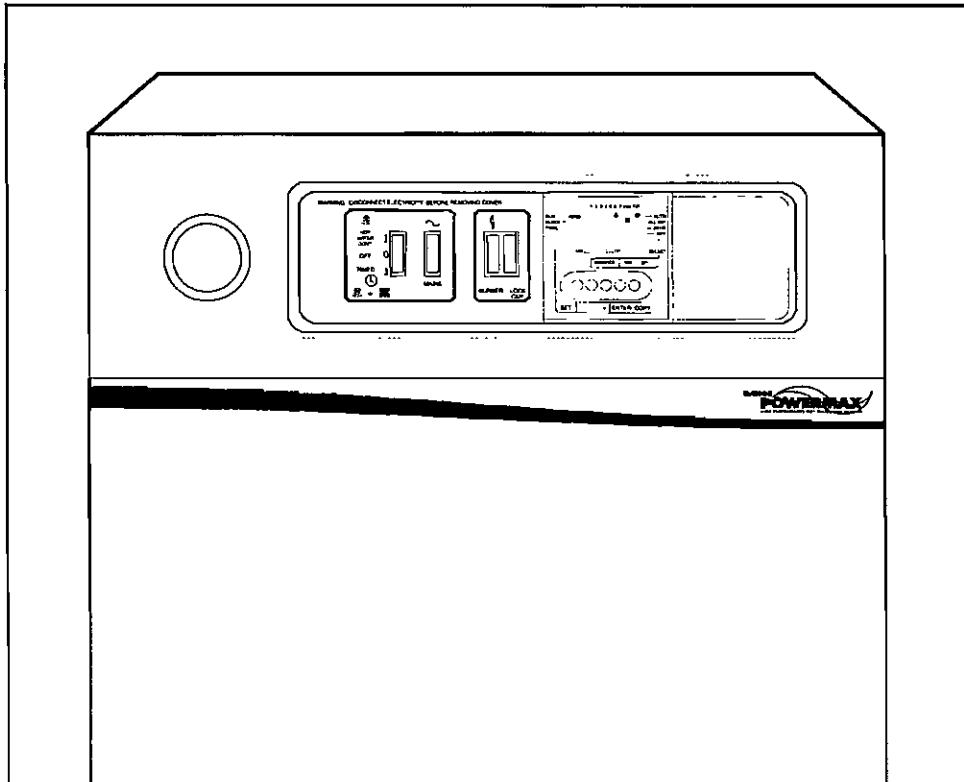


USER'S INSTRUCTIONS

TO BE LEFT WITH BOILER OR GIVEN TO HOUSEHOLDER

For 140, 155x & 185

RANGE **POWERMAX** HIGH PERFORMANCE HOT WATER & HEATING



POWERMAX OPEN VENT MODELS :

| | | | |
|-----------|------------|--------|-------------------------------|
| OV 140 P | OV 155x P | 185 P | WITH FITTED PUMP |
| OV 140 CP | OV 155x CP | 185 CP | WITH FITTED PUMP & PROGRAMMER |

POWERMAX SEALED SYSTEM MODELS :

| | | |
|-----------|------------|-------------------------------|
| SS 140 P | OV 155x P | WITH FITTED PUMP |
| SS 140 CP | OV 155x CP | WITH FITTED PUMP & PROGRAMMER |



The code of practice for the Installation, commissioning & servicing of central heating systems



SAFETY NOTICE

In your own interest and that of safety, it is the law that all gas appliances are installed and serviced by competent persons in accordance with gas safety (installation and use) regulations 1998. This appliance requires annual checking or servicing and this should be entrusted to a CORGI Registered Installer. All CORGI Registered Installers carry a CORGI ID card and have a registration number. Both should be recorded in your central heating log book. You can check your installer is CORGI registered by calling CORGI on 01256 372300.

DESCRIPTION

'Powermax' is a combination boiler in which the gas burner heats the contents of a built-in thermal store. This heated water is used as 'primary' water and circulated, as required, to the radiators. Domestic hot water ('secondary' water) is heated by a heat exchanger and delivered via a blending valve which is preset to 55 - 60°C for domestic use.

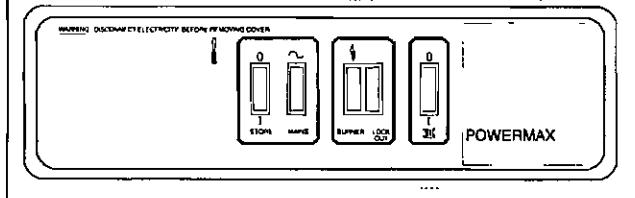
Operation is fully automatic and a pre-mixed burner is used to ensure that gas is burned cleanly and efficiently. The boiler control thermostat will try to maintain the thermal store at the correct temperature (around 80°C). A thermostat prevents the central heating pump from operating if the store is too cold. Note that hot water performance will be temporarily reduced after the central heating has been switched on with the heating system cold. It is normal for the outlet temperature to fall as more hot water is drawn off. We therefore recommend that showers supplied by this appliance should be of the thermostatic type.

