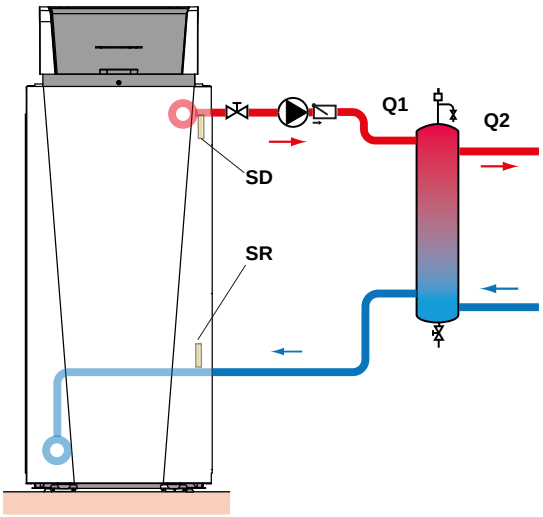
This is used for "LV" in-line installations, if the ground is not uniform.

| ALIGNMENT | IN-LINE, "LV" FLOOR-MOUNTED | | | | | |
|---|---|---|---|---|---|---|
| Number of boilers | 2 | 3 | 4 | 5 | 6 | 7 |
| Number of feet required | 5 | 6 | 8 | 9 | 11 | 12 |

## VARIABLE FLOW PUMP OPERATION AND POWER ADJUSTMENT

### SH VERSION

The variable flow pump adjusts the Q1 flow rate to obtain the highest ΔT (boiler flow/return sensor) and modulates the burner output to reach the flow target temperature. In most cases, with the help of the pump flow modulation, Q1 is level with Q2, the aim being to obtain low heating water return temperatures (condensation) and to reduce mixing in the low-loss heater (maintaining boiler performance).

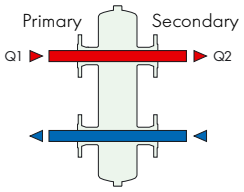



C140_F0012

**KEY**
SR: boiler return sensor
SD: boiler flow sensor
Q1: primary flow rate
Q2: secondary flow rate

· with Q1 = Q2

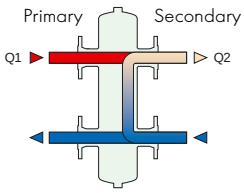
The variable flow pump adjusts the Q1 flow rate to the Q2 flow rate, limiting mixing in the head.




IX_F0116

· with Q1 < Q2

The boiler's primary Q1 flow rate < the secondary Q2 flow rate:
To maintain this balance between Q1 and Q2, we must provide for a boiler temperature increase corresponding to the difference in flow rate.

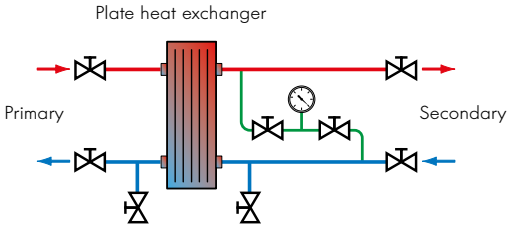



IX_F0116

The C140... SH/EP versions and separation kits provide hydraulic independence for the boilers. The regulator allows for optimum operation by adjusting the water flow rate and burner output.

### EP VERSION

In versions C140.... EP, the low-loss heater is replaced by a plate heat exchanger, while the control principle remains the same.
Inside the exchanger, a large amount of energy is exchanged with a minimal temperature difference between the primary inflow water and the secondary outflow water.
This difference corresponds to the pinch temperature of the exchanger, which is between 5 and 7°C. This means that, at a boiler primary temperature of 80/60°C, the heating circuit secondary water temperature will be 75/55°C.
The operation of the boiler at its nominal output is around 10 days per year.
The boiler modulates its output and temperature for 99% of its operating time. The exchangers enhances performance, further reducing this pinch temperature, thus also decreasing its impact on boiler performance.
The plate heat exchanger defends against the build-up of mud and limescale in the boiler system in systems where controlling the water quality is difficult.
Thanks to two isolation valves and two taps, it can be easily cleaned or replaced in case of clogging. To limit this clogging, we strongly recommend installing a filter or clarifier and a deaerator on the secondary system.
The exchanger's performance levels in the secondary system are guaranteed up to a ΔT° of 20°C (75/55°C). To be used with a ΔT° of 20°C. A temperature or pressure drop in the secondary flow must be borne in mind.




AC_F001B

## STATUTORY GUIDELINES FOR INSTALLATION AND MAINTENANCE

Installation and maintenance of the appliance, in both residential buildings and establishments open to the general public, must be performed by a qualified professional in accordance with the relevant statutory guidelines and good industrial practice.

## C140 INSTALLATION (BOILER ONLY AND SH AND EP VERSIONS)

C140-... boilers may be installed in any area of a dwelling, provided that it is protected from frost and well-ventilated. Thanks to their protection rating, they may be installed in kitchens and bathrooms, although not in protection areas 1 or 2. To ensure sufficient access around the boiler, we recommend respecting the minimum dimensions detailed opposite.

### ROOM VENTILATION

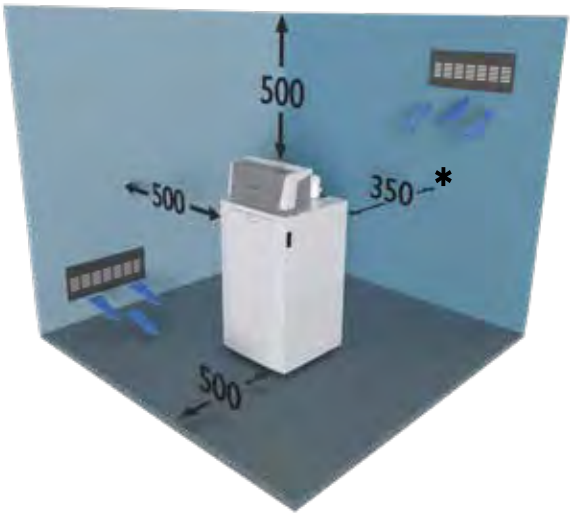
(with chimney connection - type $B_{23}$, only)

The room ventilation section (where the combustion air is extracted) must comply with the prevailing standard.

NOTE

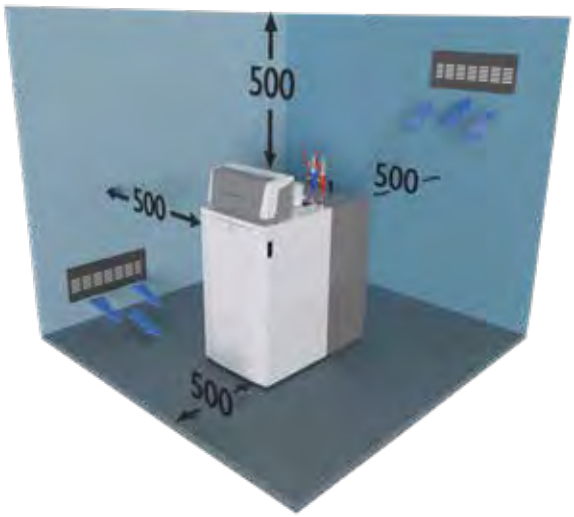
For boilers connected to a concentric forced flue (type $C_{13x}$ or $C_{33x}$ connections) the installation room does not need to be ventilated, unless the gas supply includes one or more mechanical connections; see prevailing standard.

- **BOILER ONLY**




C140_Q0500

- **SH AND EP BOILER VERSIONS**
(with rear-mounted low-loss header kit)




C140_Q0501

* 500 mm for models C140-90/110

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

In order to avoid damage to the boilers, it is necessary to prevent the contamination of combustion air by chlorine and/or fluorine 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:
- Prevent 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.
- Avoid storing such products close to boilers.

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

## 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 prevailing standards.
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 > 300 kW, the pressure regulator must be fitted outside of the building.

### CERTIFICATE OF CONFORMITY

The installer is required to draw up certificates of conformity approved by the ministries responsible for construction and gas safety.

### 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.
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.

## ELECTRICAL CONNECTION

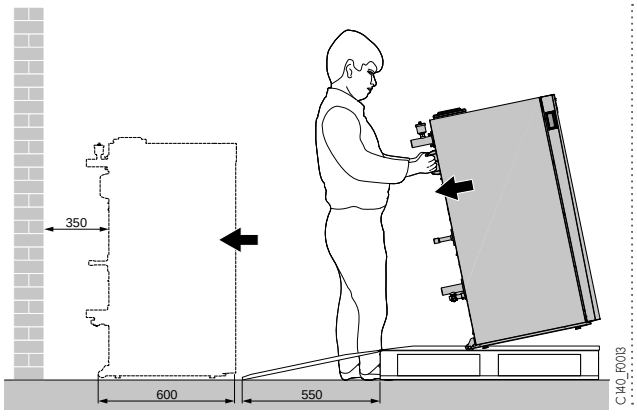
This must comply with the prevailing national or even local instructions and standards.
The boiler must be supplied via an electrical circuit which includes an omnipolar switch with an opening gap distance of > 3 mm. Protect the network connection using a 6A fuse.

