



WORKING KNOWLEDGE BY TERRY MACKENZIE HOY

DEALING WITH UNEXPECTED EARTH LEAKAGE TRIPS

The other day, someone in my office had a problem with the distribution board at home. It "kept tripping". I established that the earth leakage protection relay (ELU) was tripping. The person said they would switch it back on again and it would be okay for about an hour after which it would trip.

I was asked what I thought the problem could be, and to establish this I asked the standard questions, which are as follows: (a) Has anybody recently worked on the distribution board? (b) Have you recently connected a new power point? (c) How old is the distribution board? (d) Have you recently purchase a new appliance?

Just by simple questioning, one can get to what a problem might be. If the board is ten years old or more, it may be that the ELU is faulty. If there's a new appliance, it could be faulty, or otherwise faulty workmanship could be the issue.

I told the person to unplug everything in the house to see if the board still tripped. Thereafter, I suggested, they plug the appliances in, one by one, and see what happens.

Anyway, having got the advice of a consulting engineer, the person called an electrician who said the ELU was faulty and should be replaced. This was done but the problem did not go away. I told the

person to tell the electrician to turn the distribution board power supply off, remove all the neutrals from the neutral bar and voltage test them with an ac insulation tester to see if any of the neutrals was down to earth. If any were, then part of the return current would be travelling through the earth and bypassing the earth leakage protection relay which then, measuring an imbalance between live and neutral, would trip.

The person relayed this to the electrician who ignored the advice and told the person that the problem was one of the outside plugs, which the electrician replaced. This still did not solve the problem. Finally, the person asked me to explain why they should insulation test the neutrals while disconnected from the neutral bar. I explained that it really didn't matter why—the point was that all the neutrals should only be connected to earth via a single neutral from the main power supply on the neutral bar. And if this was not the case, the earth leakage protection would trip. Klaar!

The electrician replaced the distribution board, rewired some of the wiring and said the problem was fixed. It was. For this he charged R6000. Nice work if you can get it.

Just about all unexpected earth leakage protection trips are caused

by the following: (a) Earth leakage won't reset: *live is down-to-earth*. (b) Earth leakage trips intermittently but is often okay for a day or two: *faulty appliance*. (c) Earth leakage trips intermittently every hour or so: *neutral is down to earth somewhere*. (d) Earth leakage trips generally at night or in the morning at about seven or eight: *circuits protected by earth leakage protection are overloaded: typically coffee machine, kettle, microwave and heater, all on*.

Other thoughts: If you take your voltage meter and measure from earth to live on the circuit breakers in a distribution board and you get voltage then you should not get voltage from earth to neutral. If you do, this means the neutral is broken somewhere. If you have a cable that is three core and you measure the voltage from the earth to live at 110 V and earth to neutral at 110 V, then the cable earth is not connected to earth.

Finally, never disconnect the neutral wire of a circuit in a distribution board if the circuit is live. You will subject whatever is connected to the circuit to a high-voltage. Furthermore, if you're working on a distribution board make sure you have solid earth cables and connect them to the live wires of the board while you're working on it. **The earth you can see is the earth you can trust.**

BOSCH LAUNCHES NEW GENERATION OF 18 V ROTARY HAMMERS

The latest additions to the Bosch range of rotary hammers with EC motors generate an impact energy of 2.6 joules, which is 50% more than the current strongest 18 V rotary hammer.

The GBH 18V-26 Professional and GBH 18V-26 F Professional are the latest additions to the Bosch range of rotary hammers with EC motors. Campbell Mhodi, Bosch Professional Power Tools senior brand manager explains that the high performance makes them comparable with corded tools such as the GBH 2-26 Professional. The EC motor is highly efficient and completely maintenance-free and users can choose between a model with a fixed chuck and a model with a changeable chuck, which is also supplied with a keyless chuck for round shank drill bits.

To allow installers to stay in control even when carrying out work on hard materials, such as drilling into reinforced concrete, Bosch has equipped the GBH 18V-26 Professional and the GBH 18V-26 F Professional with KickBack control. If the rotary hammer turns suddenly or unpredictably on its drill axis, as can occur if the drill becomes jammed in reinforced concrete, the integrated sensor shuts off the motor in a fraction of a second.

This prevents unexpected kickback of the tool, thereby reducing the risk of injury. In addition, the integrated electronic precision control (EPC) feature supports tradespeople when drilling into delicate materials such as tiles. If the EPC function is activated, the maximum power of the rotary hammer is limited to 70%, with a slower run-up. This enables professional tradespeople to work in impact mode from the start of their task by omitting one work step. The bit is prevented from slipping off when the user starts to drill, and precise results can be achieved quickly and easily.

When developing the new generation of 18 V rotary hammers, Bosch also redesigned the shape of the tools and optimised them for ergonomic work. The handle is now in line with the drill axis on both tools. This 'L-shape' reduces the effort and fatigue involved during working. In addition, both rotary hammers feature efficient vibration damping. A damping element uncouples the main handle from the hammer drive, reducing vibrations actively.

To enable tradespeople to work in building stock in a dust-free environment, such as when retrofitting light fittings, Bosch now offers the new 18 V rotary hammers with an active integrated dust extractor. The GDE 18V-16 Professional can simply be attached to the rotary hammer when required. It has its own motor, also supplied with power by the rotary hammer battery. To allow drilling to be carried out easily and cleanly using dust extraction, the dust extractor has an automatic power on/off function. It starts automatically at the same time as the rotary hammer. However, to ensure optimal dust extraction, it continues to function for two seconds after the drilling operation is ended.

The integrated HEPA filter also provides reliable dust protection and, like the dust container, can be cleaned and emptied in just a few easy movements. Further features include an LED light on the housing to illuminate the working area, as well as an I 6.0 Ah battery. With its accompanying GAL 1880 CV Professional quick charger, the battery is fully charged in 50 minutes, which is 30% faster than the previous model. The new GBH 18V-26 will be available from Bosch selected dealers from September 2017 onwards.



ALTRON SELLS CRABTREE TO SIEMENS AG, SUBJECT TO REGULATORY APPROVAL



JSE listed Allied Electronics Corporation Limited (Altron) has announced that its wholly owned subsidiary, Power Technologies Proprietary Limited (Powertech), has entered into an agreement whereby it will sell Crabtree Electrical Accessories (Crabtree) to Siemens AG.

Crabtree produces and distributes low-voltage components for the South African construction market, including light switches, power outlets, cable routing

systems, and adapters. The sale of Crabtree forms part of Altron's plan to exit its manufacturing operations and focus on its information technology and telecommunications business.

The transaction is subject to the grant of approvals by the relevant competition authorities.

Enquiries: www.altron.com

ROTO-BIN-DICATOR Technology: Paddlewheel Applications: Universal, dry bulk point level detection with advanced features and diagnostics	GUIDED WAVE Technology: Guided Wave Radar Applications: Measures bulk solids or liquids, radar signal is guided along steel cable
PULSE POINT II Technology: Vibrating Fork Applications: Wide range of dry bulk materials, liquid/solid interface	CAP LEVEL Technology: Capacitance Applications: Measures bulk solids or liquids
DIAPHRAGM-DICATOR Technology: Diaphragm Switch Applications: Detection of free flowing dry bulk materials	MP SERIES RADAR Technology: Through-Air Radar Applications: Non-contact, reliable in difficult environments

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