MODULENS O®

FUEL OIL CONDENSING BOILERS FROM 10.6 TO 30.0 KW

- AFC 18, 24, 30: for central heating only
- AFC.../V 100 HL: for heating and DHW production with 100 litres stratification calorifier placed under the boiler
- AFC.../B 160 SL: for heating and DHW production with 160 litres coil calorifier placed to the right or to the left of the boiler
- AFC.../VL 160 SL: for heating and DHW production with 160 litres coil calorifier placed horizontally under the boiler
- AFC.../B 220 SHL: for heating and DHW production with 220 litres solar calorifier placed to the right or to the left of the boiler

AFC 18, 24, 30 | AFC.../V 100 HL | AFC.../VL 160 SL | AFC.../B 160 SL | AFC.../B 220 SHL

AFC 18, 24, 30... :
For heating only

AFC.../V... and AFC.../B... :
For heating and DHW production

Condensing

Domestic fuel oil

EC identification No:
1312CN5691

The MODULENS O® range of boilers includes models for heating only and models composed of boilers combined with a 100-, 160- or 220-litre tank for DHW production. MODULENS O® boilers are fully equipped as standard with:
- A high energy efficiency modulating heating circulating pump (EEI < 0.23);
- An automatic air vent, a draining valve, the heating safety valve, a fuel oil filter, a siphon;
- A DIEMATIC iSystem control system that allows you, depending on the options connected, to control and regulate up to three circuits (and one DHW circuit) based on the outside temperature. It can also be used to optimise management of combined control systems (HP, solar) and control cascades of 2 to 10 boilers.

AFC boilers are delivered as standard either for chimney or forced flue connection.

CONDITIONS OF USE

Boiler:

Max. operating temperature: 85°C
Max. operating pressure: 3 bar
Safety thermostat: 95°C
Power supply: 230 V/50 Hz
Protection index: IP 21

Calorifiers:

Max. operating temperature: 70°C
Max. operating pressure: 10 bar
Max. solar operating pressure: 6 bar (220 SHL)

HOMOLOGATION

B_{23P}, B_{23}, C_{13}, C_{33}, C_{93}

PRESENTATION

The AFC 18, 24 and 30 boilers are fitted as standard with an high energy efficiency modulating heating pump, an automatic air vent, a draining valve, a heating safety valve, a fuel oil filter with deaerator and a condensate receiver tank with flue gas thermostat and large siphon. An 18-litre expansion vessel, package MV 4, can be ordered separatly.

The AFC…/V 100 HL models are composed of an AFC 18, 24 or 30 boiler combined with the 100-litre 100 HL (High Load) DHW tank placed under the boiler to form a uniform "column» and a boiler/tank connecting kit. The DHW tank is equipped with a TAS (Titan Active System®) anode, without consumption of material, guaranteeing protection of the tank, a draining valve, a coupling for a circulation loop, boiler/DHW tank connecting pipes, two DHW sensors, adjustable feet.
The 100 HL DHW tank is a high performance, enamelled stratification tank, equipped with a plate exchanger combined with a load pump. It is insulated with high density injected CFC-free polyurethane foam.

The AFC…/B 160 SL models are composed of an AFC 18, 24 or 30 boiler combined with the 160-litre 160 SL (Standard Load) DHW tank and a boiler/tank connecting kit. The DHW tank can be placed to the right or left of the boiler. It is equipped with a TAS (Titan Active System®) anode, without consumption of material, guaranteeing protection of the tank, a draining valve, a coupling for a circulation loop, boiler/tank connecting pipes, a DHW sensor, adjustable feet.
The 160 SL DHW tank is an enamelled coil DHW tank. It is insulated with high density injected CFC-free polyurethane foam.

The AFC…/VL 160 SL models are composed of an AFC 18, 24 or 30 boiler combined with the 160-litre L 160 SL (Standard Load) DHW tank and a boiler/tank connecting kit. The DHW tank is placed horizontally under the boiler. He can be placed completly against the wall to enable space saving. It is equipped with a TAS (Titan Active System®) anode, without consumption of material, guaranteeing protection of the tank, a draining valve, a coupling for a circulation loop, boiler/tank connecting pipes, a DHW sensor, adjustable feet.
The L 160 SL DHW tank is an enamelled coil DHW tank. It is insulated with high density injected CFC-free polyurethane foam.

The AFC…/B 220 SHL models are composed of an AFC 18, 24 or 30 boiler combined with the 220-litre 220 SHL solar DHW tank and a boiler/tank connecting kit. The DHW tank can be placed to the right or left of the boiler. The solar DHW tank is equipped with a TAS (Titan Active System®) anode, without consumption of material, guaranteeing protection of the tank, a draining valve, a coupling for a circulation loop, two DHW sensors, adjustable feet.
It is also equipped with a complete solar unit: pump, expansion vessel (delivered separately – Package ER 229), safety unit, air vent, glycol tank, solar control system.
The 220 SHL solar DHW tank is an enamelled stratification tank equipped with a plate exchanger combined with a load pump and a coil for connection to a solar system. It is insulated with high density injected CFC-free polyurethane foam.

High levels of performance

- Annual operating efficiency up to 105%,
- Requires little floor space:
  Width 600 mm/Depth 680 mm
- Low pollution emission:

MODULENS O®	**NOx* (mg/kWh)**	**CO* (mg/kWh)**
AFC 18…	47	6
AFC 24…	45	1
AFC 30…	56	4

* In accordance with EN 15034, nitrogen content of the fuel oil: 91 mg/kWh, CO_2: 12%

Strong points

- **Single-unit stainless steel exchanger** with very thick walls for enhanced resistance to corrosion, with vertical 3-path flue gas circuit and large combustion chamber;
- Combustion chamber door in aluminium with flame viewing opening;
- Perfect adaptation of boiler output to actual needs thanks to the brand new EcoNOx fuel oil burner, modulating from 59 to 100% output, positioned vertically and controlled by the DIEMATIC iSystem control system (see p. 6);
- **DIEMATIC iSystem** control panel in which the control system is open to all installation configurations, including the most complex. As delivered, it can be used to control and regulate a direct circuit.
  With the addition of a sensor, it can be used to regulate a direct circuit and a circuit with mixing valve; with the addition of a PCB + sensor, it can control a second circuit with mixing valve. Installation of a DHW sensor enables regulation with priority to a DHW circuit. It is specifically designed to enable **the optimization of management of combined systems**. (solar systems). The position of the control module is adjustable for ease of use regardless of height;
- The boilers are delivered either for connection to a chimney, or with the choice of a horizontal forced flue in PPS Ø 80/125 mm (Package FM 183) + elbow (Package DY 131) or vertical forced flue Ø 80/125 mm (Package DY 843);
- Easy commissioning and maintenance: hole for carrying bars, support bracket for putting the burner in the vertical position, opening in the bottom of the combustion chamber for flushing, cleaning brushes provided, adjustable feet.

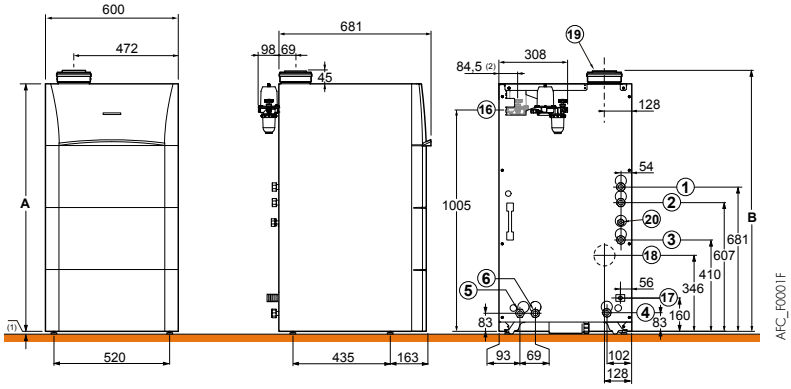
MODELS AVAILABLE

	Model		Nominal output at 50/30°C kW	Boiler	Expansion vessel	Calorifier (DHW sensor included)	Boiler/ calorifier connecting-set	Solar expansion vessel
Heating only	 AFC_Q0007	**AFC 18, 24, 30** For heating only	18	MV 1 +	MV 4	-	-	-
			24	MV 2 +				
			30	MV 3 +				
Heating and DHW production with calorifier	 AFC_Q0010	**AFC 18, 24, 30 /V 100 HL** With enamelled stratification calorifier «High Load» 100 litres	18	MV 1 +	MV 4	ER 225	MV 7 or MV 34	-
			24	MV 2 +	 +	 +		
			30	MV 3 +				
	 AFC_Q0008	**AFC 18, 24, 30 /B 160 SL** With enamelled coil calorifier « Standard Load » 160 litres	18	MV 1 +	MV 4	ER 223	MV 8 or MV 32	-
			24	MV 2 +	 +	 +		
			30	MV 3 +				
	 AFC_Q0019	**AFC 18, 24, 30 /VL 160 SL** With enamelled coil calorifier « Standard Load » 160 litres	18	MV 1 +	MV 4	EC 600	MV 7 or MV 34	-
			24	MV 2 +	 +	 +		
			30	MV 3 +				
Heating and DHW production with solar calorifier	 AFC_Q0009	**AFC 18, 24, 30 /B 220 SHL** With enamelled stratification calorifier «High Load» equipped with a solar exchanger 220 litres	18	MV 1 +	MV 4	ER 220	MV 11 or MV 35	ER 229 or JA 74
			24	MV 2 +	 +	 +		
			30	MV 3 +				