To reduce heating costs, timed operation of the central heating is essential and a Powermax programmer (built-in or remote) is recommended. It will enable both hot water and heating periods - up to 3 per day - to be timed for both comfort and economy. The built-in programmer has 'average' time periods (5 days, plus 2 days) already in its memory - See Section 4 of the Setting Instructions. The central heating system should also include temperature controls and your installer will advise on these.

LIGHTING THE BOILER

- i Check that mains electricity and gas supply is turned on. An orange neon on the control panel glows when electricity is being supplied - see Fig.1.

Fig. 1



- ii Move the appliance on/off switch to 'I' (ON). For programmer models move the 3-way appliance switch up to 'I' 'HOT WATER CONT' - See Fig 2. The boiler is now operational, the burner will ignite and the green neon will glow, indicating the burner is working.
- iii If the burner fails to light, the ignition sequence will be automatically repeated until either the burner lights or a safety **LOCK-OUT** condition is signalled by the red neon. If red neon glows, switch to 'O' (OFF) at the appliance on/off switch, **WAIT TEN SECONDS BEFORE SWITCHING ON AGAIN**.

A. FRONT PANEL OPERATION

1. When the Powermax unit has an electricity supply the orange indicator light will be illuminated.
2. When the burner is heating the unit, the green indicator light will be illuminated.
3. If the red indicator is illuminated, the ignition is at lock-out and the boiler must be re-started as in C1.
4. For programmer models the main operating switch should be set in the "Timed" heating and hot water position. The unit can then be controlled through the programmer settings.

B. BUILT-IN PROGRAMMER OPERATION

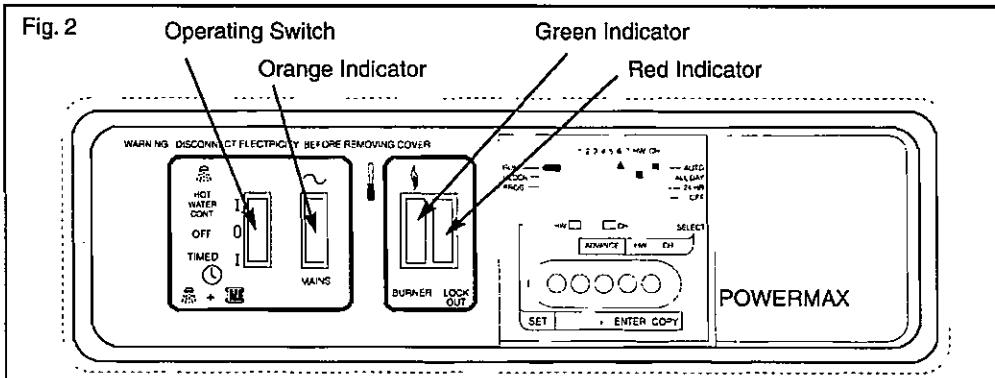
1. The programmer clock should be set at the correct time of day. Note: am/pm setting.
2. The programmer should be set to give the timed hot water and central heating periods which you require. Hot water is always on whenever central heating is requested and the programmer will automatically set this.
3. If the central heating and hot water are out of a timed period, ie. OFF and you wish to bring it ON manually, just press the Advance button. Similarly if the system is ON and you wish it to switch OFF again press the Advance button.

C. SIMPLE FAULT RECTIFICATION

1. If the Powermax burner has not ignited, ie. green light is not on but large red light is illuminated, switch OFF at the operating switch, leave for at least 10 seconds and switch back to Timed ensuring that the hot water or heating is switched ON, ie. the red indicator light on the programmer is illuminated. The unit will then try to light the burner again.
2. If the built-in programmer becomes frozen or scrambled you may return it to the factory pre-set programme by pressing the Minus (-) button and Enter button simultaneously. If this resolves the problem you will need to re-enter the clock and timed periods to your requirements.
3. If the programmer fault cannot be rectified then put the operating switch on 'Hot Water Cont' which will allow the unit to heat up and provide hot water. The programmer will then need rectifying before central heating can be operated.

Note that separate operating instructions are supplied with the optional Powermax 'Diadem' remote programmer.

