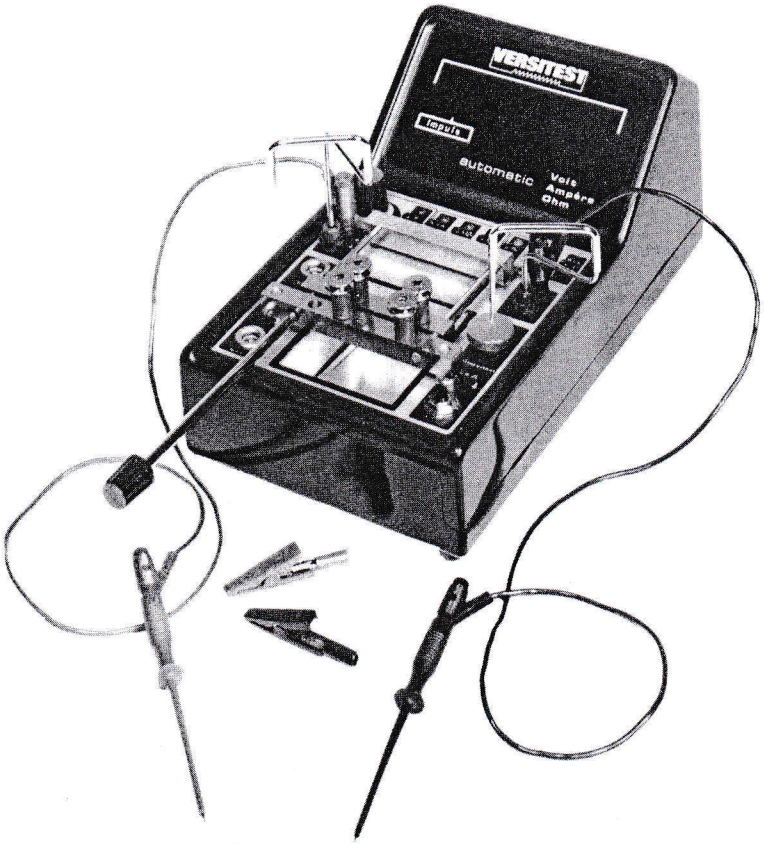
# TEST VERSITEST VER


# INSTRUCTION MANUAL




## TECHNICAL SPECIFICATION

Mains Voltage 220-240v A/C
Operating Voltage 12v D/C-500amp
Size 110 x 190 x 50mm
Weight 550 gms
Output Voltage 0-3.5v D/C (5v A/C)
μ A Analogue 0.1-2000 μ A
μ A Digital 0.1-1000 μ A
Ω 0-20,000 at test voltage of 0.2v
KΩ 0-2000
mA 0.1-150mA

## STANDARD ACCESSORIES

Universal movement holder
Test leads with clip adaptors
Test probes
Adaptor for connection to Versitime

# PREFACE

**Your Versitime is manufactured to the most exacting standards and should give many years of trouble free service. It is fully guaranteed for two years.**
**In the unlikely event that your Versitest should develop a fault please return it to us immediately. We will loan you a machine while yours is being repaired. This service is available throughout the life of your Versitest. A nominal rental fee will be charged once the guarantee period has expired.**

Versitest and Versitime together provide all the facilities needed for controlling and fault finding in quartz watches.
Please read the following notes. They will help you to take full advantage of Versitests potential.

1. Always use test probes in the raised sockets.

2. Always move test probes by holding the lower right angle.

3. All metal parts of the Versitest are positive therefore the movement holder is also positive. This works in accord with the vast majority of quartz watches as their bridgework and case are also positive (always in the case of analogue watches)
Should one encounter a watch of reversed polarity it will identify itself by a breaking down of the voltage readout and the impulse light flickering erratically. This is overcome by isolating the watch from the positive case vice with a piece of non conductive material.

4. Versitests built in mirror is used to monitor the voltage required to start analogue watches with second hands. By increasing voltage supply steadily one can see the exact moment the watch starts. Most analogue watches require between 0.96 and 1.15v. If more than 1.30v is needed to start the seconds hand moving the motion work should be checked for dirt, lack of oil etc. (see manufacturers repair manual)

5. It should be remembered that watch batteries are designed to give maximum output until exhausted. Therefore a battery check will only ever indicate the present voltage output and cannot be used as an indication of it's residual capacity.

