



Operating Instructions

SAFE7CHECK PROFESSIONAL



The SAFETCHECK Professional (STC PRO) is an electrical Portable Appliance Tester (PAT), designed and manufactured in Australia. The SAFETCHECK Professional ensures the electrical safety of appliances is compliant with the requirements of the current Australian and New Zealand Standard AS/NZS 3760 (In-service safety inspection and testing of electrical equipment).

The STC PRO is unique in that it ensures an appliance is correctly connected prior to running a test sequence. Most, if not all other testers, will pass an appliance even if it is not connected in accordance with the standard.

With the STC PRO, testing Electrical Safety of Appliances has never been as simple, fast, accurate, thorough and safe. You can test the safety of Class 1 (protectively earthed) appliances, Class 2 (double insulated) appliances and extension leads in accordance with the standard, simply and efficiently. There is no interpretation, no ambiguity, just a simple PASS or FAIL.



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The testing of appliances with the STC PRO

The STC PRO will test most 240V 50Hz single phase class 1 and 2 electrical appliances and extension leads to comply with the current electrical safety standard AS/NZS 3760. Any appliances with characteristics which may require modified test parameters (in accordance with the standard) may be found in the "Other Appliances" menu. If you experience difficulties or doubts in testing certain appliances please contact the manufacturer:

TRIO Test & Measurement Solutions
Telephone 1300 853 407
Facsimile 1300 853 409
sales@trioelectrix.com
www.trioelectrix.com

Frequency of electrical safety testing

(Guide only)

The minimum recommended frequency of safety testing of electrical equipment is specified in Australian Standard for in service testing AS/NZS 3760.

Type of environment in which equipment is used	Earthed appliance	Double insulated appliance	Extension cords
Factories, shops & places of work manufacturing, repair, maintenance or construction	6 months	12 months	6 months
Office environment where equipment is not subject to constant flexing of the supply cord	5 years	5 years	12 months
Other commercial environments, e.g. tea rooms, office, kitchens, health care studios, with no protection	12 months	12 months	6 months
Construction and Demolition sites	3 months	3 months	3 months
Hire equipment	Before each hire	Before each hire	Before each hire

Function and basic technical specification

Earthed appliances are tested for:

- > Electrical continuity $\leq 100\text{K Ohm}$
- > Earth continuity $\leq 1\text{ Ohm @ }200\text{mA}$
- > Insulation resistance $\geq 1\text{M Ohm}$ (250/500V DC Selectable)

Note: If the appliance requires mains power to energise its On/Off switch (and the switch must be "on" to complete the mains electrical circuit), the STC PRO can conduct a Current Leakage Test (Run Test) to ensure Leakage Current is $\leq 5\text{mA}$.

Double insulated appliances are tested for:

- > Connection test (unique to the STC PRO) Ensures the conductive bandage is correctly in place:
 - to provide a return path for any leakage current during the insulation resistance test; and
 - provides operator protection from electric shock
- > Electrical continuity $\leq 100\text{K Ohm}$
- > Insulation resistance $\geq 1\text{M Ohm}$ (250/500V DC Selectable)

Note: If the appliance requires mains power to energise its On/Off switch (and the switch must be "on" to complete the mains electrical circuit), the STC PRO can conduct a Current Leakage Test (Run Test) to ensure Leakage Current is $\leq 1\text{mA}$.

Extension cords are tested for:

- > Insulation resistance $\geq 1\text{M Ohm}$
- > Earth circuit continuity $\leq 1.0\text{ Ohm @ }200\text{mA}$
- > Electrical continuity for resistance Active / Neutral 10K Ohm nominal
- > Connection polarity (transposition of active and neutral)

Test duration

< 3.5 seconds

Electrical stress test parameters

- > Insulation 500V D.C.
- > Earth circuit 200mA nominal

Display

- > LCD to indicate
 - Pass/Fail
 - Possible fault conditions
 - User information

> LED's

- Red (Fail / Reset)
- Green (Start / Ready)

Power requirements

240V +/- 10% @ 50Hz

Test inlets

- > Flush mounted mains plugs for test purposes (both IEC and standard 240V), protected from accidental application of 240V 50Hz mains voltage
- > Flush mounted 240V socket

Operating instructions

- > On screen prompts displayed and clearly labeled switches
- > Step by step instructions detailed in this Manual

Warranty period

12 months from date of purchase

Calibration period

Recommended every 12 months

Repairs and calibration

We recommend that the STC PRO is returned to an authorised service centre for repair and/or calibration. In doing so you are assured that any recent basic enhancements to the hardware and/ or software (applicable to your STC PRO) will be included in the repair or calibration as a matter of policy (at no extra cost). Contact TRIO Test & Measurement Solutions for details.