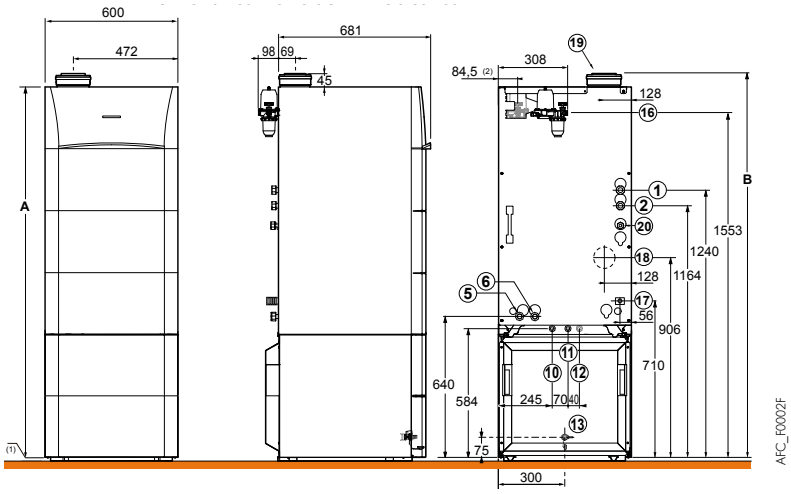
TECHNICAL SPECIFICATIONS

Main dimensions (mm and inches)

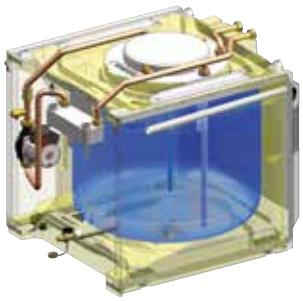
⇨ AFC 18, 24 and 30



⇨ AFC.../V 100 HL



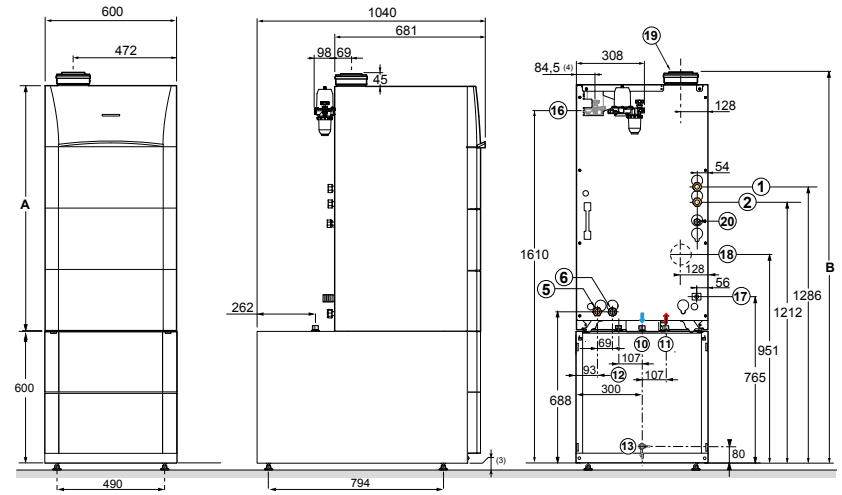
Calorifier 100 HL



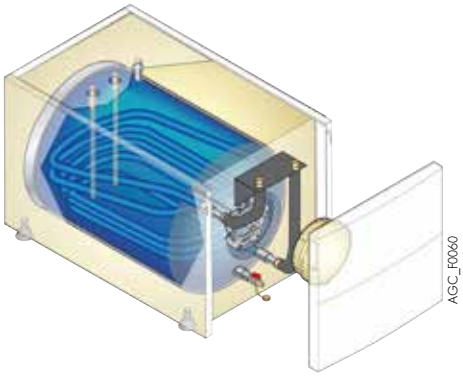
AGC_Q0024

Stratification DHW tank equipped with:
- a load pump
- a plate exchanger
- a draining valve
- protection of the enamelled tank by TAS (Titan Active System®)
- 2 x DHW sensors

⇨ AFC.../VL 160 SL



Calorifier L 160 SL

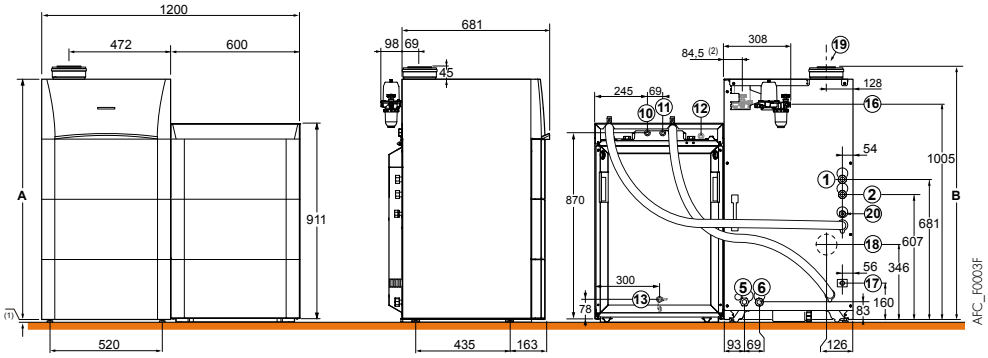


AGC_F0060

DHW coil calorifier equipped with:
- a draining valve
- a imposed current anode TAS (Titan Active System®) to protect the enamelled tank
- a DHW sensor
- a recirculation

TECHNICAL SPECIFICATIONS

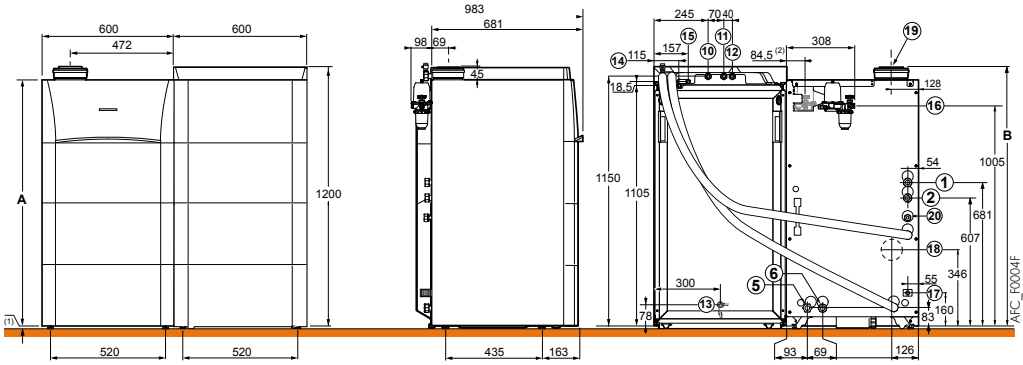
⇨ AFC.../B 160 SL



Calorifier 160 SL

DHW tank with tubular exchanger equipped with:
- a draining valve
- protection of the enamelled tank by TAS (Titan Active System®)
- a DHW sensor

⇨ AFC.../ B 220 SHL



Calorifier 220 SHL

Solar stratification DHW tank equipped with:
- a load pump
- a plate exchanger
- a draining valve
- protection of the enamelled tank by TAS (Titan Active System®)
- 2 DHW sensors
- a solar unit (pump, expansion vessel, safety unit, air vent, glycol tank, solar control system)

* For the AFC…/B 220 SHL version, the solar expansion vessel should be affixed to the wall.

	AFC, AFC/B 160 SL and AFC/B 220 SHL			AFC/V 100 HL			AFC/VL 160 SL		
	18	24	30	18	24	30	18	24	30
A (mm)	1113	1113	1193	1677	1677	1747	1113	1113	1193
B (mm)	1158	1158	1238	1722	1722	1792	1763	1763	1843

Legend

① Heating flow direct circuit G 1
② Heating return direct circuit G 1
③ ④ Primary inlet/return from independent DHW calorifier G 3/4
(with package MV 18 or MV 33*: internal connecting pipes for the connection of an independent DHW calorifier including load pump)
⑤ ⑥ Heating flow/return circuit with mixing valve G 1
(with package MV 5 or MV 31*: internal pipes kit with motorised 3-way valve, or with package MV 6: internal pipes only kit-option)
⑩ Domestic cold water inlet G 3/4
⑪ Domestic hot water outlet G 3/4
⑫ DHW circulation loop return G 3/4
(with package ER 218: recirculation kit for 100 HL calorifiers or with package ER 219: recirculation kit for 160 SL and 220 SHL – options)
⑬ Drain tap connection for pipe Ø ext. 14 mm
⑭ Primary inlet from solar coil Cu 18 mm
⑮ Primary outlet from solar coil Cu 18 mm
⑯ Oil supply G 3/8
⑰ Condensate evacuation, tube Ø ext. 25 mm
⑱ Flue outlet low Ø 80 mm (AFC… E with package MV 9 – option)
⑲ AFC…E: Flue connection Ø 80 mm
AFC…FF: Air/flue connection Ø 80/125 mm

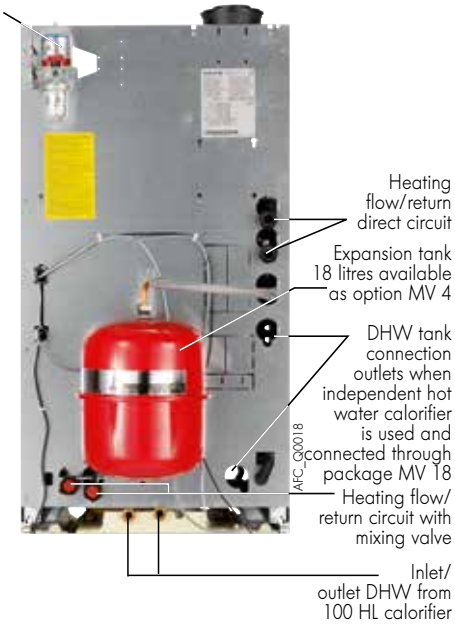
(1) Feet adjustable from 10 to 30 mm.
(2) In case of mounting the oil filter with deaerator outside the boiler
* Package including a high energy efficiency pump