6. When measuring current consumption of analogue watches it is essential to depress the analogue button μ A ⏲ for one full second. Reading obtained is the average consumption. and Versitest allows for all pulse frequencies, converting automatically the varying current consumption obtained and expressing them as one single figure.
Should the reading oscillate errtically it would indicate a fault with the stepping motor.

## SETTING UP YOUR VERSITEST

Connect din plug to socket in the back of the instrument ensuring that the locating grooves are correctly positioned.

Ensure that the transformer voltage is set to 220v.

Connect transformer to mains supply.

To operate Versitest, simply depress the appropriate button.

## POWER SUPPLY TO QUARTZ MODULE

Insert movement holder into sockets (6 and 16)

Ensure that variable control knob is turned fully to banking (counter clockwise)

Remove battery from module and place module in holder.

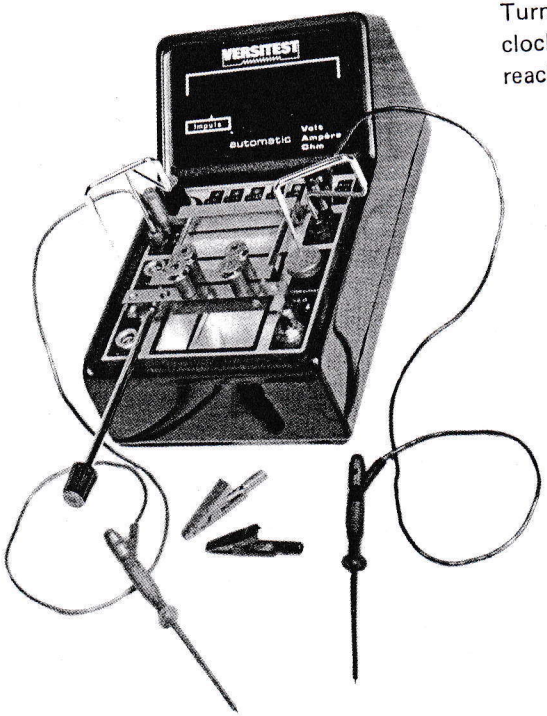
Insert test probes into raised socket

Place positive probe onto the bridge of the module, or positive battery terminal.

Place negative probe onto the negative battery terminal.

Depress V Button.

Turn variable voltage control knob clockwise until desired imput is reached.



## CURRENT CONSUMPTION (ANALOGUE)

COMPLETE ELECTRONIC CIRCUIT (SUBTRAT)

Set up Versitest as described on page 2 column 2

Depress analogue button μ A ⊛ for one second.

Impulse monitor will flash in the rythm of the stepping motor.

Allow 3-4 steps to stabilise measurement.

The figure obtained, expressed in micro-amps is the total consumption of the module.

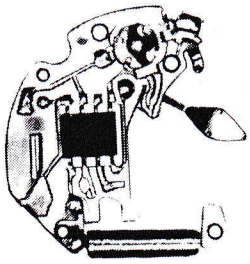
## CURRENT CONSUMPTION OF SUBSTRAT

BUT EXCLUDING COIL.

After completing the above check, depress

μ A 12: Button.

The reading obtained expressed in micro-amps is the consumption of the integrated circuit only, excluding the coil.



Subtrat of a typical analogue watch.

## CURRENT CONSUMPTION

(Complete module L C D)

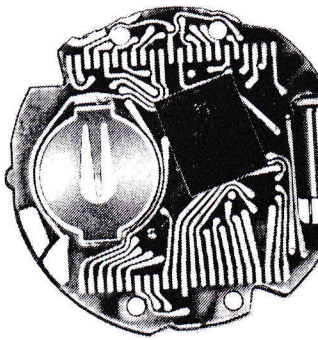
Set up Versitest as for analogue watches.

Depress digital button μ A 12:

L C D watches are powered by a constant current. The monitor light will not flash.

The figure obtained, expressed in micro-amps is the total consumption of the module, and will appear immediately.

In view of the fact that L C D watches are solid state, consumption figures are lower than in analogue watches.
This applies to watches set in time mode only. Additional facilities such as chronograph, alarm and lamp, increase consumption considerably.



