



USERS OPERATING MANUAL

RIO 140

Floor Standing Combination Boiler
providing
Central Heating and Mains Fed Domestic Hot Water

For use with Natural Gas (G20) - Natural Gas model only
or Propane (G31) - Propane model only

EC Certificated for Safety and Performance



**The boiler must be installed by a competent person in accordance with the
Gas Safety (Installation and Use) Regulations.**

**Servicing and replacement of parts must only be carried out by competent persons
such as British Gas or other CORGI registered personnel.**

ABOUT YOUR BOILER

The Rio 140 is a combination boiler with an integral unvented hot water storage tank. It will supply domestic hot water at mains pressure and provide central heating.

As all the basic components required for the central heating system and for providing domestic hot water are fitted within the boiler, the need for external hot and cold water storage is eliminated. Therefore the system normally has no tanks in the loft or a hot water storage cylinder.

The boiler will suit central heating systems requiring upto 28.40 kW (96 900 Btu/h), your Installer will have adjusted the boiler output to suit the system.

The boiler is fully automatic once switched on, and will supply hot water whenever a hot tap is opened and central heating during the periods set on the timer.

METHOD OF OPERATION (see Fig. 1 for boiler controls)

The boiler operating mode is controlled by the 'Summer/Winter' switch on the control panel. When set to Summer, the boiler will only operate in the Domestic Hot Water mode. When set to Winter, it will operate in the Domestic Hot Water and Central Heating mode.

Note: The timer only controls the operating times of the central heating, not domestic hot water - this is available continuously.

Incorporated within the boiler case is an insulated unvented domestic hot storage cylinder containing 140 litres of domestic hot water maintained at the temperature set by the adjustable hot water temperature selector and (depending on incoming mains pressure) available at a maximum pressure of 3.5 bar.

Domestic hot water supply always takes priority over central heating. If a demand for hot water occurs during a central heating period and reduces the store temperature to below that set by the hot water temperature selector, the boiler automatically switches to the hot water mode until the stored water is reheated to the temperature set by the hot water temperature selector. This interruption in the central heating should not be noticed.

Central Heating Mode - If there is a call for heat the pump will start to circulate the central heating water and after a few seconds the burner will light. The burner output is automatically adjusted to match the system demand. As the temperature of the water in the boiler approaches that set by the adjustable temperature selector, the burner is turned off and the pump continues to run. As the heating system water cools, the temperature drop is detected by the control system and the burner is automatically restarted for the cycle to continue until either the timer or room thermostat stops calling for heat. The burner is then turned off (if it is operating at the time) and the pump runs on for about 2½ minutes.

Domestic Hot Water Mode - When a demand for hot water reduces the temperature of the stored hot water below that set by the adjustable hot water selector, the pump starts and the burner lights, increasing to its maximum output. Water in the boiler is then diverted from the central heating system to reheat the stored hot water to the temperature set by the adjustable hot water temperature selector. When the stored water reaches the selected temperature the burner is turned off and the pump stops. The boiler then returns to the central heating mode.

In both modes the fan starts before the burner lights and stops after the burner is turned off.

CENTRAL HEATING SYSTEM

The boiler operates on a sealed central heating system which will have been pressurised by your Installer. He will have set the red pointer on the pressure gauge (see Fig. 1), to indicate the system pressure (when cold). Do not adjust this pointer. The grey pointer indicates the actual system pressure (between 0.8 and 1.5 bar) which will increase slightly when the boiler is operating.

If the grey pointer falls below the red pointer (when the boiler is switched off and cold), you should contact your Service Engineer to re-pressurise the system. If the system requires re-pressurising more than once a year, ask your Service Engineer to check the heating system for leaks.

The boiler is fitted with an automatic air vent which removes air from the system as it leaves the boiler. Any air trapped in the radiators needs removing by venting the radiators using the vent screw at the top of the radiators. Only vent a radiator if the top is cool and the bottom is hot. Excessive venting will reduce the system pressure, so only vent when necessary and check the system pressure as mentioned above.

The temperature of the water leaving the boiler to the radiators can be increased by turning the heating temperature control knob (see Fig. 1) clockwise.

The boiler will provide central heating whenever the timer is in an 'ON' period and the room thermostat (if fitted) is calling for heat.

For summer time operation, when central heating is not required, set the 'Summer/Winter' switch (see Fig. 1) to Summer.

DOMESTIC HOT WATER SYSTEM

The boiler will supply domestic hot water whenever a hot tap is opened.