TECHNICAL SPECIFICATIONS

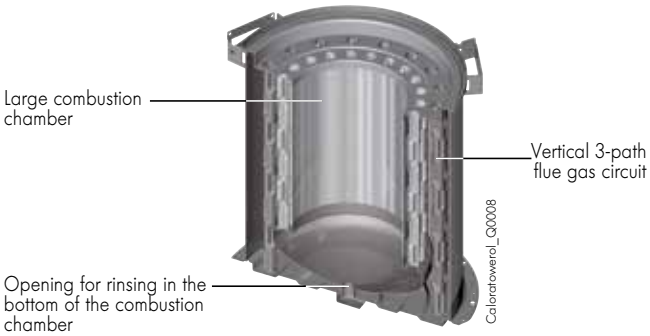
Main components

AFC.../V 100 HL

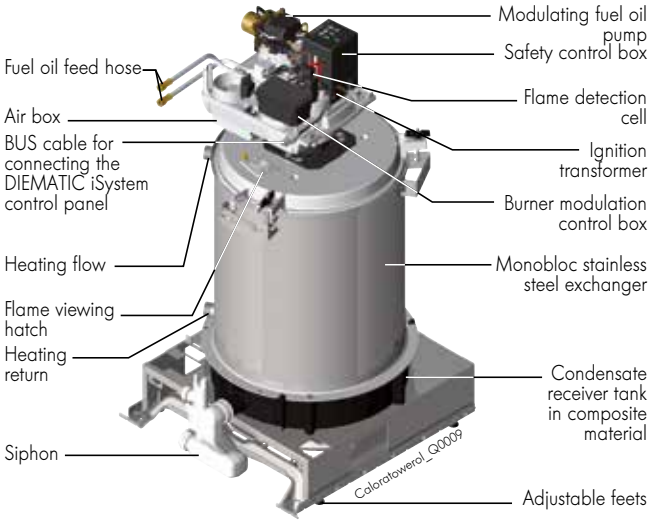
Back view AFC/V 100 HL



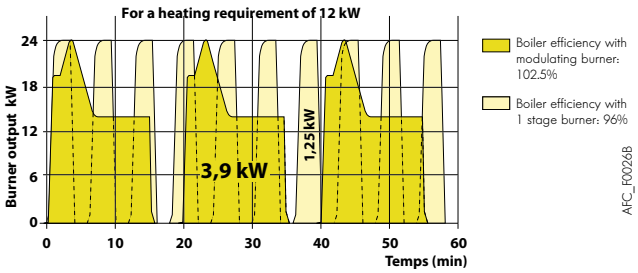
Details of the single-unit heat exchanger in stainless steel



Preset EcoNOx fuel oil boiler vertically positioned



The burner that comes in a brand new design, with a broad modulation range (from 59 to 100%) is controlled by the BUS connected to the boiler.
An optimized combustion system also reduces CO and NOx emissions and electricity consumption, a **saving of 6 to 8% in useful efficiency at 50/30°C** compared with a 1-stage burner:
Example: for a heating requirement of 12 kW, with AFC 24 boiler view:



Over one hour, the modulating burner on the AFC 24 will start up only three times, delivering an output of 3.9 kW each time.
A conventional 1-stage burner would have started up ten times, delivering an output of 1.25 kW each time.

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

Boiler models:
- AFC…: heating only
- AFC…/B…: heating + DHW production with calorifier placed at the right or the elft of the boiler
- AFC…/V…: heating + DHW production with calorifier placed under the boiler
- AFC…/VL…: heating + DHW production with calorifier placed horizontally under the boiler

Boiler type: condensing
Burner: built-in blower
Energy used: oil
Combustion evacuation: chimney or sealed
Min. operating temperature: 30°C

If using non-road diesel (NRD or ORD) with our boilers and burners, see recommendations in the current product catalogue

Boiler specifications

Model		AFC	18… 18/V…, VL… 18/B…	24… 24/V…, VL… 24/B…	30… 30/V…, VL… 30/B…
Nominal output at 50/30°C (heating mode)		kW	18.0	24.0	30.0
Efficiency in % of low calor.,	- 100 % Pn, at average temp. 70°C	%	97.2	97.1	97.4
power at load … %	- 100 % Pn, at return temp. 30°C	%	102.1	102.0	101.6
and water temp. … °C	- 30 % Pn, at return temp. 30°C	%	102.4	102.3	102.0
Nominal water output at Pn Δt = 20 K		m^3/h	0.773	1.032	1.291
Stand-by losses at Δt = 30 K		W	109	109	128
Losses through the outer casing		%	61	61	63
Auxiliary electrical power at Pn (without pump)		W	162	167	189
Electrical power circulating pump (1)		W	33	33	33
Electrical power at zero load		W	6	6	6
Min.-max. useful output	- 50/30°C	kW	10.6-18.0	14.1-24.0	17.6-30.0
range at	- 80/60°C	kW	10.0-17.1	13.4-22.8	16.7-28.6
Water content		l	47	47	58
Water resistance at Δt = 20 K		mbar	64	84	109
Flue gas mass flow rate		kg/h	27	36	45
Pressure available at the boiler outlet		Pa	30	50	70
Manometric height available heating circuit		mbar	679	633	565
Net weight	- AFC	kg	113	113	133
	- AFC/V 100 HL	kg	169	169	189
	- AFC/B 160 SL, AFC/VL 160 SL	kg	201	201	221
	- AFC/B 220 SHL	kg	232	232	252

(1) Variable speed pump, controlled by the boiler

DHW specifications

Model	AFC…		18… /V 100 HL	24… /V 100 HL	30… /V 100 HL	18… /VL 160 SL	24… /VL 160 SL	30… /VL 160 SL	18… /B 160 SL	24… /B 160 SL	30… /B 160 SL	18… /B 220 SHL	24… /B 220 SHL	30… /B 220 SHL
Nominal output at 50/30°C		kW	18.0	24.0	30.0	16.2	22.0	27.0	18.0	24.0	30.0	18.0	24.0	30.0
DHW calorifier capacity		l	100.5	100.5	100.5	159	159	159	155.6	155.6	155.6	219.7	219.7	219.7
Flow per hour at Δt = 35 K (1)		l/h	440	590	740	400	535	670	440	590	740	440	590	740
Flow over 10 min at Δt = 30 K (2)		l/10min	220	240	260	230	235	240	230	235	240	210	225	240
Specific rate at Δt = 30 K (compl. with EN 13203) (2)		l/min.	22	24	26	21	23.5	24	21	23.5	24	21	22.5	24
Auxiliary electrical power in DHW mode*		W	70/45	70/63	120/85	70	70	120	70	70	120	70/45	70/63	120/85
Loss through the outer DHW casing at Δt = 45 K		W	62	62	62	75.5	75.5	75.5	80	80	80	117	117	117
Cooling constant		kWh/24h/K	0.34	0.34	0.34	0.24	0.24	0.24	0.26	0.26	0.26	0.28	0.28	0.28

*Primary side/Secondary side
(1) DHW performances at room temperature at Pn: 20°C, cold water temp. at Pn: 10°C, primary hot water: 80°C
(2) DHW performances at room temperature at Pn: 20°C, cold water temp. at Pn: 10°C, primary hot water: 85°C, storage temp.: 60°C

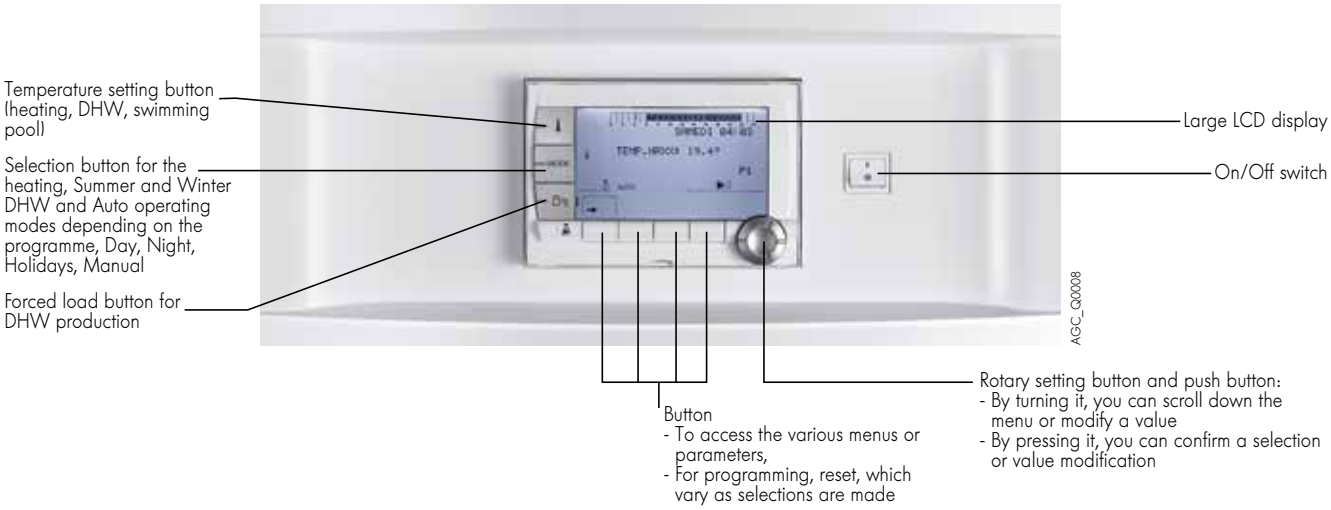
Solarside specifications

Model	AFC…	… /B 220 SHL
Solar volume/back-up volume	l	135/85
Solarexchanger capacity	l	8.4
Exchanger surface	m^2	1.25

