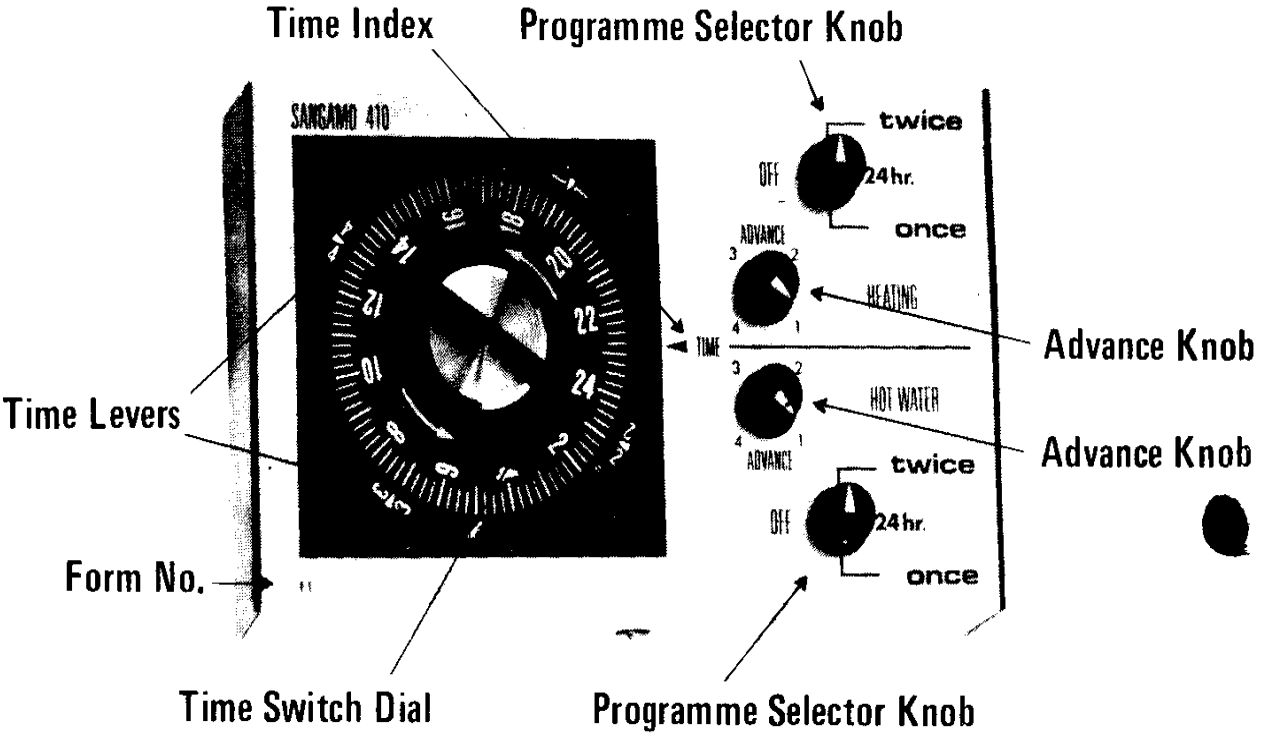
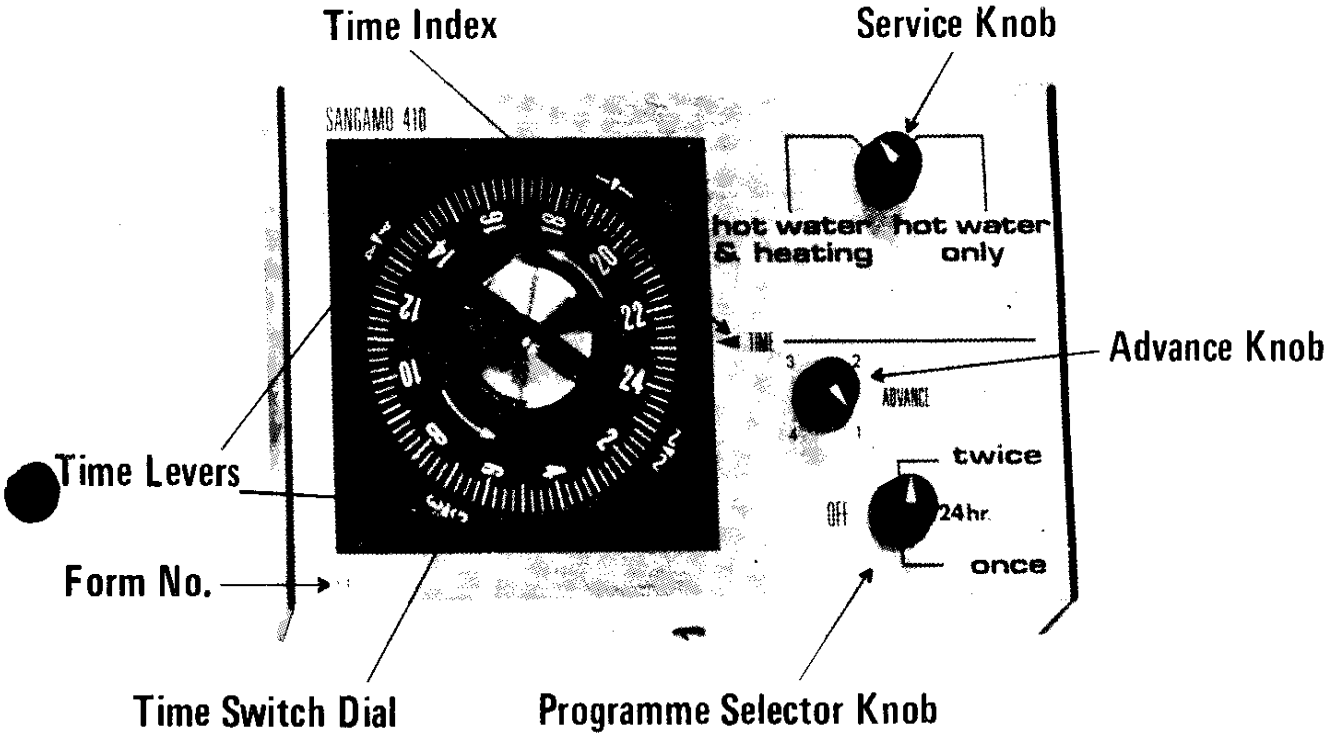
Sangamo
410 Programmer