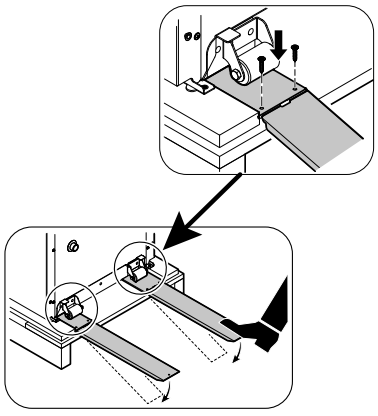
NOTE
• the sensor cables must be separated from the 230 V circuits by at least 10 cm,
• to help maintain the frost protection and anti-blocking functions of the pumps, we recommend that the boiler is not powered off using the mains switch.
• Depending on the quality of the power supply network, we recommend using an isolation transformer.

## INSTALLATION SERVICE

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.

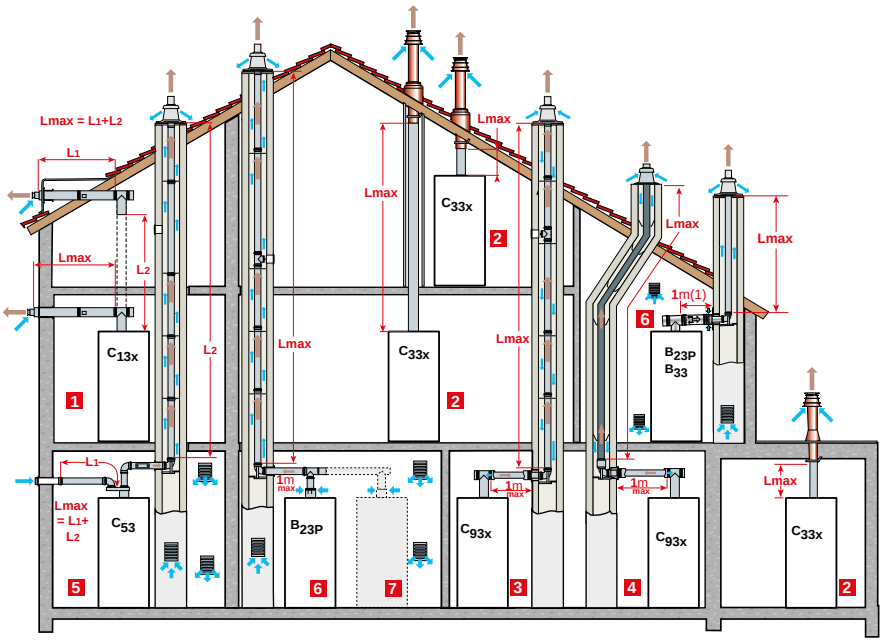
To facilitate fitting the C140-... boiler, it is equipped with wheels built into the chassis and with unloading ramps.



## AIR-FLUE GAS CONNECTION FOR C140

For information on how to set up the air-flue gas connection ducts and the installation rules, see the "flue system" brochure. For details of the different configurations, see the "flue system" brochure or current product catalogue.




### KEY

1 **CONFIGURATION $C_{13(x)}$:** Air-flue gas connection via concentric ducts to a horizontal terminal ("forced flue")

2 **CONFIGURATION $C_{33(x)}$:** Air-flue gas connection via concentric ducts to a vertical terminal (roof outlet)

3 **CONFIGURATION $C_{93(x)}$:** Air-flue gas connection via concentric ducts in boiler room, single ducts in flue (combustion air in counter-current in flue)

or

4 **CONFIGURATION $C_{93(x)}$:** Air-flue gas connection via concentric ducts in boiler room, single "flex" ducts in flue (combustion air in counter-current in flue).

5 **CONFIGURATION $C_{53}$:** Separate air and flue connections, single ducts (combustion air taken from outside). The connection elements require for this configuration are not offered by De Dietrich.

6 **CONFIGURATION $B_{23P}/B_{33}$:** Connection to a chimney (combustion air taken from within the boiler room).

7 **CONFIGURATION $B_{23P}$:** for cascade installations

8 **CONFIGURATION $B_{23}$:** 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 BOILER MODEL

| TYPE OF AIR-FLUE GAS CONNECTION | | | LMAX : EQUIVALENT MAXIMUM LENGTH OF THE CONNECTION DUCTS IN METRES | | | |
|---|---|---|---|---|---|---|
| | | | C140- | | | |
| | | | 45 | 65 | 90 | 115 |
| Concentric pipes connected to a horizontal terminal (**PPs**) | $C_{13(x)}$ | Ø 80/125 mm | 16 | – | – | – |
| | | Ø 100/150 mm or Ø 110/150 mm | – | 9 | 8 | 5.9 |
| Concentric pipes connected to a vertical terminal (**PPs**) | $C_{33(x)}$ | Ø 80/125 mm | 14.5 | – | – | – |
| | | Ø 100/150 mm or Ø 110/150 mm | – | 11 .5 | 10 | 9.4 |
| Pipes<br>• concentric in boiler room<br>• single in chimney (combustion air in counter-current) (**PPs**) | $C_{93(x)}$ | Ø 80/125 mm Ø 80 mm | 15 | – | – | – |
| | | Ø 80/125 mm Ø 100 mm | 25 | – | – | – |
| | | Ø 110/150 mm Ø 110 mm | – | 16 | 13.2 | 10 |
| Pipes<br>• concentric in boiler room<br>• "flex" in chimney (combustion air in counter-current) (**PPs**) | $C_{93(x)}$ | Ø 80/125 mm Ø 80 mm | 12 | – | – | – |
| | | Ø 110/150 mm Ø 110 mm | – | 16.5 | 13.5 | 9.4 |
| In chimney (rigid or flex) (combustion air taken from within the premises) (**PPs**) | $B_{23P}$/ $C_{33}$ | Ø 80 mm (rigid) | 23.5 | – | – | – |
| | | Ø 80 mm (flex) | 21 | – | – | – |
| | | Ø 110 mm (rigid) | – | 40 | 40 | 40 |
| | | Ø 110 mm (flex) | – | 29.5 (1) | 24 | 17.5 |

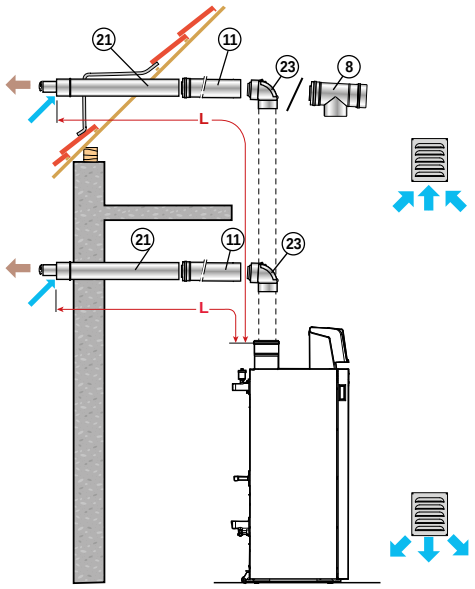
(1) ⓘ: The max. height in the flue gas duct (Configuration $C_{93X}$, $B_{23P}/C_{33}$) of the support elbow at the outlet must not exceed 25 m for the flex PPS. If bigger lengths are used, mounting brackets must be added every 25 metres.

# FLUE GAS **CONNECTION**

FOR **ELIDENS C140**

## 1 CONFIGURATION $C_{13X}$ - CONCENTRIC HORIZONTAL FORCED FLUE

(connection to outside wall or with roof outlet)

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| BOILER TYPE | $L_{MAX}$ (m) | |
|---|---|---|
| | Ø 80/125 mm | Ø 110/150 mm |
| C140-45 | 14.5 | – |
| C140-65 | – | 11.5 |
| C140-90 | – | 10 |
| C140-115 | – | 9.4 |

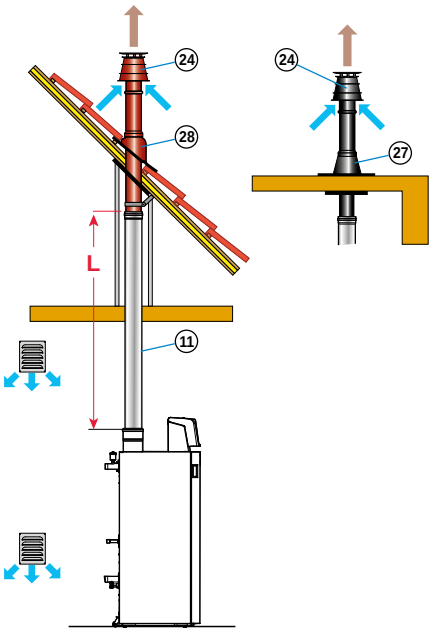
### PPs FLUE GAS SYSTEM ACCESSOIRES

| | | |
|---|---|---|
| Horizontal forced flue Ø 80/125 mm | Package no. | DY882 |
| | Ref. | 100011365 |
| Horizontal forced flue Ø 110/150 mm | Package no. | DY881 |
| | Ref. | 100011364 |

For Elidens C140-65 to 115 boilers, to gain height (in the case of the replacement of an Elidens DTG with an Elidens C140, for example) we offer an optional elbow Ø 100/150 mm (Package DY930, Ref. 7715416) or an inspection elbow Ø 100/150 mm (Package DY931, Ref. 7715445) to be placed directly onto the flue gas outlet. In this case, the sleeve with measuring points supplied with the Elidens C140, as well as the Ø 100/150 mm over Ø 110/150 mm adaptor supplied with the DY881 horizonal forced flue must be installed after the elbow.