DIEMATIC iSystem CONTROL PANEL

DIEMATIC iSystem control panel

The DIEMATIC iSystem control panel is a very advanced control panel, with new control ergonomics which includes electronic programmable regulation as standard to modulate the boiler temperature by activating the modulating burner according to the outside temperature and the room temperature if a CDI D. iSystem, CDR D. iSystem or simplified interactive remote control is connected (optional).
As standard, DIEMATIC iSystem is capable of automatically operating a central heating installation with a direct circuit without mixing valve and 1 circuit with mixing valve (the flow sensor - package AD 199 - must be ordered separately, however) except when using kit "Internal 3-way valve" - package MV 5/MV 31 - where this valve is included).
By connecting another "PCB + sensor for 1 valve circuit" option (package AD 249), it is therefore possible to control up to 3 circuits in total and each of these circuits can be fitted with a CDI or CDR D. iSystem remote control (optional).
Connection of a domestic hot water sensor makes it possible to programme and regulate a DHW circuit.
This control system has been specifically developed to enable **optimum management of systems combining various heating generators** (boiler + heat pump or + solar system…).
It allows the installer to set the parameters for the entire heating installation regardless of its degree of complexity.
In the context of larger installations, it is also possible to connect 2 and as many as 10 boilers in cascade.
The connection of other additional circuits is also possible using the DIEMATIC VM iSystem control system.



DIEMATIC iSystem control panel options

Domestic hot water sensor - Package AD 212

This is used for regulating the DHW temperature as a priority and programming of domestic hot water production with an independent calorifier.

Sensor for mixing valve - Package 199

This sensor is required to connect the first circuit with mixing valve to a boiler fitted with a DIEMATIC iSystem control panel, except when using kit " 3-way valve " - package MV 5/ MV 31 (where this valve is included).

PCB + sensor for 1 mixing valve - Package AD 249

This is used to control a mixing valve with an electromechanical or electrothermal motor. The PCB is inserted into the DIEMATIC iSystem panel connected by pin connections. DIEMATIC iSystem can receive 1 "PCB + sensor" option, enabling it to control 1 additional mixing valve.

Sensor for storage tank - Package AD 250

Includes 1 sensor for managing a storage tank with a boiler fitted with a DIEMATIC iSystem control panel.

DIEMATIC iSystem CONTROL PANEL

DIEMATIC iSystem CONTROL PANEL OPTIONS

AD 284/285

CALENTA_Q0005

AD 252

8666Q172A

CDI D. iSystem interactive remote control - Package AD 285
CDR D. iSystem interactive "radio" remote control (without transmitter/receiver radio) - Package AD 284
Radio boiler module DIEMATIC iSystem (transmitter / receiver) - Package AD 252

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

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

8575Q037

Simplified remote control with room sensor - Package FM 52

This is used from the room in which it is installed to override certain instructions from the DIEMATIC iSystem panel:
- room temperature program and instruction override. It is also used to enable the self-adaptability of the heating curve for the circuit concerned (1 remote control per circuit).

8227Q020

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

The BUS cable is used to make the connection between 2 boilers fitted with the DIEMATIC iSystem control panel in a cascade installation, as well as the connection of a DIEMATIC VM iSystem control unit or a telemonitoring network transmitter.

AD 251

8575Q034

AD 252

8666Q172A

Radio outside temperature sensor - Package AD 251
Boiler radio module (radio transmitter) - Package AD 252

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

If this sensor is used:
- With a wire connection remote control (AD 285 or FM 52), it is necessary to order the "Boiler radio module"
- With a radio remote control (AD 284), already associated with "Boiler radio module" (AD 252) the ordering of a second module is not required.

VM_Q0001

Control system (wall-mounted) DIEMATIC VM iSystem - Package AD 281

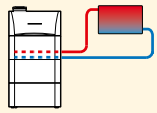
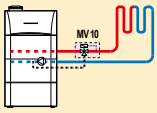
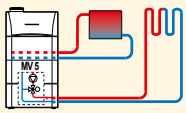
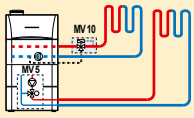
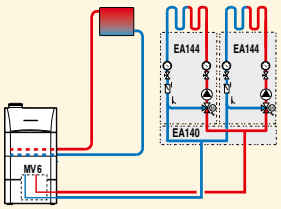
The DIEMATIC VM iSystem electronic control system, incorporated in a wall-mounted box, is used to manage and control two heating circuits and a DHW circuit and each of the heating circuits may be a direct circuit or a circuit with motorised 3-way mixing valve.
It is possible to interlink up to 20 DIEMATIC VM iSystem control systems and thus configure numerous combinations, regardless of the type of installation:
- DIEMATIC VM iSystem can be used in combination with an existing generator to control additional heating and DHW circuits;
- DIEMATIC VM iSystem can also be used fully autonomously on its own to control heating and DHW circuits according to the outside temperature (sensor to be ordered separately – package FM 46) independently of the generator;
- DIEMATIC VM iSystem can control a boiler via OpenTherm (existing outlet on VM iSystem) for a boiler equipped with an OpenTherm bus, or as «ON/OFF» via the auxiliary contact for any other generator (burner, HP, wood-fired boiler…);
- DIEMATIC VM iSystem can control a cascade of boilers:
  - Equipped with a DIEMATIC control panel
  - Equipped with an OpenTherm BUS via an interface board (1 board per generator).«

BOILERS OPTIONS

Hydraulic modules

Using the various elements presented below, it is possible to put together complete hydraulic connection kits depending on the installation to be constructed.

List of packages required depending on the type of installation to be constructed:

	1 direct radiator circuit	1 direct underfloor heating circuit	1 circuit with mixing valve + 1 direct radiator circuit	1 circuit with mixing valve + 1 direct radiator circuit (or underfloor heating)	3 circuits whose 2 with mixing valve
Type of installation to achieve					
AFC… AFC…/V…, VL… AFC…/B…	–	MV 10	MV 5 or MV 31	MV 5 or MV 31 + MV 10	MV 6 + EA 140 + 2 x EA 144 (1)
Control system options needed	–	–	–	–	PCB AD 249 Sensor AD 199

AFC_F0024C

(1) The boiler/collector connections should be made by the installer

MV 5/MV 31

AFC_Q0011

Internal 3-way valve kit (with engine and sensor for mixing valve) - Package MV 5
Internal 3-way valve kit with high energy efficiency pump - Package MV 31

Can be used to connect a circuit with mixing valve. This package includes the AD 199 sensor.

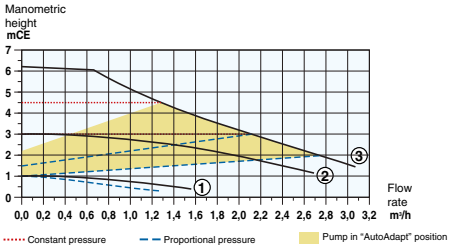
This kit is incorporated inside the boiler casing.

Specifications of the pump fitted to the internal 3-way valve kit MV 5

① Low speed ② Medium speed ③ High speed

Specifications of the pump fitted to the internal 3-way valve kit MV 31

AGC_F0023

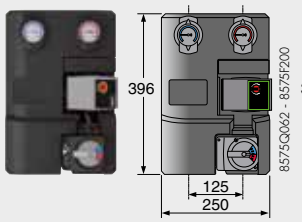


AFC_F0033

AFC_Q0012

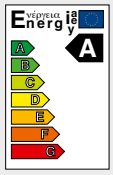
Internal adaptation kit for external 3-way valve - Package MV 6

Can be used to connect two circuits with mixing valve outside the boiler.



8575Q062 - 8575F200

EA 144

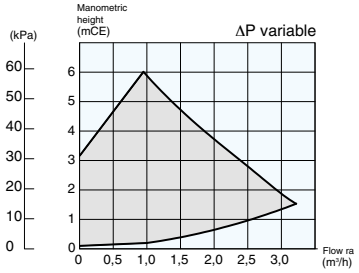


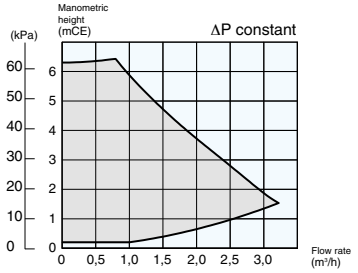
Picto_ENERGIE_A-A

Hydraulic module for 1 circuit with valve - Package EA 144
(with high efficiency modulating pump)

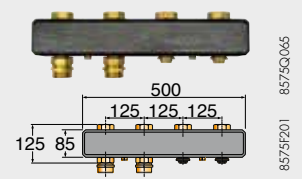
These modules are fully assembled, insulated and tested; fitted with an electronic pump, a motorized 3-way mixing valve, thermometers built into the gate valves and a non-return valve built into the outlet valve.

