
PAT2000
PORTABLE APPLIANCE TESTER
OPERATING INSTRUCTIONS
202A510

CONTENTS

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NOTICE

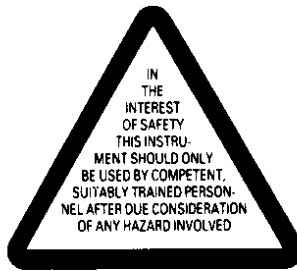
Data may be lost or altered in virtually any electronic memory under certain circumstances. Therefore Seaward Electronic assumes no responsibility for financial losses or claims due to data lost or otherwise rendered unuseable whether as a result of abuse, improper use, defects, disregard of operating instructions or procedures, or any other allied causes.

The information contained in this manual is subject to change without notice.

PAT INTERNAL BATTERY

The Portable Appliance Tester contains an internal rechargeable battery to maintain the memory when the unit is switched off. In order to ensure that this battery maintains operability the following procedure should be followed:-

1. On receipt of the PAT tester, clear the memory and leave the unit switched on for one hour.
2. If the PAT will not be in use for long periods of time the previous test results should be downloaded onto a printer/PC prior to the unit being stored or the unit should be switched on for 12 hours to ensure full charge.
3. When the PAT has not been used for a period of time and hence the battery possibly heavily discharged, and if the results of prior tests have not been previously downloaded it is advisable to ascertain if the tests are still stored by carrying out the downloading sequence. If the memory is intact then charge the battery for one hour prior to further testing or clear the memory and leave the PAT on charge for 12 hours.



SAFETY

Read instructions before use

Due to the potential hazard associated with any electrical circuit it is important that a user is fully familiar with the instructions covering the capabilities, applications and operation of this instrument. The user should ensure that all reasonable safety procedures are followed and if any doubt exists should seek advice before proceeding.

The PAT2000 performs a number of electrical tests which involve high voltages and high currents. Never touch the appliance being tested while the testing procedure is being followed.

This product is designed for use by suitably trained competent personnel.

GETTING STARTED

On receiving your tester:-

- 1) Read instructions
- 2) Assemble tester with interconnection lead between keypad and main unit
- 3) Plug in tester and leave for 1 hour to charge battery back up
- 4) Clear memory

INTRODUCTION & DESCRIPTION

The PAT2000 is one of the most advanced portable appliance testers available, performing eight functions and providing a comprehensive guide to the electrical safety for both 240v and 110v appliances of class 1 or 2 construction.

The instrument is micro processor controlled and enables the user to select either the automatic, testcode or manual mode which gives control of the testing sequence to the instruments computer or the operator.

All internal power and test outputs for both 240v and 110v appliances are derived from 240v 50hz supply.

The equipment performs the test selected by the user and records the results in its internal memory which is capable of storing over 700 sets of test results.

To speed up data entry, The Appliance Number, Test Code Number and the User Code can all be entered by a bar wand recorder.

In addition to test results the memory also records the appliance number, the test number and the date of testing. Preset pass/fail limits have been programmed into the PAT2000 and the test result is clearly displayed on the instruments liquid crystal display and any hard copy print out.

A fully charged battery backed memory will store test results for up to six months without being reconnected to the supply for re-charging. It is recommended that the memory is printed or down loaded to a PC daily.

Particular features of this product are:

Dual Voltage output: Allows the user to change between 240v and 110v outputs at the start of a new test.

Rugged Enclosure.

Compatibility with PATS software.

Bar code reader input

LAYOUT

The PAT2000 is contained in a robust polyethylene moulded case with an integral carrying handle and separate keypad. Power supplies, 240v/110v sockets and high voltage/power components are housed in the main enclosure. Two indicators show which of the test sockets are in use. The microcomputer, keypad input, display and i/o port are housed in the smaller keypad enclosure. The keypad has a "qwerty" layout with the numbers grouped on the right hand side.

The keypad is held in place by two over-centre latches

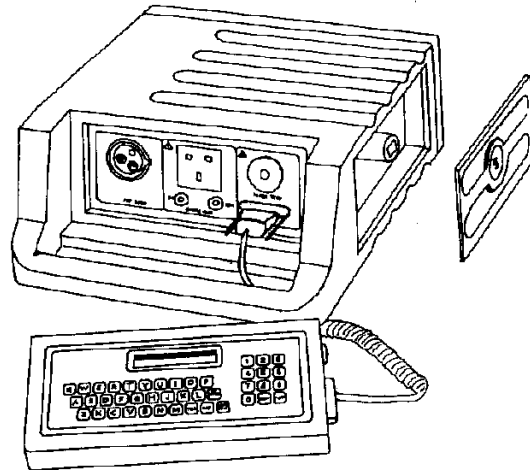
The mains input connector and test leads are housed behind two side panels held in place by quick release fasteners. Hand tools are not required to operate or access the PAT2000.

