Supply Connection to 3200.

It is essential to understand that correct supply connection is required to use the 3200 to test Electrical Test instruments. A safety feature in the 3200 will prevent the instrument from working if the connection is incorrect.

The Correct Connection Is

200 to 250 V AC on the LIVE wire to the 3200

0V to 10V AC on the NEUTRAL wire to 3200

0V on the EARTH wire.

Why is this?

Electrical test instruments such as RCD testers and LOOP Testers used by electricians are designed to test/measure mains wiring and detect faults such as open earth, or incorrect polarity. When using the 3200 calibrate testers, the tester is plugged into the 3200, which is plugged into the mains supply. If the 3200 does not have the correct supply then the tester will not, and therefore the tester would be calibrated incorrectly.

For the most accurate readings on the tester being calibrated the mains connection must be as good as possible. Addition connections and switches, even long cable runs add often varying resistances, which will give unreliable readings on the tester under calibration.

What is a Loop tester?

A loop tester measures the resistance of the mains live/earth wiring from the power station to the socket being tested. This is important because if the resistance is high the socket is dangerous, as the earth conductor will not provide protection against electric shock.
A loop tester works by measuring the voltage between live and earth under no load, and again under load, usually 25Amps. The voltage drop divided by the current gives the resistance.

What is an RCD – Residual Current Device (Sometimes called an RCCD)

An RCD is a 'Trip' to turn off the mains when a fault condition occurs resulting in some current leaking down to earth. It works on the principle that the current flowing out of the live should all flow back through the neutral. If there is even a small imbalance in the out and in currents then the trip will disconnect the supply. This provides a high level of protection, even when the earth is poor.

The sensitivity of a typical trip is 30mA. This is the imbalance current. There may be 1,10 or 100Amps passing through the trip which unlike a fuse will not open the trip.

What is an RCD Tester?

An RCD tester checks the sensitivity of a Trip, and also measures how long it takes to open. It does this by passing from live to earth, which will cause the trip to open.
Calibrating Loop and RCD testers.

As both of these instruments pass current down the earth they will open any RCD trip in the circuit. THEREFORE they can only be calibrated using a supply without a RCD TRIP or unprotected.

An unprotected supply is not available.

Transmille offer an option where the 3200 can be run off of an unprotected supply.
This is simply achieved by wiring the unit so the return current, which would normally flows to earth flows back down the neutral. There is little disadvantage with this other than some accreditation authorities may point out that the instrument being calibrated is connected to the mains in a different way than it is used, and therefore possibly give different readings. This option is called earth neutral.

Mains Polarity Reversal.

The European style mains connector can be inserted in either way round. This will have the effect of making the neutral live and the live neutral. Obviously it is not possible for an RCD or loop tester to be calibrated with a reversed supply. In this case the 3200 will display a warning on the display.

Auto Supply Detect Option

Transmille can supply an option to auto supply detect, this option does increase end loop resistance as internal relays are used to correct supply polarity. With this option
The 3200 can also be used a RCD protected supply allowing the 3200 to work from any socket with an earth.

See attached diagrams:

- Correct Supply wiring to 3200 without earth/neutral option
- Incorrect Supply wiring to 3200 without earth/neutral option
- Alternative wiring to 3200 with earth/neutral option

Rewiring the 3200 to function on a protected supply (Overview)

To rewire 3200 to function on a protected supply open the calibrator and drop down the rear panel of the calibrator.

