



USER OPERATING MANUAL

SOLAR TWIN

**Wall Mounted Combination Boiler providing Central Heating
and Mains Fed Domestic Hot water**

Solar Twin GC Appliance No. 4701503

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

EC Certificated for Safety and Performance



0063

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

**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 Solar Twin 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 27.90 kW (95 200 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 'Heating' switch on the control panel. When set to Hot Water Only, the boiler will only operate in the Domestic Hot Water mode. When set to Heating & Hot Water, 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 45 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 for about 90 seconds. 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 90 seconds.

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.

The temperature display (see Fig. 1) gives an indication of the temperature of the water in the boiler leaving the heat exchanger to either heat the store or the heating system. At temperatures upto 70°C the burner operates at maximum output, above this temperature the output automatically modulates down to minimum.

CENTRAL HEATING SYSTEM

The boiler operates on a sealed central heating system which will have been pressurised by your Installer. The pressure gauge indicates the actual system pressure (between 0.8 and 1.5 bar) which will increase slightly when the boiler is operating.

If the pointer on the gauge falls below 0.8 bar (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.

Note: Your sealed system may incorporate a 'Top-Up' vessel, advice on how to use it should be obtained from your Installer.

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 'Heating' switch (see Fig. 1) to Hot Water Only.

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.

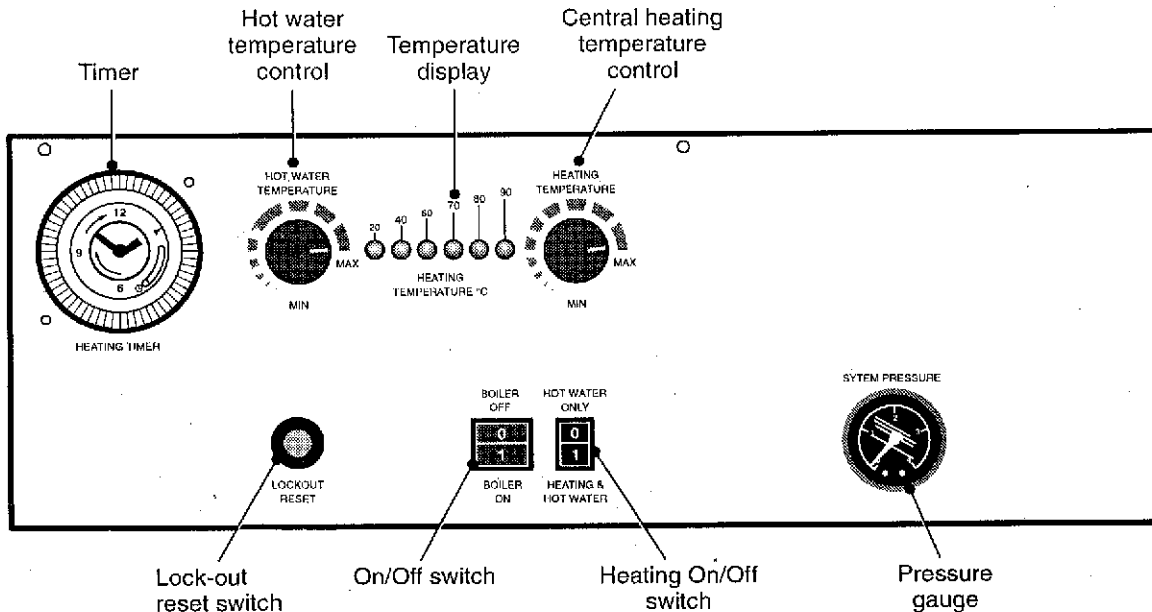


Fig. 1

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, the timer is correctly set (refer to the Timer section), the Heating switch is set to Heating & Hot Water, the pointer on the pressure gauge is not below 0.8 bar and the room thermostat (if fitted) is set at the desired setting.
- 2** Switch on the electricity supply to the boiler.
- 3** Set the On/Off switch to ON (the red light on the switch indicates the switch is set to ON).
- 4** The boiler is now ready to light automatically.
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.

TURNING OFF YOUR BOILER (see Fig. 1)

For short periods - Set the On/Off switch to OFF.

To restart, simply set the On/Off switch to ON.

For long periods: Set the On/Off switch to 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 timer to the correct time.

GENERAL NOTES AND CARE OF YOUR SYSTEM

- 1 **On/Off switch** - This switch turns the boiler and the timer on and off. The red light on the switch indicates it is in the on position.
- 2 **'Heating' switch** - This switch allows you to switch off the central heating in the summer. It does not effect the supply of hot water for the taps.
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 **Pressure gauge** - This indicates the central heating system pressure. The pointer indicates the actual pressure, which will increase as the system warms up.
Do not operate the boiler if the pointer falls below 0.8 bar. Contact your Service Engineer to have the system re-pressurised.
- 6 **Temperature display** - This range of small lights indicate the temperature of the water in the boiler leaving the heat exchanger to either heat the store or the heating system - see paragraph 3 above.
- 7 **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.
- 8 **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.
- 9 **Clearances and ventilation** - Always ensure that the boiler has the following minimum clearances for safety and servicing:-
Top: 200 mm, Bottom: 200 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.
- 10 **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.
- 11 **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 Heating switch is set to Heating & Hot Water.
- 12 **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.
- 13 **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: It will be necessary to re-set the correct time on the timer after a power failure.
If the mains water supply is ever cut off, the boiler will not supply domestic hot water. It will however, still provide central heating.
- 14 **Gas leak** - If a gas leak is suspected, turn off the gas supply and contact your local Gas Region.
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 in the 3-pin 13A plug.

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 electronic display (24 hr. clock) provided 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 \odot (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 \odot (central) position and your central heating will operate during your pre-set periods.