## 2 CONFIGURATION $C_{33X}$ - CONCENTRIC VERTICAL FORCED FLUE

(connection to sloping or flat roof)

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| BOILER TYPE | $L_{MAX}$ (m) | |
|---|---|---|
| | Ø 80/125 mm | Ø 110/150 mm |
| C140-45 | 16 | – |
| C140-65 | – | 9 |
| C140-90 | – | 8 |
| C140-115 | – | 5.9 |

### PPs FLUE GAS SYSTEM ACCESSOIRES

| | | | | |
|---|---|---|---|---|
| Vertical forced flue Ø 80/125 mm | or | black | Package no. | DY843 |
| | | | Ref. | 100002732 |
| | | red | Package no. | DY844 |
| | | | Ref. | 100002733 |
| Vertical forced flue Ø 110/150 mm | | black | Package no. | DY845 |
| | | | Ref. | 100002734 |
| 110/150 mm to 100/150 mm adaptor | | black | Package no. | DY817 |
| | | | Ref. | 100002357 |

## Ø 110/160 mm FLUE GAS SYSTEM ELEMENTS FOR CONFIGURATIONS 1 AND 2

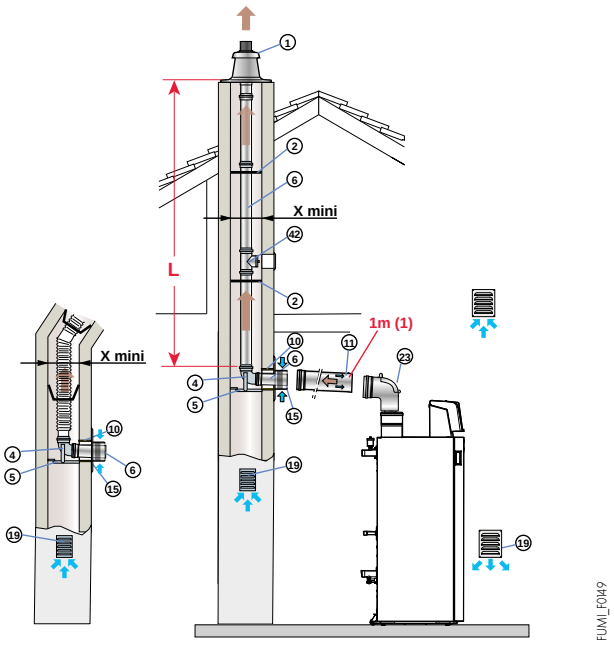
| | PACKAGE | REF. NO. |
|---|---|---|
| Ø 110/160 mm adaptor | DY434 | 7715075 |
| Concentric tube Ø 110/160 mm, lg. 500 mm | DY421 | 7715060 |
| Concentric tube Ø 110/160 mm, lg. 1000 mm | DY422 | 7715063 |
| Concentric tube Ø 110/160 mm, lg. 2000 mm | DY423 | 7715064 |
| Elbow Ø 110/160 mm, 90° | DY425 | 7715066 |
| Elbow Ø 110/160 mm, 45° | DY424 | 7715065 |
| Inspection hatch Ø 110/160 mm | DY426 | 7715067 |
| Inspection T Ø 110/160 mm | DY427 | 7715068 |
| Escutcheon Ø 160 mm | DY431 | 7715072 |

| | PACKAGE | REF. NO. |
|---|---|---|
| 100/150 mm to 110/150 mm adaptor | DY817 | 100002357 |
| 500 mm extension | DY811 | 100002351 |
| 1000 mm extension | DY812 | 100002352 |
| Inspection T | DY816 | 100002356 |
| Straight inspection tube | DY815 | 100002355 |
| 87° elbow | DY813 | 100002353 |
| 45° elbow (2 parts) | DY814 | 100002354 |
| Condensate manifold | DY918 | 100018984 |

### OTHER FLUE GAS SYSTEM ACCESSORIES AVAILABLE

Extensions, Ts, elbows, compensating sleeves, vent tiles, etc.): see FLUE GAS SYSTEM technical sheet

## 6 CONFIGURATION $B_{23P}/B_{33}$- CONNECTION TO A CHIMNEY
(combustion air taken from within the boiler room or premises where the boiler is installed)




| BOILER TYPE | | LMAX (m) ø 80 mm (rigid) | ø 80 mm (flex) | ø 110 mm (rigid) | ø 110 mm (flex) |
|---|---|---|---|---|---|
| C140-45 | | 23.6 | 21 | – | – |
| C140-65 | | – | – | 40 | 29.5* |
| C140-90 | | – | 40 | 24 | |
| C140-115 | | – | – | 40 | 17.5 |
| min. x | ⊠ | 140 | 140 | 170 | 170 |
| | ∅ | 160 | 160 | 190 | 190 |

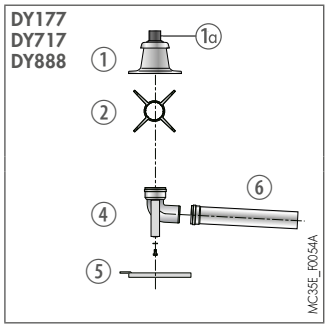
* The max. height in the flue gas duct of the support elbow at the outlet must not exceed 25 m for the flex PPS. If bigger lengths are used, mounting brackets must be added every additional 25 metres.

(1) For each additional metre of horizontal pipe, subtract 1.2 m from the vertical length Max. L indicated in the table below.

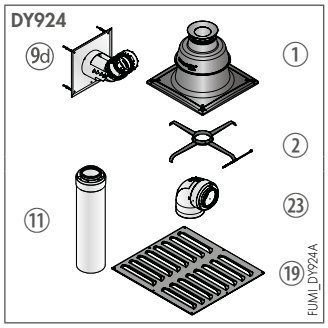
### PPS FLUE GAS SYSTEM ACCESSORIES required at a minimum for connection to a chimney

| BOILER TYPE | CONNECTION Ø | | | BOILER CONNECTION KIT | FLUE CONNECTION KIT | ADAPTOR | FLEX DUCT |
|---|---|---|---|---|---|---|---|
| C140-45 | - Ø 80/125 mm in room<br>- Ø 80 mm (**rigid**) chimney | | Package no. | DY913 | DY717 | – | – |
| | | | Ref. | 100017527 | 84887717 | – | – |
| | - Ø 80/125 mm in room<br>- Ø 80 mm (**flex**) in chimney | Quick Kit | Package no. | DY924 | | – | DY897 (lg 12.5 m) (1) |
| | | | Ref. | 7650956 | | – | 100015327 |
| C140-65/90/115 | - Ø 110/150 mm in room<br>- Ø 110 mm (**rigid**) in chimney | | Package no. | DY914 | DY177 | DY817 | – |
| | | | Ref. | 100017529 | 84887577 | 100002357 | – |
| | - Ø 110/150 mm in room<br>- Ø 110 mm (**flex**) in chimney | | Package no. | DY914 | DY888 | DY817 | DY889 |
| | | | Ref. | 100017529 | 100015287 | 100002357 | 100015288 |

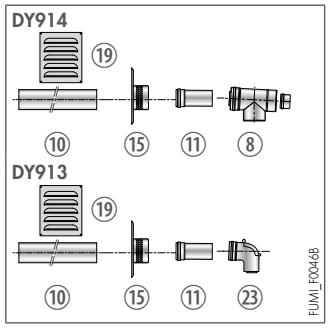
(1) other flex duct lengths are available



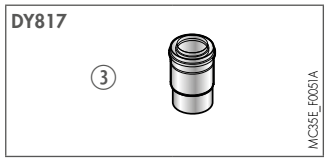

① Terminal with flashing
⑩ Black PPs finishing tube, lg 0.345 m
② Centring stars
③ Ø 110/150 mm to Ø 100/150 mm adaptor




④ Single 90° elbow
⑤ Support rail
⑥ Single 0.5 m extension
⑧ Inspection T




⑨d Chimney finishing plate Ø 80 mm (with elbow) for flex duct
⑪ Concentric 0.5 m extension
⑩ Galvanised sheath, L = 0.5 m
⑮ Combustion air inlet
⑲ Ventilation grille