The main unit is connected to the keypad by a 25 way screened interconnection lead as configured in fig 1.

The standard PAT2000 performs eight functions which include:

- 1) Visual Inspection
- 2) Earth Bond
- 3) Insulation
- 4) Flash Test
- 5) Load Test
- 6) Operation Test
- 7) Earth Leakage Test
- 8) Fuse Check

The control and use of the instrument is extremely simple with clear explicit prompts on the large crystal liquid display.



SAFETY FEATURES

A number of safety features are included in the instrument design and these include:

- 1) Fuse Protection.
- 2) A monitor between neutral and earth connection to the PAT2000 which inhibits testing if a potential of greater than a nominal 50V exists (as with a reversed polarity connection). (240V Version only.) The inhibit can be overridden if the user decides it is safe to continue e.g. when using an isolation transformer.
- 3) The unit has a preset Pass/Fail level for each test. In addition a preset trip level has also been incorporated for each test which will terminate the test if the measured level exceeds this value. The exact trip level will vary according to test but will normally be approximately 120% of the maximum Pass/Fail level.
- 4) An electronic cutout which provides rapid disconnection of internal relays where test results are detected which are in excess of 5 times the fail limit.
- 5) Sensing circuitry to detect overvolts on the 110V output.

Use of the PAT2000 is straight forward. Plug the tester into a suitable outlet and follow the instructions on the LCD display.

Variations of the standard instrument are available to suit international voltages and connecting sockets, details of those available at the time are listed under the section headed Specifications.

APPLICATIONS

The PAT2000 is designed to check the electrical safety of portable appliances and its comprehensive testing routine allows for appliances of Safety Class 1 and Class 2 insulation to be checked.

As a guide BS and IEC standards define these two categories of insulation as follows:

- | | |
|---------|--|
| Class 1 | Appliances which have a functional insulation throughout and an earth connected case. These are often described as earthed appliances. |
| Class 2 | Appliances which have both functional and additional insulation and where any metal parts cannot become "Live" under fault conditions. |

The symbol represents double insulation and no earth connection is present in this type of appliance.

Different regulations and standards describe a variety of tests for electrical appliances and in general cover type approval tests. Such testing involves prolonged sophisticated techniques. It is generally recognised that for periodic inspection to ensure that the safety of the appliance is maintained tests of the type performed by the PAT2000 are realistic and satisfactory.

The same sequence of tests are carried out for either 240v or 110v appliances. Eight different tests are performed by the PAT2000 and these are described as follows:

VISUAL CHECKS

The objective of the visual checks is to confirm that the appliance under test is not damaged and thereby safe to test. The user is asked to check the lead, case, and fuse. If any of the three checks is answered "no" then a fail is recorded in the test results.

EARTH BOND TEST

The objective of this test is to ensure that the connection between the earth or protective conductor of the appliance's mains supply plug earth pin and the metal casing of the appliance is satisfactory and of a low enough value to satisfy accepted safety standards.

The PAT2000 applies a low voltage of approximately 6 volts AC RMS between the earth pin of the mains supply plug and the lead connected to the earth bond test terminal, a high current is allowed to flow for a period of 5 seconds which can be either approximately 25 amps at 0.1 ohm or 8Amps depending upon the earth bond output socket selected. The objective of the high current is to test under load conditions and the duration of the test is limited to 5 seconds to prevent damage or over stressing which may be caused by testing for prolonged periods.

INSULATION

In the insulation test a nominal voltage of 500V d.c. is applied between the earth pin and both live and neutral pins of the appliances mains supply plug. 110V appliances have the insulation voltage applied to the earth pin and the line pins. The PAT2000 displays the resistance measured and allows the user to confirm sufficient insulation exists.

For class 2 appliances the flash probe replaces the earth pin in the plug, and the default pass level in manual and automatic modes changes from 2Mohms to 7Mohms.

FLASH TEST

A wide variety of tests are specified under different BS and IEC specifications. For this reason test voltages have been selected for the PAT2000 which are realistic for routine testing without overstressing and potentially weakening appliances insulation levels.

A nominal test voltage of 3KV for class 2 appliances is applied and 1.5KV for class 1 appliances.

