

**SANGAMO CONTROLS**  
(Office & Works)

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SANGAMO  
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Form 414/413

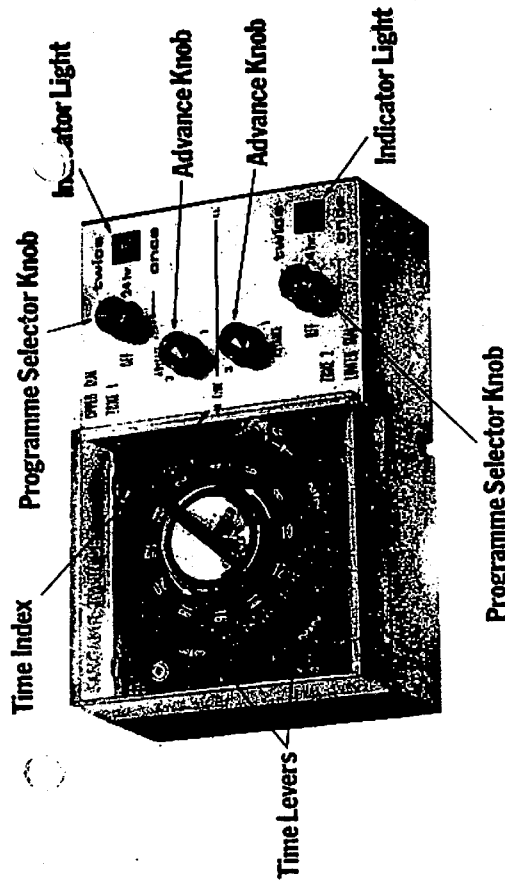
# Sangamo Twin Set 414

## Two zone Central Heating Programmer

### Installation and User's Instructions

(To be left with the householder)

The programmer is fitted with two time switch dials on the left-hand side, each having two 'on' and two 'off' levers. The right-hand side is divided into two, the upper portion carrying the knobs and indicator associated with the upper time switch dial (Zone 1) and the lower portion with the lower dial (Zone 2).



## Time Switch Dials

The 24-hour dials are marked in 15 minute steps and intermediate positions at 7½ minute intervals are also provided.

Each dial is fitted with two 'on' levers, coloured red and numbered 1 and 3 respectively and two 'off' levers, coloured black and numbered 2 and 4. These numbers correspond to those on the appropriate advance knob.

Setting each time lever is achieved by depressing it, moving it around the dial in either clockwise or anti-clockwise direction to the required time and releasing it to click into place. When all four time levers have been set, the dials (which are in tandem) must be rotated anti-clockwise for at least one complete revolution and then continue to be turned until the time index indicates the correct time of day.

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## Programme Selector Knobs

Each zone is provided with a knob to give choice of switching operations at any time, including overriding the settings on the time switch dials.

When the appropriate knob indicates:

**twice** – all time levers are effective (two on/off operations per day) (unless ADVANCE knob is used)

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

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

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

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## Advance Knobs

The advance knob for each zone indicates the number of the last time lever to pass the time index. Should it be necessary to advance any operation this is achieved as follows:

Rotate 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, will cause the switch to anticipate the action of lever 4 ('off') and the circuit will be 'off' and remain 'off' until lever 1 passes the time index.

### example 2:

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

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## Indicator Lights

Each zone has a neon indicator to give visual indication when the switch contacts for that zone are closed, i.e. circuit is 'on'.

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## 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.