Fig. 2



NOTES

If the green neon fails to glow (indicating the burner is not working) it may be for several reasons :

- a. An external thermostat may be turned off and/or the stored water may already be at working temperature.
- b. The electric supply may have failed (the orange neon will not glow) - check 3amp fuse in switch or in plug if fitted.
- c. The gas supply may have been turned off (check gas service cock at the meter).
- d. Water loss from the central heating system may have caused safety shut down - Refer to Sealed System Models.

IMPORTANT

The correct operating position for the 3-way switch is the down TIMED position which enables HOT WATER and HEATING to be obtained when required. The up HOT WATER position will provide 24 hour hot water availability in the unlikely event of the programmer failing.

OPERATING HINTS

- a. To turn the appliance OFF for short periods switch the appliance on/off switch to the 'O' (OFF) position.
- b. To turn appliance OFF for long periods switch off the electricity supply and also turn off the gas supply.
- c. During the summer months, the central heating can be switched off by the RH switch (Fig.1 non-programmer model); or by the RH button of the programmer (Fig.2). NB THE LIFE OF THE CENTRAL HEATING PUMP WILL BE PROLONGED IF YOU SWITCH THE CENTRAL HEATING ON FOR A MINUTE OR SO EACH WEEK DURING THE SUMMER OFF PERIOD.

WARNING : DO NOT HANG ITEMS UPON THE APPLIANCE TO DRY. If a storage shelf is constructed above the appliance it should be removable and must be at least 75mm above the top of the casing.

PROGRAMMER MODELS

The built-in Powermax programmer is an electronic 7-day central heating and hot water control, designed to be easy to use and understand. Properly programmed it will help you save energy and create a comfortable environment in your home.

For convenience morning and evening ON/OFF periods have been pre-set in the programmer 'memory' and will be retained, even if the mains power supply is interrupted. Details of these ON/OFF periods are given in the next section, together with step-by-step setting instructions.

The programmer automatically links the hot water HW and central heating CH operations. This ensures that central heating is only available during hot water ON time periods when the burner can keep the thermal store hot.

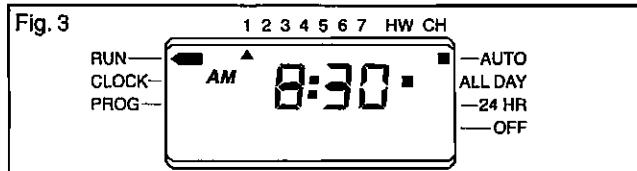
The following combinations can be set in the RUN mode (using the ENTER and COPY buttons):-

| Hot Water Programme | C/Heating Programme |
|---------------------|--|
| AUTO | AUTO OFF |
| ALL DAY | AUTO ALL DAY (First ON to last OFF time) OFF (eg : Summertime) |
| 24 HOUR | AUTO ALL DAY 24 HOUR (Continuous) OFF |
| OFF | OFF |

THE RECOMMENDED COMBINATION IS :

| | |
|--------------------------------|-----------------------------|
| Hot Water Programme ALL DAY | C/Heating Programme AUTO |
|--------------------------------|-----------------------------|

The display should then look like this :



The Powermax programmer also offers the following features :

- * Up to 3 On-Off time periods every 24 hours plus the option of programming different times for each day of the week.
- * A central heating ADVANCE button allowing an instant switch from OFF to ON or ON to OFF without affecting normal settings.

HOW TO SET 7 DAY PROGRAMMER

Your installer should have commissioned the programmer by moving the slider switch on the rear of the programmer to the right. If this has not been done the display will show SWITCH ON and your installer should then carry out the operations as described in section 12 of the installation instructions.

1. BUTTONS, INDICATORS & SYMBOLS

Most of the control buttons on the programmer are dual purpose. They can be used as SET buttons for inputting time of day, ON/OFF times, etc, or as SELECT buttons for using the advance facility and choosing override programme options.

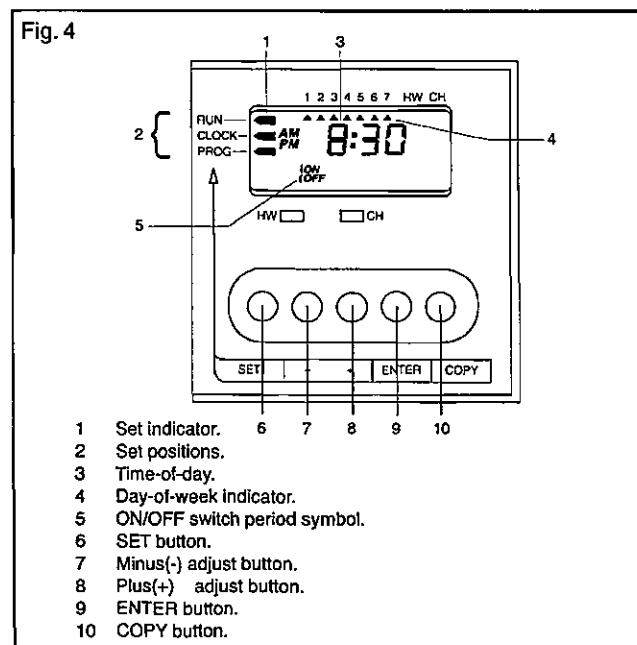
Figure 4 can be used to identify the SET buttons, indicators and symbols referred to in sections 3 and 4.