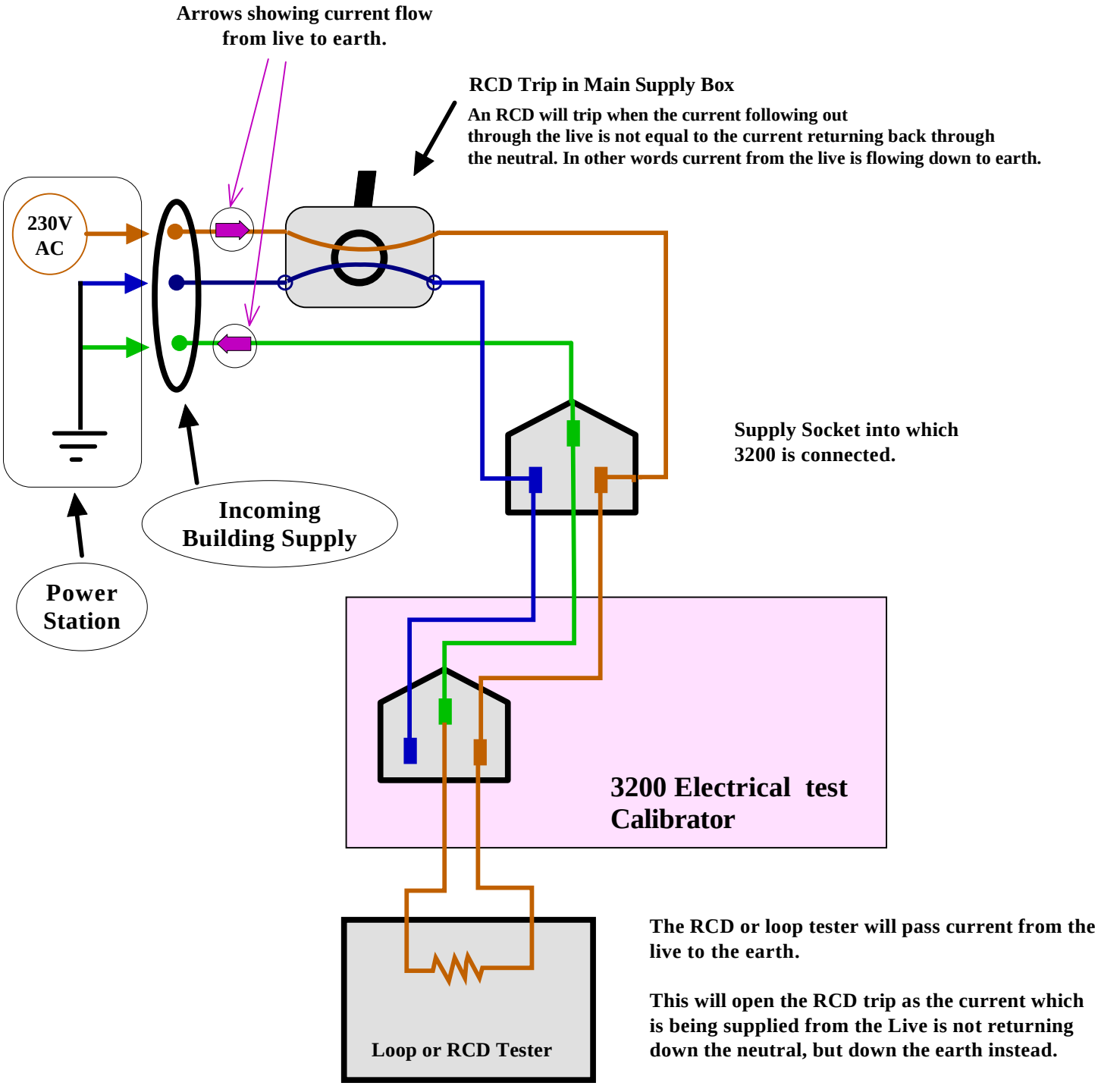
Locate the **green** earth wire from the main PC board which normally connects to the rear panel earth stud and change this connection to the neutral position of the mains switch.

Later calibrators may have a connector block fitted to enable the earth wire connection to be changed.