Note:

This particular test may be omitted when testing electronic equipment incorporating interference suppressors. This action may be necessary where the voltage withstand rating of the components fitted to the appliance is insufficient to accommodate the test without damage.

LOAD TEST

Before switching full power on to an appliance the load test is conducted which applies a voltage through a current limiting resistor to the mains supply plug and checks that the current flow will not be excessive when full voltage is applied.

The result for this test is not displayed unless the tester detects a potentially high supply current in which case, the user can determine whether it is safe to continue. This test is for 240V appliances only.

OPERATION

The appliance under test is energised at either 110v or 240v depending on the voltage selected through the mains supply plug for a period of 8 seconds. The PAT2000 measures power taken by the appliance after 4 seconds and displays the reading in KVA based upon a nominal supply voltage.

It should be noted that if the appliance under test draws an extremely high current due to short circuit in its internal wiring it is possible that the dip caused in the supply voltage available to the PAT2000 will cause the micro processor circuit to be reset. The operator will be returned to the start sequence.

LEAKAGE

During the operation tests described in the above section the PAT2000 monitors the current flow through the earth lead of the appliance and displays the result on the screen with a pass or fail indication.

This particular test is of value when an appliance incorporates a number of sequences which may change the electrical characteristics of the product during its operation. As such these defects would not be apparent under normal passive testing.

NOTE:

It is important for complete testing that the appliance is switched on for the duration of the test cycle.

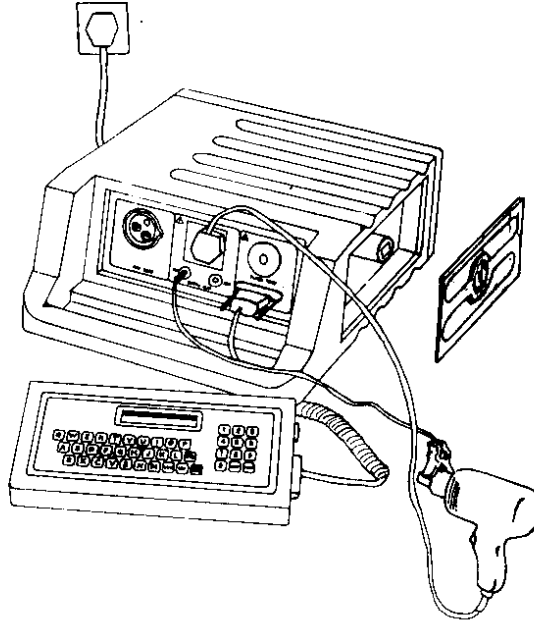
At the end of the leakage test a warning may be given 'Low Load, check fuse'. If the appliance is known to be less than 50W rating the fuse may be found to be healthy and the test has been valid.

WARNING

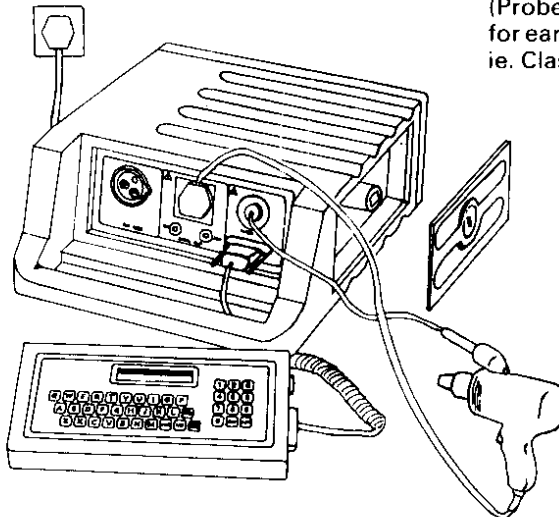
- a) Do not touch the appliance while testing is in progress. A high voltage of 1.5KV is applied with respect to earth during the flash test and a nominal 500V DC during the insulation test.
- b) Ensure that the earth clip of the bonded earth test cable is securely attached to this appliance. A poor connection may introduce arcing of the contact.
- c) The appliance will be automatically energised during the load test. Care should be taken that no ill effects can occur when the appliance commences operation.
- d) Certain appliances may contain interference suppressors which may be damaged by the flash test if their components are not rated to withstand this type of test. Under these conditions the flash test may be skipped.
- e) Where it is unclear which Class of insulation applies to the appliance being tested it is recommended that the manufacturers operating instructions be consulted.
- f) It is recommended that the operation of the PAT2000 is periodically checked by testing an appliance of known electrical characteristics.
- g) Test should not be carried out while a printer or computer is connected to the instrument's serial port.
- h) The instrument is designed to output a nominal 240V or 110V only from the appropriate socket and various features are incorporated to ensure this. It is extremely dangerous to connect a 110V appliance to 240V and this must not be done in any circumstances.
- i) The side panels are fitted with quick release fasteners to allow access to test leads etc. Do not attempt to release any fasteners within the side enclosures.