Installation and User's Instructions

To be left with the householder



The form number of each programmer is indicated on the left-hand lower corner, E.G. F.1 (above left) to indicate Form 1. The programmes available on each model are given on the back of this leaflet.



Time Switch

The easy-to-read 24-hour dial is marked every 15 minutes and fitted with two 'on' and two 'off' levers. The 'on' levers, numbered 1 and 3 are red and the 'off' levers, numbered 2 and 4 are black. These numbers correspond to the numbers around the ADVANCE control knob.

To set the time levers, push each one in and slide it either clockwise or anti-clockwise to the appropriate time. After setting the levers turn the time switch dial anti-clockwise for one complete turn and then continue turning it until the time of day is in line with the time index.

Service Knob (Forms 4, 5, 6 & 7).

Manually operated system selector enables you to choose the service required. (E.g. Hot Water only or Hot Water & Heating.)

Programme Selector

This knob gives you a choice of switching operations. When the pointer is turned to :

twice – all time levers are effective so there are 2 on/off operations per day (unless the ADVANCE knob is used)

24 hr. – time levers non-effective (i.e. continuously 'on')

once – time levers 1 and 4 effective only (1 on/off operation per day)

off – time levers non-effective (i.e. continuously 'off')

Advance Knob

The ADVANCE knob indicates the number of the last time lever to pass the time index. If you wish to advance any operation you should :

Turn the ADVANCE knob until it indicates the number of the time lever whose operation you wish to anticipate.

Example 1: When lever 1 ('on') has passed the time index, the ADVANCE knob will indicate 1. Turning the knob to indicate 4, the switch will immediately anticipate the action of lever 4 ('off' lever) and the circuit will be 'off' and remain 'off' until lever 1 passes the time index.

Example 2: When lever 3 ('on') has passed the time index the ADVANCE knob will indicate 3. Turning the knob to indicate 4, the switch will immediately anticipate the action of lever 4 ('off') and the circuit will be 'off' and remain 'off' until lever 1 passes the time index again.

Note: Forms 1, 2 and 3 only
These switches have two ADVANCE knobs which are mechanically linked. Independent control of any service is achieved by depressing and turning the ADVANCE knob of that particular service.

