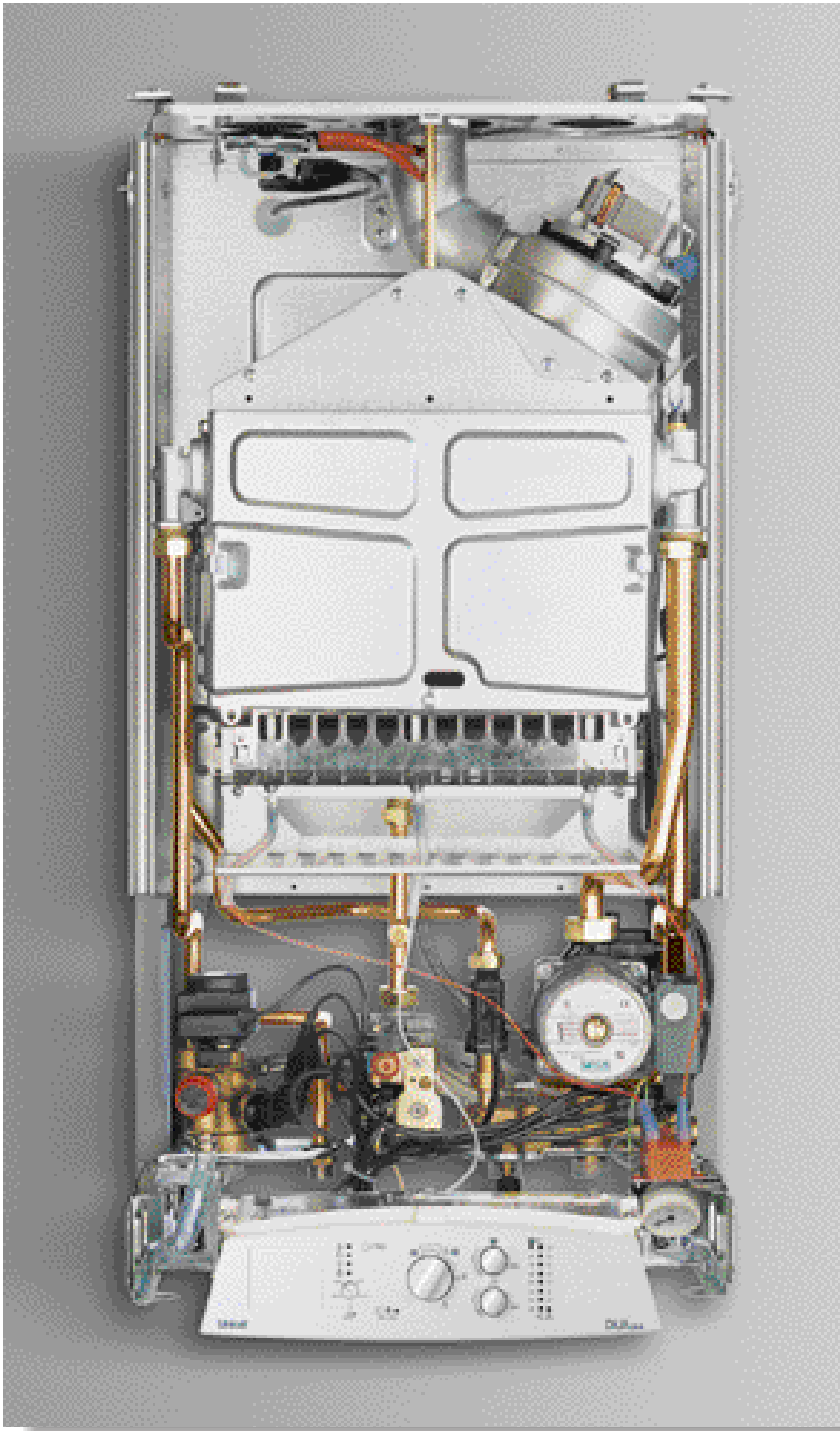


























DUA PLUS.

Unical

# Ideas and forms in evolution



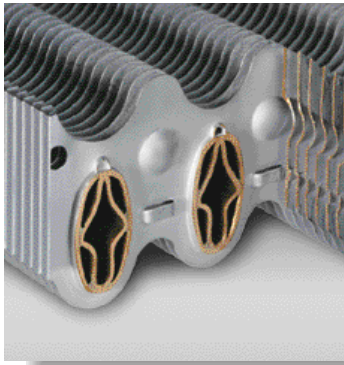
TYPE			natural draught	room sealed	electric diverting valve
RTN 24					
CTN 24 E					
RTFS 24					
CTFS 24 E					

DUA PLUS is a natural draught or room sealed forced draught wall hung gas boiler, with electronic ignition, ideal to satisfy all the customer's needs, who pretends quality and high performances, joined to the dependability, the traditional UNICAL's "mission", whose this product is the evolution confirmation.