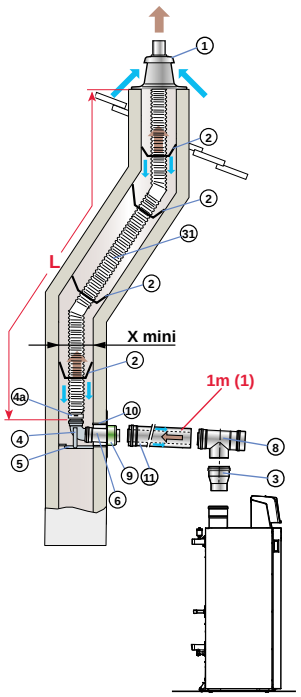

㉓ Inspection elbow

### OTHER FLUE GAS SYSTEM ACCESSORIES AVAILABLE
Extensions, Ts, elbows, compensating sleeves, vent tiles, etc.): see FLUE GAS SYSTEM technical sheet

# FLUE GAS **CONNECTION**

FOR **ELIDENS C140**

## 3 CONFIGURATION $C_{93X}$ - CONCENTRIC DUCTS IN BOILER ROOM, SINGLE DUCTS IN FLUE (combustion air in counter-current)

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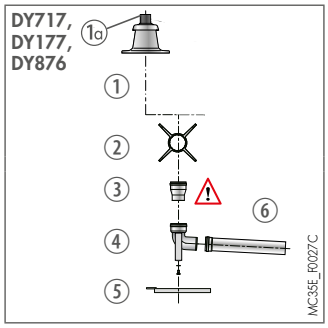
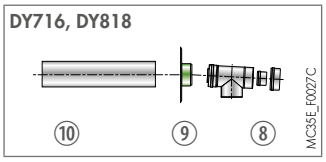
| | | LMAX (m) | | | |
|---|---|---|---|---|---|
| IN BOILER ROOM (mm) ▶ | | Ø 60/100 | Ø 80/125 | | Ø 110/150 |
| IN CHIMNEY (mm) ▶ | | Ø 80 | Ø 80 | Ø 110 | Ø 110 |
| ▼ BOILER TYPE | | | | | |
| C140-45 | | – | 15 | 25 | – |
| C140-65 | | – | – | – | 16 |
| C140-90 | | – | – | – | 13.2 |
| C140-115 | | – | – | – | 10 |
| min. x | ⍁ | 140 | 140 | 160 | 160 |
| | ∅ | 160 | 160 | 180 | 180 |

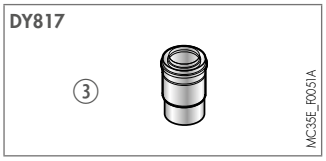
(1) For each additional metre of horizontal pipe, subtract 1.2 m from the vertical length Max. L indicated in the table below.
(2) Or location ③ if necessary

**PPS FLUE GAS SYSTEM ACCESSORIES** required at a minimum for the air-flue gas connection with concentric ducts in boiler room, and single rigid in chimney

| BOILER TYPE | CONNECTION Ø | | BOILER CONNECTION KIT | FLUE CONNECTION KIT | ADAPTOR |
|---|---|---|---|---|---|
| Elidens C140-45 | - Ø 80/125 mm in boiler room<br>- Ø 80 mm in chimney | Package no. | DY716 | DY717 | – |
| | | Ref. | 84887716 | 84887717 | – |
| | - Ø 80/125 mm in boiler room<br>- Ø 110 mm in flue | Package no. | DY716 | DY876 | Ø 110 to 80 mm included in DY876 |
| | | Ref. | 84887716 | 100008312 | – |
| Elidens C140-65, 90, 115 | - Ø 110/150 mm in boiler room<br>- Ø 110 mm in flue | Package no. | DY818 | DY177 | DY817 |
| | | Ref. | 100002360 | 84887577 | 100002357 |



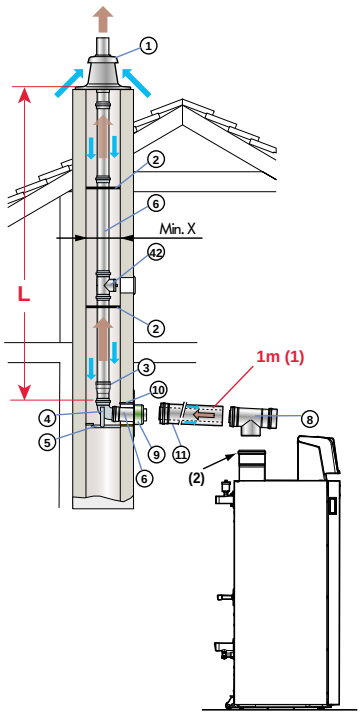

① Terminal with flashing
①o Black PPs finishing tube, lg 0.345 m
② Centring stars
③ Adaptor:
- Ø 80 to 110 mm for DY876
- no adaptor for DY717 and DY177

④ 87° elbow
⑤ Support rail
⑥ Extension 0.5 m
⑧ Inspection T
⑨ Chimney finishing plate
⑩ Galvanised sheath, L = 0.5 m
㊵ Adaptor Ø 80/125 mm

## OTHER FLUE GAS SYSTEM ACCESSORIES AVAILABLE

Extensions, Ts, elbows, compensating sleeves, vent tiles, etc.): see FLUE GAS SYSTEM technical sheet

## 4 CONFIGURATION $C_{93X}$ - CONCENTRIC DUCTS IN BOILER ROOM, SINGLE DUCTS IN FLUE (combustion air in counter-current)



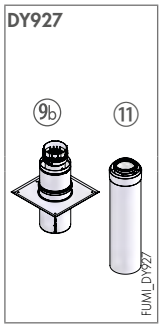

| | | $L_{MAX}$ (m) | |
|---|---|---|---|
| IN BOILER ROOM (mm) ▶ | | Ø 80/125 | Ø 110/150 |
| IN CHIMNEY (mm) ▶ | | Ø 80 | Ø 110 |
| ▼ BOILER TYPE | | | |
| C140-45 | | 12 | – |
| C140-65 | | – | 16.5 |
| C140-90 | | – | 13.5 |
| C140-115 | | – | 9.4 |
| min. x | ⍁ | 140 | 170 |
| | ∅ | 160 | 190 |

(1) For each additional metre of horizontal pipe, subtract 1.2 m from the vertical length Max. L indicated in the table below.

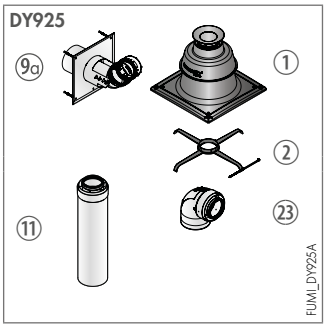
### PPS FLUE GAS SYSTEM ACCESSORIES required at a minimum for the air-flue gas connection with concentric ducts in boiler room, and single "flex" in chimney

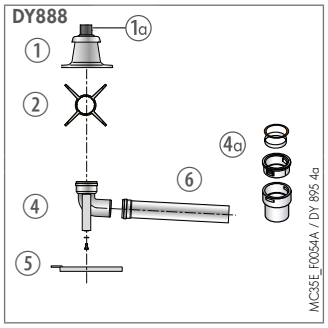
| BOILER TYPE | CONNECTION Ø | | | BOILER + CHIMNEY CONNECTION KIT | | | ADAPTOR | FLEX DUCT |
|---|---|---|---|---|---|---|---|---|
| Elidens C140-45 | - Ø 80/125 mm in boiler room<br>- Ø 80 mm (**flex**) in chimney | Quick Kit | Package no. | DY925 (perpendicular) | or | DY927 + DY899 (telescopic, below duct) | – | DY897 (lg 12.5 m) (1) |
| | | | Ref. | 7650958 | or | 7650964 + 100015329 | – | 100015327 |
| Elidens C140-65, 90, 115 | - Ø 110/150 mm in boiler room<br>- Ø 110 mm in flue | Standard Kit | Package no. | DY818 | + | DY888 | DY817 (Ø 100/150 to 110/150) | DY889 (lg 15 m) (1) |
| | | | Ref. | 100002360 | + | 100015287 | 100002357 | 100015288 |

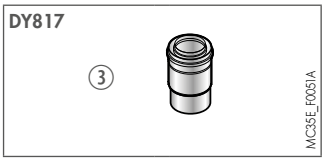
(1) other flex duct lengths are available