The flow of water from the taps (hot or cold) depends upon the mains water pressure, and in some homes it may not be possible to use a number of taps at the same time.

The temperature of water leaving a hot tap depends on a lot of variables, such as mains pressure, distance of the tap from the boiler and the flow rate of the water leaving the tap. It may take some time and experimenting with the hot water temperature control (see below) and how far you open a tap to achieve the results you require. Remember, if you open a hot tap fully it may not supply water at such a high temperature as when you only open it half way.

The temperature of the hot water leaving the boiler for the hot taps can be increased by turning the hot water temperature control knob (see Fig. 1) clockwise.

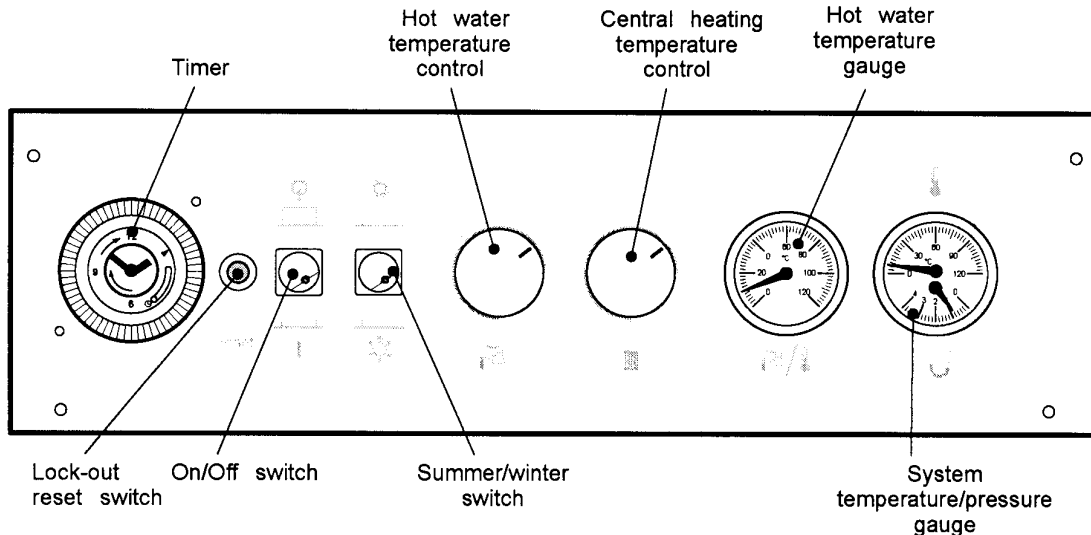


Fig. 1

LIGHTING YOUR BOILER (see Fig. 1)

1 Ensure that - the gas and water supplies are turned on, the electricity supply to the boiler is off, the On/Off switch is set to OFF (switch push button is out), the timer is correctly set (refer to the Timer section), the Summer/Winter switch is set to Winter (the switch push button should be in), the grey pointer on the pressure gauge is not below the red pointer, the room thermostat (if fitted) is set at the desired setting and the timer is correctly set (refer to the relevant Timer section).

2 Turn both the Hot Water and Heating temperature selectors fully clockwise to their maximum setting.

3 Switch on the electricity supply to the boiler.

4 Press in the On/Off switch (the green light on the switch indicates the switch is set to on).

5 The boiler is now ready to light automatically.

If the stored domestic hot water in the cylinder is cold, the boiler will heat this first.

If the timer is set to an 'on' period the boiler will light (see note below) and provide central heating.

If a hot water tap is opened the boiler will supply hot water.

6 Reset the controls to the desired settings.

TURNING OFF YOUR BOILER (see Fig. 1)

For short periods - Set the On/Off switch to off (the switch push button should be out, and the green light on the switch off).

To restart, simply press in the On/Off switch to on (the switch push button should be in, and the green light on the switch on).

For long periods: Set the On/Off switch to off (the switch push button should be out, and the green light on the switch off), and switch off the electricity supply to the boiler. If required, the gas, water and electricity supplies may be turned off at the mains.

To restart, refer to the full lighting instructions above.

Note: After switching the boiler off, it will be necessary to re-set the mechanical (24 hr) timer to the correct time. The digital electronic timer has a built-in battery to retain the time, date and programmes.