Installation and Wiring Instructions

1. Loosen the two locating screws (fig 1).
2. Pull the terminal plate from the rear of the programmer.
3. Secure the plate firmly in position to a conduit box using the screws provided, or to any flat vertical surface free from condensation, using either countersunk machine screws or countersunk No.6 wood screws. For conduit box fixing, pass the cable through the centre of the terminal plate. When mounted other than on a conduit box, a cable 'knock out' is provided on the underside of the case, finger pressure being sufficient to push this out to facilitate cable entry.
4. Strip back insulation by 8mm (5/16 ins.) from ends of wires so that satisfactory connection with the terminals may be made.
5. When all electrical connections are made, plug the programmer into the terminal plate, ensuring that the external wiring is not trapped under the motor.
6. Tighten the two locating screws.

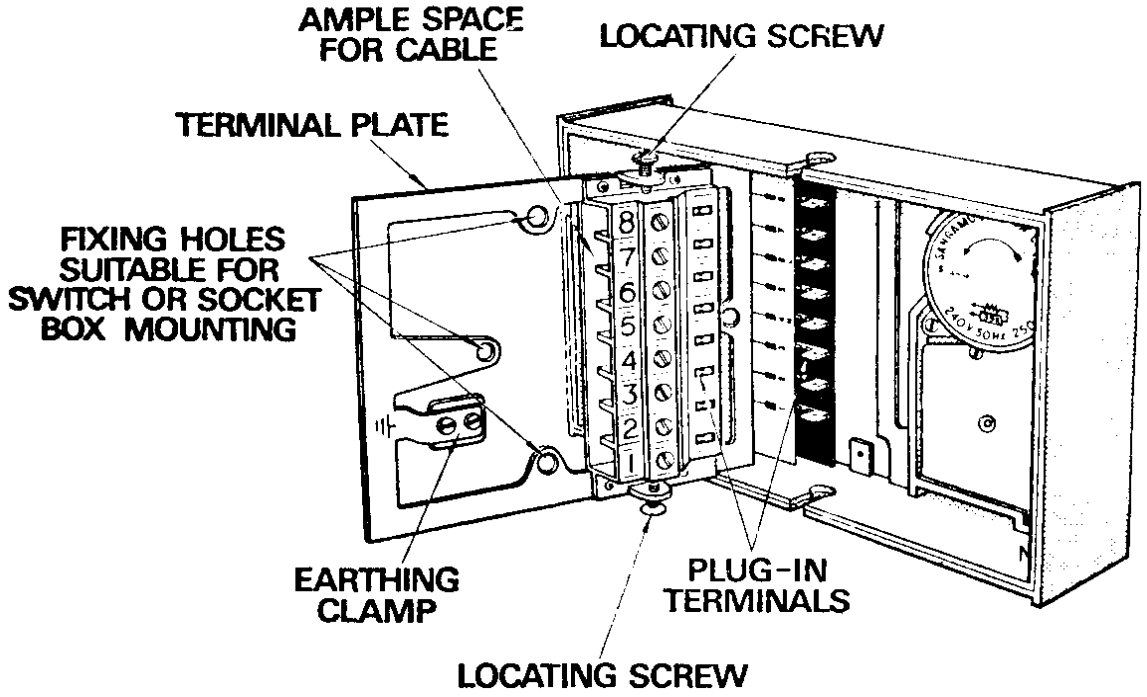


Fig. 1

Voltage rating:	As shown on identification label of switch
Contact rating:	10A resistive load 2.5A inductive load
Exposure of live parts:	Enclosed
Moisture protection:	Ordinary
Dirt protection:	Normal situations
Shock protection:	Class 1
Ambient temperature range:	0°C. to 55°C.

ELECTRICAL CONNECTIONS

IT IS ESSENTIAL THAT THIS PROGRAMMER BE INSTALLED ONLY BY A QUALIFIED ELECTRICIAN.

AN INSTALLATION MANUAL IS AVAILABLE TO QUALIFIED INSTALLERS ON REQUEST.

WARNING: This programmer must be earthed. Terminals are for fixed wiring only. Provision for Class A disconnection of the supply to the control must be made in the fixed wiring.