240V APPLIANCES

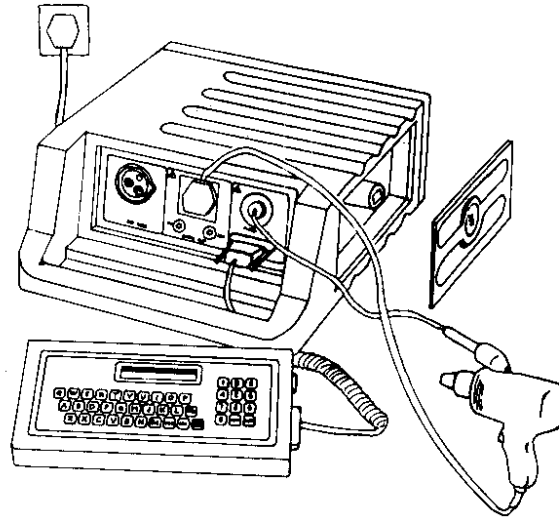
TEST 1
Earth Bond Test
25 Amps/8Amps



TEST 2
Insulation Test
500V DC
(Probe not needed
for earthed appliances
ie. Class 1)



TEST 3
A.C. Flash Test
1.5KV Class 1
3.0KV Class 2

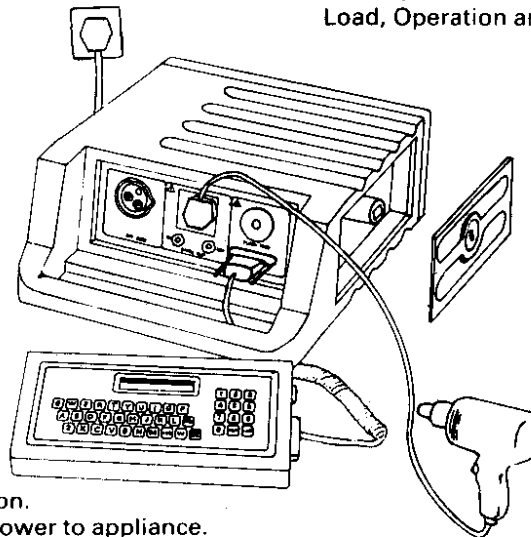


Note:

1. Press # to apply Flash Test Voltage
2. Probe is not required for Class 1 (Earth Appliance)

Warning: Do not touch probe tip or appliance during test and allow time for any internal capacitors to discharge after test is complete.

TEST 4, 5 and 6
Load, Operation and Earth Leakage Test



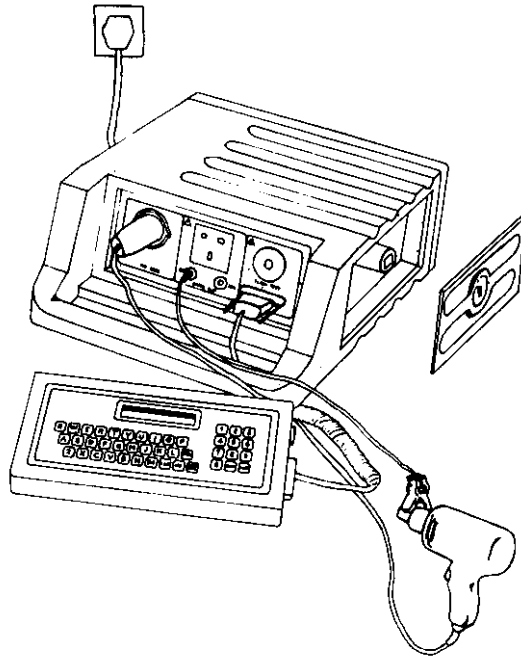
Note:

1. Switch appliance on.
2. Press # to apply power to appliance.

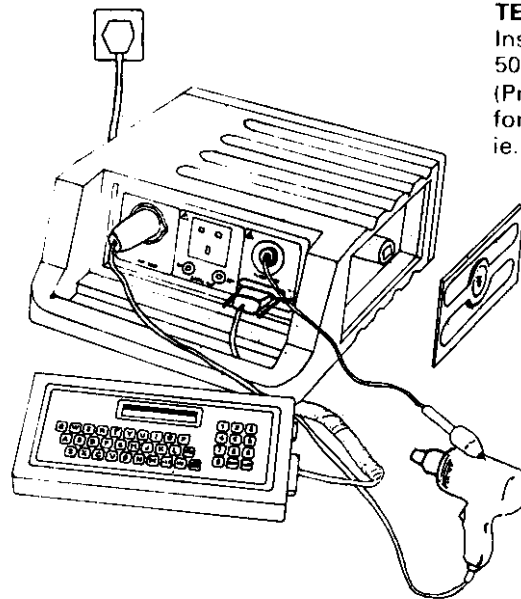
Warning: Ensure that no hazard will occur when the appliance operates.

110V APPLIANCES

TEST 1
Earth Bond Test
25 Amps

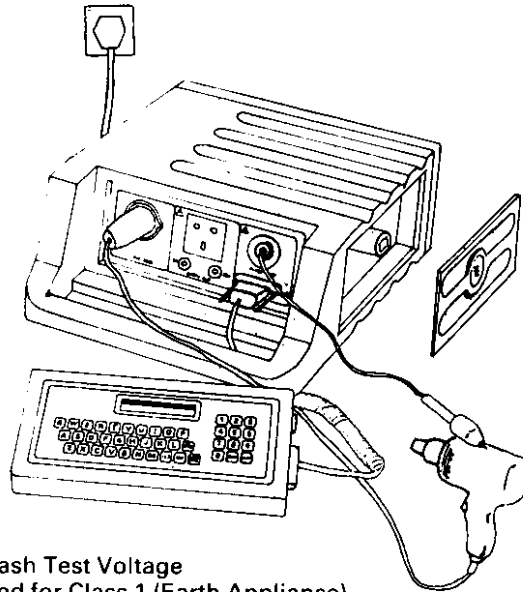


TEST 2
Insulation Test
500V DC
(Probe not needed
for earthed appliances
ie. Class 1)



TEST 3

A.C. Flash Test
1.5KV Class 1
3.0KV Class 2



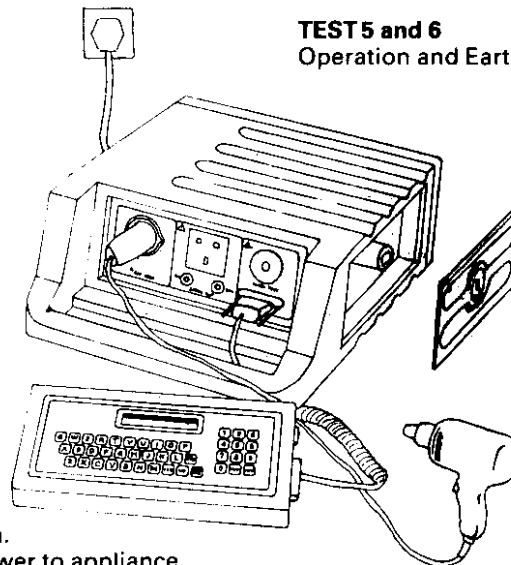
Note:

1. Press # to apply Flash Test Voltage
2. Probe is not required for Class 1 (Earth Appliance)

Warning: Do not touch probe tip or appliance during test and allow time for any internal capacitors to discharge after test is complete.

TEST 5 and 6

Operation and Earth Leakage Test



Note:

1. Switch appliance on.
2. Press # to apply power to appliance.

Warning: Ensure that no hazard will occur when the appliance operates.

INTRODUCTION

The PAT2000 is microprocessor controlled and is designed to be extremely user friendly by asking a series of questions which will guide the operator through the testing sequence.

The instrument will make clear statements concerning the test or condition of the equipment and ask the operator to confirm or deny the status. e.g. in the case of setting the test mode the display prompts autotest? Y/N.

The operator can use either the YES and NO keys or the Y and N characters in answer to the required questions.

If the operator wishes to use the automatic test sequence he presses the Y and the instrument records the choice and proceeds to the next step.

If the operator wishes to use the manual mode he presses N.

In this case the display will present the message manual test mode? Y/N. The operator then will press the Y to confirm that he wishes to use the manual test sequence. Should the operator wish to change his mind he should press N and go back to the beginning of the sequence.

If the PAT2000 has been unused for several months it is recommended that it be switched on for 1 hour before use to ensure the memory backup battery is in a healthy state of charge. Check memory for corruption and if in doubt clear before use.

(The hash sign represents the enter command and advises the micro processor that a selection has been made and it should action the request. NOTE: No action will follow unless the hash sign has been depressed.)