GENERAL NOTES AND CARE OF YOUR SYSTEM

- 1 **On/Off switch** - This switch (switch push button in for on, out for off) turns the boiler and the timer on and off. The green light on the switch indicates it is in the on position.
- 2 **'Summer/Winter' switch** - This switch (switch push button in for winter, out for summer) allows you to switch off the central heating in the summer. It does not effect the supply of hot water for the taps. The green light on the switch indicates it is in the winter position.
Winter - Heating and Hot Water
Summer- Hot Water Only
- 3 **Heating temperature control** - This control allows the temperature of the water leaving the boiler for the heating system to be adjusted. Turning it clockwise increases the temperature.
- 4 **Hot water temperature control** - This control allows the temperature of the water leaving the boiler for the hot taps to be adjusted. Turning it clockwise increases the temperature.
- 5 **Temperature/pressure gauge** - This indicates the central heating system water temperature and pressure. The grey pointer indicates the actual pressure, which will increase as the system warms up. The red pointer indicates the system pressure (boiler off and system cold) set by your installer.
Do not operate the boiler if the grey pointer falls below the red pointer. Contact your Service Engineer to have the system re-pressurised.
- 6 **Lockout reset button** - If there is a burner control malfunction, a built-in safety circuit switches the boiler off and the lockout reset button will light. Usually such malfunctions are short lived, and pressing the reset button (press in and release quickly) will restore normal operation.
If the boiler continually goes to 'lockout' a fault exists and you will need to call your Service Engineer.
- 7 **Safety valves** - The boiler is fitted with safety valves to release excess pressure from the central heating or hot water system if it overheats. If water or steam is discharged from the end of these pipes, switch off the boiler and contact your Service Engineer. Your installer should have informed you where these pipes terminate.
- 8 **Clearances and ventilation** - Always ensure that the boiler has the following minimum clearances for safety and servicing:-
Top: 300 mm, Front: 600 mm, Sides: 5 mm
If the boiler is installed in a compartment, your Installer will have provided ventilation openings in the wall or door. Do not obstruct these openings, periodically check that they are clear.
Do not place any combustible material around or on the boiler or flue pipe.
- 9 **Flue terminal** - The flue terminal on the outside wall must not be obstructed or damaged.
In cold weather steam might appear from the terminal - this is quite normal for a high efficiency boiler.
In severe conditions check that the terminal does not become blocked by snow.
- 10 **Frost protection** - The boiler is fitted with built-in frost protection. This will automatically start the boiler if the water temperature falls below 5°C, providing the electrical supply to the boiler is on, the On/Off switch is set to on and the Summer/Winter switch is set to winter.
- 11 **Cleaning and servicing** - Lightly wipe over the case with a damp cloth and a little detergent. Do not use abrasive pads or cleaners.
You should have your boiler serviced at least once a year to ensure safe and efficient operation.
Contact your Service Engineer for further details.
- 12 **Failure of mains services** - If the electricity supply fails, the boiler will not operate. Once it is restored the boiler will resume its normal operation.
Note: The timer has a built-in battery to retain the time, date and programmes.
If the mains water supply is ever cut off, the boiler will not supply domestic hot water. It will however, still provide central heating.
- 13 **Gas leak** - If a gas leak is suspected, turn off the gas supply and contact your local Gas Region or Service Engineer.
Remember - do not operate electrical switches, smoke or light matches.

ELECTRICITY SUPPLY

The boiler requires a 230V ~ 50Hz supply. It must be protected by a 3A fuse.

Warning: This appliance must be earthed.

TIMER

The timer (mechanical or electronic) fitted to your boiler allows you to control the times of your central heating periods only. Domestic hot water will always be available, provided the boiler is switched on.

The mechanical timer has a 24 hr. clock setting together with a 12 hr. clock hands display.

The digital electronic display (24 hr. clock) provides a permanent display of the time of day and day of the week. If the boiler is switched off or its power supply interrupted, a built in battery will operate the display and protect the programme of operating times etc.

When setting the times for the heating periods it is useful to remember that it might take up to an hour for the house to become warm, especially in colder weather. Also the effect of the central heating will remain for a time when the central heating is turned off.

MECHANICAL TIMER - Description and setting (see Fig. 2)

The 24 hr. timer dial has a number of tappets around its edge, each corresponding to 15 minutes. When tappets (or groups) are set towards the outside of the dial, the timer will be in an 'on' position during that period and the boiler will provide central heating.

A typical timer setting for a working family could be as follows:-

The groups of tappets between 6.00 and 8.00, and 16.00 and 22.00 set outwards as shown in Fig. 2. This would provide two 'on' periods for central heating from 6 am to 8 am, then again from 4 pm to 10 pm.