## CURRENT SUPPLY TO INTEGRATED CIRCUIT (I.C.)

Set up Versitime as described on page 2 column 2 but leave battery in situ

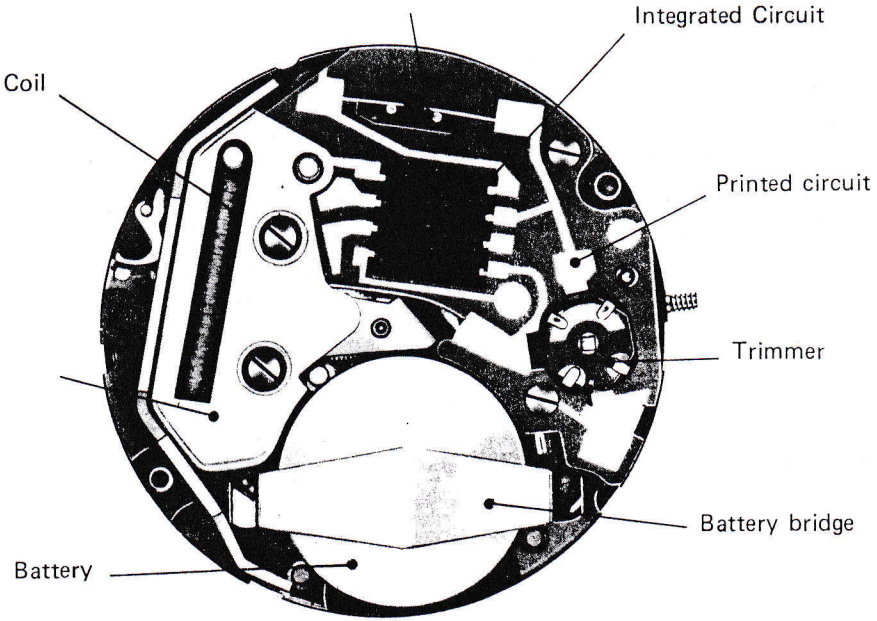
Depress V button and turn voltage control knob back to banking (counter clockwise)

Place one test lead on battery casing

Place the other test lead against each terminal of the I.C. until the input voltage which should equal the battery output voltage registers.

This quick test will show if the battery, trimmer quartz, printed circuit and contacts are in good condition, and if the I.C. is receiving current.

If unable to obtain voltage reading, test battery and contacts for good connection and cleanliness.



## OUTPUT SIGNALS OF MOTOR DRIVE CIRCUIT FROM INTEGRATED CIRCUIT

Leave battery in situ

Depress resistance (Ω) button

Place test probes either on output terminals of I.C. or on imput terminals of coil

The later is the more usual as the terminals are easier to locate.

The impulse monitor will flash in the rythm of the stepping motor once the correct terminals are touched and the reading appears.

## COIL RESISTANCE

Remove Battery

Depress resistance (Ω) button

Place test leads on output terminals of integrated circuit

The resulting reading is the resistance of the coil expressed in ohms

Valves vary according to calibre

Refer to table on page or manufacturers literature

The coil need not be disconnected from the integrated circuit as the test voltage is only o.2v.

## BATTERY TEST (removed)

Ensure that variable voltage control knob is turned fully back to the banking (counter clockwise)

Place battery onto test platform (15) Depress V button

Insert test lead into socket and place against battery end cap

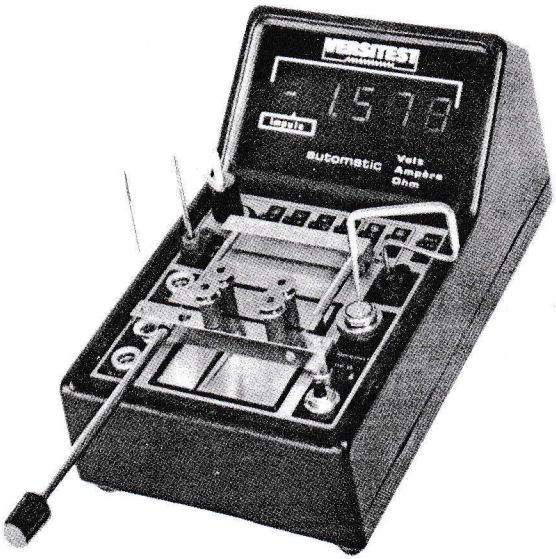
Read off voltage from display panel.