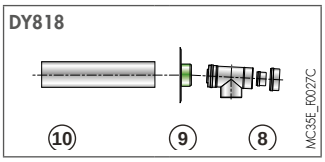






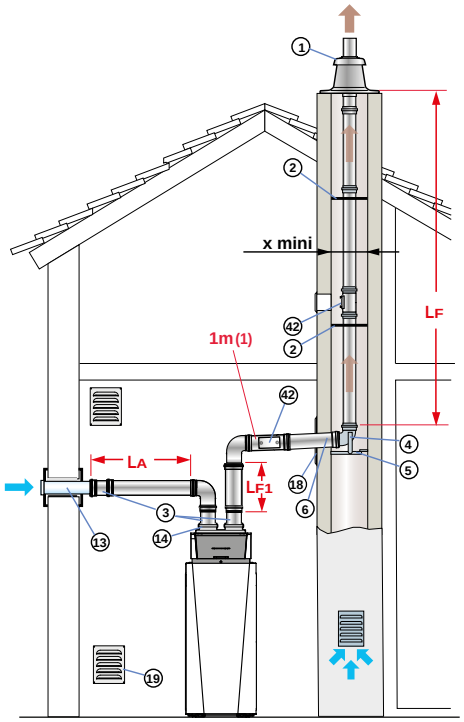

① Terminal with flashing
② Centring stars
③ Ø 100/150 to 110/150 adaptor
④ 87° elbow
④a Adaptor part
⑤ Support rail
⑥ Extension 0.5 m
⑧ Inspection T
⑨ Chimney finishing plate
⑨a Chimney finishing plate Ø 80/125 mm (with elbow) for flex duct
⑨b Chimney finishing plate Ø 80/125 mm (without elbow) for flex duct
⑩ Galvanised sheath, L = 0.5 m
⑪ Concentric 0.5 m extension
㉓ Concentric inspection elbow

⑩ ⑨ ⑧

### OTHER FLUE GAS SYSTEM ACCESSORIES AVAILABLE

See "FLUE GAS SYSTEM" technical sheet

## 5 CONFIGURATION $C_{53}$ - SEPARATE AIR AND FLUE GAS PIPES IN PPS
(combustive air taken from outside)

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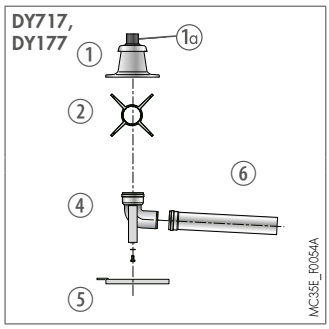
| | | $(L_A+L_{F1}+L_F)$ max (m) | |
|---|---|---|---|
| IN BOILER ROOM (mm) ▶ | | Ø 80/125 | Ø 100/150 |
| IN CHIMNEY (mm) ▶ | | 2 X Ø 80 | 2 X Ø 110 |
| ▼ BOILER TYPE | | | |
| C140-45 | | 16 | - |
| C140-65 | | - | 18 |
| C140-90 | | - | 21 |
| C140-115 | | - | 15 |
| x min | ⍁ | 140 | 140 |
| | Ø | 160 | 160 |

(1) For each additional metre of horizontal pipe, subtract 1.2 m from the vertical length Max. L indicated in the table below.

**PPS FLUE SYSTEMS ACCESSORIES** need as a minimum for connection with separate air and flue gas pipes (bi-flow)

| BOILER TYPE | CONNECTION Ø | | BI-FLOW ADAPTER | EXTERNAL AIR INLET | CHIMNEY CONNECTION KIT | FINISHING PLATE | ADAPTER | |
|---|---|---|---|---|---|---|---|---|
| Elidens C140-45 | - Ø 80/125 mm su 2 x 80 mm | Package no. | DY933 | DY38 | DY717 | DY757 | | - |
| | | Ref. | 7736229 | 84887438 | 84887717 | 84887757 | | - |
| Elidens C140-65, 90, 115 | - Ø 100/150 mm su 2 x 110 mm | Package no. | DY934 | DY810 | DY177 | DY879 | DY932 (Ø 100 mm su Ø 110 mm | + DY935 (Ø 110 mm su Ø 100 mm |
| | | Ref. | 7736230 | 100002285 | 84887577 | 100010270 | 7736228 | 7739839 |

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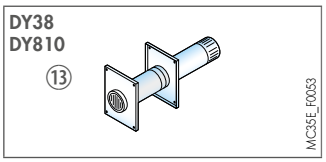


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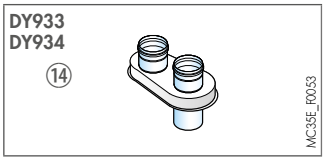


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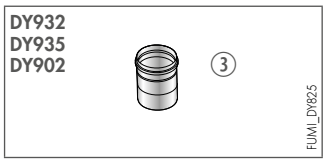


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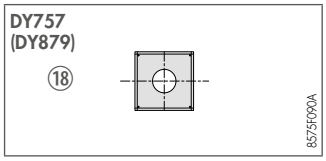


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① Terminal with flashing
①a Black PPs finishing tube, lg 0,345 m
② Centring stars
③ Adapter
④ 87° elbow
⑤ Support rail
⑥ Extension 0,5 m
⑬ External air inlet
⑭ Bi-flow adapter
⑱ Finishing plate

## OTHER FLUE GAS SYSTEM ACCESSORIES AVAILABLE
See "FLUE GAS SYSTEM" technical sheet

## WATER CONNECTIONS

IMPORTANT
Condensing boilers are based on the principle of recovering the energy contained in the steam from the flue gases (latent heat of 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 drain system. The connector must be removable, 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.

### CONNECTION TO THE HEATING CIRCUIT

The C140-... 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 transmitters to prevent any deposits which could lead to malfunctions (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 the installation is cleaned-flushed before it is fitted.
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 | 50 | 50 | 50 |
| Other components | mg/l | 1 | 1 | 1 |
| Total water hardness (1) | °f | 1 - 20 | 1 - 15 | 1 - 5 |
| | °dH | 0.5 -1 1.2 | 0.5 - 8.4 | 0.5 - 2.8 |
| | mmol/l | 0.1 - 2.0 | 0.1 - 1 .5 | 0.1 - 0.5 |

(1) 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.

### 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 controlled by the boiler's regulator; as a result, the boiler requires a flow rate proportional to its output/ΔT°.
The standard ΔT° is 15 to 40 °C/35 °C. However, a minimum flow rate must be respected.

| OPERATING FLOW RATE WITH THE LOW-LOSS HEADER KIT | | C140-... | | | |
|---|---|---|---|---|---|
| | | 45 | 65 | 90 | 110 |
| Minimum flow rate | L/h | 195 | 290 | 340 | 455 |

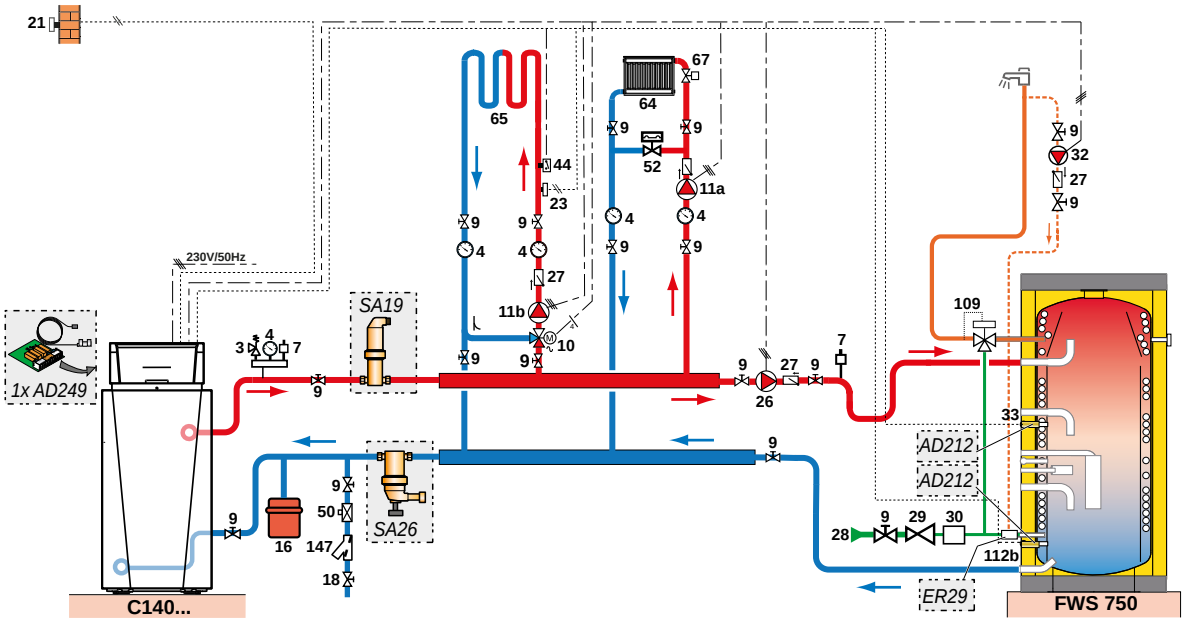
## INSTALLATION EXAMPLES

The examples shown 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 number of safety and control components (including some built into C140- boilers as standard) are shown, though ultimate responsibility for providing the final safety and control components in the boiler room, based on its individual requirements, lies with the installers, consultant engineers and design offices. In every case, it is important to comply with the applicable regulations and adhere to good industrial practice.

