

- IMPORTANT:** Upon completion, ensure that all terminal screws are tightened to the correct torque values (Load, Line and Neutral Terminal - 1.2 to 1.5 Nm, Supply Line Terminal - 2.0 to 2.5Nm).
10. Test the RCBO as detailed in Section H of this leaflet.
11. AFFIX LABEL SUPPLIED TO THE SENTRY® CONSUMER UNIT.
12. Leave this Instruction Leaflet with the end user for future use.

## H. TESTING

### 1. Insulation resistance tests

**NOTE:** The following values of resistance will be encountered due to the circuit of the RCBO alone, while performing insulation resistance test using a 500V d.c. insulation test instrument.

Between L in or L out and N in or N out > 100 MΩ

Between L in or L out and Functional Earth > 100 MΩ

Between Neutral and Earth 2.7 MΩ approx.

2. After the installation is complete, turn on the supply to the RCBO and check that the supply voltage to the product is present at its L (Supply) and N (Supply) connection.

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3. Switch on the RCBO by moving its switch dolly upwards to show I position. Press the Test Button on the device, the device should trip.

4. Carry out the following tests using a calibrated RCD Tester.

### Test Current Result

0.5 I <sub>Δn</sub>	RCBO must not trip
I <sub>Δn</sub>	RCBO must trip within 300 ms
2I <sub>Δn</sub>	RCBO must trip within 200 ms
5I <sub>Δn</sub>	RCBO must trip within 40 ms

If the device fails to trip as required in steps 3. and 4. above, do not use the product.

Failure to trip according to 3. and 4. above, after it is confirmed that the supply is present to the product, indicates to a faulty product. Consult a qualified electrician or contact,

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### Maintenance

It is recommended that the RCBO is checked regularly, at least quarterly. Refer to Item 4 in Section E, Safety Instructions, of this leaflet.

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## J. GUARANTEE

The Company undertakes to replace or repair, at its discretion, this product should it become defective within a period of 10 years after delivery, solely as a result of faulty materials and/or workmanship. Understandably, if the product has not been installed or maintained in accordance with the Company's instructions, has not been used appropriately, or if any attempt has been made to rectify, dismantle or alter the product in any way, the guarantee will be invalidated.

This Guarantee states the Company's entire liability. It does not extend to cover consequential loss or damage or installation costs arising from the defective product. This Guarantee does not restrict or infringe the normal statutory or other rights of the consumer.

Caradon MK Electric Limited wishes to make it clear that it will take all necessary legal action in any part of the world against any party found to be manufacturing, distributing, selling or otherwise dealing with any article which infringes the company's design rights, copyrights or patents in its products, or any other rights of the company therein.

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### Caradon MK Electric Limited

The Arnold Centre, Paycocke Road,  
Basildon, Essex SS14 3EA

Tel: 01268 563000 (National)

Fax: 01268 563563 (UK Sales)

+44 (0) 1268 563360 (International)

E-mail: mkelectric@caradon.com

Website: [Http://www.mkelectric.co.uk](http://www.mkelectric.co.uk)

## SENTRY® RCBO

(Residual Current Operated  
Circuit Breaker with Integral  
Over-Current Protection)

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*Please leave this leaflet with the  
end user for future reference*

43060PL Ed.1

MBO 1991.499A



## A. INTRODUCTION

In this range of Single Module Width RCBO's, each product provides dual protection; from Over-current via its MCB section, and from Earth Leaking Fault Current (Residual Current) via its RCD section. These devices provide RCD protection in full compliance with the requirements of the Standard BS EN 61009-1. They also provide very effective RCD protection in the Supply Voltage Range of **50V to 253V a.c.**, meeting the requirements of the Standard for sensitivity and trip speed at  $I_{\Delta n}$  and  $2I_{\Delta n}$ . Effective operation down to 50V a.c. means that the devices provide protection against leakage currents to earth right down to the safe, **Extra Low Voltage** level. They meet the requirement of the current edition of the UK Wiring Regulations (BS 7671), as regards ability to trip with Earth Loop Impedance of up to  $1667 \Omega$  (for a 30mA RCD), by being able to operate with Earth Loop Impedance of up to  $10,000 \Omega$ .

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## C. PRODUCT SPECIFICATION (Cont.)