DUA PLUS is a boiler which conjugates the past with the future, taking, as reference, the bases of the experience made with the previous model with the addition of all the most advanced technology, to supply the user with the maximum well-being. No other competing boiler can, in fact, summarize in a unique model, the contents of DUA PLUS:

- *the design solidity*
- *the flexibility of the D.H.W. priority systems*
- *the economy of management*
- *the practicality in the installation*
- *the quickness in the maintenance*
- *the simplicity of the controls*
- *the stylishness of the design*

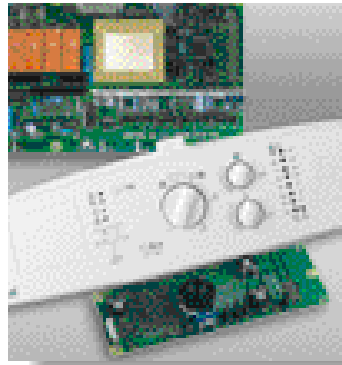
# The mechatronics of DUA PLUS



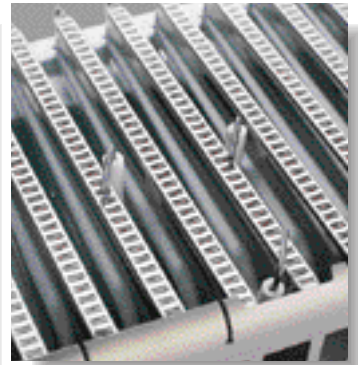
High efficiency  
by-thermal engine: > 92%



Electrical  
Diverting valve



Swinging panel board  
for a quick service



Double safety, with two electronic  
ignition electrodes



Pump with three selectable speeds  
and built-in air vent



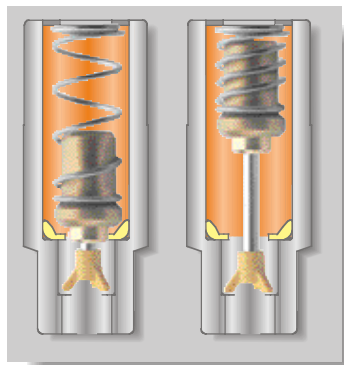
Manual adjustment and  
automatic action by-pass



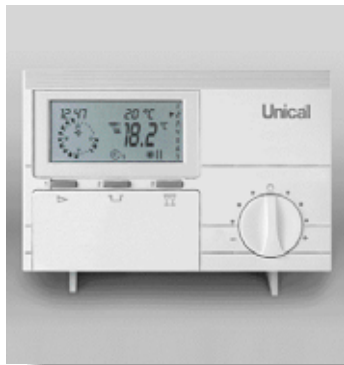
Simple use of the controls



Led diagnostics  
for a quick fault finding



TES (Thermostatic Energy Saver)  
economiser for GAS-WATER and  
TIME saving



Room temperature  
modulating control

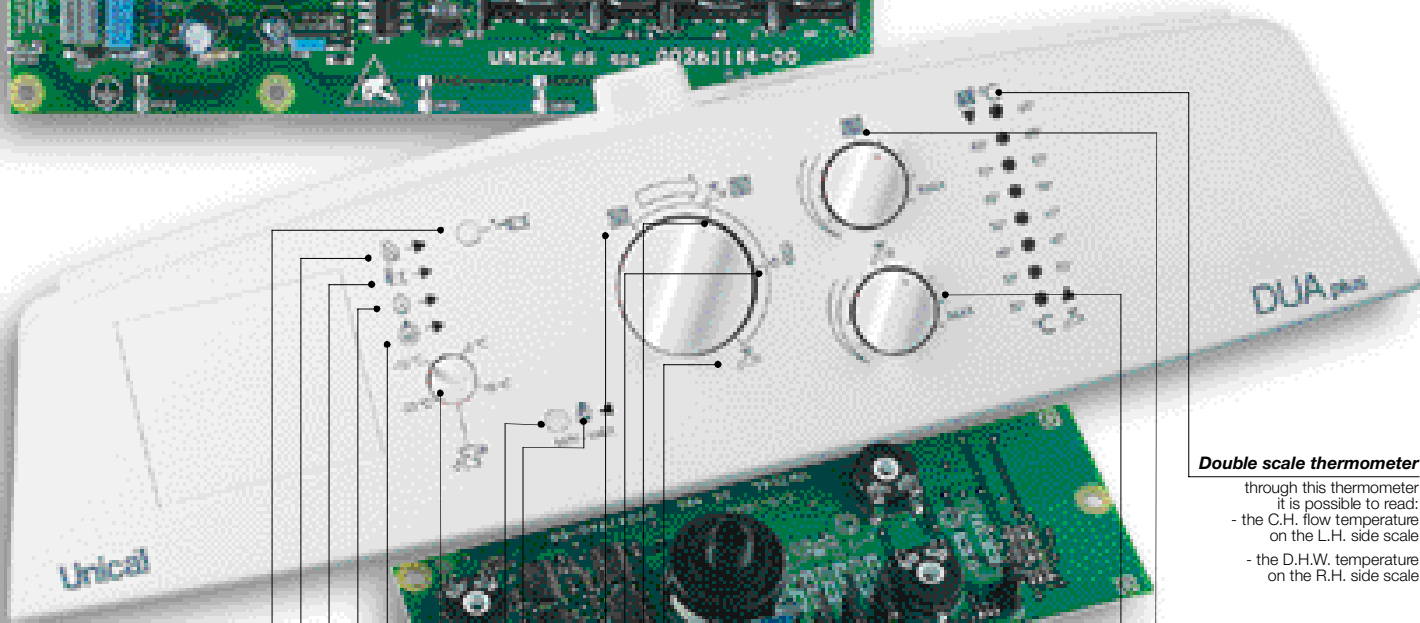
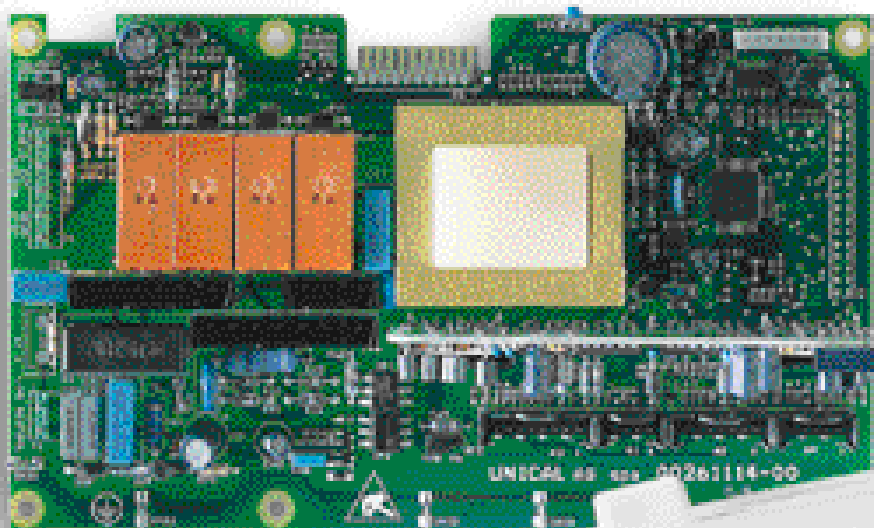