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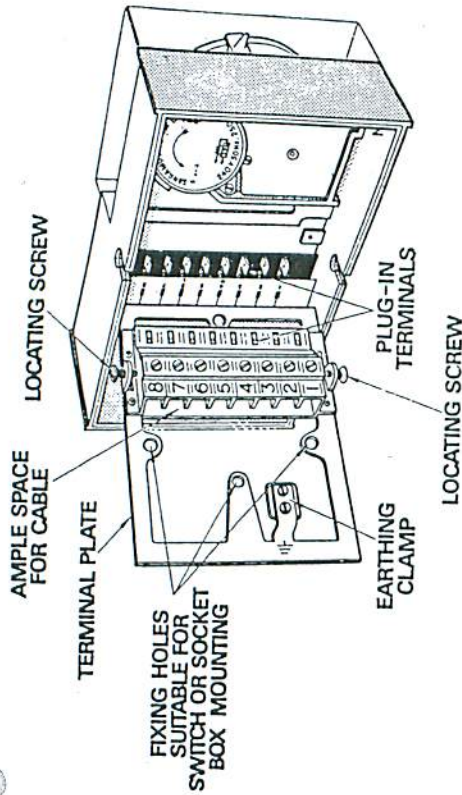


Fig. 1

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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

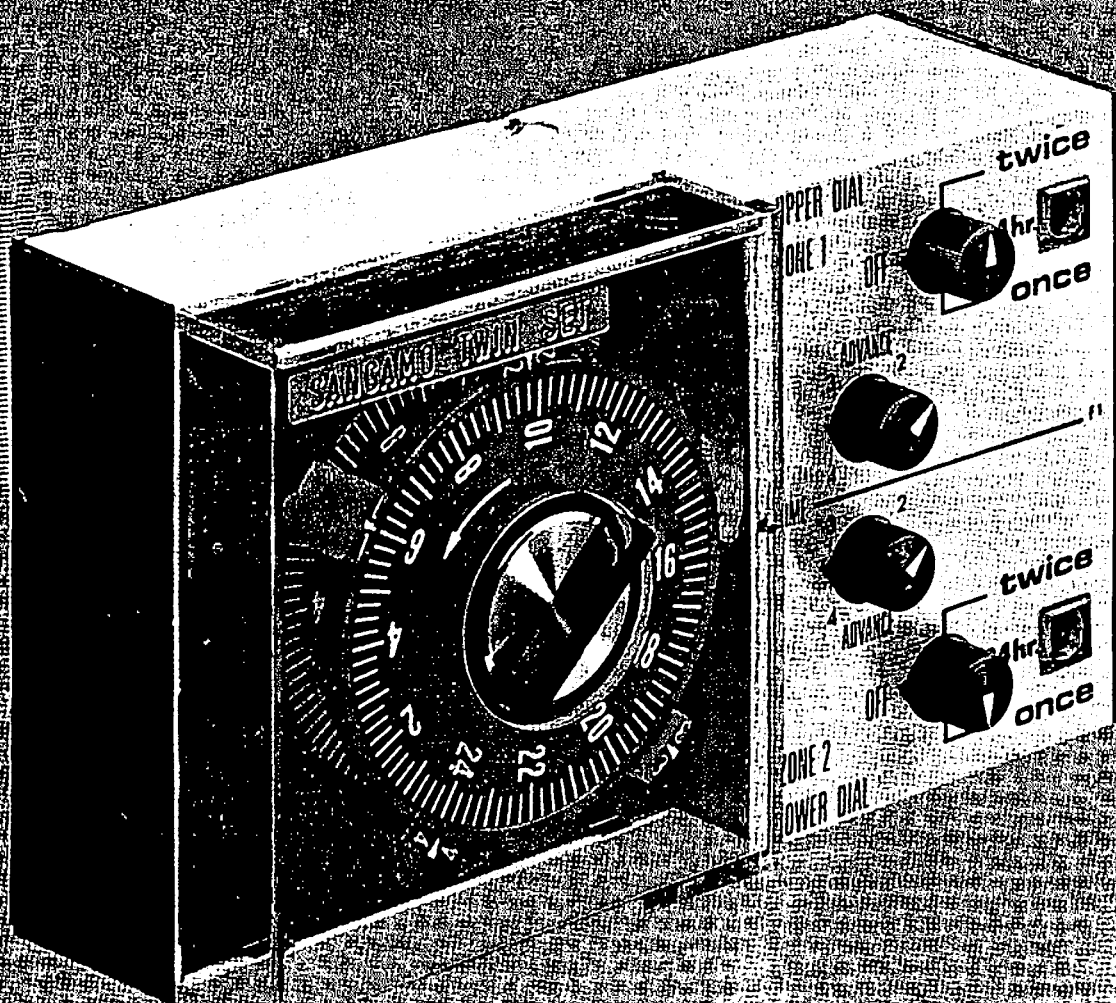
IT IS ESSENTIAL THAT THIS PROGRAMMER BE INSTALLED ONLY BY A QUALIFIED ELECTRICIAN.  
AN INSTALLATION MANUAL IS AVAILABLE TO QUALIFIED INSTALLERS ON REQUEST.