For batteries of under 2v capacity polarity need not be observed

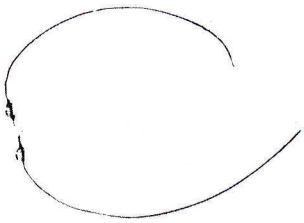
Over 2v always observe polarity

Never test batteries of more than 5v capacity on Versitest.

See notes in preface concerning watch batteries



## LAMP CURRENT CONSUMPTION

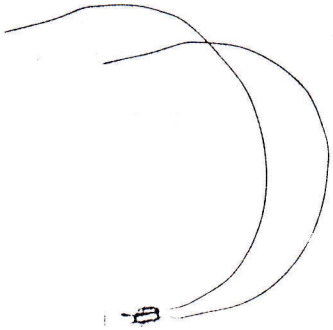


Turn voltage control knob back to banking.

Depress m A button

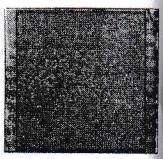
Place test leads to bulb wires

The figure obtained, expressed in mili amps is the current consumption of the backlight system.



The M A button is always used when testing components and movements with a current consumption of over 2000 $\mu$ A e.g. lamps, clock components, clocks with bim-bam alarm etc.

## L C D DISPLAY TEST



Insert test lead into 5v A/C supply located at the back of the tester to the left of the din socket.
Holding the display in one hand, draw the test lead accross the contacts located at top and bottom of the display, checking each segment in turn.

## PIEZO ELECTRIC BUZZER TEST

Connect test lead to 5v supply as above.

Insert positive test lead in socket.
Touch one lead to case back and the others against buzzer.
If the buzzer is functioning properly, a soft buzzing noise will be heard.

## TECHNICAL SPECIFICATION OF SOME POPULAR CALIBRES

| Make & Cal. | Average Consumption Time mode | Battery Walsh Ref. | Coil Resistance |
|---|---|---|---|
| Bulova 2141 | 4. 5-7 | 8 | 6000 |
| 2181 | 8-10 | 6 | 4500 |
| 2242 | 11.5 | 6 | 5000 |
| Citizen 7300 | 1.9 | 7 | 2000 |
| 8300 | 4 | 53 | 2500-3500 |
| 8500a | 4 | 53 | 3300-4100 |
| 8620a | 6 | 7 | 4000-5000 |
| 8900 | 4 | 13 | 2500-3000 |
| 9060a | 4 | 54 | |
| 9100 | 3 | 13 | |
| E S A 9181 | 19 | 54 | 2500-3200 |
| 9200 | 6 | 4 | 4500 |
| 9220 | 3 | 53 | 2300 |
| 9225 | 1.9 | 55 | 2200 |
| 9362 | 6 | 9 | 2000 |
| 900-231 | 4 | 9 | 1700-2100 |
| 923-031 | 1.5 | 62 | 16000 |
| 935-112 | 4 | 55 | 2350-2650 |
| 940-111 | 6 | 13 | 2000 |
| 944-111 | 3.5 | 14 | 2200-2800 |
| 950-001 | 1.6 | 62 | 1.9-2.4k |
| 951-111 | 2.6 | 55 | 1900-2400 |
| 954-111 | 2.1 | 58 | 3200-3600 |
| 960-111 | 4 | 9 | 2300-2700 |
| 961-101 | 4 | 55 | 2200 |
| 965-311 | 2.2 | 60 | 2600-3200 |
| 977-001 | 1.6 | 62 | 2400-2800 |
| Junghans 632 | 2 | 53 | 650 |
| 632-50 | 1.8 | 18 | 650 |
| 667 | 6.5 | 9 | 2800-3000 |
| Omega 1350 | 0.5 | 64 | 1500-2500 |
| 1310 | 15 | | 2000-2200 |
| Puw 632 | 3 | 53 | 700 |
| 3000 | 7 | 3 | 3200 |
| Ronda 671 | 2 | 54 | 2800 |