This product is guaranteed by your supplier for 1 year from date of purchase. If it should become defective please contact your installer or supplier for a replacement unit.

Programmes Available

F1

Independent control of heating and hot water

HW	OFF	HW	ON 24hr.
CH	OFF	CH	ON once
HW	ON twice	HW	ON 24hr.
CH	OFF	CH	ON 24hr.
HW	ON twice	HW	OFF
CH	ON twice	CH	ON twice
HW	ON once	HW	OFF
CH	OFF	CH	ON once
HW	ON once	HW	OFF
CH	ON twice	CH	ON 24hr.
HW	ON once	HW	ON twice
CH	ON once	CH	ON once
HW	ON 24hr.	HW	ON twice
CH	OFF	CH	ON 24hr.
HW	ON 24hr.	HW	ON once
CH	ON twice	CH	ON 24hr.

F2

Hot water and heating jointly controlled, alternatively hot water only

HW	OFF	HW	ON once
CH	OFF	CH	ON once
HW	ON twice	HW	ON 24hr.
CH	OFF	CH	OFF
HW	ON twice	HW	ON 24hr,
CH	ON twice	CH	ON twice
HW	ON once	HW	ON 24hr.
CH	OFF	CH	ON once
HW	ON once	HW	ON 24hr.
CH	ON twice	CH	ON 24hr.

HW = Hot water
CH = Central heating

F3

Independent control of two particular zones

Zone 1	OFF	Zone 1	ON 24hr.
Zone 2	OFF	Zone 2	ON once
Zone 1	ON twice	Zone 1	ON 24hr.
Zone 2	OFF	Zone 2	ON 24hr.
Zone 1	ON twice	Zone 1	OFF
Zone 2	ON twice	Zone 2	ON twice
Zone 1	ON once	Zone 1	OFF
Zone 2	OFF	Zone 2	ON once
Zone 1	ON once	Zone 1	OFF
Zone 2	ON twice	Zone 2	ON 24hr.
Zone 1	ON once	Zone 1	ON twice
Zone 2	ON once	Zone 2	ON once
Zone 1	ON 24hr.	Zone 1	ON twice
Zone 2	OFF	Zone 2	ON 24hr.
Zone 1	ON 24hr.	Zone 1	ON once
Zone 2	ON twice	Zone 2	ON 24hr.

F4

Hot water and heating jointly controlled, alternatively hot water only

HW	OFF
CH	OFF
HW	ON twice
CH	OFF
HW	ON twice
CH	ON twice
HW	ON once
CH	OFF
HW	ON once
CH	ON once
HW	ON 24hr.
CH	OFF
HW	ON 24hr.
CH	ON 24hr.

F5

Control of two-speed fan on storage heaters

N	OFF
B	OFF
N	ON twice
B	OFF
N	ON once
B	OFF
N	ON 24hr.
B	OFF
N	OFF
B	ON twice
N	OFF
B	ON once
N	OFF
B	ON 24hr.

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F6

Warm air system with provision for ventilation

H	OFF
V	OFF
H	ON twice
V	OFF
H	ON once
V	OFF
H	ON 24hr.
V	OFF
H	OFF
V	ON 24hr.

F7

Optional priority system for heating and hot water

PHW	OFF
PCH	OFF
PHW	ON twice
PHW	ON once
PHW	ON 24hr.
PCH	ON twice
PCH	ON once
PCH	ON 24hr.

F8

Simplified Programmer

OFF
ON twice
ON once
ON 24hr

F9

Independent control of heating and hot water.

Programmes available as F.1

N.B. F.9 and F.1 are not interchangeable

HW = Hot water
PHW = Priority hot water
PCH = Priority central heating
H = Heat
V = Vent
N = Normal
B = Boost

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IMPORTANT

Although every care is taken to ensure the accuracy of the electrical system circuit diagrams shown, they are intended for guidance only.

Sangamo Time Controls or Associated Companies cannot be held responsible or liable for the circuit connections other than those directly associated with the programmer.

