

**Elcometer Protoval 130**

**Wall Tie and Stud Locator**

**Operating Instructions**



**CE** This product meets the emc directive 89/336/EEC, amended 92/31/EEC and 93/38/EEC. The Elcometer Protovale 130 Wall Tie and Stud Locator has been tested in accordance with EU regulations governing Electromagnetic Compliance and it meets the required directives.

**Note:** Performance may be affected if the unit is operated within a radio frequency electromagnetic field strength greater than 3V/m.

elcometer® and Protovale are registered trademarks of Elcometer Instruments Ltd.  
All other trademarks acknowledged.

© Elcometer Instruments Ltd. England 1994 - 2007.

All rights reserved. No part of this document may be reproduced, transmitted, transcribed, stored (in a retrieval system or otherwise) or translated into any other language in any form or by means (electronic, mechanical, magnetic, optical, manual or otherwise) without the prior written permission of Elcometer Instruments Ltd.

A copy of this Instruction Manual is available for download on our Website via [www.elcometer.com/downloads](http://www.elcometer.com/downloads)

## CONTENTS

---

Section	Page
1 About your Wall Tie and Stud Locator .....	2
2 Getting started.....	4
3 Using the instrument - Model 130/D (mild steel) .....	6
4 Using the instrument - Model 130/E (mild steel/Stainless steel).....	6
5 Search head orientation.....	7
6 Trouble shooting.....	8
7 Maintenance .....	8
8 Spare parts and accessories .....	9
9 Related equipment .....	9

DISCONTINUED

Thank you for your purchase of this Elcometer Protovale 130 Wall Tie and Stud Locator. Welcome to Elcometer.

Elcometer are world leaders in the design, manufacture and supply of inspection equipment for concrete and coatings.

Our concrete inspection products include a comprehensive range of concrete, and civil engineering inspection equipment. Our coatings products cover all aspects of coating inspection, from development through application to post application inspection.

The Elcometer Protovale 130 Wall Tie and Stud Locator is a world beating product. With the purchase of this instrument you now have access to the worldwide service and support network of Elcometer. For more information visit our website at [www.elcometer.com](http://www.elcometer.com)

## **1 ABOUT YOUR WALL TIE AND STUD LOCATOR**

---

The Elcometer Protovale 130 Wall Tie and Stud Locator is a handheld instrument for fast and accurate location of mild steel and stainless steel<sup>a</sup> wall ties and studs.

The Elcometer Protovale 130 Wall Tie and Stud Locator consists of a Control Unit and a Search Head which are connected by a lead.

The control unit of the stainless steel version (model 130/E) is fitted with a switch on the control panel which is used to select whether it should be sensitive or insensitive to stainless steel, and an extra search head is supplied, which must be used when the stainless option is selected.

---

a. Stainless steel detection on Elcometer 130/E only

## 1.1 WHAT THE BOX CONTAINS

- Elcometer Protovale 130 Wall Tie and Stud Locator
- Search head, 100 mm (4"), for mild steel
- Search head, 150 mm (6"), for stainless steel (Elcometer P130/E models only)
- 4 x LR6 (AA) alkaline batteries
- Leather carry case
- Plastic carry case
- Operating instructions

The instrument is packed in a cardboard and foam package. Please ensure that this packaging is disposed of in an environmentally sensitive manner. Consult your local Environmental Authority for further guidance.

## 1.2 WALL TIE AND STUD LOCATION

As situations in the building industry are so varied and the combination of ties, positions and distance are not always standard, it is beneficial in non-standard situations to create a test piece and check the reaction of the detector with various search heads. This can be done in air, as your detector 'sees through' all non magnetic materials equally.

**To maximise the benefits of your new instrument, please take some time to read these Operating Instructions. Do not hesitate to contact Elcometer or your Elcometer supplier if you have any questions.**

## 2 GETTING STARTED

---

### 2.1 FITTING BATTERIES

The Elcometer Protovale 130 Wall Tie and Stud Locator uses dry cell batteries only. Sealed alkaline batteries are recommended however rechargeable equivalents may also be used.

4 x LR6 (AA) alkaline batteries are supplied in the kit.

To fit or replace the batteries:

1. Remove the instrument from the carrying case.
2. Remove the battery compartment cover.
3. Fit the batteries taking care to ensure correct polarity.
4. Replace the battery compartment cover.
5. Replace the instrument in the carrying case ensuring that the speaker output grille lines up with the hole in the case.

**Note:** Remove the batteries from the instrument if it is to remain unused for a long period of time. This will prevent damage to the instrument in the event of malfunction of the batteries.

**Note:** Alkaline batteries must be disposed of carefully to avoid environmental contamination. Please consult your local Environmental Authority for information on disposal in your region.

**Do not dispose of any batteries in fire.**

## 2.2 CONNECTING THE SEARCH HEAD

Screw the plug of the search head into the socket marked 'coil' on the front panel of the control unit, taking care not to cross the threads.

## 2.3 SWITCHING ON/OFF

Switch the machine on by turning the knob marked 'audio' clockwise from the OFF position until it just clicks on.

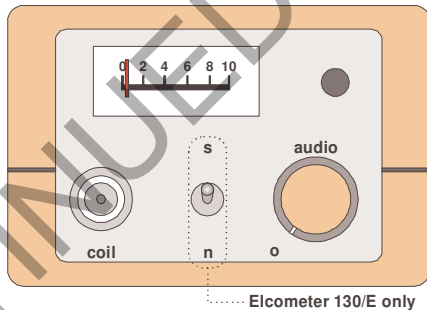
The machine is now working, and set to minimum sensitivity.

## 2.4 BATTERY TEST

Press the battery test button; a meter reading of 7 or over indicates that the batteries contain sufficient charge. If the meter reading is less than 7, the batteries should be replaced - see "Fitting batteries" on page 4.