Anti-frost protections

# The well-being controls

## Easy to use

DUA PLUS is designed to guarantee the maximum ease to the user. The panel board has been studied according to the most recent fundamental ergonomic rules: the selector switch of the primary functions is placed in the center, with, all around, the secondary controls. A series of led indicate the functions ON, show the temperatures of heating and domestic hot water and the type of fault which could have occurred within the boiler.



### **Reset button**

Button resetting the boiler operation after a lock-out of the burner control.

### **Failure lamp:**

Indicates the lock-out of the burner control.

### **Fault signaling lamp**

Indicates a fault in the boiler operation.

### **Burner On Lamp**

Indicates the good operation of the burner.

### **Supply line On Lamp**

Indicates the power supply is On.

### **Outer sensor calibration button**

Adjust the compensation curve for the control of the room temperature depending on the outer temperature (it works only when the outer temperature sensor is fitted).

### **Heating only position**

### **Summer position**

### **Winter position**

### **Off/anti-frost position**

### **Multifunction switch**

the boiler works for C.H. only.  
the boiler works for D.H.W. production only  
the boiler works for heating and D.H.W. production  
the boiler is Off; only anti-frost protection is On.

### **Special functions button**

Starts the boiler for technical maintenance use.

### **Signaling lamp**

is ON if the special functions button is in operation.

### **Double scale thermometer**

through this thermometer it is possible to read:  
- the C.H. flow temperature on the L.H. side scale  
- the D.H.W. temperature on the R.H. side scale

### **Heating temperature adjustment**

This knob allows the adjustment of the C.H. flow temperature. Adjustment range: 35 to 85°C.

### **D.H.W. temperature adjustment**

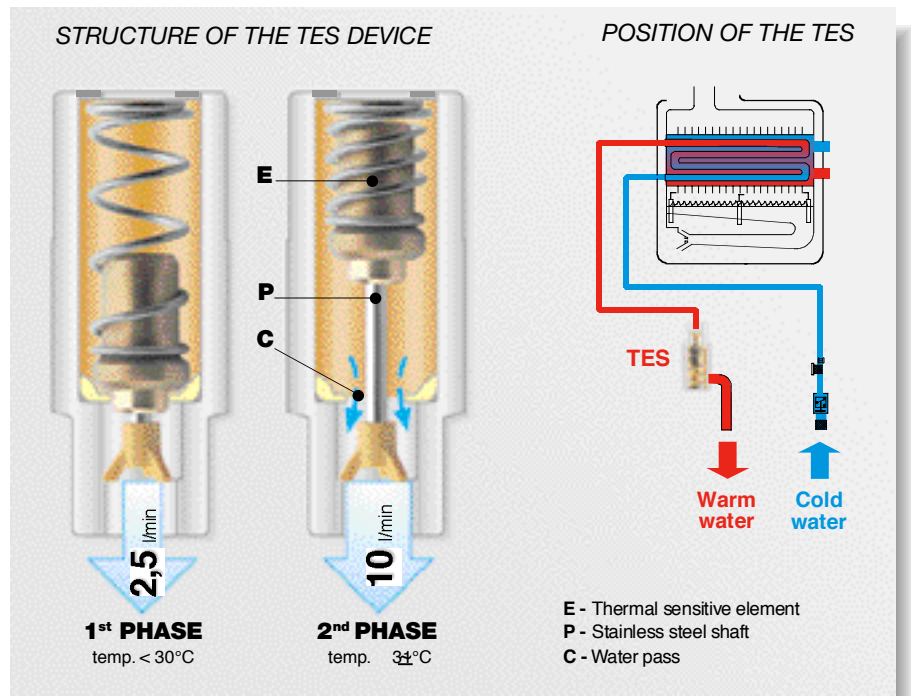
This knob allows the adjustment of the D.H.W. temperature. Adjustment range: 35 to 65°C.