Specifications heating circulating pump WILO YONOS PARA RS25/6 fitted to the hydraulic module





8575F202A



8575Q065

8575F201

Collector for 2 or 3 circuits - Package EA 140

In the case of an installation with 2 or 3 circuits.

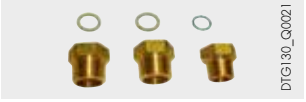
BOILERS OPTIONS

Hydraulic modules


8575Q066

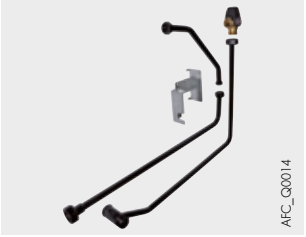
Wall bracket for collector - Package EA 141

This console is used to fix the collector EA 140 on the wall.


DTG130_Q0021

Set connection G in R (1" and 3/4") - Package BH 84

This kit includes 2 x G 1-R 1 fittings and 1 x G 3/4-R 3/4 fitting with gaskets and can be used to switch from flat gasket fittings to conical fittings (water tightness in the threading).


AFC_Q0014

Hydraulic limiter temperature for underfloor heating circuit - Package MV 10

This kit includes a thermostatic mixing valve and is connected to the boiler's exchanger terminals using the pipes provided to make it possible to limit the heating flow temperature if connected directly to an underfloor heating circuit with mixing valve.

Other options

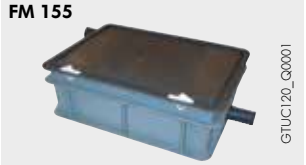

MCA_Q0138

Decoupling cylinder 60/60 - 1" - Package GV 45

For all installations with several circuits (1 direct circuit + 1 valve circuit) or for installations in cascade up to 70 kW, the use of a disconnecting cylinder is highly recommended.

The 60/60 - 1" cylinder is delivered insulated, fitted with a bracket to secure it to the wall and an accessories kit including a plug, an air vent and a 1/2" draining valve.

FM 155


GTUC120_Q0001

Condensates neutralisation station - Package FM 155

Delivered with carbon filter (0.5 kg) and marble granules (5 kg). The flow of condensates between the boiler and the station must be by gravity.

Carbon filter (0.5 kg) and marble granules (5 kg) refill for neutralisation station - Package FM 156

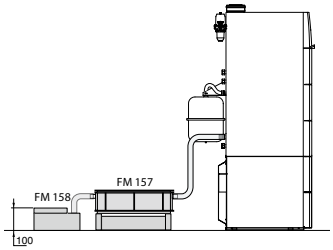
FM 158


GTUC120_Q0003

Lift pump for neutralisation station - Package FM 158

The flow of condensates between the station and the pump must be by gravity.

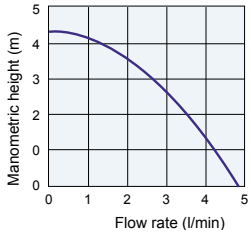
Installation diagram



AFC_F0025

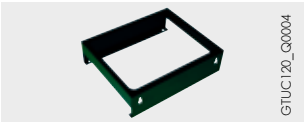
	Station base frame
AFC	height 50 mm to achieve
AFC/B… AFC/V… AFC/VL…	FM 157 or ≥ 50 mm to achieve

Specifications of the lift pump
(package FM 158)



GTUC120_F0007

As the condensates resulting from the combustion of fuel oil are acidic (pH 2) the installation of a station that neutralises the condensates before dispatching them into the waste water network is strongly recommended (and even compulsory in some regions). During annual maintenance operations, the efficiency of the granules must be checked by measuring the pH: replacement of the carbon filter and the granules is necessary if the pH is lower than 6.5.


GTUC120_Q0004

Neutralisation station holder - Package FM 157

Height adjustable from 100 to 165 mm.

BOILERS OPTIONS

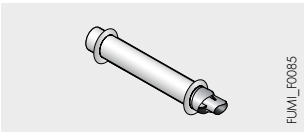
Other options

Kit rear exit for a chimney connection - Package MV 9

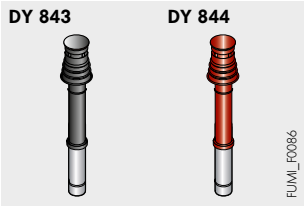
If using a chimney connection, this kit enables flue gas connection behind the boiler (no. ⑱ on dimensional diagrams on page 4). It includes a flue gas connection elbow and a plug for the boiler cover. It is put in place after removing the existing flue gas evacuation pipe and air inlet pipe.

Measure adapter Ø 80/125 mm PPS/Alu - Package MV 25

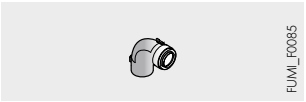
This sleeve is fitted to the existing air/flue gas outlet and is used to report the measurements taken outside the boiler to facilitate its use.



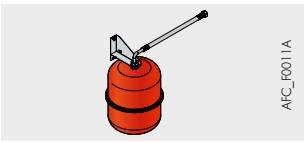
Horizontal forced flue Ø 80/125 mm – Package FM 83



Vertical forced flue Ø 80/125 mm black - Package DY 843
Vertical forced flue Ø 80/125 mm red - Package DY 844



Elbow Ø 80/125 mm – Package DY 131



Expansion vessel 18 litres – Package MV 4

18 liter solar expansion vessel - Package JA 74

This solar expansion vessel replaces the 12-litre delivered as standard with AFC…/220 SHL.

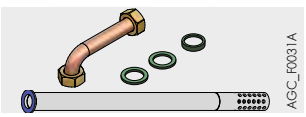
For DHW production

Domestic hot water sensor - Package AD 212

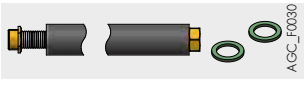
This is used for regulating the DHW temperature as a priority and programming of domestic hot water production with an independent calorifier.

Magnesium anode kit - Package EA 103

For the DHW tanks on the AFC…/V… and /B… models, if the "Titan Active System®" self-adapting current anode fitted as standard is not kept permanently switched on (in holiday homes, for example).



Recirculation kit for calorifier 100 HL - Package ER 218



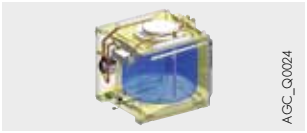
Recirculation kit for calorifier 160 SL and 220 SHL - Package ER 219

Internal connecting pipes for the connection of an independent calorifier - Package MV 18
Internal connecting pipes for the connection of an independent calorifier with high energy efficiency pump - Package MV 33

This kit includes the load pump, the nonreturn valve and the internal adaptation pipes for connecting an independent DHW tank to the boiler terminals, see AFC dimensional diagram on page 4 (no. ③ and ④).

BOILERS OPTIONS

DHW PRODUCTION WITH 100 HL CALORIFIER



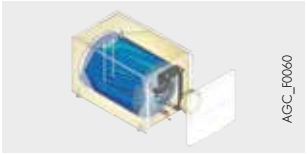
Calorifier 100 HL – Package ER 225

Stratification DHW tank equipped: with a load pump, a plate exchanger, a draining valve, protection of the enamelled tank by TAS, (Titan Active System®), two DHW sensors.

Boiler/calorifier 100 HL/L 160 SL connecting pipes – Package MV 7
Boiler/calorifier 100 HL/L 160 SL connecting pipes with high energy efficiency pump – Package MV 34

This units include the load pump with a set of flow/return pipes, a nonreturn valve

DHW PRODUCTION WITH L 160 SL CALORIFIER



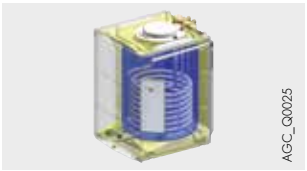
Calorifier L 160 SL – Package EC 600

DHW tank with tubular exchanger equipped: with a draining valve, protection of the enamelled tank by TAS (Titan Active System®), a DHW sensor.

Boiler/calorifier L 160 SL connecting pipes – Package MV 7
Boiler/calorifier L 160 SL connecting pipes with high energy efficiency pump – Package MV 34

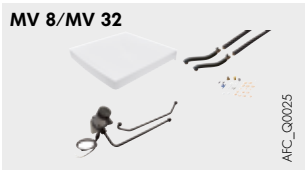
This units include the load pump with a set of flow/return pipes, a nonreturn valve

DHW PRODUCTION WITH 160 SL CALORIFIER



Calorifier 160 SL – Package ER 223

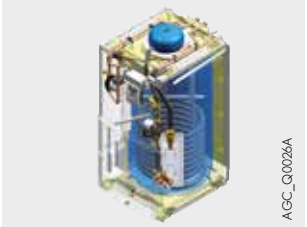
DHW tank with tubular exchanger equipped: with a draining valve, protection of the enamelled tank by TAS (Titan Active System®), a DHW sensor.



Boiler/calorifier 160 SL connecting pipes – Package MV 8
Boiler/calorifier 160 SL connecting pipes with high energy efficiency pump – Package MV 32

This units include the load pump with a series of flow/return pipes, nonreturn valves, air vents, two flexible pipes and a white cover.

DHW PRODUCTION WITH 220 SHL SOLAR CALORIFIER



Solar calorifier 220 SHL – Package ER 220

Solar stratification DHW tank equipped: with a load pump, a plate exchanger, a draining valve, protection of the enamelled tank by TAS (Titan Active System®), two DHW sensors, a solar unit (pump, expansion vessel, safety unit, air vent, glycol tank, solar control system).

Boiler/calorifier 220 SHL connecting pipes – Package MV 11
Boiler/calorifier 220 SHL connecting pipes with high energy efficiency pump– Package MV 35

This units include the load pump with a series of flow/return pipes, nonreturn valves, air vents, one flexible pipe and a white cover.