Included Accessories

- > Mains power cord
- > Test lead for earthed appliances
- > Test lead for double insulated appliances
- > Conductive bandage
- > Calibration Certificate
- > Operation manual

Optional Accessories

- > Stainless steel blanket
- > RCD Tester
- > Inspect software
- > On-board database
- > Scanner
- > Flash tester (1350V AC)
- > Test tags
- > Log Book

Note: TRIO reserve the right to change the specifications at any time without notice

Preparation of the appliance prior to safety testing


General visual inspection

- 1 Ensure the appliance to be safety tested has no obvious mechanical faults and is free from external damage.
- 2 Inspect the supply lead for any damage, defects or loose terminals in the accessories, connectors, plugs or outlet sockets. Common faults encountered:
 - a) Frayed or damaged supply lead.
 - b) Exposed conductors and/or covered by insulation tape.
 - c) Abrasions in the outside insulation jacket.
 - d) Supply lead anchorage at plug or appliance entry.
- 3 Check that any controls, alarms and replaceable protective devices accessible to the operator, are of correct rating and in good working order.
- 4 Inspect all switches and speed controls for mechanical operation; ensure switches and controls are clear of any obstruction, e.g. filings, swarf, metal particles, grease, etc.
- 5 Confirm all identity tags/labels etc. pertaining to the frequency of safety testing are correctly attached and records of all test/inspections are kept to ensure the safety integrity and history of the appliance.
- 6 Unroll extension leads/rolls and inspect as above.

Identify the appliance to be tested

Examine the appliance to be tested and identify whether the appliance is an earthed appliance, a double insulated appliance or an extension cord.

Earthed appliances should always have an earth pin on their plug, and will normally have exposed metal components.

Double insulated appliances may be identified by the double insulation  symbol, and/or by the absence (i.e. not broken off) of an earth pin on a moulded socket.

- 1 Many double insulated tools are colour coded blue.
- 2 If any doubt exists about the design type of an appliance, the appliance should be tested as an earthed appliance.

Preparation of an earthed appliance to be safety tested

- 1 Switch any/all switches 'ON'.
- 2 Set any speed control to 'FULL ON' (Maximum speed).
- 3 Preparation for earthed appliance to be safety tested is now complete and may be connected to the **STC PRO**.
(see *Safety Testing Earthed Appliances – page 6*)

Preparation of a double insulated appliance to be safety tested

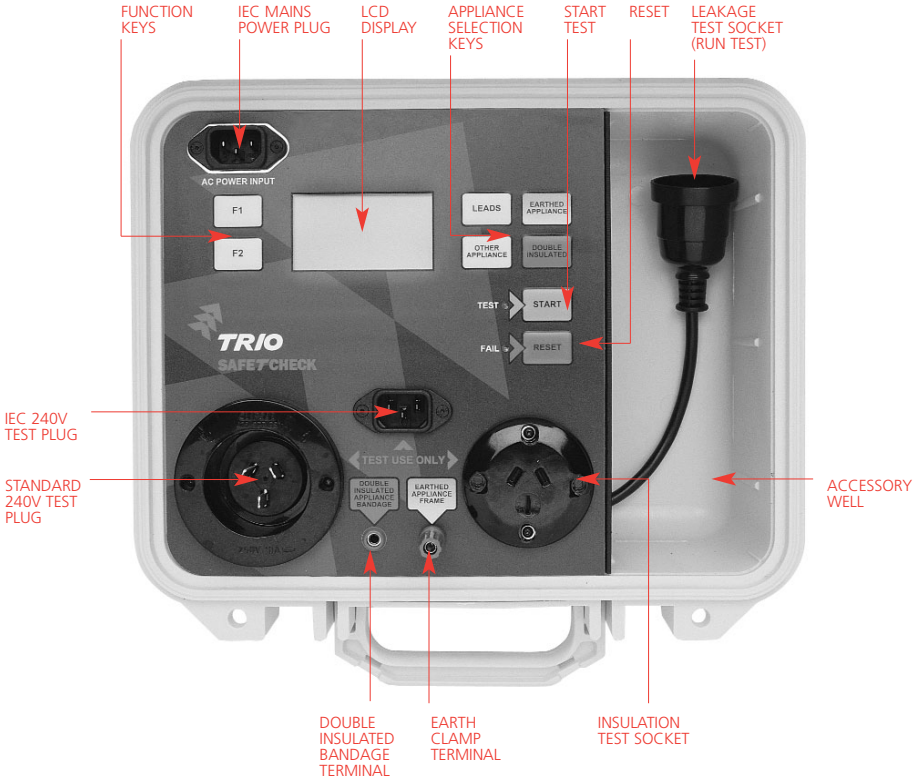
- 1 Switch any/all switches 'ON'.
- 2 Set any speed control to 'FULL ON' (Maximum speed).
- 3 Preparation for double insulated appliance to be safety tested requires the appliance to be wrapped in a conductive bandage taking care to make contact with all metal components and the exterior of the appliance where hand contact is normally possible.
- 3 Preparation for double insulated appliance to be safety tested is now complete and may be connected to the **STC PRO**.
(see *Safety Testing Double Insulated Appliances – page 8*)