Electrical Connections

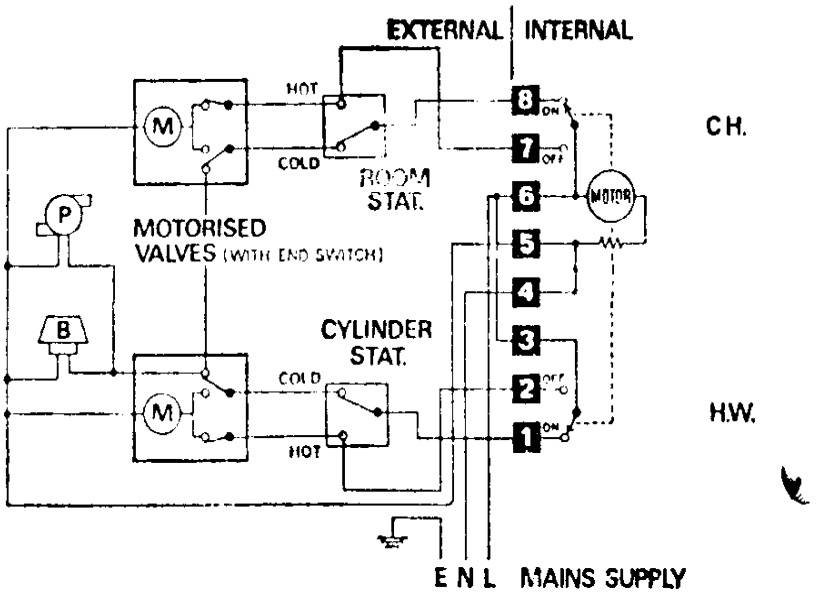
It is essential that this programmer be installed by a qualified electrician.

Warning

This programmer must be earthed. Terminals are for fixed wiring only. Provision for Class A disconnection of the supply must be made in the fixed wiring.

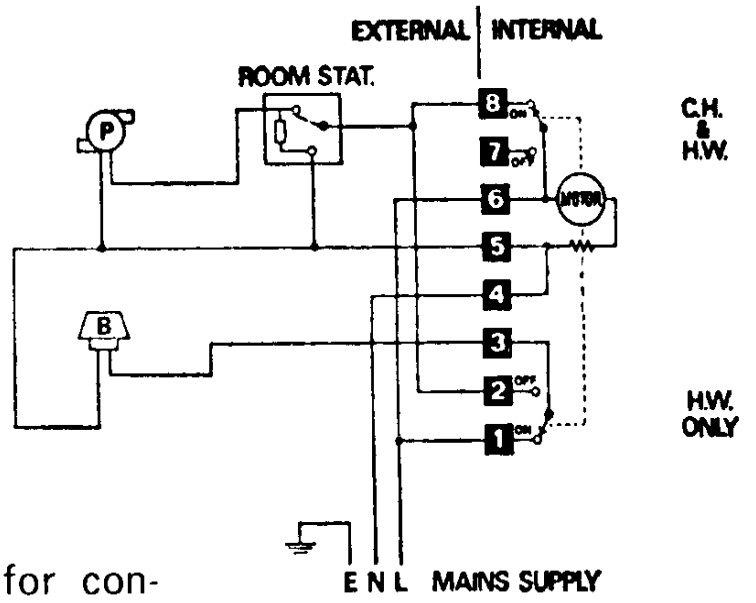
Sangamo Time Controls, Port Glasgow, Renfrewshire PA14 5XG.

Form 1



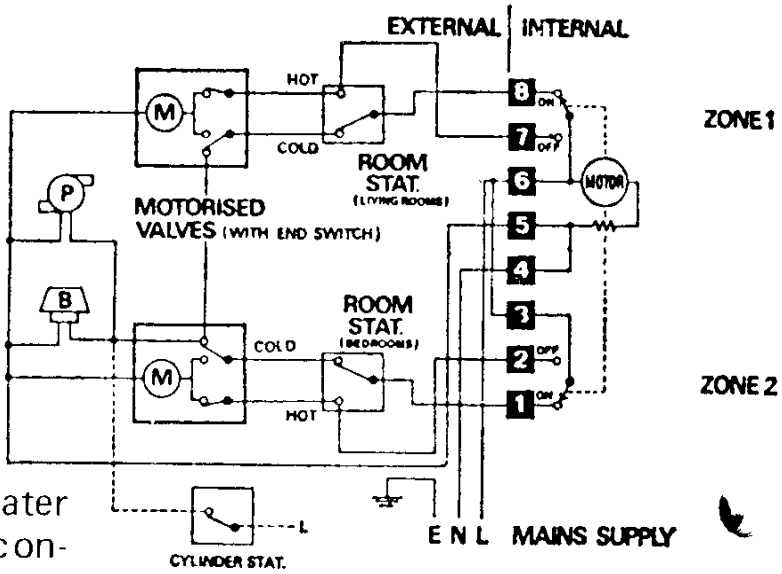
A two-circuit programmer for the independent control of a fully pumped central heating and domestic hot water system. Each circuit has an advance knob and programme selector knob.