2. APPLIANCE SWITCH

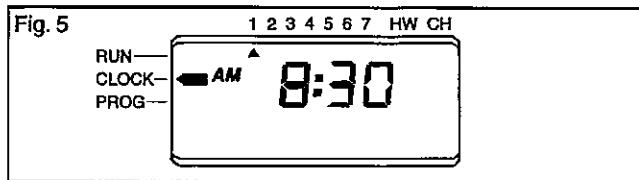
Move 3-way appliance switch Fig.2 down to TIMED.

3. SETTING DAY & TIME

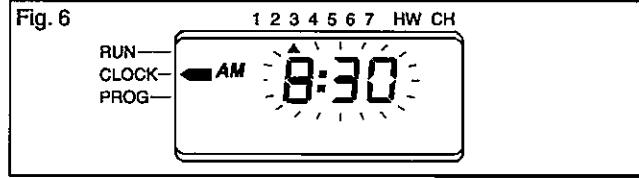
NOTE : When setting the day, time of day or switch times, if a period exceeding 60 seconds is allowed to elapse between button presses, the programmer will automatically return to normal RUN mode and any changes made since the last press of the ENTER button will not be saved.



- i Press the SET button so that the SET INDICATOR is pointing to the CLOCK position on the front of the programmer. the DAY OF THE WEEK INDICATOR will now flash (see Fig.5).



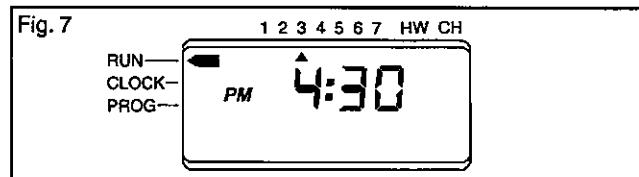
- ii Use the PLUS (+) or MINUS (-) to move the DAY OF THE WEEK INDICATOR to the current day of the week. Numbers relating to the day of the week are printed along the top of the programmer display, ie 1=Monday, 2=Tuesday and so on.
- iii Press the ENTER button. The TIME OF DAY will now flash (Fig.6).



- iv Now use the (+) or (-) BUTTONS to alter the display to the correct time of day making sure that the AM/PM SYMBOL is also correct (FIG.7).

Note : By pressing and releasing the (+) or (-) buttons you advance or retard the time in 1 minute steps. If you keep the button depressed the display will fast cycle and the time can be changed more rapidly.

- v Press the ENTER button. Now use the SET BUTTON to return the SET INDICATOR to the RUN POSITION.



4. SETTING 'ON' & 'OFF' TIMES

Note : The minimum ON or OFF period that can be set is ten minutes.

The Powermax programmer already has a factory pre-set programme of ON/OFF times in its memory. These are based on the most commonly used settings and are as follows:

Monday to Friday

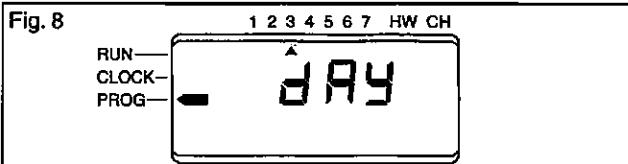
| | |
|------------------|------------------|
| 1st ON: 7.00 am | 1st OFF 10.00 am |
| 2nd ON: 12.00 pm | 2nd OFF 12.00 pm |
| 3rd ON: 5.00 pm | 3rd OFF 11.00 pm |

Saturday/Sunday

| | |
|------------------|------------------|
| 1st ON: 7.30 am | 1st OFF 11.30 am |
| 2nd ON: 12.00 pm | 2nd OFF 12.00 pm |
| 3rd ON: 5.00 pm | 3rd OFF 11.00 pm |

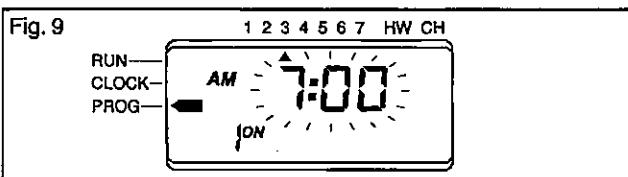
If these settings do not meet your own requirements then they can be easily changed as follows:

- i Press the SET BUTTON twice so that the SET INDICATOR is in the PROG position. The display will indicate the 'day' and the DAY OF THE WEEK INDICATOR will now flash.



