

SAFETY ALERT

Severe Electric Shock from Power Tool

INCIDENT

A mine maintenance contract fitter, working on the screening level of a processing plant, received a severe electric shock from a 240V double insulated hand held impact power tool that was being prepared for storage after use.

CIRCUMSTANCES

The contract fitter was removing the drive socket from the metallic chuck of the impact tool. The metallic drive socket was held in the left hand and the tool pistol grip handle in the right hand.

A 240V electric shock was received across the body from hand to hand resulting in large area burns to the left hand and a single point burn to the right hand. Medical treatment was given at the mine and the victim was transported to hospital. As the electric shock was so severe, hospitalisation was necessary for three days.

INVESTIGATION

The incident occurred at the end of the working shift. The victim was not wearing gloves at the time of the incident.

The tool was plugged into a 20 metre, heavy duty, 10 amp extension lead which was plugged into a 240V socket outlet on a lower level of the plant. Electrical protection did not operate to remove the power. The power tool and extension lead had in date inspection tags.

An investigation identified the following:

1. The power tool chuck insulation failed due to an extremely dirty tool (internally) with fine dust/grime evident. The dirt entered the tool through ventilation slots at the chuck/gear box and commutator. An Electro Magnetic Interference (EMI) filter system was connected across mains conductors and the internal metalwork (Figures 2, 3 and 4).
2. An external metallic screw in the power tool pistol grip handle cover penetrated one of the insulated supply conductors (Figure 1).

The victim was connected across the 240V supply via a point contact on the right hand and a large area contact of the left hand (palm). The victim is very lucky to be alive as it is unlikely the electrical protection would have detected the incident. The victim was eventually able to drop the faulty tool.

RECOMMENDATIONS

Mines apply the hierarchy of risk controls. Where the use of electric power tools can not be eliminated, there should be tools that substitute the hazard of portable 240V tools with a portable tool that gives rise to as low as reasonably practical risk.

For example, extra low voltage power tools which are generally battery powered. In using extra low voltage battery powered tools, the risks from batteries, charging, the environment, competence and ergonomics need to be managed.

Any tool used must be fit for purpose, and maintaining tools in a satisfactory condition for use is a key activity that is part of the work cycle.

Note: Please ensure all relevant people in your organisation receive a copy of this Safety Alert and are informed of its content and recommendations. This Safety Alert should be processed in a systematic manner through the mine's information and communication process. It should also be placed on the mine's notice board.

Signed



Rob Regan
DIRECTOR
MINE SAFETY OPERATIONS BRANCH
INDUSTRY & INVESTMENT NSW

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Figure 1

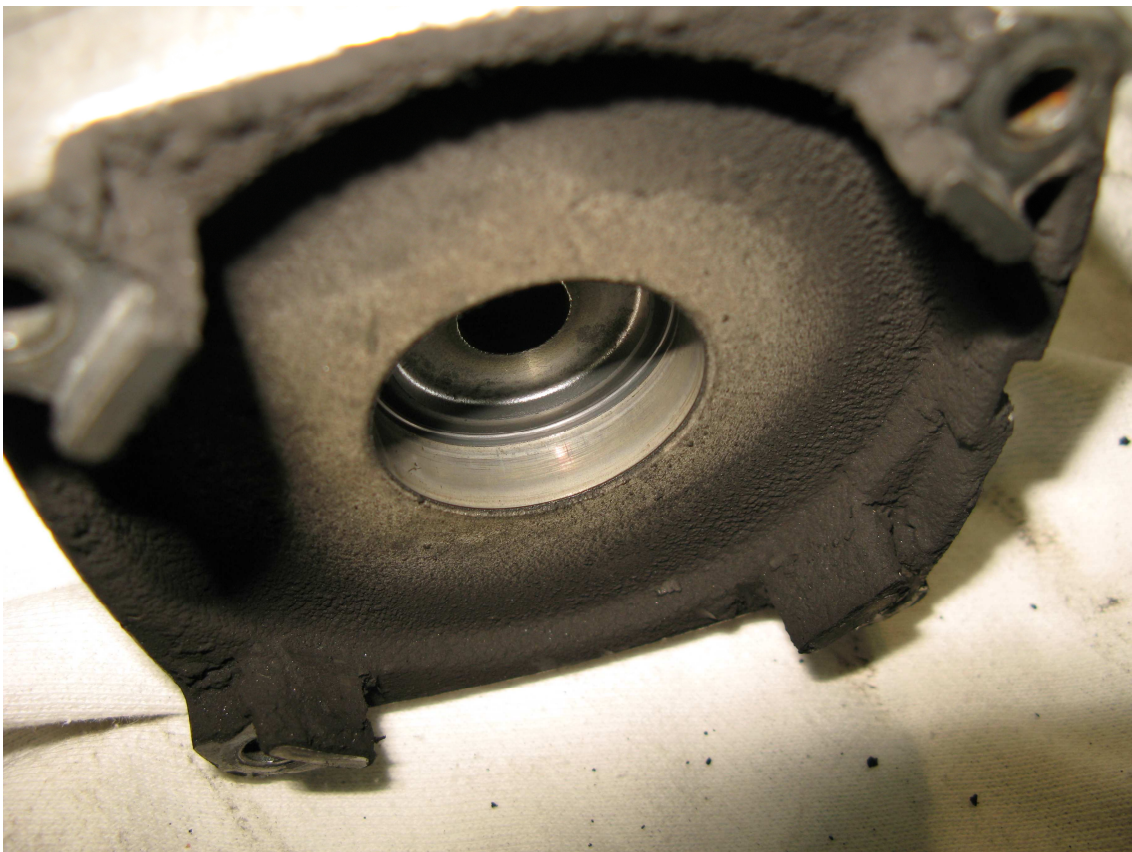


Figure 2



Figure 3



Figure 4