Solar expansion tank 12 litres – Package ER 229

BOILERS OPTIONS

SOLAR COLLECTORS RECOMMENDED FOR USE IN COMBINATION WITH AFC.../B 220 SHL

		Number of people at home from					
		Number of people at home to					
System		**DIETRISOL MODULENS O® with combined solar DHW calorifier/boiler and DIETRISOL collector type Input surface/Number**		**220-2 AFC.../B 220 SHL 1 x PRO D230 2.3 m²**		**220-4 AFC.../B 220 SHL 2 x PRO D230 4.6 m²**	
		Mounting type		**IT**	**ST**	**IT**	**ST**
Built into the roof							
	- for mechanical tiles (slope ⩾ 22°)	- Complete roof pack 2 m² i.e 1 x PRO D230	Package	ER 620	-	-	-
		- Complete roof pack 5 m² i.e 2 x PRO D230	Package	-	-	ER 621	-
	- for canal tiles (slope > 17°)	- Complete roof pack 2 m² i.e 1 x PRO D230	Package	ER 624	-	-	-
		- Complete roof pack 5 m² i.e 2 x PRO D230	Package	-	-	ER 625	-
Installation on roof (1)							
	- for mechanical tiles with universal alu bracket	- Complete roof pack 2 m² i.e 1 x PRO D230	Package	-	ER 430	-	-
		- Complete roof pack 5 m² i.e 2 x PRO D230	Package	-	-	-	ER 432
	- for mechanical tiless, mounting on rafters	- Complete roof pack 2 m² i.e 1 x PRO D230	Package	-	-	-	-
		- Complete roof pack 5 m² i.e 2 x PRO D230	Package	-	-	-	ER 434
	- for slate	- Complete roof pack 2 m² i.e 1 x PRO D230	Package		ER 431	-	-
		- Complete roof pack 5 m² i.e 2 x PRO D230	Package	-	-	-	ER 433
		- BIO heat transfer fluid (-30 °C)	Package	ER 316	ER 316	ER 316	ER 316

(1) For terrace mounting or other kinds of roof, see current catalogue for suitable fastening systems

INFORMATIONS REQUIRED FOR INSTALLATION

Statutory instructions on installation and maintenance

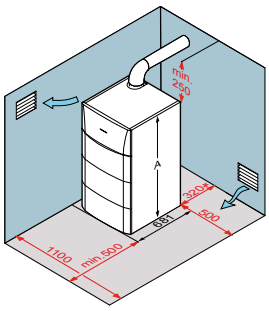
The installation and maintenance of the appliance in both residential buildings and establishments open to the public must be carried out by a qualified professional in compliance with the statutory texts of the codes of practice in force.

Location

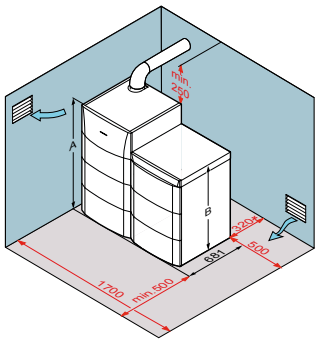
MODULENS O® condensing boilers must be installed in premises protected from frost, which can also be ventilated,
The dimensions shown are the minimum recommended dimensions for providing adequate access around the boiler.

Note: For installations with several boilers in cascade, these same dimensions should be respected for each boiler.

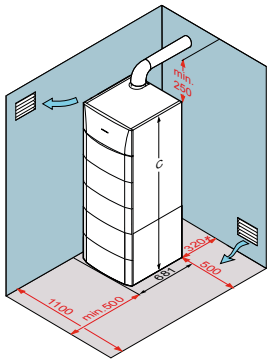
⇨ **AFC...**



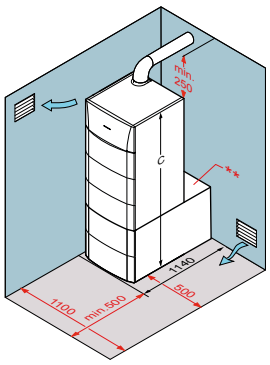
⇨ **AFC.../B...**



⇨ **AFC.../V...**



⇨ **AFC.../VL 160 SL**



AFC_F0022B

* With expansion vessel mounted on the back side, this dimension can be reduced at 100 mm when the expansion vessel is mounted on the wall.
** The calorifier L 160 SL can be placed directly against the wall.

	AFC 18, AFC 24	AFC 30	AFC 18/, AFC 24/				AFC 30/			
			V 100 HL	VL 160 SL	B 160 SL	B 220 SHL	V 100 HL	VL 160 SL	B 160 SL	B 220 SHL
A (mm)	1123	1203	-	-	1123	1123	-	-	1203	1203
B (mm)	-	-	-	-	931	1211	-	-	931	1211
C (mm)	-	-	1687	1713	-	-	1757	1793	-	-

In order to avoid damage to boilers, it is necessary to prevent the contamination of combustion air by chloride and/or fluoride compounds, which are particularly corrosive.
These compounds are present, for example, in aerosol spray cans, paints, solvents, cleaning products, washing powders/liquids, detergents, glues, snow clearing salts, etc.
It is therefore necessary:
- To avoid sucking in air discharged from premises using such products: hairdressers, dry cleaners, industrial premises (solvents), premises containing refrigeration systems (risk of leaking refrigeration fluid), etc.
- To avoid the storage of such products close to boilers.

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

Boiler room ventilation

The cross-section of the boiler room ventilation (through which combustive air is taken in) must comply with the prevailing standard.
- Air inlet: located in the lower section as close as possible to the boiler and with a cross section of Sb > 50 cm^2
- Evacuation of flue gas: this must allow effective ventilation, recommended cross section $Sh = \frac{2 \times Sb}{3}$

INFORMATIONS REQUIRED FOR INSTALLATION

Electrical connection

This must comply with the prevailing standard.
The boiler must be powered by an electrical circuit comprising a omnipole switch with an opening distance > 3 mm. Protect the connection to the mains with a 6 A fuse.

Note:
- The sensor cables must be separated from the 230 V circuits by at least 10 cm
- In order to protect the pump antifreeze and cleaning functions, we recommend not switching off the boiler at the mains switch.

Hydraulic connections

Important: The principle of a condensing boiler is to recycle the energy contained in the water vapour in the combustion gases (latent vaporisation heat). Consequently, to achieve an annual operating efficiency in the order of 105%, it is necessary to size the heating surfaces in such a way as to obtain low return temperatures, below the dew point (e.g. underfloor heating, low temperature radiators, etc.) during the entire heating period.

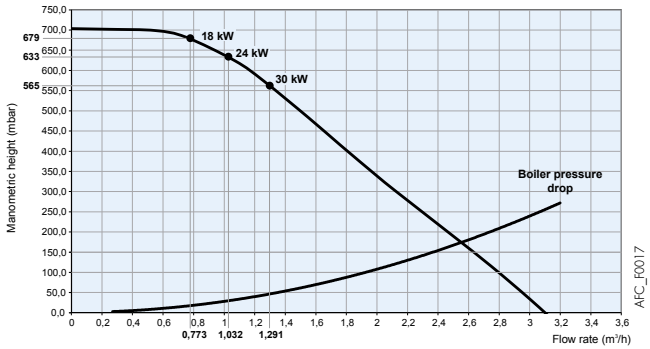
Connection to the heating circuit

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

Furthermore, it is important to protect central heating installations against the risk of corrosion, scaling and microbiological growth by using a corrosion inhibitor adapted to all types of systems (steel, cast iron radiators, heated floor, PER).
The water treatment products used must comply with regulations.

Manometric height for heating circuit at $\Delta t = 20$ K

➪ **AFC 18, 24 and 30… (with high energy efficiency circulator - GRUNDFOSS UPM2 15-70-130)**



Note:
AFC boilers are equipped with a modulating pump controlled by the control panel according to the Flow/Return temperature difference.

Condensates discharge

The siphon provided must be connected to the waste water discharge system. The connection must be removable and the flow of condensates visible. The connections and pipes must be in corrosion-resistant material. An optional condensates neutralisation system is available (Package FM 155 see page 11).

Examples of installation

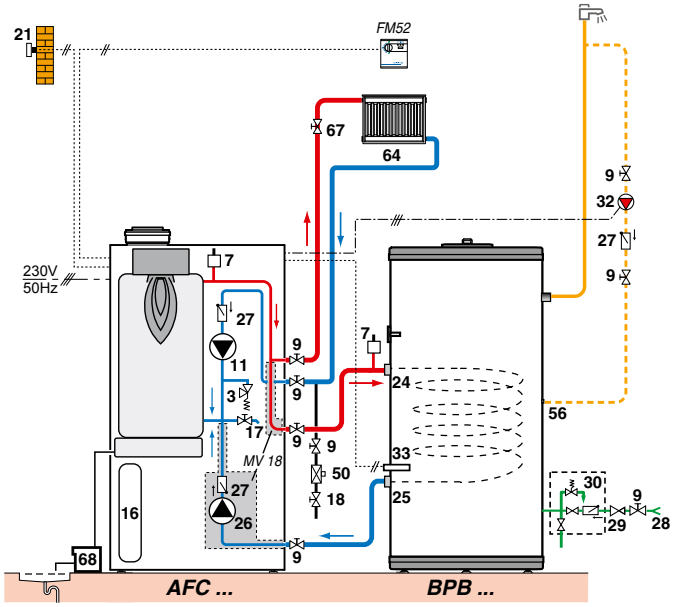
The examples presented below cannot cover the full range of installation scenarios which may be encountered.
Their purpose is to draw the attention to the basic rules to be followed. A certain number of control and safety devices (some of which are already integrated as standard in MODULENS O® boilers) are represented but it is ultimately up to installers, experts, consultant engineers and design departments to take the final decision on the safety and control devices to be used in the boiler room according to its specificities. In all cases, it is necessary to abide by the codes of practice and prevailing regulations.