STEP 1

Connect the PAT2000 to the mains supply.

On Power up the PAT2000 may display: VOLTS ON NEUTRAL PRESS # ONLY IF SAFE. ONLY proceed if the reasons are known.

Display: IS THIS RIGHT Y/N

16 MAY 92 (16:05:92)

If the date is correct depress the Y key and the programme will sequence to the next instruction.

If the date is not correct press the N key and the instrument will then lead the user through a sequence of setting day, month and year.

At the end of this sequence the new date will be displayed and the user asked to confirm whether it is correct or not. (Should the user make an error during the set up procedure of the date he will now have the opportunity to correct this.)

STEP 2

Display: INPUT APPLIANCE NUMBER, PRESS # OR USE WAND.

(Each appliance may be allocated an alpha/numeric code of up to 10 digits).

When the desired code is completed press # ONCE only to enter code into memory. The instrument will ask "Is this right? Y/N". The user may then re-check and respond accordingly.

STEP 3

Display: INPUT TEST CODE? Y/N

At this stage the operator is being asked to select either the test code or normal operation. If normal operation is required then answer 'N' and proceed to step 4. The test code can be entered by the keypad or by the bar wand. The test code has been added to save time by avoiding the requirement for repeated input of information and takes the form of a ten digit number as follows.

- Digit 1: Must be a 1
Digit 2: 0 = Visual Check omitted.
1 = Visual Check included.
Digit 3: 0 = 240V operation.
1 = 110V operation.
Digit 4: 0 = Class 2 Earth Bond omitted.
1 = Class 1 Earth Bond pass level 0.1ohm
2 = Class 1 Earth Bond pass level 0.5ohm
3 = Class 1 Earth Bond pass level 2.0ohm
Note: option 3 is only for testing extention leads.
4 = Class 1 Earth bond pass level 0.1ohm. Up to 3 tests.
5 = Class 1 Earth bond pass level 0.5ohm. Up to 3 tests.
Digit 5: 0 = Insulation test omitted.
1 = Insulation pass level 7.0Mohm.
2 = Insulation pass level 2.0Mohm.
3 = Insulation pass level 4.0Mohm.
4 = Insulation pass level 7.0Mohm. Up to 3 tests.
5 = Insulation pass level 2.0Mohm. Up to 3 tests.
6 = Insulation pass level 4.0Mohm. Up to 3 tests.
Digit 6: 0 = Flash test omitted
1 = 3.0mA pass level
2 = 5.0mA pass level
3 = 3.0mA pass level. Up to 3 tests.
4 = 5.0mA pass level. Up to 3 tests.
Digit 7: 0 = Load test omitted
1 = 0.5kW pass level.
2 = 1.0kW pass level.
3 = 2.0kW pass level (240V) or 1.8kW (110V)
4 = 3.2kW pass level (240V) or 1.8kW (110V)
Digit 8: 1 = 0.75mA leakage pass level.
2 = 3.50mA leakage pass level.
3 = 9.90mA leakage pass level.
Digit 9: 0 = No repeat test.
1 = repeat test sequence.
Digit 10: Must be a 1.

Proceed to Step 7.

STEP 4

Display: 240V Y/N or 110V Y/N.
The instrument will default to the last option used.

At this stage the operator is asked which of the output sockets is required. An indicator above each of the sockets will show which one is in use at any time. Once the operator has selected the appropriate output, it needs to be confirmed by pressing the yes key.

STEP 5

Display: AUTOMATIC TEST Y/N OR MANUAL TEST Y/N
Instrument will default to last used option

At this stage the operator is being asked to select either the automatic sequencing of tests or the manual sequence.

An automatic sequence will allow the tester to apply 5 second test sequences of each test and will only ask for a prompting at the flash test stage, and at the load test stage.

Manual mode allows the operator to perform repeat tests. If repeat tests are not required answering 'N' will cause initialisation of the next test sequence. This will commence with 'PRESS # TO START.'

It should be noted that for safety reasons tests are only performed in the sequence detailed under the section headed application.

STEP 6

Display: CLASS 1 TEST Y/N OR CLASS 2 TEST Y/N
Instrument will default to last used option

(The tester is now asking the operator to advise it which Class of insulation appliance is being tested.)

By pressing the Y key he will confirm a Class 1 appliance is being tested. Pressing the N key will result in the display prompting the question "Class 2 Test Y/N." If class 1 is selected then the user will be prompted to set the earth bond fail fault resistance. This fault level can be set to either 0.5Ω or 0.1Ω by answering Y or N to the questions asked.