Note: The above description regarding the inspection and testing of electrical appliances is a guide only. Please refer also to the current standard AS/NZS 3760.

WARNING

Upon completion of a successful safety test and removal of test lead and/or conductive bandage, please ensure all switches/speed controls are returned to their 'OFF' position.

Operating the STC PRO



Place the STC Pro on a convenient non-conductive working surface. Plug the mains power lead into the STC via the IEC mains power socket at the top left of the unit. Insert the mains plug into a correctly wired and earthed mains power outlet. The following sequence will occur:

- 1 TRIO logo appears on the Liquid Crystal Display (LCD);
- 2 There is a short beep; and
- 3 The TEST and FAIL Leds flash momentarily.

The **STC PRO** is now ready to perform Appliance Safety Testing.

Any departure from these conditions may mean the STC Pro has a fault and should be returned for repair.

Safety testing earthed appliances

- 1 Ensure the **STC PRO** is in the self test mode i.e. TRIO logo appears on the LCD.
- 2 Plug the appliance to be tested into the socket labeled TEST USE ONLY provided on the front panel of the **STC PRO**. The appliance should be connected directly and not via an extension lead.
- 3 Connect the GREEN earthing lead to the unit via the green terminal.
- 4 Connect the GREEN earthing lead to a convenient metal (Conductive) portion of the appliance under test.

If any earthed appliance has one or more metal component(s) which are possibly not connected together, the overall test must be repeated with the EARTH clamp connected to each metal component in turn.

- 5 Switch the appliance to be tested 'ON'
Note: Any or all switches must be "on" to ensure testing of the appliance's complete electrical circuit.
- 6 If the appliance to be tested has a variable speed control fitted, turn the control fully 'ON' or to be highest speed, this will connect Active/Neutral direct to the internal windings.
- 7 Select EARTHED APPLIANCE.
 The **STC PRO** is now ready to test the appliance.
 The green indicator alongside "Start" will now be flashing.
 During testing cycle the operator may apply stress to the appliance supply lead and plug in order to detect any intermittent faults.
- 8 Test results will be indicated via –
 - a) PASS or FAIL will appear on the LCD;
 - b) A Fail will be indicated by a continuous beep and the red indicator flashing alongside "Reset"; and
 - c) A Pass will be indicated by a short beep and the green indicator flashing alongside "Start".

WARNING

To avoid uncertain results when testing an earthed appliance, ensure that:

- 1 The earth clip is securely attached to the metal frame.
- 2 It has been disconnected from all other equipment.
- 3 The test is conducted on an insulated (not metal) benchtop.

Note 1: A FAIL indicating "poor continuity" denotes lack of a circuit path between the Active and Neutral of the appliance. If the appliance switch is on and this error occurs then go to the RUN TEST.

Note 2: For a FAILED earthed appliance known to be fitted with metal oxide varistors (MOV's) test again using Class 1 (250V) test under OTHER APPLIANCES.

Evaluation of in-service testing results for earthed appliances

Where the **STC PRO** identifies an appliance which fails to comply with the test criteria, the equipment shall be:

- 1 Withdrawn from service immediately and have a label attached to it warning against further use.
- 2 Repaired by the appropriately qualified person and retested after repair.
- 3 Refit test identity tags/labels etc. and log test in safety history records.

WARNING

Upon completion of a successful safety test and removal of test lead and/or conductive bandage, please ensure all switches/speed controls are returned to their 'OFF' position.