# TES: Thermostatic Energy Saver

## Clever Saving with DUA PLUS

Thanks to this patented device "TES", the user, at each drawing of D.H.W., consumes and pays what he indeed uses.

In the 1<sup>st</sup> phase the TES allows the flow rate of approximately two liters per min of water with a temperature lower than 30°C. In the mean time the burner, at its maximum output, warms very quickly the water which, as it is possible to see, in the 2<sup>nd</sup> phase causes the heating of the thermal sensitive element (wax) which, at its turn, pushes out the stainless steel shaft (P), causing the complete opening of the water pass.



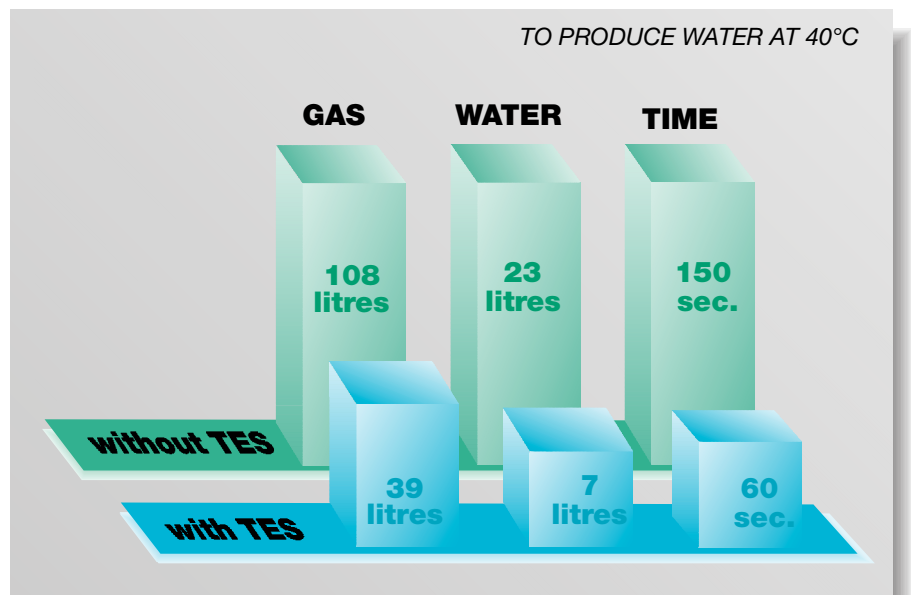
The TES is made of a special thermal sensitive element, placed downstream the heat exchanger, which allows the D.H.W. passage at the maximum flow rate only when the water is really hot.

The consumptions indicated in the beside figure, without and with TES, are considerably different.

The saving depends on the number of water drawings. If we consider, as an example, a family of three persons, which normally makes 15 water drawings a day, the annual saving can reach 350 m<sup>3</sup> of gas and 70 m<sup>3</sup> of water.

With DUA PLUS, then, the reduction of the costs and the reduction of gas and water waste is a reality.

In the comparison between the DUA PLUS and an other boiler, it is clear that the DUA PLUS saves, at each drawing of water, 69 liters of gas, 16 liters of water and 90 seconds to produce warm water at a temperature of 40°C.



The comparison between a DUA PLUS and a boiler without TES highlights that to produce warm water at 40°C, DUA PLUS consumes only 39 liters of gas and 7 liters of water, waiting just 1 min.

# The electric diverting valve

## The best solution

Why to choose a DUA PLUS with electric diverting valve?