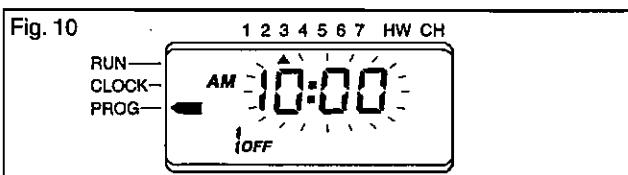
- ii Use the (+) or (-) BUTTONS to move the indicator to the day of the week that you wish to change the times for. Press ENTER.

The display will show '1 ON' and then first ON time for that day will flash (see FIG.9).



- iii Adjust the flashing time as required by using the (+) and (-) buttons then press ENTER.

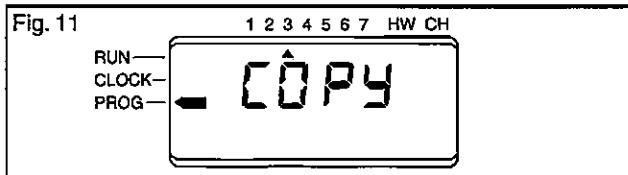
The display will now show '1 OFF' and the first programmed OFF time for the day will flash (see FIG.10).



- iv This can now be altered in the same way as the '1 ON' time mentioned above.

- v Follow the same procedure for the 2nd and 3rd ON/OFF times remembering to press ENTER after each change to the programme. If you do not wish to alter a particular time then simply press ENTER and the display will move on to the next ON/OFF time leaving the previous one unchanged.

Note: The programmer provides up to three ON/OFF periods each day. If you do not want to use all these, a switch period can be cancelled by programming the ON operation for the same time as the OFF operation eg 2nd ON at 12.00 pm and 2nd OFF at 12.00 pm. When the 3rd OFF time has been entered the programmer will display the word COPY and the DAY OF THE WEEK INDICATOR will flash (see FIG.11).



If required these ON/OFF times can now be quickly copied so that they apply to any other day(s) you choose. This avoids separately programming days with identical switching times eg Monday to Friday. If not copying press ENTER and press SET button to return SET INDICATOR to run position.

- vi Use the (+) and (-) BUTTONS to move the DAY OF THE WEEK INDICATOR to the next day that you wish the times to apply and press the COPY BUTTON, the display will indicate 'IN'.

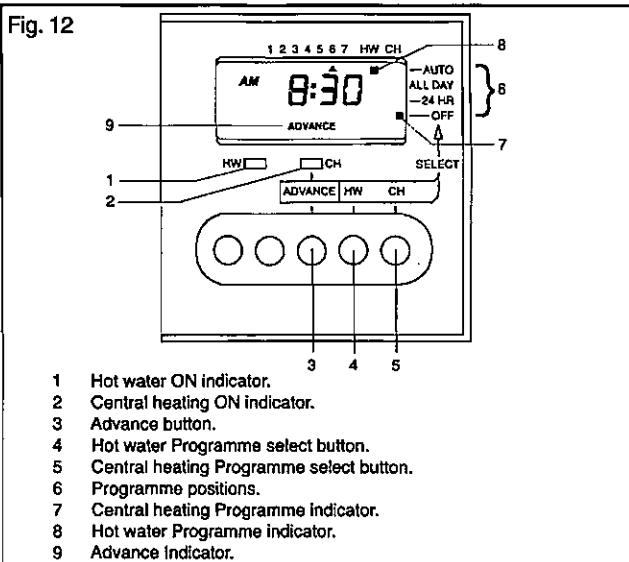
Continue in this way until the programme has been copied to all the days that you wish it to apply to.

- vii When you have finished copying simply press ENTER. The word COPY will be replaced with 'day' and the DAY OF THE WEEK INDICATOR will flash.

You can now programme those days that require different times to the ones you have just copied by following the same procedure as described at the start of this section, parts ii to v.

5. SELECT BUTTONS, INDICATORS & SYMBOLS

The following diagram (Fig.12) can be used to identify the SELECT buttons and indicators referred to in sections 5 to 7.

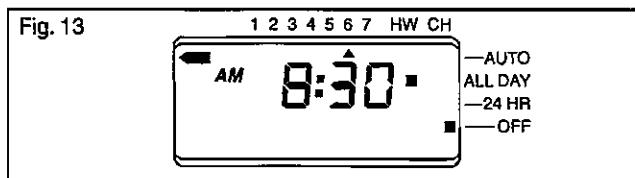


6. PROGRAMME SELECTION

The following programmes can be selected for either HOT WATER by itself or HOT WATER and HEATING together.