STEP 7

Display: VISUAL CHECK Y/N

The PAT is now asking the operator if a visual inspection is to be carried out. By pressing the Y key, 3 questions are then posed:

- (i) IS LEAD OK Y/N
- (ii) IS CASE OK Y/N
- (iii) IS FUSE OK Y/N

In automatic mode tests will be terminated if any of the questions are answered with a 'NO'.

Memory will record visual check as a pass, fail or skip.

STEP 8

PAT2000 is now ready to commence testing.

Display: CONNECT APPLIANCE
PRESS # TO START

The tester will now perform each test for a five second period except the load test which is completed in 8 seconds. Before depressing the hash button the operator should ensure that the connections are correct, the appliance is switched on and that the earth bond lead is attached to the Class 1 appliance.

The flash test probe need only be applied to a Class 2 appliance for insulation and flash tests.

In manual mode and test code mode up to 3 Earth bond tests, 3 insulation tests and 3 flash tests are available .

The results of each test will be displayed with either a pass or fail indication depending upon whether the measurement is within or outside the preset test limits.

- 1) The display will prompt and the audio sounder operate when the flash test is reached.

The user must depress the hash key to apply the high voltage.

This operation applies even in the automatic test mode.

- 2) When a test fails the PAT2000 will stop and skip all further tests in the automatic or test code mode or prompt to proceed in the manual mode. This action is taken on the grounds of safety and the operator should consider whether it is wise to proceed.

STEP 9

The operator will be prompted to enter a user code of up to eight alpha numeric characters (see step 2). If no code is given 00000000 is recorded. This code can be used to identify locations, retest dates, departments, users etc. If more than eight characters are inserted then the last eight will be recorded as the code.

NOTE: Only the last six characters are processed by the PATS software.

STEP 10

After the tests have been completed the display will prompt the user to disconnect the appliance and then ask for the next appliance number to be entered.

If no further tests are to be performed the instrument may be switched off from the mains supply.

NOTE: Always switch the appliance tester off when not in use.

RANGE LIMITS

Upper and lower limits have been set for each range; readings above the upper level are held at the upper value, preceded by >. Readings below the lower level are held at the lower level preceded by <.

e.g. if the upper earth impedance level is set to 5.00

and the lower earth impedance level is set to 0.02

then a measured value of 9.99 is shown as '>5.00'

a measured value of 1.00 is shown as '1.00'

a measured value of 0.01 is shown as '<0.02'

OTHER COMMANDS

Abort: Depressing this key will result in the test sequence being interrupted and the program being reset.

Send

Data: Using this key the operator will be put in command of recalling the test results contained within the memory.

The program will lead the user through the steps which allows for recall on the display or onto a printer (See Memory Recall.)

Clear: Clears the display and depending upon sequence in program may reset the program to the start sequence.

PRINTOUT FORMAT

Example of Printout (Worst case)

TEST NUMBER	0001	Test number automatic increment
DATE	24 APR 91	Set by operator
APP NO	0000000001	Any 10 character number Input by operator
TEST MODE	MAN	Selectable Auto: Automatic Man: Manual
VISUAL CHECK E 1	P <0.02 OHM P	Visual Check result Measured Value (P Pass)
INS 1	>9.90 MEG P	Insulation Test (P Pass)
FLASH 1	>0.30 mA P	
FLASH 2	. mA	Flash Test (S Skip)
FLASH 3 LOAD	. mA S <0.05 KVA P	Load Test (P Pass)
LEAKAGE	0.50 mA P	Leakage Test (P Pass)
USRCODE	000000	

NOTE:
P: Test Pass
S: Skip, Test not performed
F: Fail
T: Terminate
If load or leakage pretest fail

'Dump all' printout will cause all results from repeat tests to be dumped.

MEMORY RECALL

Up to 1000 test results are recorded in the instruments memory. To review the information press the send data key at the beginning of a new test sequence.

The user will have an option to print out either the worst case results or all results if there have been any multiple tests carried out.

The display will prompt with a question asking if the information is to be printed out.

Press Y if a hard copy is required and a printer is connected.

Press N if the data is to be displayed on the LCD.

By depressing the # button the display will move through each line of the test results, holding the button down will cause the display to move rapidly through the test results.

The data will continue until all results have been displayed.

To exit this stage depress and hold down the Abort button.