SELECT EARTHED APPLIANCE TEST

AC POWER INPUT

F1

F2

TRIO
SAFE7 CHECK

LEADS

EARTHED APPLIANCE

OTHER APPLIANCE

DOUBLE INSULATED

TEST

START

FAIL

RESET

2500VA
430 SERIES

250V 10A

TEST USE ONLY

DOUBLE INSULATED APPLIANCE BANDAGE

EARTHED APPLIANCE FRAME

GREEN TERMINAL

GREEN EARTHING LEAD

EARTH CLAMP

SWITCH APPLIANCE ON

Safety testing double insulated appliances

- 1 Plug the double insulated appliance to be tested into the socket labeled TEST USE ONLY provided on the front panel of the **STC PRO**.

Note: The appliance must be plugged in directly, and not via extension leads.

- 2 Switch the appliance to be tested 'ON'

Note: Any or all switches must be "on" to ensure testing of the appliance's complete electrical circuit.

- 3 If the appliance to be tested has a variable speed control fitted, turn the control fully 'ON' or to the highest speed, this will connect Active/Neutral direct to the internal windings.

- 4 Wrap the appliance in a conductive bandage, taking care to make contact with all metal components and the exterior of the appliance where human hand contact is normally possible.

The conductive bandage may be woven metal cloth mesh, conductive braid, aluminium foil, or other suitable flexible conductor with low resistance (less than 100 Ohms).

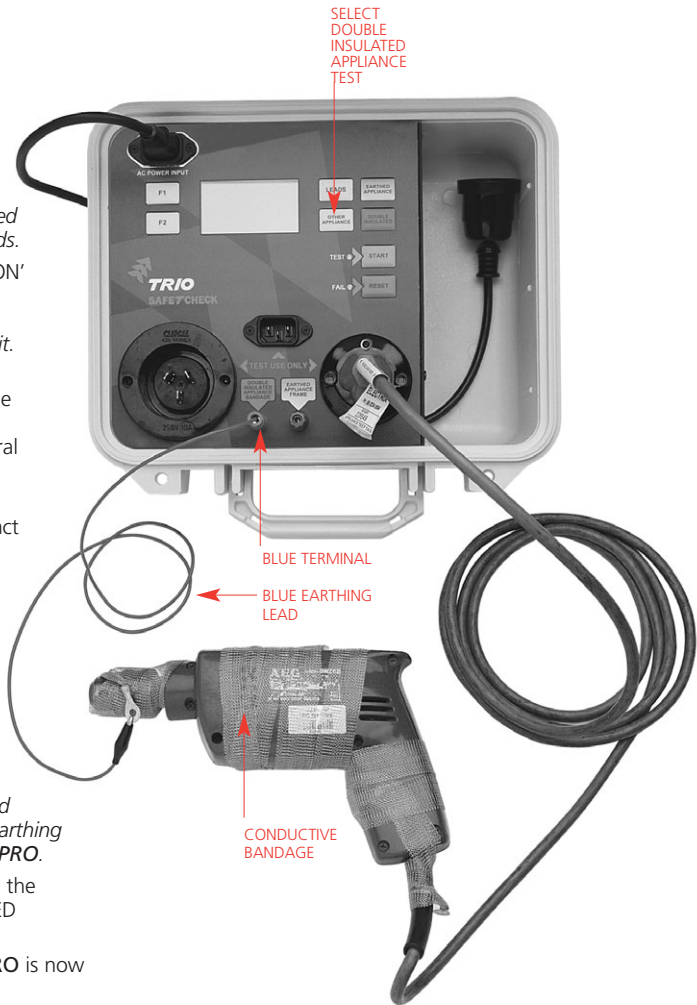
Note: The wrapped appliance should be on an insulated bench to avoid earthing the measurement circuit in the **STC PRO**.

- 5 Connect the conductive bandage to the 'BLUE' socket for DOUBLE INSULATED APPLIANCES on the **STC PRO**.
- 6 Select Double Insulated. The **STC PRO** is now ready to test the appliance.

The green indicator alongside "Start" will now be flashing. During testing cycle the operator may apply stress to the appliance supply lead and plug in order to detect any intermittent faults.

Test results will be indicated via –

- a) PASS or FAIL will appear on the LCD;
- b) A Fail will be indicated by a continuous beep and the red indicator flashing alongside "Reset"; and
- c) A Pass will be indicated by a short beep and the green indicator flashing alongside "Start".



- 7 The **STC PRO** will check that the conductive bandage and connecting lead is correctly applied, since the correct establishment of the test environment is vital to the correct verification of insulation resistance in a double insulated appliance.