Form 2



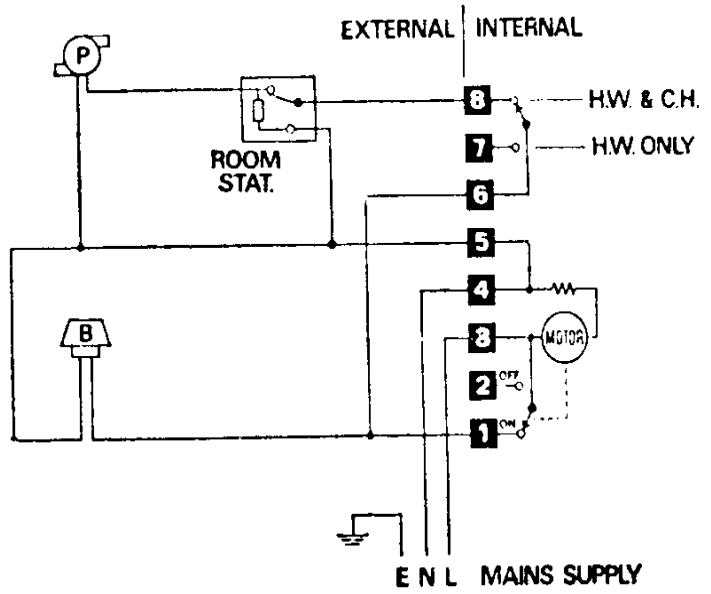
A two-circuit programmer for controlling pumped central heating and gravity hot water, alternatively hot water only. An electrical interlock ensures hot water is provided when the central heating is 'on'. Each circuit has an advance knob and programme selector knob.

Form 3



A two-circuit programmer for independent control of two particular zones such as 'living rooms' and 'bedrooms'. The hot water would be temperature controlled using a cylinder thermostat to control a motorised valve. Another method would be to use the cylinder thermostat to shut off the boiler and a Cyltrol valve fitted in the return from the indirect heater to control the water flow. Each circuit is fitted with an advance knob and programme selector knob.

Form 4



A single-circuit programmer for controlling pumped central heating and gravity hot water, alternatively hot water only. It is fitted with an advance knob, programme selector knob and service knob.

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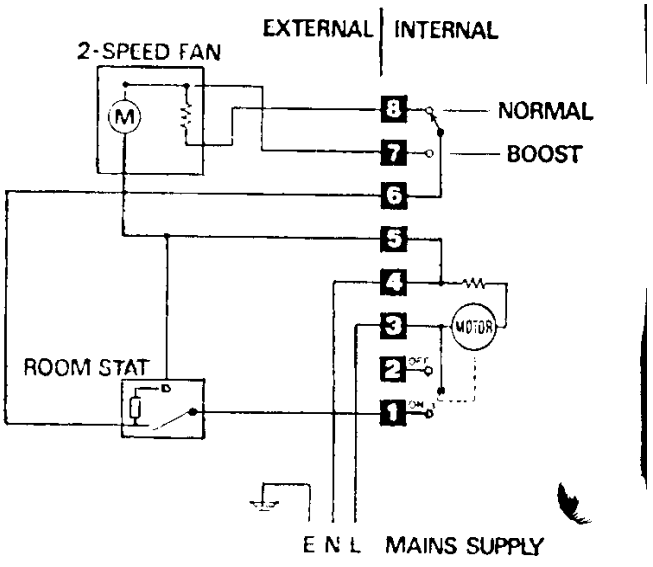
Form 5



A single-circuit programmer for controlling a two-speed fan on 'Electricaire' systems. It is fitted with an advance knob, programme selector knob and service knob. The service knob allows a choice between 'Normal' or 'Boost' conditions.