- AUTO: When AUTO is selected the programmer will switch ON and OFF according to the switching times held in the memory, ie up to three ON/OFF periods per day.
- ALL DAY: When ALL DAY is selected the programmer will switch the system on at the 1st ON TIME and OFF at the 3rd OFF TIME.
- 24 HOUR: When 24 HOUR is selected the system remains on continuously, ignoring all the time settings.
- OFF: When OFF is selected the programmer clock continues to operate but the system remains off.

To select a hot water programme press the HW PROGRAMME SELECT BUTTON until the HW (HOT WATER) PROGRAMME INDICATOR is pointing to the required programme, e.g. ALL DAY (see Fig. 13)



To select a central heating programme follow the same procedure using the CH PROGRAMME SELECT BUTTON.

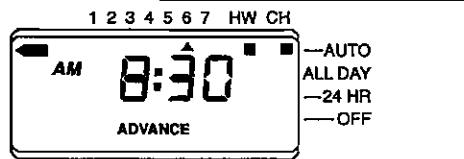
Note: When either HOT WATER or HEATING is switched to ON the relevant INDICATOR LIGHT will be illuminated (see Fig.12).

7. USING THE ADVANCE BUTTON

The ADVANCE facility allows you to bring forward the next ON or OFF period without having to alter the programmed ON/OFF times.

Press the ADVANCE BUTTON once and release. The word ADVANCE will appear in the display (see Fig.14).

Fig. 14



If the programmer was originally ON it will now switch OFF and stay OFF until the next programmed ON time.

The opposite will apply if the programmer was originally OFF.

In both cases the unit will then revert to the normal programme times.

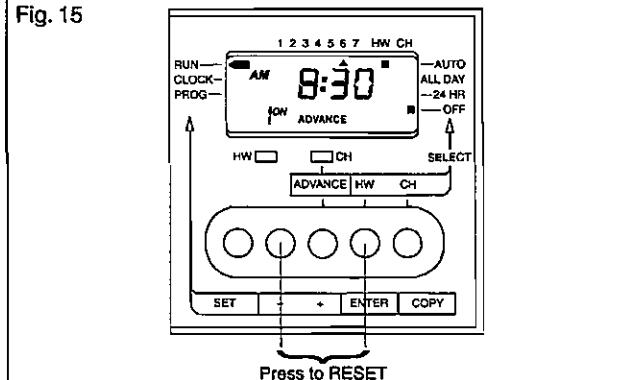
If you wish to cancel the advance simply press the ADVANCE BUTTON again and the word ADVANCE will disappear from the display.

Note: The ADVANCE facility has no effect when the CH PROGRAMME INDICATOR is in either the 24 Hour or the OFF position.

8. PROGRAMMER FAULTS

Electronic equipment can, in exceptional circumstances be affected by electrical interference. If the display or switching programme becomes frozen or scrambled, or you wish to revert to the factory pre-set programme, you can RESET the programmer by pressing the MINUS (-) adjust button and the ENTER/HW SELECT BUTTON together (see Fig. 15).

Fig. 15



After using the RESET procedure you will need to reprogramme the day and time of day plus any changes you wish to make to the factory pre-set programme.

The Powermax programmer is not user serviceable. DO NOT ATTEMPT TO DISMANTLE IT.

In the unlikely event of it developing a fault, contact your CORGI Registered Installer, or British Gas, or RSA Waterheating Limited; but before doing so try the RESET PROCEDURE above.

Should a replacement programmer be required your Installer can obtain this as product Code No. P458.

9. RESERVE BATTERY

The programmer is fitted with a NON-RECHARGEABLE LONG LIFE battery which will maintain the programmed ON/OFF settings for a period in excess of 2 years.

This is more than sufficient to cover all the expected power interruptions during the life of the unit.

Note: If a power interruption of more than 48 hours occurs the 'time of day' will need to be re-adjusted once the power is restored.

THERMOSTATIC SAFETY CUT-OUTS

There are two thermal cut-outs which will only operate if a fault condition arises. They require manually resetting by your installer after the fault has been rectified.

SEALED SYSTEM MODELS 140 & 155x ONLY

Powermax combination boilers installed with a 'sealed system' primary circuit have some additional features the householder should be aware of :

Safety Relief Valve - Your installer will have fitted a pipe where it can discharge safely.

Low Water Level Float Switch - This is a safety device designed to shut down the boiler if the heating system has lost water or air has collected in the thermal store.