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

EXAMPLES OF INSTALLATION

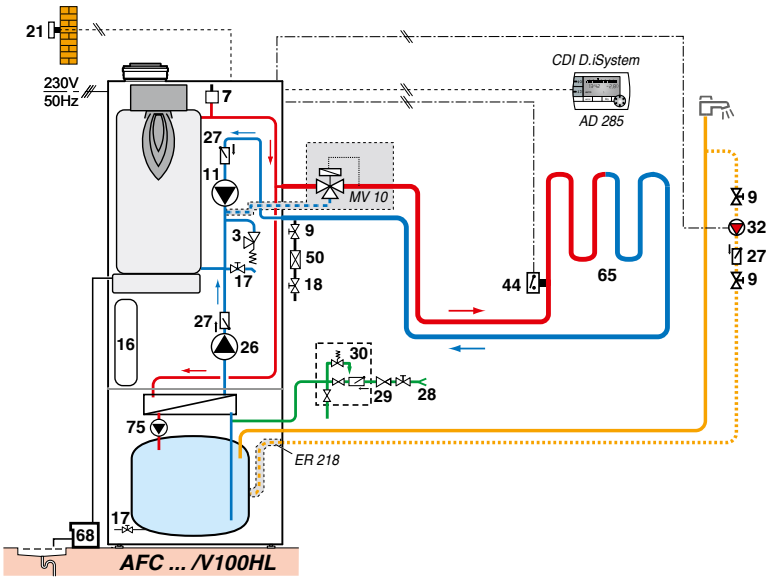
AFC... with 1 direct circuit (radiators) + 1 DHW production circuit with independent calorifier, outside temperature sensor, remote control

The package MV 18 can be replaced by the package MV 33 wich includes an high energy efficiency pump



AFC_F0018A

AFC.../V 100 HL with 1 direct circuit (underfloor heating circuit), 1 DHW production circuit, outside temperature sensor and a interactive remote control



AFC_F0019B

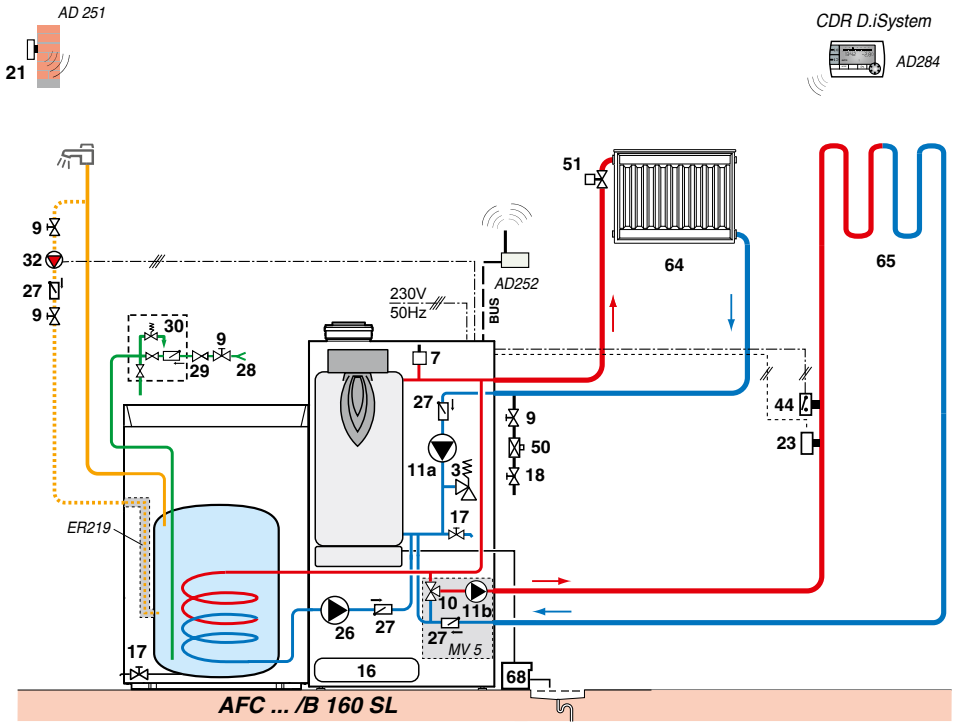
Legend

3 Safety valve 3 bar
4 Pressure gauge
7 Automatic air vent
8 Manual air vent
9 Isolation valve
11 Electronic heating pump
11a Electronic heating pump for direct circuit
11b Electronic heating pump for circuit with mixing valve
13 Flush valve
16 Expansion tank
18 Heating circuit filling
21 Outside sensor
23 Outlet temperature sensor after mixing valve
24 Primary inlet on the DHW tank exchanger
25 Primary outlet on the DHW tank exchanger
26 Domestic water load pump
27 Non-return valve
28 Domestic cold water inlet
29 Pressure reducer
30 Sealed safety device calibrated to 7 bars
32 (Optional) DHW loop pump
33 DHW temperature sensor
35 Decoupling cylinder (available as an option - see page 11)
44 65°C limiter thermostat with manual reset for underfloor heating
46 3 way-directional valve with motor reversing
50 Disconnector
51 Thermostatic valve
61 Thermometer
64 Radiator circuit (gentle heat radiators, for example)
65 Low temperature circuit (underfloor heating, for example)
67 Manual valve
68 Condensates neutralisation system
72 Hydraulic bypass
75 Domestic water pump
79 Primary outlet of the solar exchanger
84 Stop valve with releas non return valve
85 Solar circuit pump (to connect to the solar control)
87 Safety valve sealed and calibrated to 6 bar
88 Solar expansion tank
89 Recipient for heat transfer fluid
109 Thermostatic mixing valve
114 Solar circuit drainage valve (note: propyleneglycol)
130 Degasser with manual purge (Airstop)

(1) mandatory, in compliance with safety directives.

EXAMPLES OF INSTALLATION

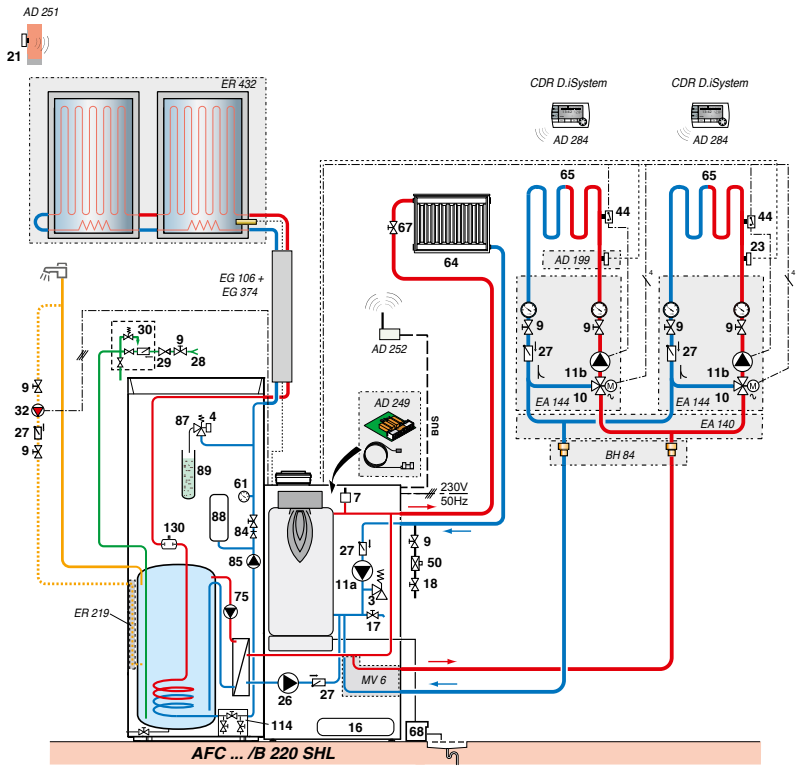
AFC…/B 160 SL with 1 direct circuit (radiators) + 1 circuit with mixing valve (mixing valve integrated in the boiler, underfloor heating), 1 DHW production circuit, outside temperature sensor and a wireless remote control



AFC_F0020

The package MV 5 can be replaced by the package MV 31 wich includes an high energy efficiency pump.