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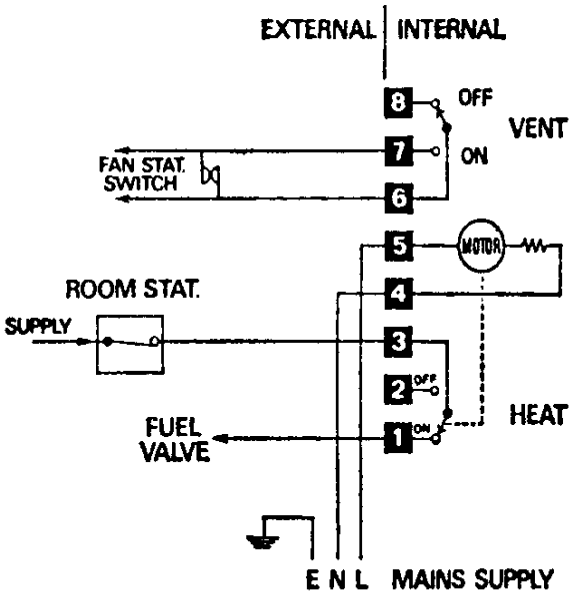
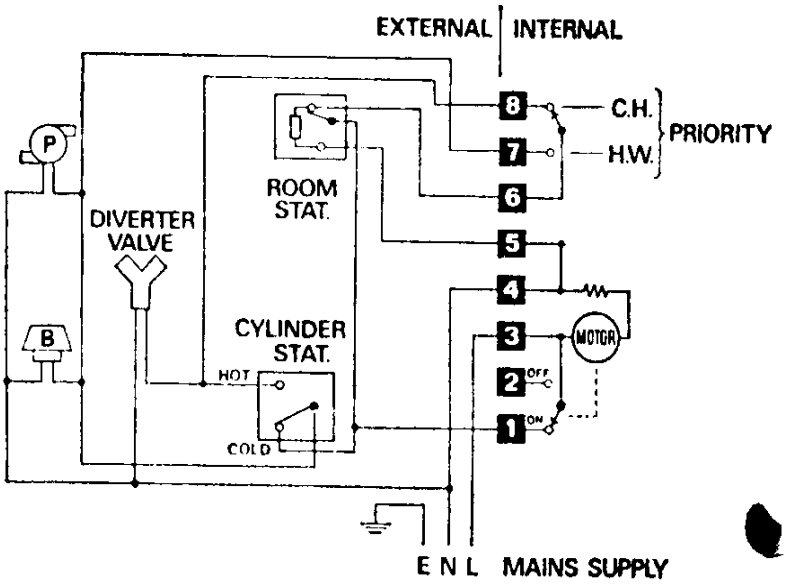
Form 6



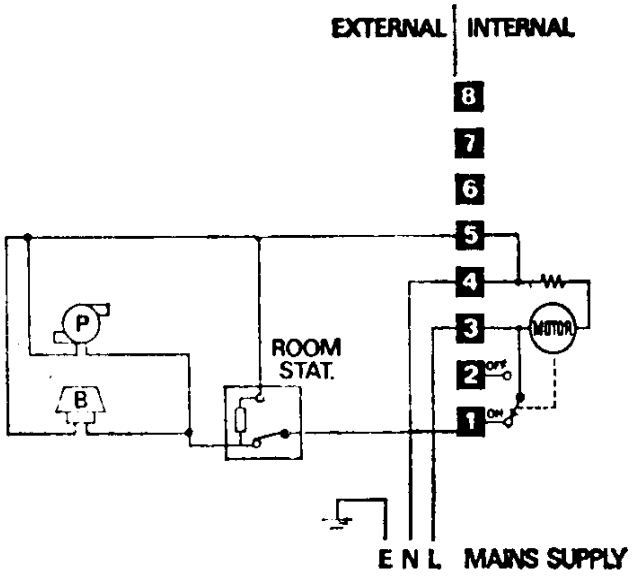
A single-circuit programmer for controlling warm air systems with a provision for VENT (ventilation). It is fitted with an advance knob, programme selector knob and a manual selector knob to provide VENT 'ON' or 'OFF'.