To set the timer to the correct time of day, turn the dial (outer tappet ring) clockwise until the time of day is against the time indicator arrow head. Fig. 2 shows the timer at midnight (24.00). The timer also has a conventional 12 hr clock hands display in the centre (do not move the pointer, as it will damage the clock).

IMPORTANT: Do not turn the dial anticlockwise.

The timer has a manual override switch which allows you to override the tappet settings on the timer as follows:-

- 1 Set the switch to I and the timer is permanently on, this provides a continuous central heating 'on' period, ignoring any tappet positions. This setting is useful if you come home late in the evening and the central heating is 'off'. Do not forget to reset the switch to the \ominus (central) position when going to bed or the house has warmed up.
- 2 Set the switch to 0 and the timer is permanently 'off' - no central heating.
- 3 Set the switch to \ominus (central) position and your central heating will operate during your pre-set periods.

The manual override switch, shown in Fig. 2, is in the \ominus position.

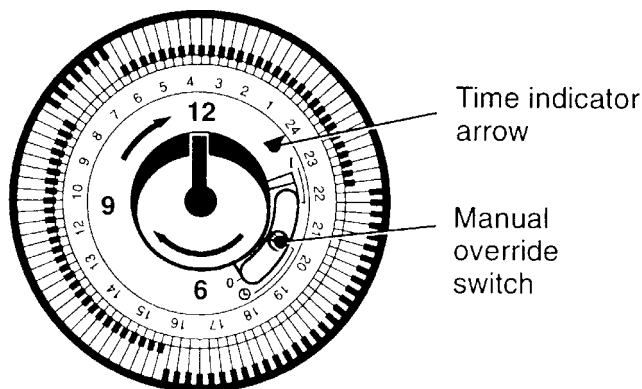


Fig. 2

ELECTRONIC TIMER – Description of controls (see Figs. 3 and 4)