NB: When connecting on the domestic hot water side, if the distribution pipes are made from copper, a sleeve made from 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 phenomena on the connections.

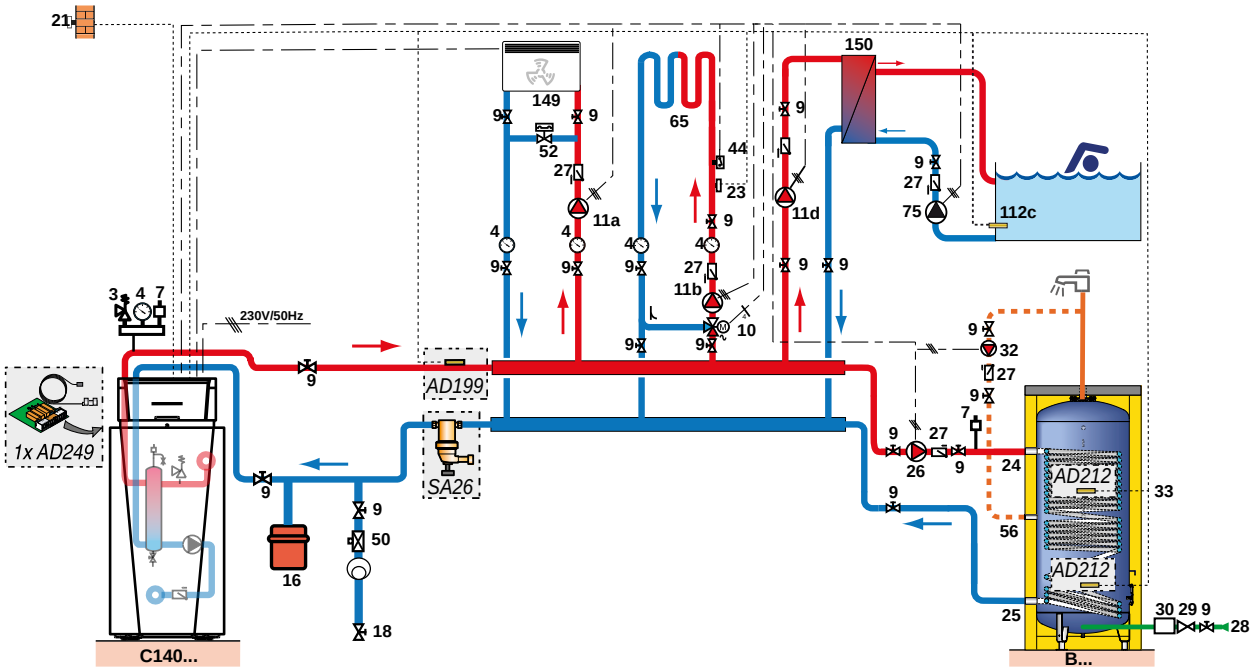
### C140-...

Installation of a C140-... with 2 circuits, 1 including a mixing valve and DHW production with an instantaneous DHW tank (tank with 2 DHW sensors).




### C140-... SH

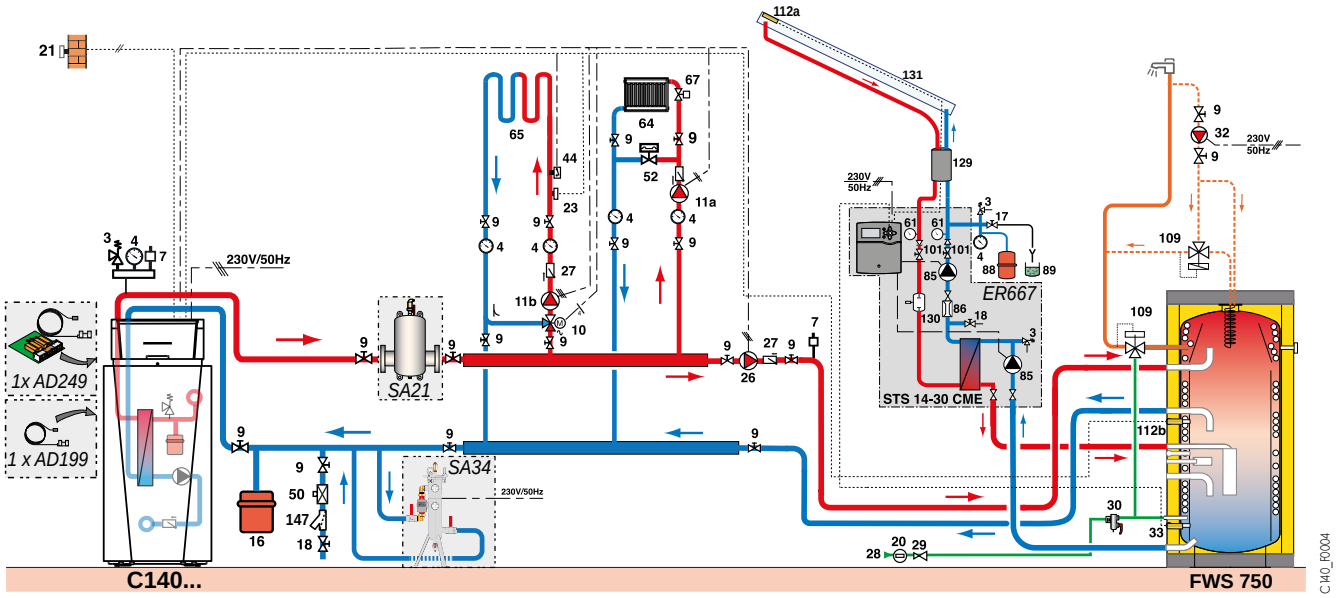
Installation of a C140-..., version SH, with 3 circuits: a direct zone with convection fans, 1 mixing zone and a zone with a pool. DHW is supplied via an independent tank with 2 DHW sensors.




KEY: see page 34

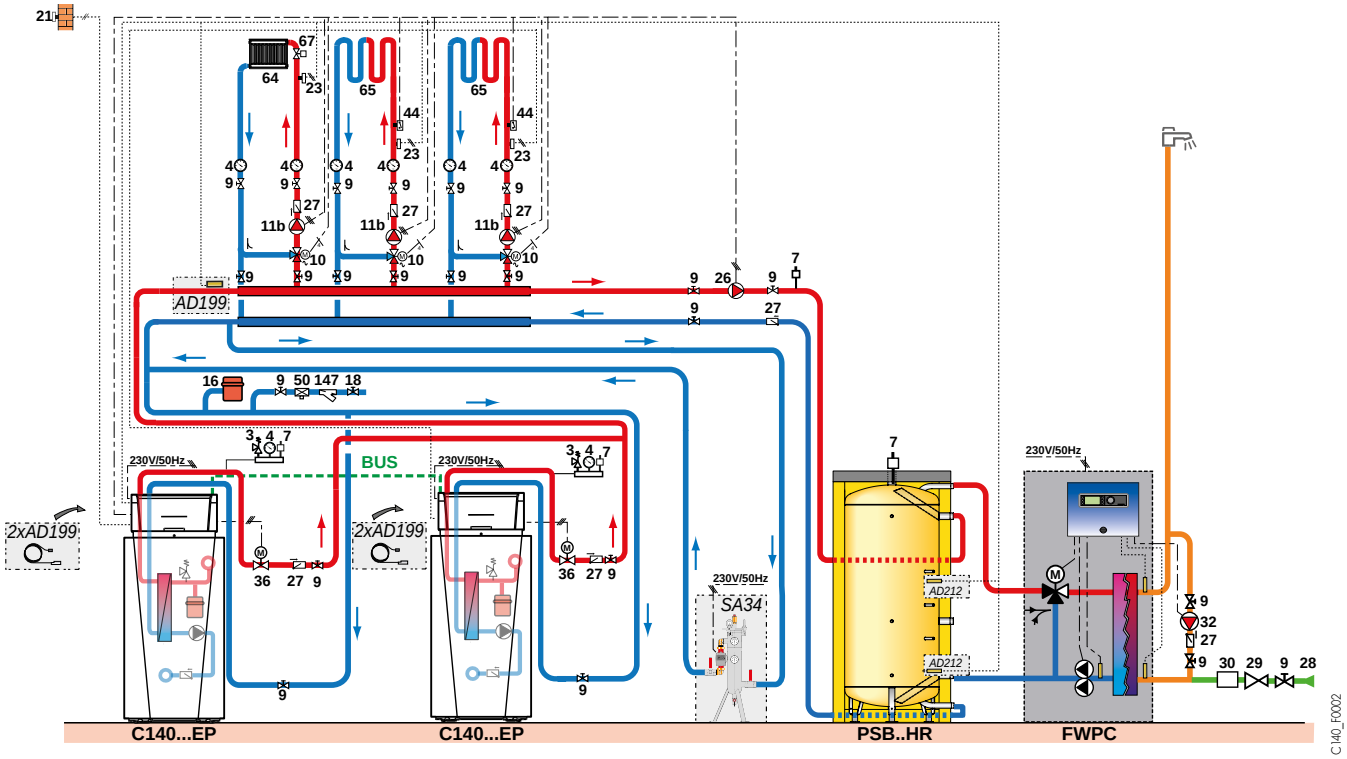
### C140-... EP

Installation of a C140-..., version EP, with 2 circuits: a direct zone and a mixing zone. DHW is made by a solar circuit linked to an instantaneous DHW tank.