Form 7



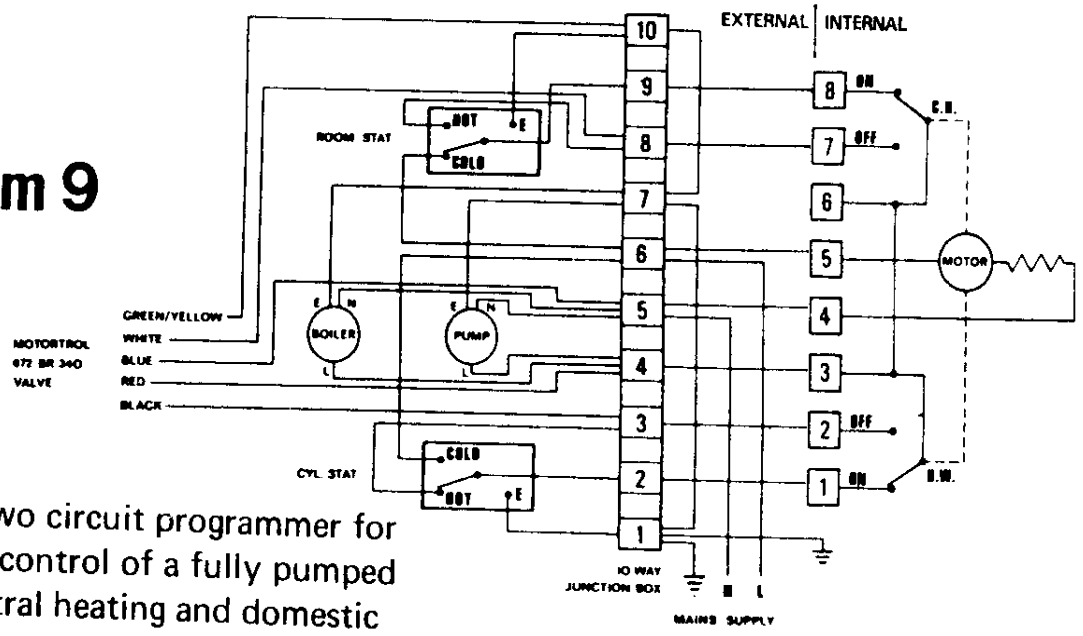
A single-circuit programmer for controlling an optional priority fully pumped central heating and domestic hot water system. It is fitted with an advance knob, programme selector knob and service knob. The service knob indicates the service priority.

Form 8



A single-circuit programmer for controlling a particular zone or a simple central heating system. It is fitted with an advance knob and programme selector knob.

Form 9



A two circuit programmer for the control of a fully pumped central heating and domestic hot water system utilizing the Motortrol 3 port 3 position valve type 672 BR 340.

MAKE THE MOST OF YOUR SYSTEM CONTROLS

THE PROGRAMMER

KEEP "ON" TIMES AS SHORT AS POSSIBLE

CHECK how long your system takes to warm up, and DON'T switch ON earlier than necessary.

CHECK how long your system takes to cool down and SWITCH OFF as early as possible before you go out during the day or go to bed at night.

DON'T forget to re-set the programmer if you go out for the evening. Why heat an empty house ?

THE ROOM STAT

TRY setting the room stat a degree lower – 21% C may be comfortable but 20% C may be equally so. A reduction of 1% can mean a saving of 7% on heating costs.

THERMOSTATIC RADIATOR VALVES

THERMOSTATIC RADIATOR VALVES are easily installed and cost nothing to run. By controlling temperatures in bedrooms, living rooms etc., they can help reduce fuel bills.

(AVAILABLE from SANGAMO – contact your Installer or our Sales Office.)

MAKE THE MOST OF YOUR SYSTEM CONTROLS

THE CYLINDER STAT

CHECK the temperature of your hot water – if it is so hot that you must add a lot of cold water, turn the cylinder stat down a couple of degrees.

EXPERIMENT with the water temperature. 60° C is a good starting point. Anything less than 54%C will probably be too cool and heat loss from the cylinder more noticeable.

NEVER allow the water to reach scalding temperature – it is not only expensive, it can be dangerous.

THE HOUSE

NOW that you have adjusted your controls to efficient and comfortable levels, don't waste your efforts.

FIX draughts from doors, windows etc.

DON'T leave doors and windows open unnecessarily.

DON'T heat unused or little used rooms more than is necessary.

CONSIDER insulation of loft, floor and walls.

SANGAMO CONTROLS

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