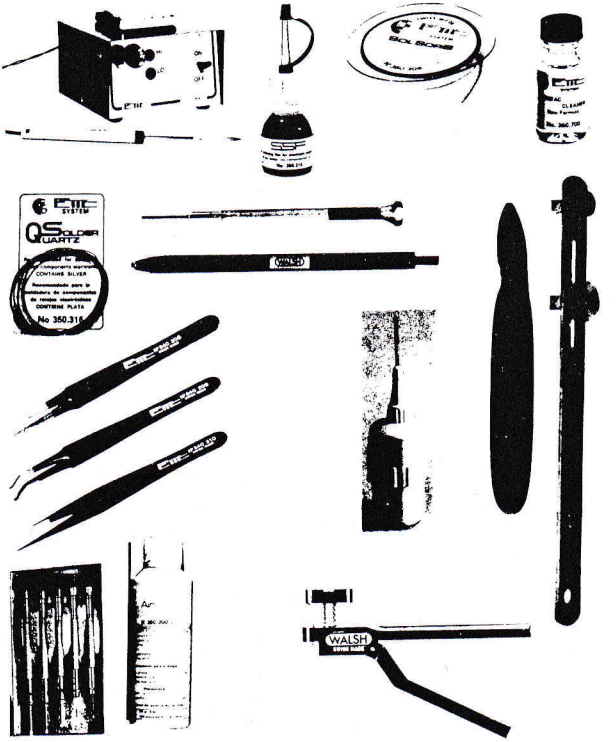
## TECHNICAL SPECIFICATION OF SOME POPULAR CALIBRES
CONT.....

| Make & Cal. | Average Consumption Time Mode | Battery Walsh Ref. | Coil Resistance |
|---|---|---|---|
| Ronda 871 | 1.7 | 53 | 2900 |
| 1175 | 3.7 | 53 | 3000 |
| 1377 | 12 | 54 | 5800 |
| Seiko 14a | 0.5 | | 1500-3500 |
| 16a | 2.6 | 55 | 1500-3500 |
| 47a | 3.5 | 55 | 2000-4000 |
| 2633a | 2 | 55 | 2000-4000 |
| 4325a | 2.5 | 55 | 3000-4000 |
| 7123a | 2 | 13 | 2000-4000 |
| 7546a | 2.5 | 7 | 3000-4000 |
| 7813a | 2.5 | 16 | 3000-4000 |
| Tissot 2030 | 5 | | 2500 |
| 2036 | 3 | | 2300 |
| 2100 | 15 | | 2200 |