### CASCADE OF 2 C140-... DIEMATIC EVOLUTION BOILERS, EP VERSION

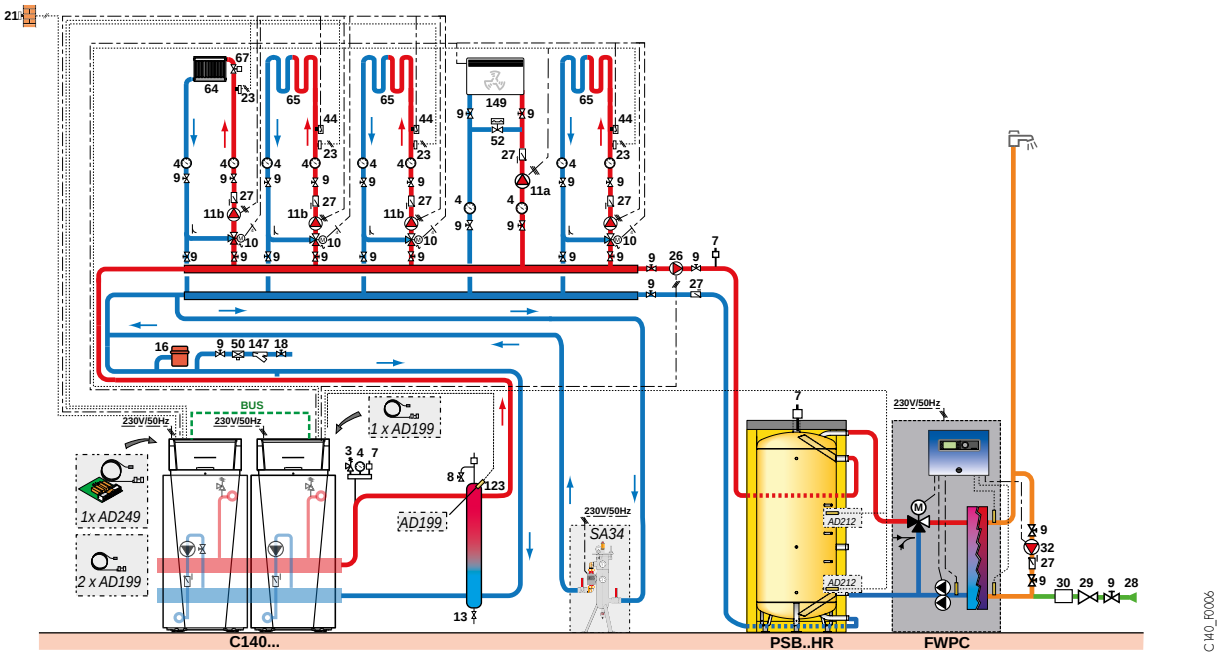
cascade installation of 2 C140-...DIEMATIC EVOLUTION. 3 mixing zones, a clarifier set shunted to the heating return to remove residue in the installation. DHW is made by an FWPC instantaneous domestic hot water tanks linked to a PSB buffer.




KEY: see page 34

## CASCADE OF 2 C140-... DIEMATIC EVOLUTION BOILERS

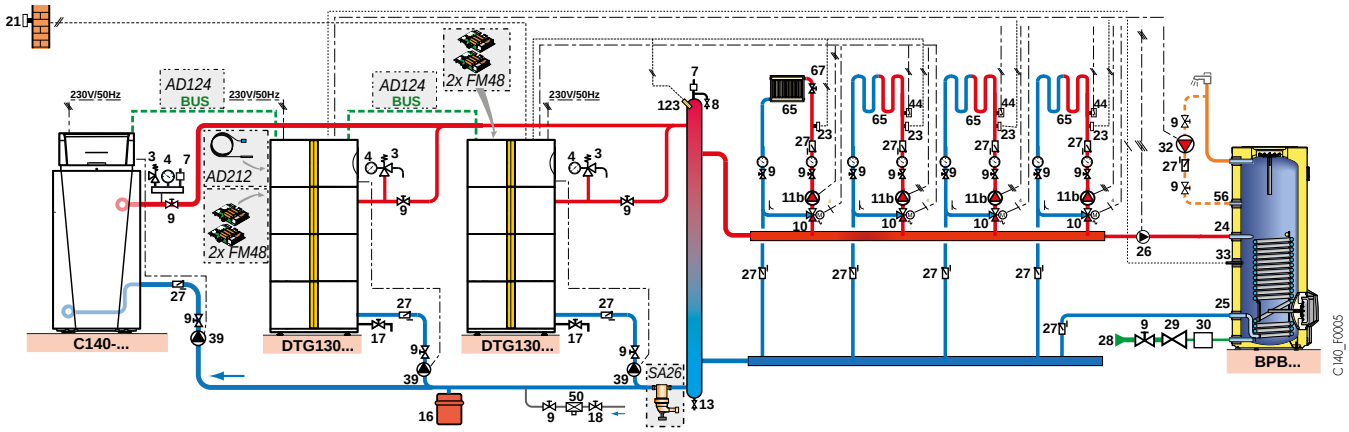
cascade installation of 2 C140-...DIEMATIC EVOLUTION. 4 mixing zones and a direct zone with convection fans. The equipment is mounted behind a low-loss header. A clarifier set is shunted to the heating return to remove residue in the installation. DHW is made by an FWPC instantaneous domestic hot water tanks linked to a PSB buffer.




C140_F0006

## CASCADE OF 3 BOILERS: A C140-... DIEMATIC EVOLUTION BOILER AND 2 DTG 130-... BOILERS

installation with a cascade of 3 boilers: a C140-...DIEMATIC EVOLUTION and 2 DTG 130-.... 4 mixing zones are mounted behind a low-loss header. DHW is made by an independent SHW tank.