### Mechanical

Terminal Capacity	Line in - 35mm <sup>2</sup> Line and Neutral out - 16mm <sup>2</sup>
Product Width	18mm
Product Height above Din Rail	60mm
Product Length	112mm
Suitable Mounting Enclosure	MK Sentry Consumer Unit (select from the MK range)
Method of Mounting in Enclosure	Top Hat Mounting (DIN) Rail to EN 50022

### Environmental

Ambient Temperature Range	-25°C to +40°C
Storage Temperature Range	-30°C to +85°C
Protection, Un-installed Device	IP 20
Protection, Installed in the Consumer Unit	IP 40

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## D. STANDARDS COMPLIANCE

The products in this range comply with the requirements of the following standards:

BS EN 61009-1  
BS EN 61009-2-2  
EN 61543 for EMC

## E. SAFETY INSTRUCTIONS

1. This product must be installed by a competent person (e.g. a qualified electrician) in accordance with these instructions and the appropriate clauses of the current edition of the IEE Wiring Regulations (BS7671).
2. The RCBO must be installed within a SENTRY® Consumer Unit (select from the range of MK consumer units).
3. The RCBO should not be regarded as a substitute for basic safety precautions.
4. Test the RCBO quarterly, as detailed in the current edition of the IEE Wiring Regulations (BS 7671), by pressing the TEST BUTTON marked T, provided on the product (see label on the Consumer Unit).

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## B. PRODUCT RANGE

The product range is given in Table 1 below. All products in the range have RCD trip current rating of 30mA.

**Table 1**

<b>List No.</b>	6932s	6933s	6934s	6935s
<b>MCB Current Rating A</b>	6	10	16	20

<b>List No.</b>	6936s	6937s	6938s
<b>MCB Current Rating A</b>	32	40	45

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## C. PRODUCT SPECIFICATION

### Electrical

Number of Poles	Single Pole with Solid Neutral
Rated Supply Voltage	230V a.c. +10%, -15%
Supply Voltage Range	50V to 253V a.c.
Supply Frequency Range	45 to 66Hz
Supply Voltage Range for Test Device Operation	99V to 253V a.c.
RCD Trip Current Rating	30 mA
Operating Characteristics for RCD	Type A (a.c. as well as pulsating d.c.)
MCB Type	B
Rated Short Circuit Capacity $I_{cn}$	6 kA
Neutral Connection	Flying Lead
Earth Connection	Flying Lead

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## E. SAFETY INSTRUCTIONS (continued)

Do not use the product if it fails to trip during this operation. Failure to trip indicates either no supply to the RCBO or a faulty device. Consult a qualified electrician or contact MK Technical Sales and Service Department.

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5. Choose an RCBO from TABLE 1, with the correct ratings, for the circuit to be protected.