| Walsh Ref. | Ray-O-Vac | Mallory | Varta | Union Carbide | Le Clanche | Bulova | Timex | Toshiba | Seiko | Maxwell | Renata | Ht.mm | Ømm | Rated Capacity | Voltage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RW52 | WH3 | 501 | 313 | MR44NM | | | | | | 13 | 5.46 | 11.56 | 165mAh | |
| 2 | | 10R10 | 503 | 388 | | 221 | | | | | | 3.30 | 8.44 | 65mAh | 1.35 |
| 3 | RW58 | 10R123 | 506 | 323 | MR47NM | | C | | SB C3 | | 8 | 5.33 | 7.87 | 90mAh | 1.35 |
| 4 | RW57 | 10R125 | 507 | 325 | MR41NM | 6UDC | | | SB C1 | | 5 | 3.56 | 7.87 | 50mAh | 1.35 |
| 5 | RW54 | 10R124 | 508 | 354 | MR42NM | | | | SB C8 | | 4 | 4.19 | 11.56 | 165mAh | 1.35 |
| 6 | RW56 | WH8 | 509 | 343 | | 218 | B | | | | 3 | 3.56 | 11.56 | 120mAh | 1.35 |
| 7 | RW34 | WS11 | 528 | 301 | 4301 | | | 43 SW | SB AB | SR43SW | 1 | 4.19 | 11.56 | 175mAh | 1.50 |
| 8 | RW51 | W2 | 502 | 387 | | 214 | | | | | | 3.56 | 11.56 | 70mAh | 1.35 |
| 9 | RW36 | WS12 | 529 | 344 | | 242 | | | | | 12 | 3.56 | 11.56 | 120mAh | 1.50 |
| 10 | RW40 | 10L130 | 553 | 391 | | | | WIS | SB BS | SR1120SW | 23 | 2.16 | 11.56 | 50mAh | 1.50 |
| 11 | RW39 | | 534 | 390 | 4211 | | | WGS10 | SB AU | | 11 | 3.05 | 11.56 | 90mAh | 1.50 |
| 12 | RW33 | 10L126 | 524 | 394 | 4501 | | | | SB A4 | SR936W | 27 | 3.56 | 9.50 | 85mAh | 1.50 |
| 13 | RW49 | 10L122 | 554 | 389 | | 603 | | WG10 | SB BU | SR1130W | 17 | 3.05 | 11.56 | 95mAh | 1.50 |
| 14 | RW30 | 10R130 | 533 | 381 | 4231 | | | | SB DS | | 34 | 2.16 | 11.56 | 50mAh | 1.50 |
| 15 | | | | | | | | | | | 18 | 3.10 | 7.90 | 37mAh | 1.50 |
| 16 | RW413 | | | 399 | | | | W2U | SB BP | SR926W | 35 | 2.67 | 9.50 | 45mAh | 1.50 |
| 17 | RW410 | | | 361 | | | | | | | | 2.06 | 7.87 | 20mAh | 1.50 |
| 18 | RW411 | | 556 | 396 | | | | 726W | SB BL | SR726W | 29 | 2.67 | 7.87 | 30mAh | 1.50 |
| 19 | RW415 | | | | | | | | | | 36 | 2.06 | 9.50 | 35mAh | 1.50 |
| 20 | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | 40 | 1.60 | 7.87 | 13mAh | 1.50 |
| 23 | RW316 | | 530 | 315 | | | | | | | 41 | 1.60 | 9.50 | 18mAh | 1.50 |
| 24 | RW317 | | 373 | 539 | | | | 916 | SB AJ | SR916SW | | 1.60 | 11.56 | 25mAh | 1.50 |
| 25 | RW318 | | 538 | 366 | | | | 1116SW | | SR1116 | 7 | 5.36 | 11.56 | 250mAh | 1.50 |
| 51 | RW42 | 10L14 | 541 | 357 | 4404 | 228 | A J | G13 | SB DS | SR44SW | 15 | 5.33 | 7.87 | 105mAh | 1.50 |
| 52 | RW48 | 10L123 | 546 | 393 | 4807 | 255 | F | | SB B3 | SR48W | 2 | 3.56 | 7.87 | 50mAh | 1.50 |
| 53 | RW47 | 10L125 | 547 | 392 | 4104 | 247B | K | 41W | SB B1 | SR41W | 6 | 4.19 | 11.56 | 175mAh | 1.50 |
| 54 | RW44 | 10L124 | 548 | 386 | 4304 | 260 | D H | 43W | SB B8 | SR43W | 10 | 3.56 | 7.87 | 50mAh | 1.50 |
| 55 | RW37 | 10L15 | 527 | 384 | 4101 | 247 | | | SB A1 | SR41SW | 14 | 3.60 | 11.60 | 100mAh | 1.50 |
| 56 | | 10L120 | 549 | | | 604 | | | | | | 3.30 | 11.31 | 65mAh | 1.50 |
| 57 | | | | 201 | | | | | | | 25 | 2.67 | 9.50 | 45mAh | 1.50 |
| 58 | RW313 | | 523 | 395 | 4521 | | | | SB AP | | 29 | 2.60 | 7.90 | 29mAh | 1.50 |
| 59 | | | | | | | | | | | 26 | 2.67 | 7.87 | 30mAh | 1.50 |
| 60 | RW311 | | 536 | 397 | 4121 | | | 726SW | SB DL | SR726SW | 16 | 5.33 | 7.87 | 105mAh | 1.50 |
| 61 | RW38 | 10L13 | 526 | 309 | 4801 | 70T | | | | | 19 | 2.06 | 7.87 | 20mAh | 1.50 |
| 62 | RW310 | | 532 | 362 | 4131 | 601 | | 720 | SB DK | | 30 | 2.06 | 9.50 | 35mAh | 1.50 |
| 63 | RW315 | | 537 | 371 | 4531 | | | 920 | SB AN | SR920SW | 31 | 2.16 | 6.80 | 15mAh | 1.50 |
| 64 | RW320 | | 531 | 364 | 4031 | 602 | | 621SW | SB AG | SR620SW | 32 | 1.10 | 6.80 | 5mAh | 1.50 |
| 65 | | | | | | | | | | | 33 | 1.40 | 7.90 | 15mAh | 1.50 |
| 66 | | | | | | | | | | | | | | | |

# VERSITOOL

We illustrate a selection of tools from our large range which are useful for the repair and control of Quartz watches.