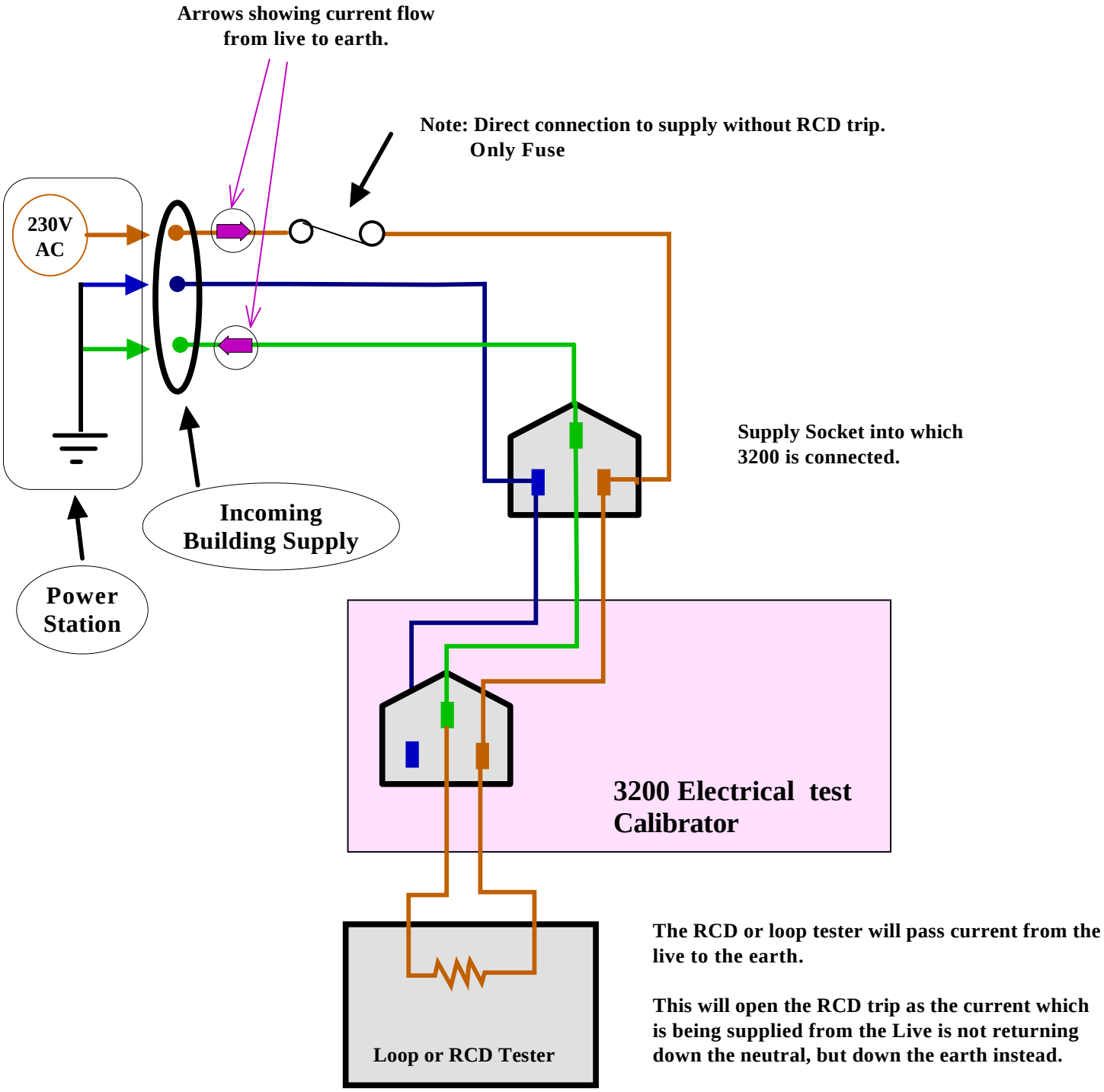
THIS PROCEDURE SHOULD ONLY BE ATTEMPTED BY A COMPETENT INDIVIDUAL.

ENSURE MAINS SUPPLY IS DISCONNECTED BEFORE PROCEEDING!

Incorrect Supply wiring to 3200 without earth/neutral option
This connection will cause the RCD trip to open.



Correct Supply wiring to 3200 without earth/neutral option



The RCD or loop tester will pass current from the live to the earth.

This will open the RCD trip as the current which is being supplied from the Live is not returning down the neutral, but down the earth instead.

Alternative wiring to 3200 with earth/neutral option
Allowing operation with an RCD protected supply