## 2.5 SENSITIVITY ADJUSTMENT

If the knob marked 'audio' is rotated slowly clockwise (with the search head well clear of any metal), a point is reached when the sound produced is a steady ticking, and the meter is displaying zero (0). Further clockwise rotation will cause the meter to deflect to the right, and the sound to increase in frequency through a buzz to a whine. Maximum sensitivity is achieved when the sound is set to a low tick-over, and is appropriate when searching for deeply-embedded bars. More often however, this setting gives more sensitivity than is necessary or desirable, and the knob can and should then be turned back as required.



### **3 USING THE INSTRUMENT - MODEL 130/D (MILD STEEL)**

---

1. Connect the 100 mm (4") search head to the control unit.
2. Hold the search head well away from any metal and adjust the Audio knob until the unit is on the verge of producing a low frequency buzz or tickover sound. This is the most sensitive setting, and in use it will usually be found that the knob can be turned back somewhat from this position.

If a sample wall tie is available, the control knob can be adjusted so that a signal is given at the equivalent distance to which the wall ties are estimated to be in the wall. In practice you may find that the unit only needs to be switched 'on' to find a mild steel tie at 50 mm (2") depth.

3. Sweep the search head over the wall to locate wall ties or studs.

If a signal is apparently being picked up from the bricks themselves (which can happen where the bricks contain iron ore), simply decrease the sensitivity as necessary and withdraw the search coil from the surface of the walls until the signal reduces, and then continue to search for the wall ties.

The most sensitive point of the search coil is at its centre. Accurate pinpointing of wall ties is achieved by steadily reducing the signal by turning the control knob back anticlockwise.

### **4 USING THE INSTRUMENT - MODEL 130/E (MILD STEEL/STAINLESS STEEL)**

---

#### **4.1 TO LOCATE MILD STEEL**

1. Connect the 100 mm (4") search head to the control unit.
2. Push the switch on the control panel to position 'n'.
3. Now follow the instructions given in "Using the instrument - Model 130/D (mild steel)" on page 6.



## 4.2 TO LOCATE STAINLESS STEEL

Your detector can be used to locate stainless-steel and phosphor-bronze bat and fish-tail wall ties.

1. Connect the 150 mm (6") search head to the control unit.
2. Push the switch on the control panel to position 's'.
3. Now follow the instructions given in "Using the instrument - Model 130/D (mild steel)" on page 6.

## 5 SEARCH HEAD ORIENTATION

Despite having a circular face, the following search heads are directional:

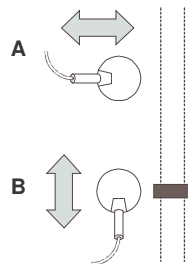
- 100 mm (4") Directional search head (optional accessory for model 130/D only)
- 150 mm (6") Stainless steel search head (standard equipment for model 130/E only)

To detect a wall tie lying in the horizontal plane, the search head must be orientated with its circular face against the wall (as usual) but with the handle pointing vertically down (or up).

The 150 mm (6") Stainless steel search head will still detect mild steel on either position of the N/S switch, and with any orientation of the coil, but will tend to give a double response when the coil is scanned in the direction of its handle as the search head has two sensitive spots, one each in the upper and lower halves of the head.

The Elcometer model 130/E can also be used to locate the presence (or absence) of stainless ties within Abbey slots. The 150 mm (6") Stainless steel search head is first held as shown in sketch 'A' to locate the slots. The head is then turned through 90 degrees as shown in sketch 'B' to locate the ties themselves. If no signal is obtained, the tie is not present.

It is not normally necessary to adjust the sensitivity when rotating the orientation of the search head.



## 6 TROUBLE SHOOTING

---

Any fault conditions encountered can usually be cleared by checking:

- the battery voltage and cell polarity
- the battery contacts for spring tension and corrosion
- the search head plug and socket for good electrical and mechanical connection.

## 7 MAINTENANCE

---

The Elcometer Protovale 130 Wall Tie and Stud Locator is designed to give many years reliable service under normal operating and storage conditions.

No special maintenance is necessary, though the unit should be wiped clean of dirt and moisture after use.

Two points in particular will ensure long-term trouble free operation:

- To prevent damage to the coil plug and socket, keep the threads clean and free from mud and grit.
- To prevent corrosion damage from leaking batteries: make sure the unit is switched OFF after use; and remove the batteries if the unit is to be stored unused for any period of time.

The instrument does not contain any user-serviceable components. In the unlikely event of a fault, the instrument should be returned to your local Elcometer supplier or directly to Elcometer. Contact details can be found on the outside cover of these instructions, or on the Elcometer website, [www.elcometer.com](http://www.elcometer.com)

## 8 SPARE PARTS AND ACCESSORIES

---

The following replacement and optional items are available from Elcometer or your local supplier.

<b>Description</b>	<b>Sales Part No.</b>
100 mm (4") Locator Search Coil	TW999198D
100 mm (4") Directional Search Coil - for Elcometer 130/D only	TW999198F
150 mm (6") Stainless steel Search Coil - for Elcometer 130/E only	TW999198E

## 9 RELATED EQUIPMENT

---

Elcometer produces a wide range of concrete and coatings inspection equipment. Users of the Elcometer Protovale 130 Wall Tie and Stud Locator may also benefit from the following Elcometer products:

- Elcometer Adhesion and Bond Strength Testers
- Elcometer Concrete Crack Microscopes
- Elcometer Concrete Moisture Meters
- Elcometer Concrete Test Hammers
- Elcometer Concrete Covermeters

For further information contact Elcometer, your Elcometer supplier or visit [www.elcometer.com](http://www.elcometer.com)