Pressure Gauge - On front of boiler.

Automatic Air Vent Fitting - Access is via the blue cap on top of the boiler and must not be obstructed.

Expansion Vessel - This is not built into the boiler and your installer will have fitted it nearby; probably close to the filling loop.

Water Filling Loop - For topping up system occasionally or replacing water lost, eg when a radiator is removed for decorating.

CHECKING WATER PRESSURE IN HEATING SYSTEMS

Even a very small leak of water from the radiator circuit will, after a while, cause the float switch to shut down the boiler as a safety precaution. Should this occur, the leak must be repaired, the system re-filled and the switch will then allow normal operation.

A pressure gauge is located on the switch panel at the front of the Powermax. (A second gauge might be fitted on the expansion vessel if this is some distance from the boiler.) The pressure in the heating system (ie thermal store, radiators and pipework circuit) can be read off the gauge and should normally be 0.9 to 1.0 bar with the system $<40^{\circ}\text{C}$ and the central heating pump switched off.

A loss of water will be indicated by the pressure gauge registering a low (or no) pressure.

If the pressure indicated at normal working temperatures - ca. 80°C - exceeds 2.5 bar, switch off the boiler and contact your installer.

NB : A pressure gauge is not fitted on Powermax boilers suitable only for low pressure open vented primary systems.

RE-FILLING

1. Remove blue moulded cover (on the top panel of boiler) by squeezing the 'ears' and pulling upwards. Release the small plastic cover on the automatic air vent by unscrewing one full turn. Do not remove. Switch off central heating.
2. Connect the filling loop flexible hose to the tap on the cold (mains) water supply. Loosely connect the other end of the hose to the valve on the radiator circuit (so that air can escape).
3. Turn on the tap slowly until water emerges from the coupling left untightened (showing that air has been expelled from hose). Tighten both couplings - open second tap if fitted - and gently admit water into system. Check that air is being expelled from air vent. Allow pressure to rise slowly to between 0.9 to 1.0 bar and turn off tap(s). This may take some time in large systems.
4. Bleed air from radiators and from vents fitted at the highest points of the circuit. When all air has been removed, re-check pressure on gauge and 'top-up' if necessary to approximately 0.9 bar.
5. With tap(s) closed, remove flexible hose and store nearby. Re-start the boiler and switch on central heating. The temperature of the water in the system now rises with the pressure constantly increasing.

NB: A pressure in excess of 2.5 bar indicates a fault condition and your installer should be consulted. Switch off boiler before the pressure reaches 3.0 bar.

SAFETY ADVICE

If a gas leak is found or suspected, turn off the gas supply, ventilate the area and contact the gas supplier or CORGI engineer. Do not use naked lights or electrical switches if a build up of gas is suspected.

This boiler when installed in a compartment (cupboard) requires adequate ventilation. **Do not obstruct ventilators.**

Do not drape or store clothes, or other combustible materials on the boiler itself or allow such materials to accumulate around the bottom of the casing where they may restrict air movement.

Boilers installed with an extended flue system may have an exposed flue pipe in the loft space. This pipe becomes very hot when the boiler is working. Do not touch. Do not allow flammable material to touch pipe.

It is important that no unauthorised modifications are made to this appliance and that only genuine Powermax parts are used for servicing. Critical components are sealed during manufacture and must not be interfered with.

Minimum clearances for servicing and safety

At the top 400mm – At the sides 10mm total

At the front 450mm unless behind an openable door

Sealed Systems

Ask your installer to identify the discharge pipe from the relief valve. Normally no water is vented but scalding water and steam may be emitted and indicate a fault condition. Switch off boiler and call installer. (Precautions should be taken to prevent the outlet becoming blocked and to minimise the hazard to persons (especially children) where the pipe discharges).

Electricity Supply

WARNING - THIS APPLIANCE MUST BE EARTHED AND THE SUPPLY PIPE SHOULD BE EARTH BONDED

Connections should be made to a 230V - 50 Hz supply. This appliance must be protected by a 3amp fuse. If a 13amp (BS.1363) plug is used or if any other type of plug is used, there should be a 3amp fuse in the circuit.

Frost Precautions

For short periods, where a room thermostat is fitted, turn to a low setting and leave the system on.

Provision is made inside the boiler for connecting to a 'frost protection' thermostat. The Sopac-Jaeger TA 547-04 (Double Outlet) is a suitable low temperature thermostat.

If the appliance is likely to be turned off for long periods in severe weather, to prevent freezing the complete system including the primary store should be drained.