6. The RCBO's in this range must not be used in ambient temperatures outside their specified range.

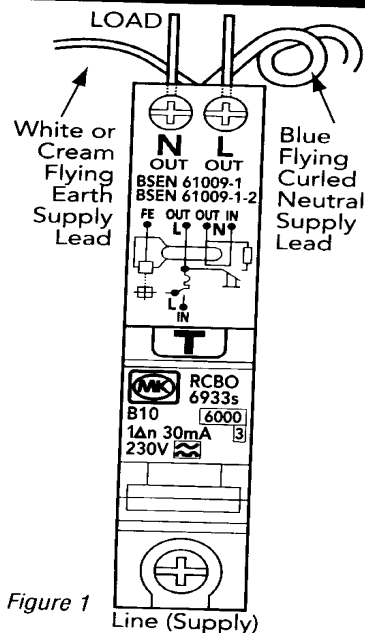


Figure 1

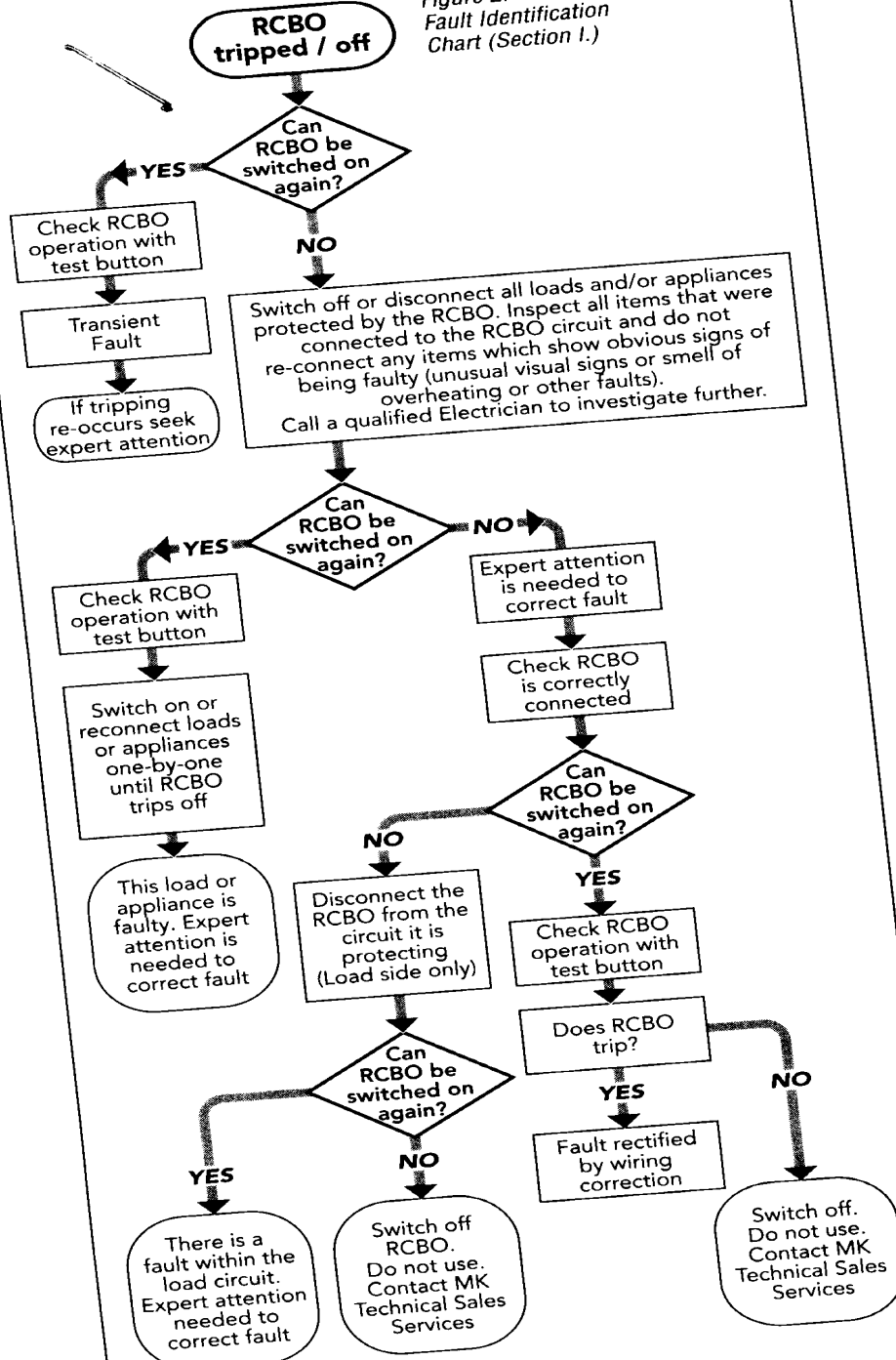
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## F. GENERAL NOTES ON INSTALLATION

1. The RCBO shall be installed at the source of the circuit in which the Earth Fault and Over-current protection is required.
2. The RCBO's may be installed alongside other SENTRY® Modular Products, as part of a larger assembly.
3. The RCBO is a sensitive device designed for fixed installation in a clean and dry environment. The device must not be installed as part of a portable system which may be subject to mechanical shocks and vibration.
4. An adhesive label giving test instructions is provided with each RCBO. This label shall be placed in a prominent position close to the RCBO (preferably on the Consumer Unit Cover)
5. Upon completion of the installation, please leave this instruction leaflet in close proximity to the RCBO, for future reference.

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Figure 2.  
Fault Identification  
Chart (Section 1.)



## G. INSTALLATION

1. Choose and install a suitable enclosure from the Range of MK Sentry Consumer Units.
2. Mount the RCBO(s) on to the DIN rail in the enclosure with the L (Supply) terminal at the bottom (shown in Figure 1).
3. It is important that the RCBO is supplied via a Double Pole Isolator (Switch Disconnecter).
4. Strip the Supply Neutral Cable and the Load Cables to expose 12mm of conductor.
5. Connect the Supply Line to the Line (Supply) Terminal at the bottom, using the Bus Bar supplied with the Consumer Unit. Alternatively, a suitable cable can be used, which should be stripped to expose 15mm of conductor for connection.
6. Connect the Neutral (Blue) flying lead of the RCBO to the Supply Neutral Terminal Bar.
7. Connect the Earth (Cream) flying lead of the RCBO to the Supply Earth Terminal Bar.
8. Connect the Load, Line and Neutral connections to the outgoing terminals at the top of the RCBO, marked L (OUT) and N (OUT), respectively.
9. Connect the Load Earth conductor to the Earth Terminal Bar.

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## I. TRIPPING IN SERVICE

If the black portion of the switch is in the 'OFF' position, this is an indication that a fault has caused the RCBO to trip.

Consult the Fault Identification Chart (Fig. 2) to establish the cause.

Any repairs to appliances or alterations to the installation, to correct the fault, should be carried out by a competent person.

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