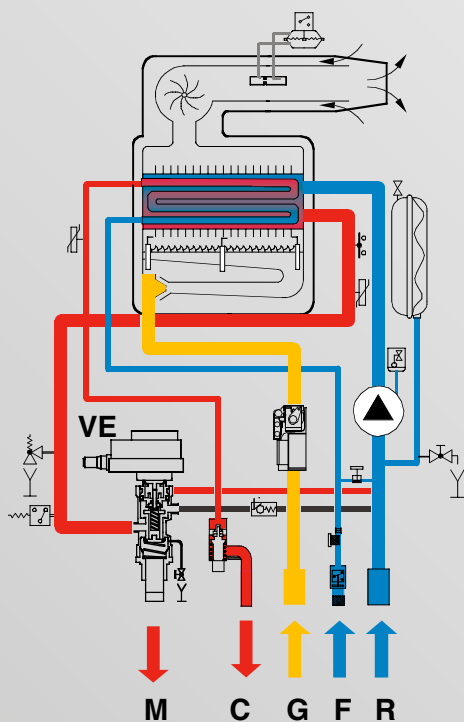
Because only with this solution it is possible to combine the new systems of electronic controls, as the modulating chrono-thermostat "TM 2000" with the control of the room temperature depending on the outer temperature.

The motorised valve, electrically controlled by these devices, answers immediately to each signal, thus guaranteeing

high precision in the temperature control and reducing the fuel consumptions.

An alternative that UNICAL, notoriously in advance with its proposals, could not disregard for the well-being of the users.

HYDRAULIC CIRCUIT OF DUA PLUS  
CTFS 24 E



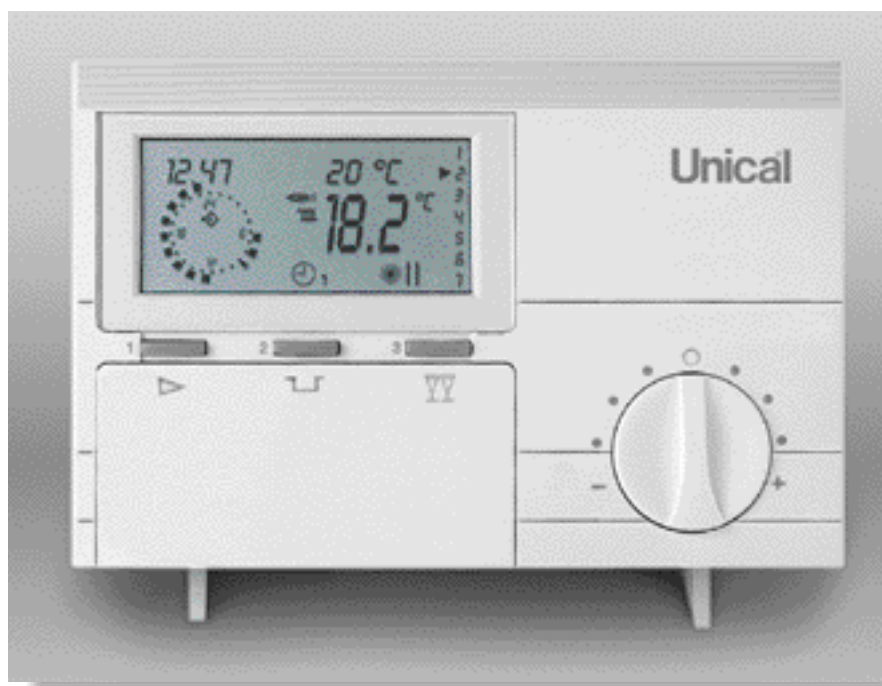
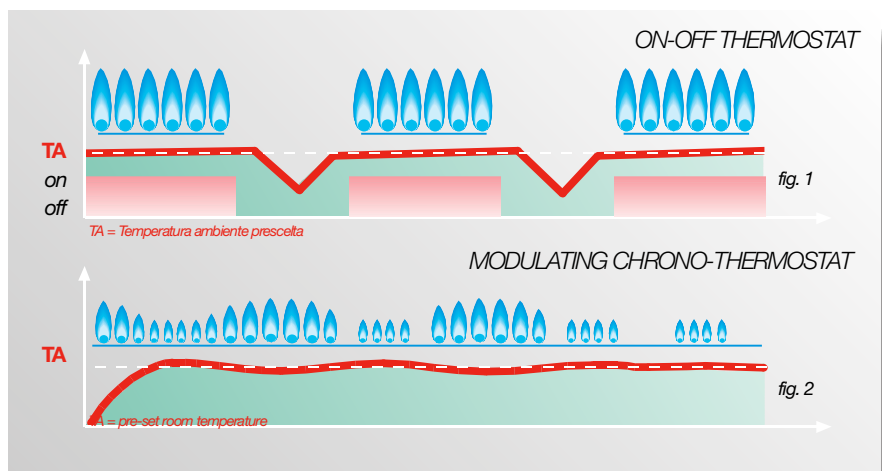
- C - Domestic Hot Water outlet
- G - Gas inlet
- F - Domestic Cold Water inlet
- VE - Electric valve
- M - C.H. flow
- R - C.H. return



# DUA PLUS for the maximum comfort

## High efficiency outer compensator

To get very high seasonal efficiencies and a pleasant room comfort, the precise room temperature control is fundamental. DUA PLUS is suitable to be connected with several types of chrono-thermostats, both On-Off and modulating type with external sensor.