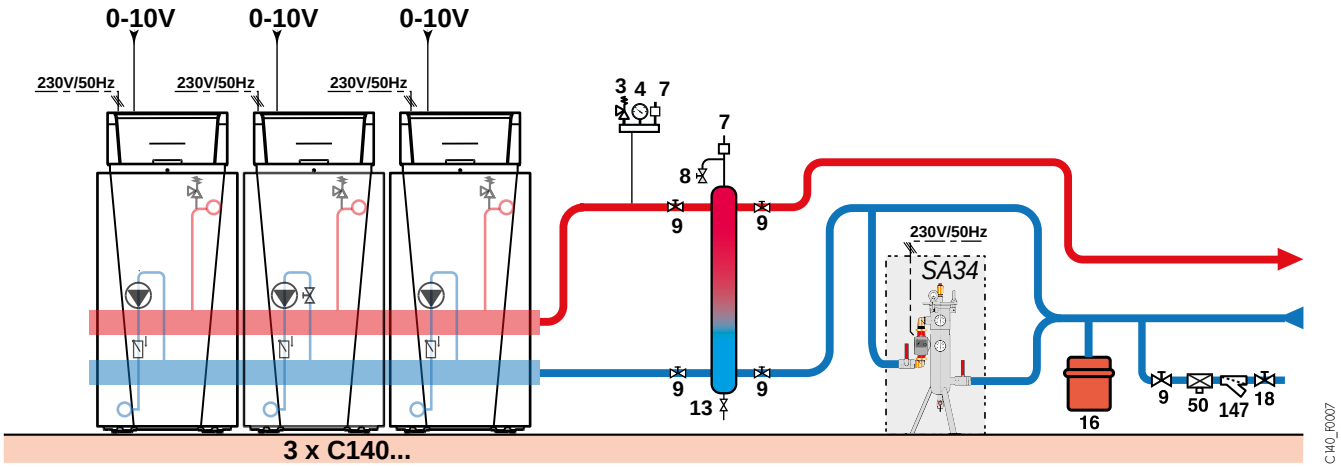



C140_F0005

**KEY:** see page 354

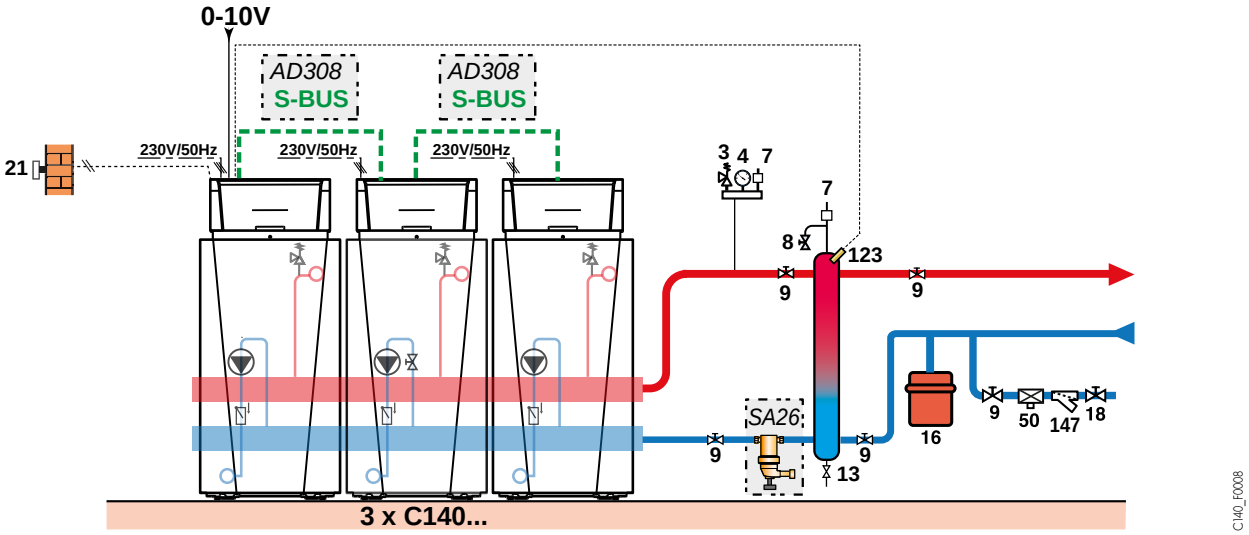
## CASCADE OF 3 C140-... INICONTROL 2 BOILERS

Model of a cascade of 3 C140-...Inicontrol 2 boilers, each controlled by a 0-10V signal from an controller in a control box.




## CASCADE OF 3 C140-... BOILERS: A C140-..DIEMATIC EVOLUTION LINKED TO 2 C140-...INICONTROL 2

Model of a cascade of 3 C140-... boilers: a C140-... DIEMATIC EVOLUTION controlled by a 0-10V signal from an controller in a control box linked to 2 C140- Inicontrol 2.




KEY: see page 354

**KEY**

3 Safety valve
4 Pressure gauge
7 Automatic air vent
9 Isolation valve
10 Mixing valve
11 Electronic heating pump
11a Electronic auto adjustment pump for direct heating circuit
11b Heating circuit pump with mixing valve
11d Pump for primary swimming pool circuit
13 Flush valve
16 Expansion vessel
17 Drain valve
18 Heating circuit filling
20 Water meter
21 Outdoor temperature sensor
23 Flow temperature sensor downstream of mixing valve
24 DHW tank exchanger primary inlet
25 DHW tank exchanger primary outlet
26 DHW 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
33 DHW temperature sensor
36 Motorised stop valve
37 Compensating valve
39 Injection pump
44 65°C limiter thermostat with manual reset for underfloor heating
46 Three-way directional valve, two positions
50 Disconnector
51 Thermostatic valve
52 Differential valve
56 DHW circulation loop return
61 Thermometer
64 Radiator circuit (e.g. gentle heating radiators)
65 Low temperature circuit (e.g. underfloor heating)
67 Manual radiator valve
75 Pump for DHW use
85 Solar primary circuit pump
86 Solar primary flow rate setting
88 18-litre expansion vessel
101 Non-return ball valve
109 Thermostatic mixing valve for DHW
112a Solar sensor probe
112b Solar DHW tank sensor
123 Cascade flow sensor
129 DUO Tube
130 Manual air vent degasser
131 Battery of flat or tubular collectors
147 500 micron filter + isolation valves
149 Convection fan

## FLOOR-STANDING GAS-FIRED CONDENSING BOILER FOR HEATING ONLY

**Brand:** De Dietrich
**Model:**
• C140-45
• C140-65
• C140-90
• C140-115
**Homologation:** $B_{23P}$, $C_{13X}$, $C_{33X}$, $C_{53}$, $C_{93X}$ $C_{43(X)}$, $C_{63(X)}$, $C_{83(X)}$
**Protection index:** IP X1B
**Power supply:** 230 V/50 Hz
**Gas category:** all natural gases, propane
**Nominal useful heating output determined at Qnom:** ... kW
**Intermediate useful heating output 30 % Qnom :** ... kW
**Min./max. useful heating output 50/30 °C:** ... kW/... kW
**Min./max. useful heating output 80/60 °C:** ... kW/... kW
**Efficiency on LHV at 30 % load (return temp. 30 °C):** ... %
**Efficiency on LHV at 100 % load (return temp. 70 °C):** ... %
**Max. temperature:** 90 °C
**Max. operating pressure:** 4 bar
**Seasonal efficiency, product SEE (without control system):** ... %
**Seasonal efficiency, product SEE (with outdoor temperature sensor):** ... %
**Standby losses at ΔT 30 K:** ... W
**Auxiliary electrical output (excluding circulating pump):** ... W
**Electrical output of auxiliaries in standby:** ... W
**Minimum water flow rate at T > 75 °C :** ... l/h
**Water content:** ... litres
**Flue gas outlet diameter:** ... mm
**Pressure available at boiler outlet:** ... Pa
**Dimensions:** 600 (L) x 1340 (H) x 605 (D) mm
**Net weight:** ... kg

### DESCRIPTION

Complies with the requirements of European directives.
Heating production will be provided by a sealed floor-standing gas-fired condensing boiler for heating only. Its exchanger will be a packaged aluminium-silicon alloy model with high corrosion resistance and a large exchange surface, operating **without minimum flow** (flow T° < 75 °C), and able to manage a **40 K difference** between the flow and the return. The exchanger will have low hydraulic pressure loss and will be accessible via the front of the boiler. The entire flue gas circuit will be easily accessible for maintenance. The gas burner will be a total premix model with woven metal fibre surfaces and a silencer on the air intake. Ignition and flame monitoring will take place with an ionisation electrode. The modulation range will be **20 to 100 %**. A condensate collector will be integrated and equipped with a siphon as standard. The boiler will be equipped with heating body flow/return sensors and a flue gas temperature sensor. A flue gas non-return valve will be integrated as standard in the boiler.

The boiler will be controlled via the **Diematic EVOLUTION** panel, which integrates a programmable electronic control system that can control up to 3 circuits with three-way valves, 1 direct circuit and 1 DHW circuit. PWM control of the boiler pump speed based on the burner output and the heating body ΔT°. This control system will communicate using Modbus RTU RS485 via our optional gateway.
The boiler will include a fault reporting output and a 0-10 V input.

### SPECIFIC FEATURES

Cascades of up to 8 boilers
• Diematic Evolution control system according to the outside temperature, enabling management of a direct circuit, DHW production and with an option of up to 2 valve circuits. Including heat energy metering, high temperature zone control and swimming pool functions.
• IniControl 2 control system for slave boilers or boilers controlled by 0-10V contact entry.

### BOILER OPTIONS

• Hydraulic connection valves kit
• Gas tap
• ErP primary modulating pump
• Low-loss header
• Condensate neutralisation station without lift pump
• Bracket for neutralisation station
• Granulate recharge (2 kg) for station
• Condensate neutralisation station with lift pump
• Granulate recharge (10 kg and 25 kg) for station
• Gas pressure regulator
• Heating body cleaning tool
• Flue gas system accessory for assembly compliant with prevailing standards

### CASCADE KIT OF 2 TO 8 BOILERS COMPRISING:

• Low-loss header
• Boiler connection collector
• Injection pumps
• Boiler connection hydraulic kits
• Optional insulating shells

### PRE-SIZED PLUG & PLAY HYDRAULIC LOW LOSS HEADER KIT COMPRISING

• A modulating pump actuated via PWM
• An insulated low-loss header with magnetic rod and deaerator
• Connection pipes to the boiler with a non-return valve and a safety valve. Secondary side pipes leading to the top of the boiler for easy connection.

### HYDRAULIC LOW-LOSS HEADER KIT WITH PRE-SIZED PLUS & PLAY EXCHANGER COMPRISING

• A modulating pump actuated via PWM, a non-return valve
• An automatic degassing device (primary side)
• An expansion vessel
• A plate heat exchanger with insulated low-loss header
• Connection pipes to the boiler and a 4-bar safety valve (primary side). Secondary side pipes with isolation valves leading to the top for easy connection. Max. secondary pressure 16 bar.

### CONTROL OPTIONS

• Wired remote control
• PCB + sensor for mixing valve
• S-BUS Diematic Evolution connection cable for cascade
• Buffer tank sensor
• DHW sensor or cascade flow sensor
• Dip sensor+sensor tube
• VM evolution (up to 3 additional valve circuits)
• GTW08 L-Bus Modbus RS485 communication gateway

De Dietrich

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