**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.

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BLANK

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# Sangamo 414-Twin Set

## Two-zone heating programmer

For separate time control of two independent zones or services including:

(a) Two heating areas, e.g. upstairs/downstairs, bedrooms/living rooms

(b) Central heating and hot water. Suitable for proprietary schemes such as: Draytonplan 5; Flowshare; Draytonplan 7; Honeywell Sundial Systems (G, S and Y); Satchwell Duo Flow; Gas Board; Superwarmth; Landis & Gyr Scheme; LGM!

### Features

- Simple-to-set unit enabling heating systems to be used with maximum efficiency.
- Small overall size: 85 x 138 x 61mm.
- Elegant styling harmonises with traditional or modern décor.
- Plug-in terminal plate for quick and easy installation. (As shown previously for the 410).

# Sangamo Time Controls

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Sangamo Time Controls reserve the right to supply  
programmers which may differ from the descriptions  
and illustrations contained in this leaflet.

The unit is fitted with two ammeters, one dial on the left hand side, each with a range of 30 operating levels. The right hand side is divided into two 20 hr time periods containing the knobs and indicators associated with the upper time switch dial (Zone 1) and the lower time switch dial (Zone 2).

Data Assisted for 414

**Time Switch Dials**

Each of the 24 hour dials is fitted with two time levels, a 'on' level and a 'off' level, indicated respectively by a '0' and a '1'. The 'on' levels correspond to those on the appropriate Advance Knob. Switching each time level is achieved by depressing it, moving it up from the dial in either a clockwise or anti-clockwise direction to the required time and releasing it to click into place.

**Programme Selector Knobs**

Each Zone is provided with a knob to give a change of programme operation, at any time, including overriding the settings on the time switch dials.

*When the appropriate knob indicates:*

**1 On** - All time levels are effective (2 on and 2 off operations per day except where Advance Knobs used see paragraph below).

**2 On** - All time levels non-effective (ie continuously off).

**3 On** - Only time levels 1 and 4 are effective (off and 1 off operation per day).

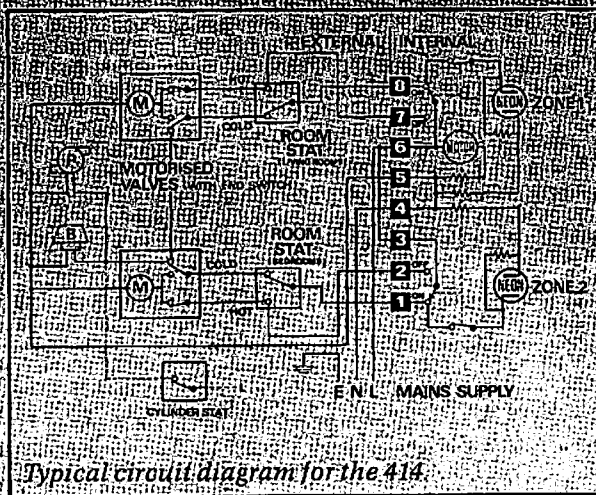
**4 Off** - All time levels non-effective (ie continuously off).

**Advance Knobs**

The Advance knob on each Zone indicates the number of hours the time level to have passed in the index. It enables subsequent switching operations to be anticipated or omitted, or will be periods of up to 24 hours without affecting subsequent operations of the pre-selected programme.

**Indicator Lights**

Each Zone has a lamp indicator for a visual indication when the switch contacts for that Zone are closed, i.e. on condition.



Typical circuit diagram for the 414

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