## On-off or modulating type. Which one to choice?

The *On-Off thermostat* intervenes by switching On and Off the boiler when the room temperature is reached (fig. 1). The heating output and temperature are managed by the boiler. The actual room temperature is influenced by several variables, as the thermal inertia of the C.H. system and the answer delay of the thermostat: it follows a lower precision in the temperature control.

*The modulating chrono-thermostat "TM 2000"* controls directly the burner output adapting it immediately to the pre-set temperature (fig. 2). It results:

- a smaller number of switching On and Off, with a lower use of the devices (fan, gas valve, pump, etc.);
- a smaller heat loss through the chimney;
- a higher speed in reaching the steady state condition;
- a higher precision in the adjustment, because the radiators heating water temperature is continuously controlled by the room thermostat;
- reduction of the excessive radiators overheatings, which are the cause of dry air, reach in suspensible dusts, particularly annoying.

## The "TM 2000" brainy comfort

- **The self-adaptation:** with an outer temperature lower than 8°C, speeds up the adaptation to the pre-set temperature.
- **The pre-heating optimization:** establishes the best advanced ignition to obtain the requested temperature at the requested time.
- **The outer sensor:** the coupling of the On-Off chrono-thermostat with the outer temperature sensor controls the boiler output depending on the outer temperature, thus assuring the pre-set room temperature.

# Easy installation and service

## Front access to all components

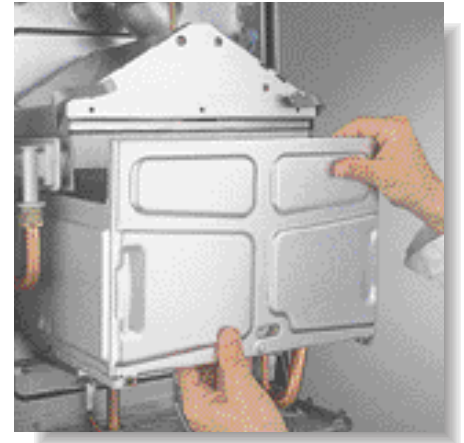
DUA PLUS has been designed taking particular care to the easy use, to the quickness in the installation and to easy access to the components to facilitate the ordinary and extraordinary service, thus reducing the service costs.

Large are, in fact, the spaces between the components and few are the tools required for service operations, all executable from the front of the appliance:

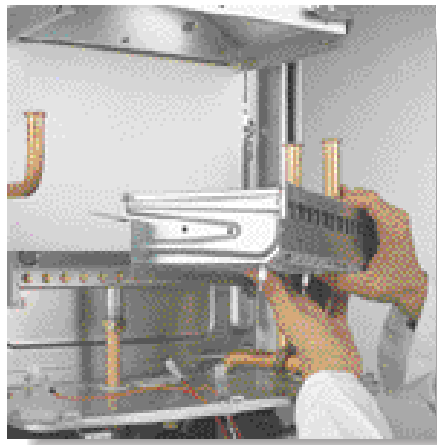
- two adjustable wrenches,
- a cross screw driver,
- a socket wrench,
- a multimeter,
- a gas pressure gauge.



Opening of the sealed room with quick fasteners



Opening of the combustion chamber with release levers



Burner removal by front sliding without removing the gas train



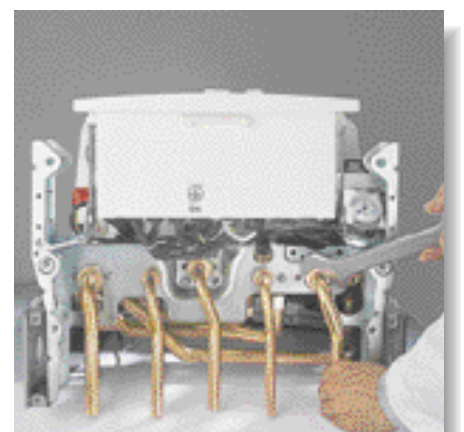
Heat exchanger removal by front ward sliding



Removal of the casing front and side panel by vertical sliding



Fan frontward removal with removal of just one screw



Boiler connections at 15 cm from the rear wall to facilitate the installation

# Accessories and mounting jig

A standard pipes kit, the screw anchors and a mounting jig allow the quick mounting of the DUA PLUS, whilst other optional accessories complete the range. The professional installer can easily connect it to a digital or analogue room thermostat to optimize its operation.

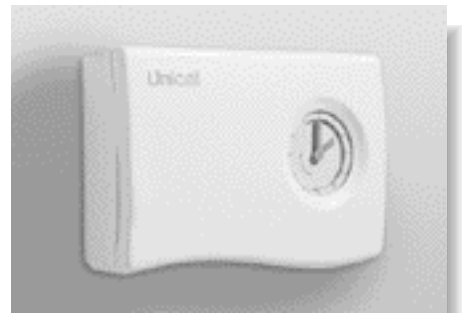
Every boiler is equipped with a metal mounting jig, with the indications concerning the wall fitting, the connection reference for the gas, cold water inlet, hot water outlet, C.H. flow and return.