Switch operation

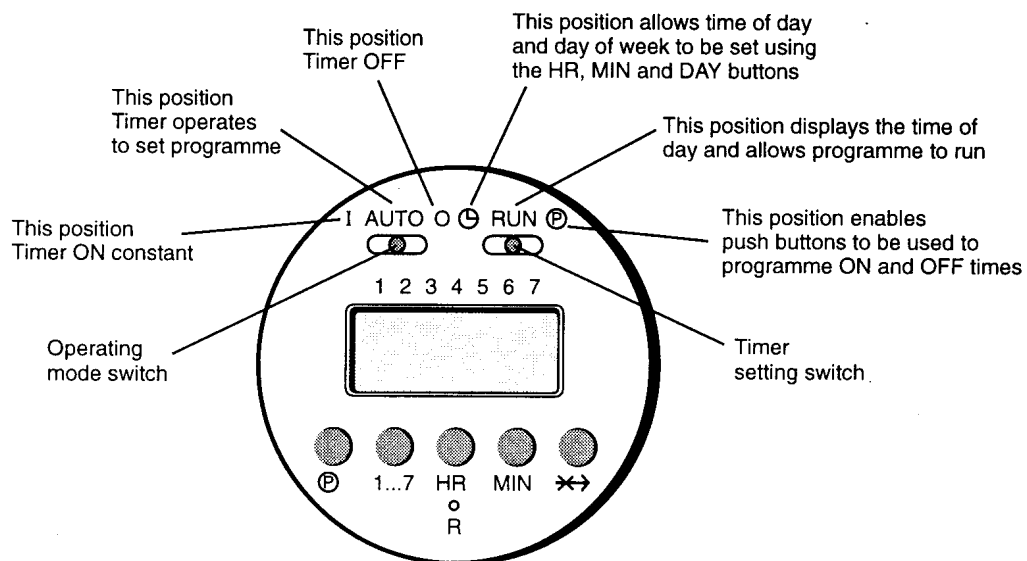


Fig. 3

Button operation

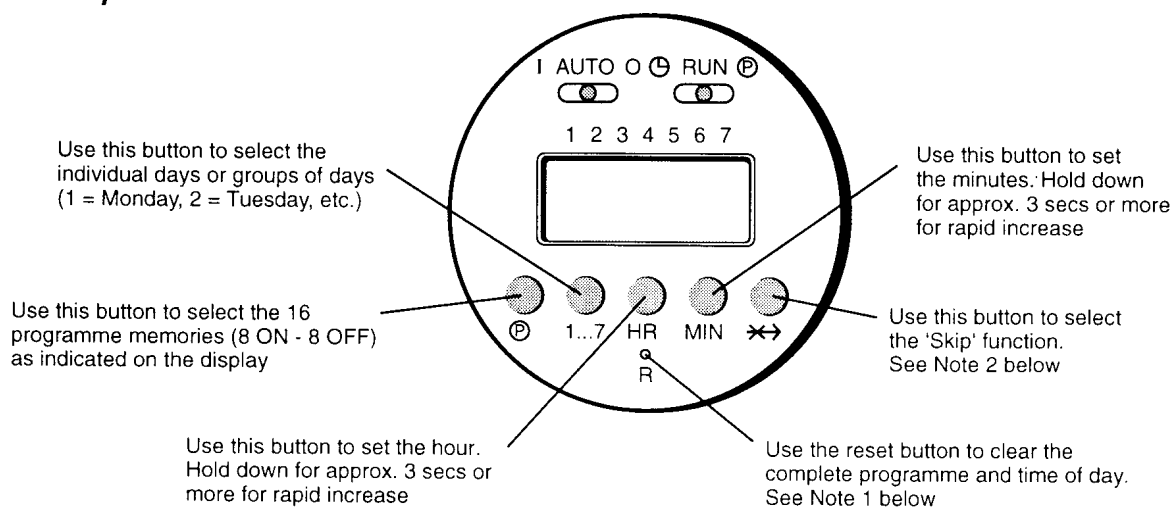









Fig. 4



Note 1: After pressing the reset button: The display will reset to 0.00 and 7 (Sunday) will be selected. The display will flash until the timer setting switch is set to  to set the timer.


Note 2: Pressing  turns the timer OFF ( appears in the display) for 24 hours from midnight that day to the following midnight, when it will revert back to the normal programme and the  disappears. If required, a second 24 hr skip period can be selected during the skip day by pressing the  button again.

PROGRAMMING THE ELECTRONIC TIMER

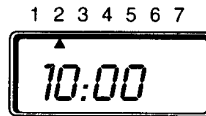
1 Press  (reset) to clear any previous inputs.


2 Set the timer setting switch to 

3 Set the timer using  and 

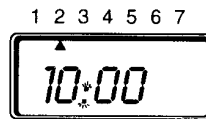
4 Set the actual day using  1...7


An arrow will be displayed under the actual day.





Set the timer setting switch to 

The actual time of day will be displayed (flashing colon).

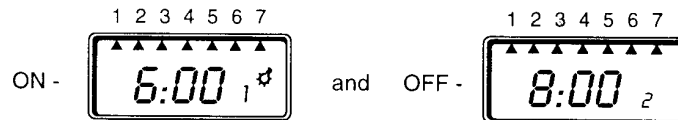





5 Set the time setting switch to 

6 Select the required day (or group of days) for the first ON setting by pressing  1...7


7 Select ON/OFF time selection (8 ON and 8 OFF are available) by pressing 


(Number and symbol in the display indicates the selection)




8 Select the first required ON time by pressing  and  and then press 



9 Repeat steps 6, 7 and 8 to set the first required OFF time. Adopt the same procedure for all other required ON/OFF times.



10 When all the switching selections are completed, set the timer setting switch to 

11 Ensure that the operating mode switch is set to AUTO 

The timer is now set to run automatically on the times programmed.

12 To use the 'skip' function press 

Pressing  turns the timer OFF ( appears in the display) for 24 hours from midnight that day.

If the timer is 'OFF' (with  in the display), to override the skip function set the operating mode switch to I  (constant)

TERMS OF GUARANTEE

- 1 The Company shall mean ICI CALDAIE UK LTD.
- 2 The boiler is guaranteed for a period of 12 months from the date of installation providing that any work undertaken is authorised by the Company and carried out by an approved service agent.
- 3 The boiler is to be checked on installation by a CORGI registered installer.
- 4 The heating circuit is to be treated and maintained against corrosion in accordance with BS 7593:1972 and is at all times to be inhibited with an approved anti corrosion solution.
- 5 The Guarantee does not cover breakdowns caused by incorrect installation, neglect, misuse, accident or failure to operate the boiler in accordance with the manufacturers instructions.
- 6 The Company will endeavour to provide prompt service in the unlikely event of a problem occurring, but cannot be held responsible for any consequence of delay however caused.
- 7 We strongly recommend that you complete and return the Guarantee Registration Card, but failure to do so does not affect your statutory rights.

**DO NOT NEGLECT YOUR GAS COMBINATION BOILER
THE COMPANY RECOMMENDS YOU TAKE OUT AN ANNUAL SERVICE CONTRACT WITH AN
APPROVED CORGI REGISTERED INSTALLER.**

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