The verification of a correctly wrapped and connected conductive bandage is made by the **STC PRO** by measuring the capacitance between the electrical circuit in the double insulation appliance and the conductive bandage.

Begin tests by pressing START. During the testing cycle the operator may apply stress to the appliance supply lead and plug in order to detect any intermittent faults.

- 8 If the verification test passes the **STC PRO** will continue with the double insulated appliance test.

Failure of this verification for double insulation appliances may be for one or more of the following reasons:

- The double insulated appliance is not correctly wrapped or connected to the 'BLUE' socket for double insulated appliances.
- The assumed double insulated appliance is in fact, an earthed appliance and the incorrect identification and/or an incorrect test selection has been made.
- The double insulated appliance is connected to the **STC PRO** via an extension cord.
- The appliance is earthed via another path such as a metal earthed bench.
- Both active (A) and neutral (N) leads are open circuited in the appliance. E.g. failure to turn 'ON' appliance switch(es).
- The resistance of the conductive bandage around the appliance is too high.
- The appliance has extremely low inherent capacitance between the external surface and the internal electrical circuit. This may apply to some very small appliances with minimum internal circuitry e.g. a plastic bedlamp.

- 9 Test results will be indicated via –
- PASS or FAIL will appear on the LCD;
 - A Fail will be indicated by a continuous beep and the red indicator flashing alongside "Reset"; and
 - A Pass will be indicated by a short beep and the green indicator flashing alongside "Start".

Note 1: A FAIL indicating "poor continuity" denotes lack of a circuit path between the Active and Neutral of the appliance. If the appliance switch is on and this error occurs then go to the RUN TEST.

Note 2: For a FAILED double insulated appliance known to be fitted with metal oxide varistors (MOV's) test again using Class 2 (250V) test under OTHER APPLIANCES.

Evaluation of in-service testing results

Where the **STC PRO** identifies an appliance/tool which fails to comply with the test criteria the equipment shall be –

- Withdrawn from service immediately and have a label attached to it warning against further use.
- Repaired by the appropriately qualified person and retested after repair.
- Refit test identity tags/labels etc. and log test in Safety history records.

WARNING

Upon completion of a successful safety test and removal of test lead and /or conductive bandage, please ensure all switches/speed controls are returned to their 'OFF' position.

Safety testing extension leads



- 1 Plug the extension lead into the plug and socket labelled TEST USE ONLY provided on the front panel of the STC PRO.
- 3 Select LEADS. The STC PRO is now ready to test the appliance. The green indicator alongside "Start" will now be flashing.
- 5 During the testing cycle the operator may apply stress to the lead and plug in order to detect any intermittent faults.
- 6 Test results will be indicated via –
 - a) PASS or FAIL will appear on the LCD;
 - b) A Fail will be indicated by a continuous beep and the red indicator flashing alongside "Reset"; and
 - c) A Pass will be indicated by a short beep and the green indicator flashing alongside "Start".

Note 1: If the extension lead into the plug and socket (as in extension reels), this must be connected to the fixed test plug on the STC PRO with a short TEST extension lead of rated voltage and current, which has been previously tested and verified SAFE. Normally, extension leads must be tested individually and not cascaded.

Note 2: For a FAILED EPOD known to be fitted with metal oxide varistors (MOV's) test again using EPOD (250V) test under OTHER APPLIANCES.

Note 3: Each socket of the EPOD must be tested in turn.



Safety testing other appliances

The STC Professional is capable of testing many electrical appliances with unusual characteristics. The "Other Appliances" menu is used to select the test suitable for any of these appliances. The user may scroll through the list by using the F1 and F2 keys.

Appliances such as those fitted with surge protection or MOV's (Metal Oxide Varistors) may be tested at 250V (instead of 500V):

- > Class 1 250V
- > Class 2 250V
- > EPOD 250V

Appliances requiring the mains voltage to be applied to activate the On/Off switch, shall have their leakage current checked:

- > Class 1 Run Test
- > Class 2 Run Test

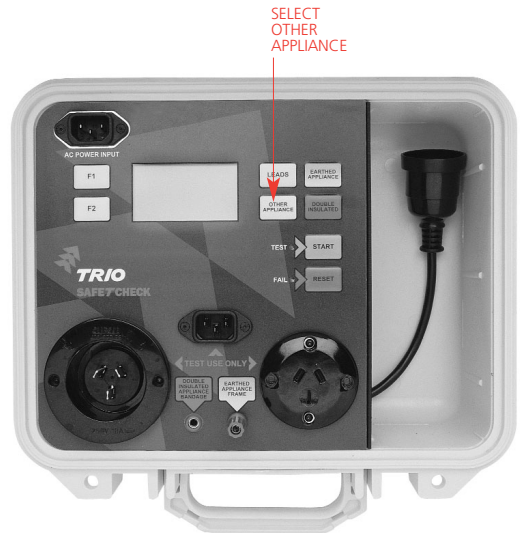
An earth continuity test may be conducted by selecting:

- > Earth only test

Appliances employing Mineral Insulated Metal Sheath (MIMS) such as stoves and electric jugs may be tested performing a run test by selecting:

- > MIMS Run Test

NOTE: The tests available under "Other Appliances" may be updated from time to time either by request or at time of calibration or repair (at authorised repairers only).



Run test (Leakage current test)

The run test for earthed appliances (Class 1) and double insulated appliances (Class 2) are leakage current test modes to be used only for appliances that must be energised to operate a switching circuit.

Run testing earthed appliances

- 1 Ensure the appliance is switched off.
- 2 Plug the appliance into the separate RUN TEST socket.
- 3 Connect the GREEN earthing lead to the STC PRO via the green terminal.
- 4 Connect the GREEN earthing lead clamp to a convenient metal point on the appliance under test.

WARNING

Upon completion of a successful safety test and removal of test lead and /or conductive bandage, please ensure all switches/speed controls are returned to their 'OFF' position.

- 5 Switch the appliance on.
- 6 Select CLASS 1 RUN TEST under OTHER APPLIANCES (F1 and F2 keys move the selection of mode up or down respectively)
- 7 Press START button and follow the screen instructions. The appliance will operate for 10 seconds during the run test.

WARNING

Ensure appliances such as drills, angle grinders etc are firmly restrained during the run test.



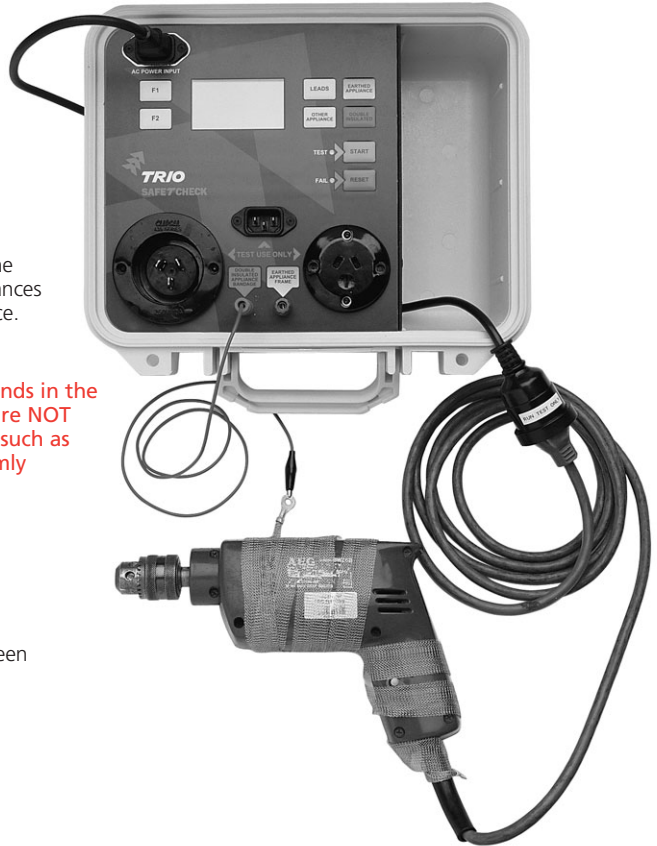
Run testing double insulated appliances

- 1 Ensure the appliance is switched off.
- 2 Plug the appliance into the separate RUN TEST socket.
- 4 Connect the conductive bandage to the blue socket for double insulated appliances and apply the bandage to the appliance.

WARNING

The appliance will operate for 10 seconds in the run test mode. Ensure rotating parts are **NOT** wrapped in the bandage. Appliances such as drills, angle grinders etc should be firmly restrained during the run test.

- 5 Switch the appliance on.
- 6 Select CLASS 2 RUN TEST under OTHER APPLIANCES using the F1 and F2 keys.
- 7 Press START button and follow the screen instructions.





ADELAIDE

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in Australia