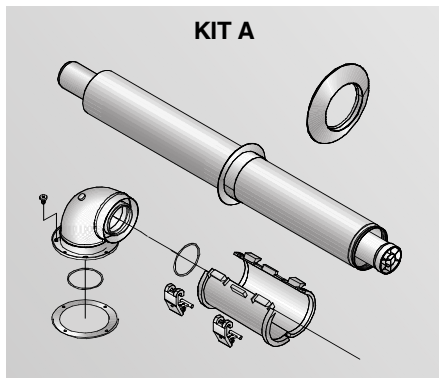
OUTER TEMPERATURE SENSOR  
Cod. SND 0140C



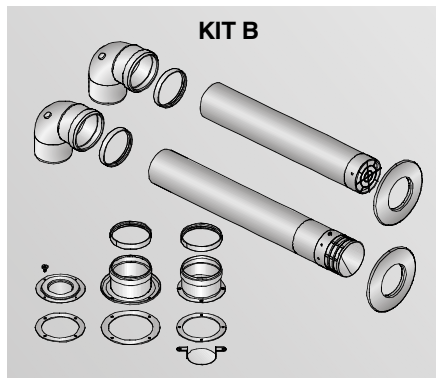
DIGITAL WEEKLY CHRONO-THERMOSTAT SD 700  
Cod. 00260738



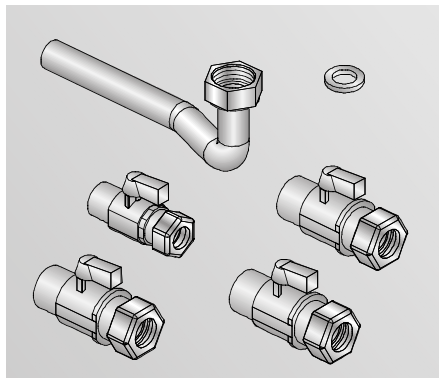
ELECTRONIC ANALOGUE DAILY  
CHRONO-THERMOSTAT  
Cod. 00260737



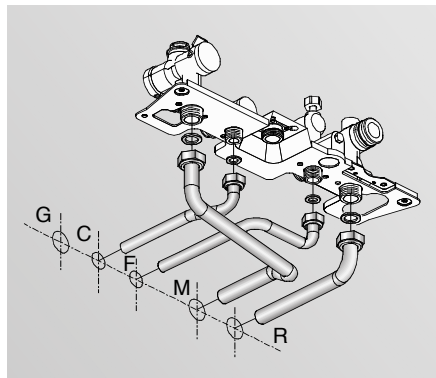
KIT A  
AIR/SMOKE COAXIAL DUCTS  
Cod. KIT5500C



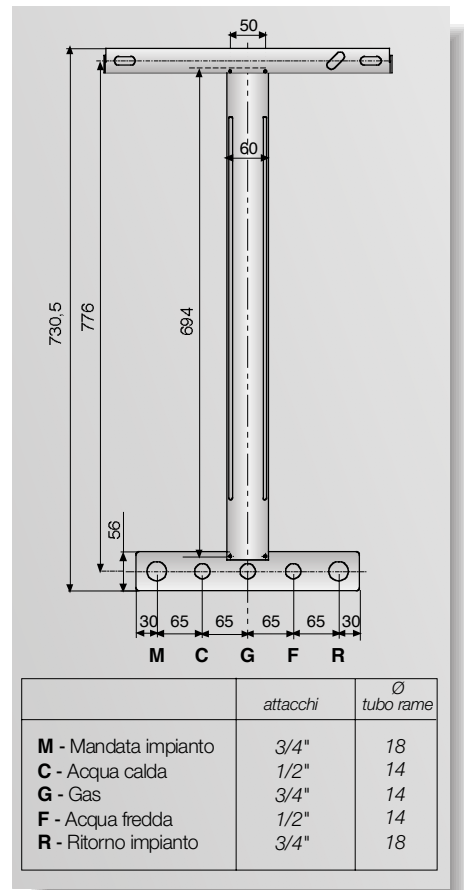
KIT B  
AIR/SMOKE SEPARATE DUCTS  
Cod. 00360535



ISOLATING BALL VALVES KIT  
Cod. 00360682



DUA C/DUA PLUS C ADAPTATION KIT  
Cod. 00360457



METAL MOUNTING JIG  
Cod. 00360460

# Safe protection

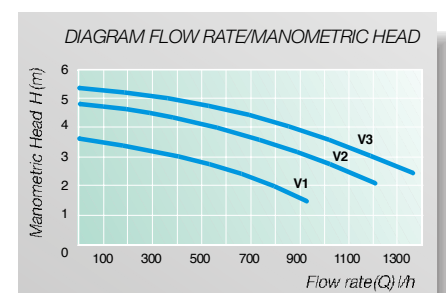
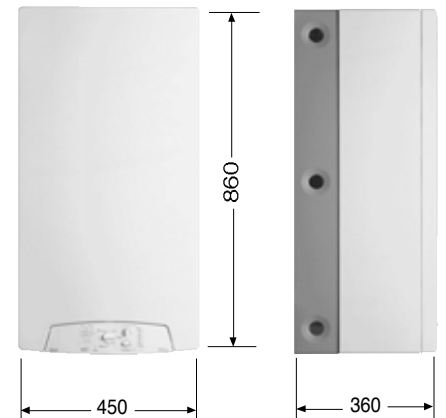
The professional installer asks for performances of the products he installs, but also he asks for quick installations, free from obstacles, with the minimum impact for his clients.