MEMORY CLEAR

Should the memory be required to be cleared of its contents the following sequence should be followed:

PRESS:-ABORT

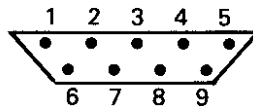
PRESS:-CLEAR

The display will ask for confirmation of the desire to clear memory. The unit will check its memory.

DATA INPUT/OUTPUT

A 9 pin D type connector is located at the lower right corner of the lid panel.

The data output uses RS232 levels using $\pm 5VDC$



Pin 5,7 Ground, Earth
Pin 3 Data out
Pin 2 Busy/Data in
Pin 1,4,6,8 No connection
Pin 9 +5V

For a printer/computer the set up data is as follows:-

Baud Rate 1200

Start Bits 1

Stop Bits 2

Data Bits 8

No Parity

For a bar wand recorder the set up data is as follows:-

Baud Rate 9600
Stop Bits 2
Data Bits 8
Intercharacter Delay 100mS
No Parity

MAINTENANCE

The PAT2000 is a rugged quality instrument, however care should be taken, failure to do so will reduce the instruments life and hinder its reliability.

- 1) Always check all test leads for signs of damage prior to use.
- 2) Keep the appliance tester clean and dry.
- 3) Avoid testing in conditions of high electrostatic or electromagnetic fields.
- 4) Check memory for corruption prior to each period of operation. If in doubt clear memory.
- 5) No attempt should be made to gain access to the instrument while under test conditions.
- 6) Maintenance should only be performed by an authorised recognised member of personnel.

The PAT2000 contains no user replaceable parts
Note: Warranty excludes the internal rechargeable battery.

Should the PAT2000 require service, repair or calibration return the equipment to a recognised dealer or to Seaward Electronic Limited, Bracken Hill, South West Industrial Estate, Peterlee, County Durham, SR8 2JJ, England. The product should be returned post paid where, upon receipt, the owner will be advised of any costs prior to work commencing.

SPECIFICATION

- 1) Earth Bond
- 2) Insulation
- 3) Flash Test
- 4) Load Test
- 5) Operation
- 6) Leakage Test

EARTH BOND TEST

Measuring Range:	0.02-5.00 ohms
Pass Band selectable at 0.1 ohms, 0.5 ohms and 2.0 ohms (test code only)	
Test voltage:	6V RMS nominal
Output current:	Nominal 25amps or 8amps
Accuracy:	+/-5% (+/- 2 digits with range 25 mill-ohms to 1 ohm)

NOTE: Impedance of earth connector will be significant at low Impedances.

INSULATION TEST

Meter Range: 1 - 9.90M ohms
Pass band limit: 2M, 4M or 7Mohms selectable
Output voltage: 500V 2M ohms +/- 10% for input mains voltage variation
Accuracy of indication: +/- 8%

FLASH TEST

Measuring range: 0.3 - 6mA
Pass band limit: 3mA or 5mA
Open circuit voltage:
Class 1: 1.5KV AC RMS
Class 2: 3KV AC RMS
Accuracy: +/- 5% +/- 150 microamps in range 0-6mA

LOAD TEST

Test Voltage: Supply voltage
Test Current: Test Current limited by high value resistor (1K ohm)

OPERATION TEST

Meter reading: 0.05-3.2 KVA
Pass band limit: User selectable
Accuracy at nominal supply voltage +/- 3% +/- 180VA

LEAKAGE TEST

Meter reading: 0.3-6mA
Pass band limit: 0.75mA, 3.5mA or 9.9mA
Leakage current: +/- 10% +/- 60 microamps in range 0 - 6mA

SUPPLY VOLTAGE

Rated Voltage +/- 10%
NOTE: Reading's are related to supply voltage variation

Dimension: 250mm x 200mm x 150mm (Approx)

Weight: 11 Kilo (Approx)

SUPPLY OPTION PART NUMBER

UK	202A910
European	202A911
Australian	202A915

ACCESSORIES REPLACEMENT PARTS

High Voltage Probe	161A015
Earth Lead	161A024
Schedule Label	91B037
Pass Safety Test Label	91B038
PATS Software	161A921
PATS + Software	161A922
Printer	194A910
Printer Lead	194A912
Computer Lead	194A913
Bar wand reader	194A300
Bar code labels	194A915

FUSES

Plug Fuse
13A to BS 1362

P.S. Fuse
F1A

TEMPERATURE RANGE

0-40°C
Calibration performed at 20±2°C

Due to a policy of continuous development Seaward Electronic Limited reserves the right to alter the equipment specification and description outlined in this publication without prior notice and no part of this publication shall be deemed to be part of any contract for the equipment unless specifically referred to as an inclusion within such contract.