AFC…/B 220 SHL with 1 direct circuit (radiators) + 2 low temperature circuits, 1 solar system for DHW production with 2 DIETRISOL PRO D 230 collectors, outside temperature sensor and 2 wireless interactive remote controls



AFC_F0021C

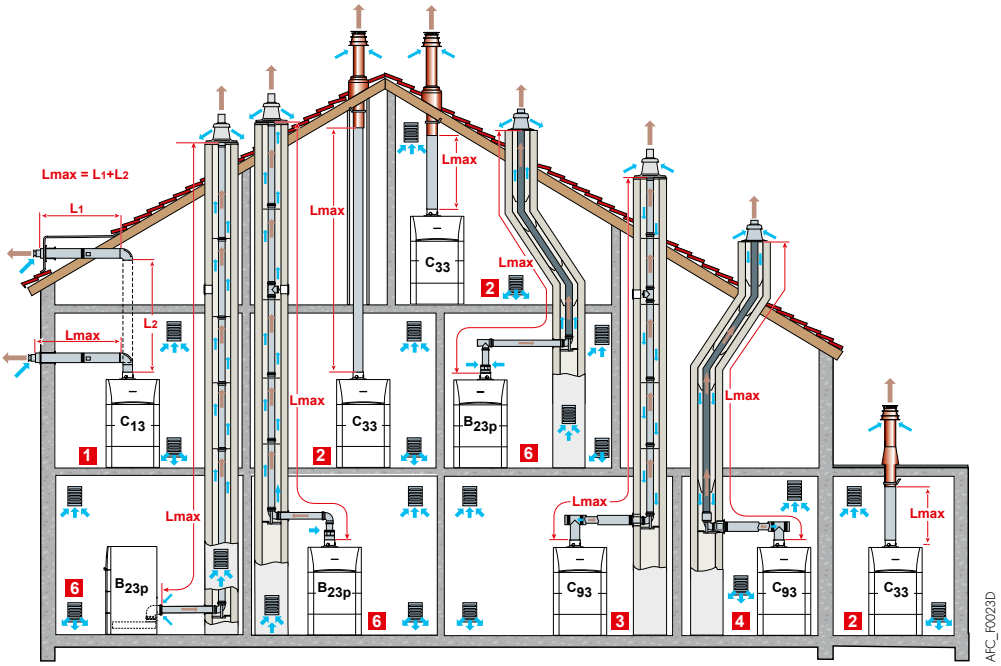
Legend: see page 17

INFORMATION REQUIRED FOR INSTALLATION

Air/flue gas connection

For the use of the air/flue gas connection pipes and the rules on installation, see details of the various configurations in the current product catalogue.

Classification



1 **Configuration C_{13}:** Air/flue gas connection by means of concentric pipes to a horizontal terminal (so-called forced flue)
2 **Configuration C_{33}:** Air/flue gas connection by means of concentric pipes to a vertical terminal (roof outlet)
or
3 **Configuration C_{93}:** Air/flue gas connection using concentric pipes in the boiler room and single pipes in the chimney (combustive air with counter current in the chimney)
or
4 Air/flue gas connection using concentric pipes in the boiler room and single "flex" pipes in the chimney (combustive air with counter current in the chimney)
6 **Configuration B_{23P}:** Connection to a chimney (combustive air taken from the boiler room)

Table of maximum air/flue gas pipe lengths admissible according to boiler type

Type of air/flue gas connection			L_{max} of the connecting pipes in m					
			AFC			AFC		
			18 E	24 E	30 E	18 FF	24 FF	30 FF
Concentric pipes connected to a horizontal terminal (**PPS**)	C_{13}	Ø 80/125 mm	-	-	-	8	8	8
Concentric pipes connected to a vertical terminal (**PPS**)	C_{33}	Ø 80/125 mm	-	-	-	8	8	8
Pipes - concentric in the boiler room, - single in the chimney (combustive air with counter current) (**PPS**)	C_{93}	Ø 80/125 mm Ø 80 mm	-	-	-	18	18	18
Pipes - concentric in the boiler room, - "flex" in the chimney (combustive air with counter current) (**PPS**)	C_{93}	Ø 80/125 mm Ø 80 mm	-	-	-	15	15	15
In the chimney rigid or flex, (combustive air taken from the premises) (**PPS**)	B_{23P}	Ø 80 mm (rigid)	18	18	18	-	-	-
		Ø 80 mm (flex)	15	15	15	-	-	-

Note: Lmax is measured by adding the lengths of the straight air/flue gas pipes and the equivalent lengths of the others sections:
- Ø 80/125 mm (PPS): elbow 87° = 1.5 m, elbow 45° = 1 m, inspection T= 2.6 m, straight inspection = 0.6 m, inspection elbow = 2 m
- Ø 80 mm (PPS): elbow 87° = 1.9 m, elbow 45° = 1.2 m, inspection elbow = 1.9 m, straight inspection = 0.3 m, inspection T = 4.2 m, 1 inspection pipe for flex pipe = 0.3 m

Important: Our gas-boilers have been designed, tested and approved using the air/flue gas pipes proposed in our catalogue, pursuant to the requirements of the prevailing NF EN 483 and XPD 35-430 standards. We guarantee the safety and correct operation of our boilers when they are installed with the approved flue systems and under the conditions recommended in our technical documentation.

DESCRIPTION

MODULENS AFC... FLOOR-STANDING FUEL OIL CONDENSING BOILER FOR CONNECTION TO A CHIMNEY OR A FORCED FLUE

Brand: De Dietrich
Directive, NOx classification: 5
Model:
- **AFC 18, 24, 30:** for heating only
- **AFC 18, 24, 30/V 100 HL:** for heating and domestic hot water preparation by associated 100 litre DHW stratification calorifier placed under the boiler.
- **AFC 18, 24, 30/B 160 SL:** for heating and domestic hot water preparation by associated 160 litre DHW calorifier with coil placed to the left or to the right of the boiler.
- **AFC 18, 24, 30/VL 160 SL:** for heating and domestic hot water preparation by associated 160 litre DHW calorifier with coil placed horizontally under the boiler.
- **AFC 18, 24, 30/B 220 SHL:** for heating and domestic hot water preparation by associated 220 litre Solar DHW tank placed to the left or to the right of the boiler.

Homologation: B_{23p}-B_{23}-C_{13}-C_{33}-C_{93}
Protection index: IP 21
Power supply: 230V/50Hz

Useful output in heating mode at 50/30°C (max.):
- AFC 18:_____kW
- AFC 24:_____kW
- AFC 30: _____kW

Specific flow in DHW mode:
- AFC .../V 100 HL: _____l/min
- AFC .../B 160 SL: _____l/min
- AFC .../VL 160 SL: _____l/min
- AFC .../B 220 SHL: _____l/min

Boiler:
Max. operating temperature: 85°C
Max. operating pressure: 3bar
Safety thermostat: 95°C

Calorifier:
Max. operating temperature: 70°C
Max. operating pressure: 10bar
Solar calorifier max. operating pressure: 6bar (220 SHL)

Dimensions: _____ x _____ x _____ mm
Weight empty: _____kg

DESCRIPTON

Complies with the requirements of European Directives.
New compact and ultra-responsive stainless steel exchanger.

EcoNOx fuel oil burner, modulating from 59 to 100% output, fitted with a silencer on the air intake.
The DIEMATIC iSystem control panel is a control panel with new control ergonomics and incorporates a programmable electronic control system as standard.
Suitable for managing a direct circuit + 1 valve circuit (optional flow sensor). Capable of managing 1 DHW circuit (sensor optional) and 1 additional valve circuit (PCB + sensor optional) and a DHW circuit.
New ergonomics and optimization of management of combined heating systems.

Boiler delivered and prefitted with, a high energy efficiency heating pump, 3 bar safety valve, heating/DHW reversal valve, automatic air vent.
- **AFC .../V 100 HL:** with enamelled, insulated 100 litre DHW "High Load" calorifier placed under the boiler. Boiler/tank connecting pipes, tank protection with Titan Active System®, a drain valve and DHW sensor.
- **AFC .../B 160 SL:** with insulated 160 litre DHW "Standard load" calorifier placed to the left or to the right of the boiler. Boiler/tank connecting pipes, tank protection with Titan Active System®, a drain valve and DHW sensor.
- **AFC .../VL 160 SL:** with insulated 160 litre DHW "Standard load" calorifier placed horizontally under the boiler. Boiler/tank connecting pipes, tank protection with Titan Active System®, a drain valve and DHW sensor.
- **AFC .../B 220 SHL:** with enamelled, insulated 200 litre solar DHW calorifier placed to the left or to the right of the boiler. Boiler/tank connecting pipes, tank protection with Titan Active System®, a drain valve and DHW sensor. Prefitted with all the components required to connect and control a solar installation: solar station with pump, expansion vessel, safety unit, solar regulation, degasser, glycol recovery tank.

Air/flue gas connection Ø 80 mm for connection to a chimney (with measuring point) or Ø 80/125 mm for connection to a forced flue (with measuring point).

Control panel options
- Domestic hot water sensor, sensor for 1 mixing valve
- PCB + sensor for 1 mixing valve
- Sensor for storage tank
- CDI D. iSystem interactive remote control
- CDR D. iSystem interactive "radio" remote control
- Radio boiler module DIEMATIC iSystem
- Simplified remote control with room sensor
- BUS connection cable, radio outside temperature sensor
- Boiler radio module
- Control unit DIEMATIC VM iSystem

Boiler options
- Hyd. kit limiter temperature for underfloor heating circuit
- Internal 3-way valve kit
- Internal adaptation kit for external 3-way valve
- Internal connecting pipes for the connection of an independent calorifier
- Hydraulic module with a high energy efficiency pump
- Insulated collector for 2 hydraulic modules
- Set of wall consoles for hydraulic module, set connection G in R
- Decoupling cylinder 60/60 - 1"
- Lift pump
- Spare granules for neutralisation station
- Condensate neutralisation tank, neutralisation station holder
- Granule refill for neutralisation tank (2kg)
- Kit rear flue gas exit (for AFC...E)
- Measure adapter Ø 80/125 mm PPS/Alu
- 87° elbow Alu/PPS Ø 80/125 mm
- Horizontal forced flue Ø 80/125 mm
- Vertical forced flue Ø 80/125 mm black
- Vertical forced flue Ø 80/125 mm red
- Magnesium anode for tank protection
- Recirculation kit for calorifier 100 HL
- Recirculation kit for calorifiers 160 SL and 220 SHL

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

De Dietrich