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

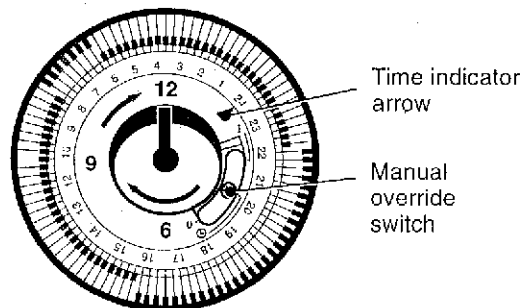


Fig. 2

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

Switch operation

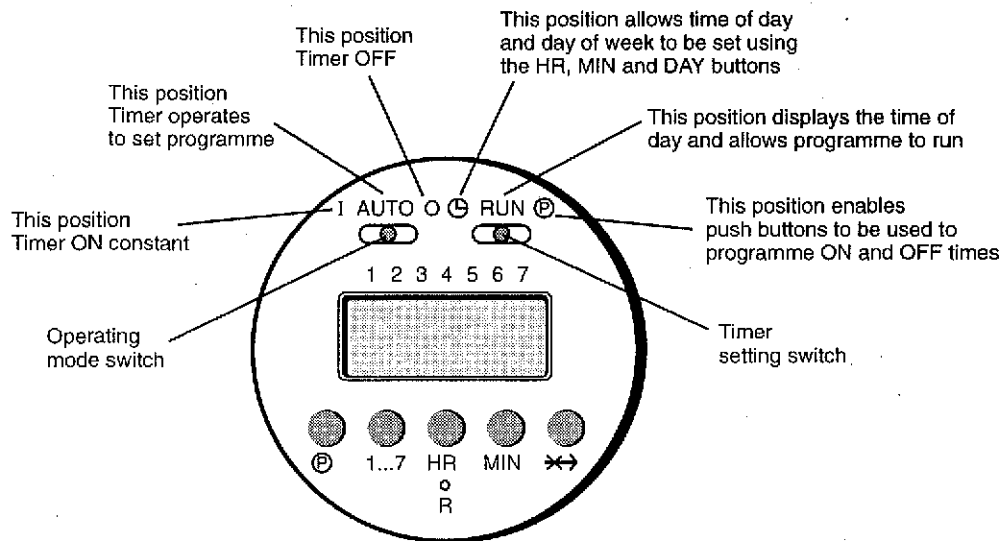


Fig. 3

Button operation

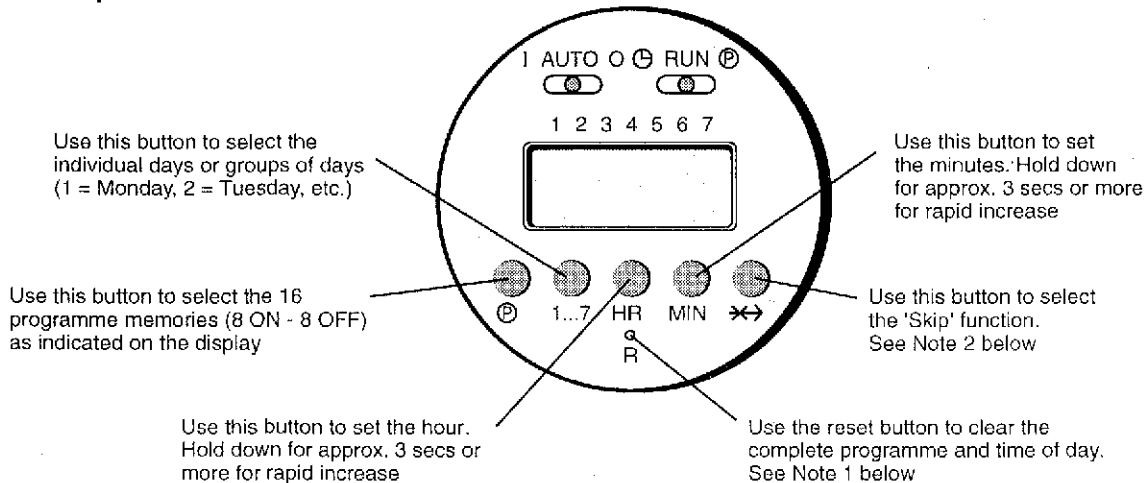









Fig. 4



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

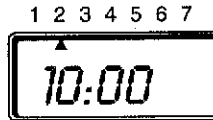
1 Press  (reset) to clear any previous inputs.


2 Set the timer setting switch to 

3 Set the timer using  and 

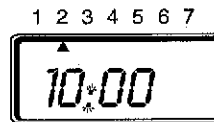
4 Set the actual day using  1...7


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).



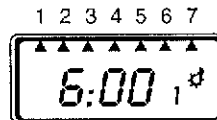
5 Set the time setting switch to 

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

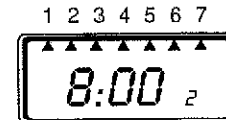
7 Select ON/OFF time selection (8 ON and 8 OFF are available) by pressing 




(Number and symbol in the display indicates the selection)

ON -




and OFF -




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 hot water heat exchangers on gas fired boilers manufactured by ICI CALDAIE are guaranteed for a period of 5 years from the date of installation.
- 4 The boiler is to be checked on installation by a CORGI registered installer.
- 5 The heating circuit is at all times to be inhibited with an anti corrosion solution.
- 6 This Guarantee does not cover breakdowns caused by incorrect installation, neglect, misuse, accident or failure to operate this boiler in accordance with the manufacturers' instructions.
- 7 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.
- 8 We strongly recommend that you complete and return the Guarantee Registration Card, but would advise you that failure to do so does not affect your statutory rights.



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