A range of Versitools is available in kit form comprising:—

- Case Knife
- Scratch brush
- Waterproof case opener
- Dust Blower
- Non magnetic screwdriver
- Battery tweezers
- Fine tweezers
- Set of trimmers

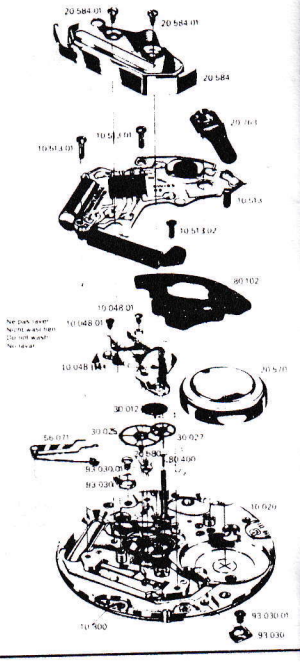
Ref. 22/55

With this kit you will be able to rectify most of the common faults found in quartz watches.

Details of tools for more advanced repairs are available on request.

## EXPLODED VIEW OF EBAUCHES

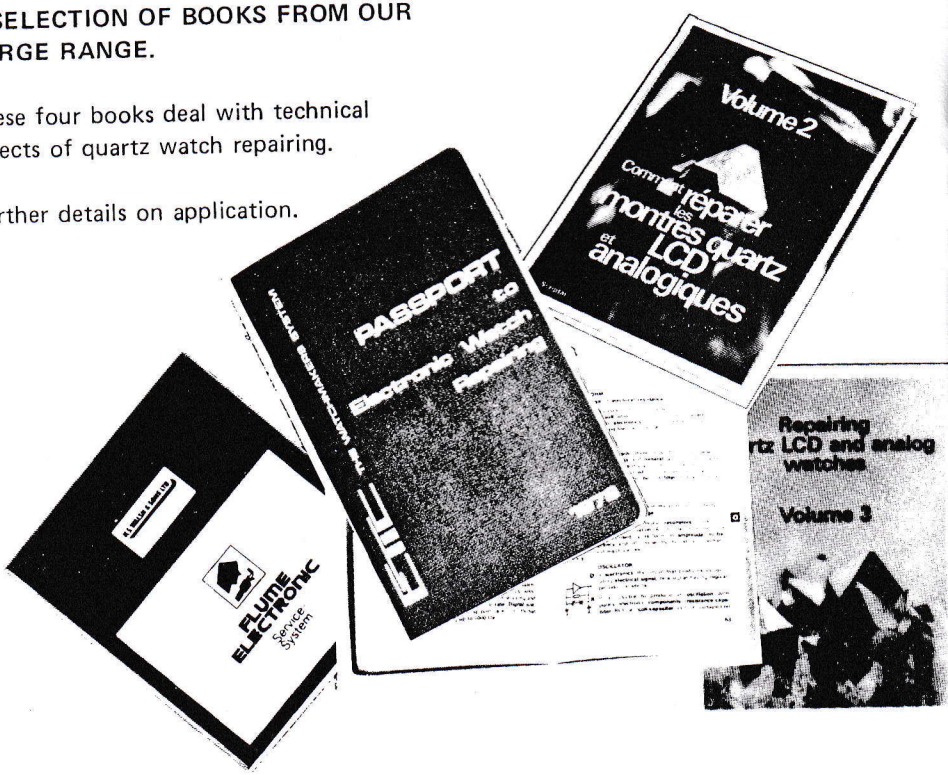
Analogue Movement



## A SELECTION OF BOOKS FROM OUR LARGE RANGE.

These four books deal with technical aspects of quartz watch repairing.

Further details on application.



## USE OF VERSITEST AND VERSITIME TOGETHER

Connect Versitest to Versitime with the adaptor provided as illustration below.
Set up Versitest as described on page 2. (power supply to quartz module).
Depress ⏲ μA button on Versitest and 32KH2 button on Versitime.
The Versitest screen will register the current consumption of the module, and the Versitime screen the gain or loss rate.