The casing is supplied, separate from the boiler, but in the same strong packing, to be fitted later on, when the installation is finished.



# Technical data

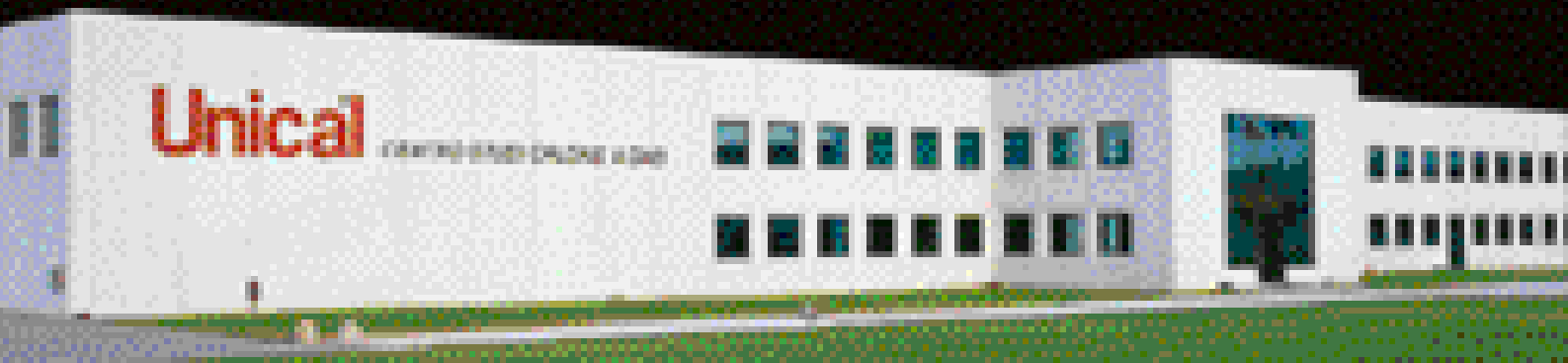
Model		DUA PLUS CTN	DUA PLUS CTFS
NOMINAL AND MINIMUM OUTPUT	kW	24.01-11.07	24.35-10.84
NOMINAL INPUT	kW	26.5	26.5
WATER EFFICIENCY AT 100% LOAD	%	90.01	91.21
WATER EFFICIENCY AT 30% LOAD	%	88.62	90.33
COMBUSTION EFFICIENCY AT 100% LOAD	%	93.1	93.1
HEAT LOSSES THROUGH THE CASING MIN/MAX	%	3.06-3.09	1.0-1.89
MAX SMOKE TEMPERATURE	°C	87	107.6
SMOKE FLOW RATE MIN/MAX	g/s	17.7-19.5	15.93-15.58
CO <sub>2</sub>	%	2.6-5.3	2.9-6.8
CHIMNEY HEAT LOSSES WITH BURNER IN OPERATION MIN/MAX	%	9.6-6.9	12.3-6.9
APPLIANCE CATEGORY		I12H3+	I12H3+
MIN WATER THROUGHPUT IN THE C.H. CIRCUIT WITH $\Delta T = 20K$	l/min	7.8	7.8
C.H. CIRCUIT MIN/MAX WORKING PRESSURE	bar	0.5-3	0.5-3
CLOSED EXPANSION VESSEL TOTAL CAPACITY	l	7	7
C.H. CIRCUIT MAX WATER CONTENT *	l	130	130
PRIMARY CIRCUIT WATER CONTENT	l	3.5	3.5
D.H.W. MIN/MAX WORKING PRESSURE	bar	0.5-6	0.5-6
D.H.W. FLOW ADJUSTER	l/min	10	10
CONTINUOUS D.H.W. PRODUCTION - MIXED **	l/min	13.7	13.7
ELECTRICAL SUPPLY TENSION/FREQUENCY	V-Hz	230/50	230/50
MAIN FUSE	A(F)	4	4
MAXIMUM OUTPUT ABSORBED	W	90	137
DEGREE OF PROTECTION	IP	X4D	X4D
NET WEIGHT	kg	42	45



(\*) Calculated for a maximum temperature of 90°C  
 (\*\*) Medium flow rate for a  $\Delta t = 25 K$



Unical



**Unical** AG S.p.A. - 46033 casteldario - mantova - italy - tel. 0376/57001 (r.a.) - telefax 0376. 660556 - e-mail: [info@unical-ag.com](mailto:info@unical-ag.com)

Unical AG declines any liability for the inaccuracies that may appear due to errors in transcription or printing. It also reserves the right to introduce those modifications to its products that it considers necessary or useful, without compromising the essential characteristics of the said products.