

Appendix 6: Trip-wires - extended guidance

Trip wires do not prevent access to the rotating parts of machinery but may mitigate injury when entanglement occurs if they are properly sited, designed, maintained and operational.

The use of trip wires instead of interlocked guards is lower in the hierarchy (see Appendix 4) and must be robustly justified in a written risk assessment with evidence of why guards are not practicable. Machines supplied from late 2014 following the EU wide publication of BS EN 16228 should only be fitted with trip wire protection as a secondary or additional protective device.

Trip wires may still be found as primary protection on older machines. If a dutyholder produces robust evidence that guards are not practicable (obtain SG advice on this) there potentially may be a need for them to rely on trip wires. Meeting all the requirements set out below is extremely challenging and not easy to achieve on drilling rigs with large heads, sliding heads and/or capable of drilling differing diameter holes. The following points must be addressed:

- Where the drill string can rotate in either direction there must be at least one trip wire on each side. The wires should not be more than 150mm from the outside rotating edge of the drill string i.e. they may need to be adjusted if a smaller diameter drill is used.
- The trip wires must have a spring mounting at the end/s remote from the switch. The switch should act in either direction i.e. so that it will trip if the wire is deflected and fail to safety should the trip wire break.
- Rotation should stop if a component in the system fails.

BS EN 16228 criteria for 'Additional Pressure Sensitive Devices' is applicable to newly supplied rigs from late 2014 and is listed as follows:

- be activated by contact with any part of a person;
- be activated by a force in accordance with EN ISO 13856 for pressure sensitive devices and from any foreseeable actuation direction;
- be activated by an actuating travel of less than 50 mm [previous HSE advice allowed 200mm actuation travel];
- an activation shall stop the moving parts identified with the residual risks as follows:
 - in special protective mode; rotating parts, feed movements and remaining moving parts shall stop as quickly as possible without creating additional hazards;
 - in restricted operating mode; rotating parts shall stop in less than half a revolution; feed movements and remaining moving parts

shall stop as quickly as possible without creating additional hazards;

- be positioned and of sufficient number to cover any residual risks according to the risk assessment;
- be of design and construction together with its associated signal parts, connecting wiring etc. so as to prevent unauthorised or deliberate overriding of its function;
- be clearly visible and of a colour that contrasts with the standard machine, with red being the normal colour;

be capable of being tested prior to each period of machine operation by the operator.