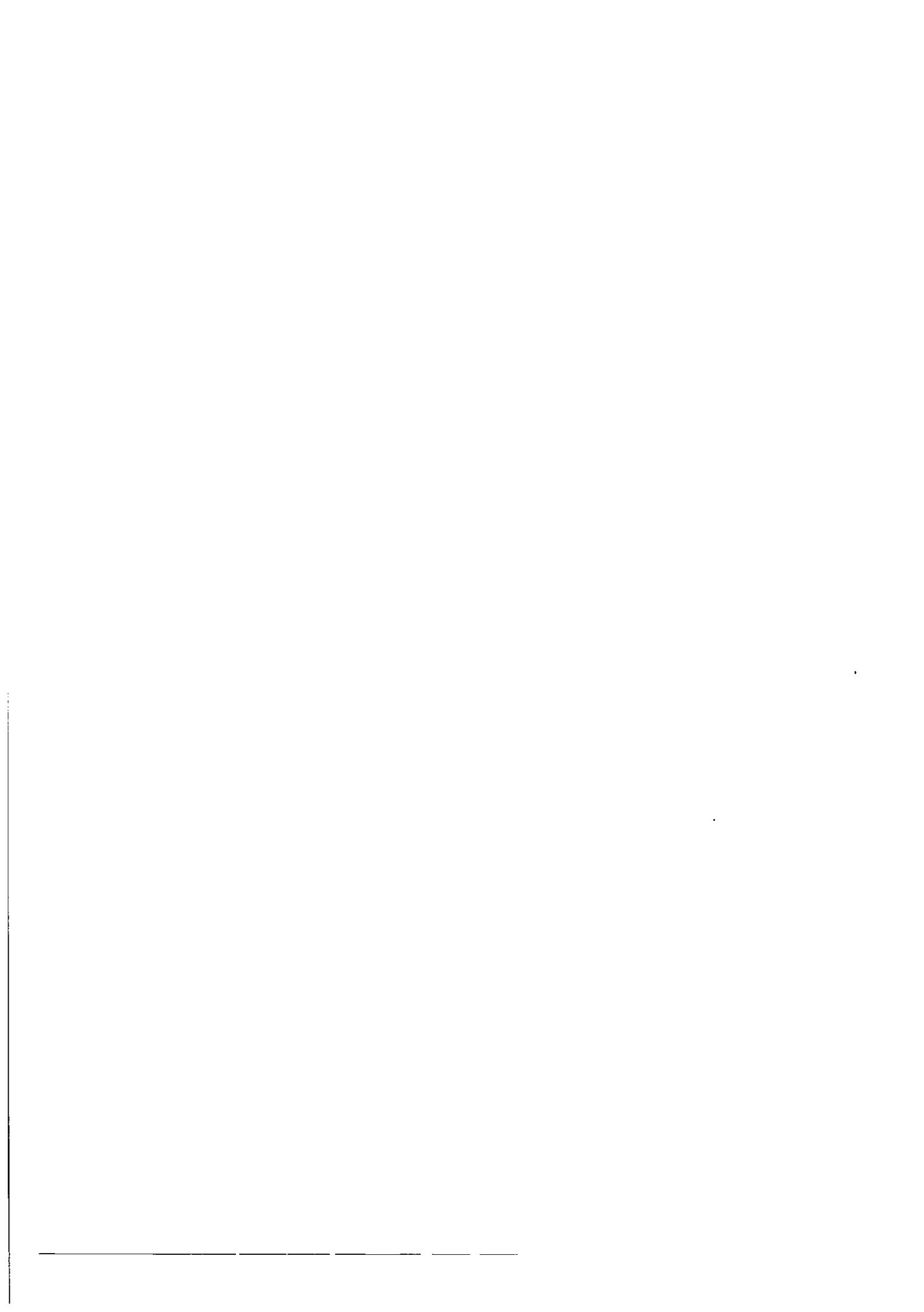
To clean the appliance

Simply wipe the outer casing with a soft, damp cloth. DO NOT use scouring powders or steel wool pads as these will scratch the finish of the case.

SERVICE

If the boiler fails to work or if any gas leaks or faults are found or suspected, switch OFF boiler and turn off gas as above.

We care about the safety and efficiency of your Powermax boiler and our Customer Service Department will be pleased to arrange for a trained service engineer to call. Simply telephone 0870 606 0933 and ask for Customer Service.





RANGE
POWERMAX

P 444
04/01

benchmark

The code of practice for the installation, commissioning & servicing of central heating systems

BAXI POTTERTON
BROWNEDGE ROAD
BAMBER BRIDGE
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(Technical Helpline)TEL 0870 606 0955
(Service)TEL 0870 606 0933 FAX 0870 606 0966
(Spares)TEL 0870 6060454

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