INTERLOCKED GUARDS

A guard, similar to a fixed guard, but which has a movable (usually hinged) part so connected to the machine controls that if the movable part is in the open/lifted position, the dangerous moving part at the work point cannot operate. This can be arranged so that the act of closing the guard activates the working part (to speed up work). e.g. the front panel of a photocopier.

An interlocking guard should be so connected to the machine controls that:

- Until the guard is closed the interlock prevents the machinery from operating by interrupting the power medium;
- Either the guard remains locked closed until the risk of injury from the hazard has passed or opening the guard causes the hazard to be eliminated before access is possible.

Functions of an interlock

An interlock provides the connection between a guard and the control or power system of the machinery to which the guard is fitted. The interlock and the guard with which it operates should be designed, installed and adjusted so that:

- Until the guard is closed the interlock prevents the machinery from operating by interrupting the power medium;
- Either the guard remains locked closed until the risk of injury from the hazard has passed, or opening the guard causes the hazard to be eliminated before access is possible.

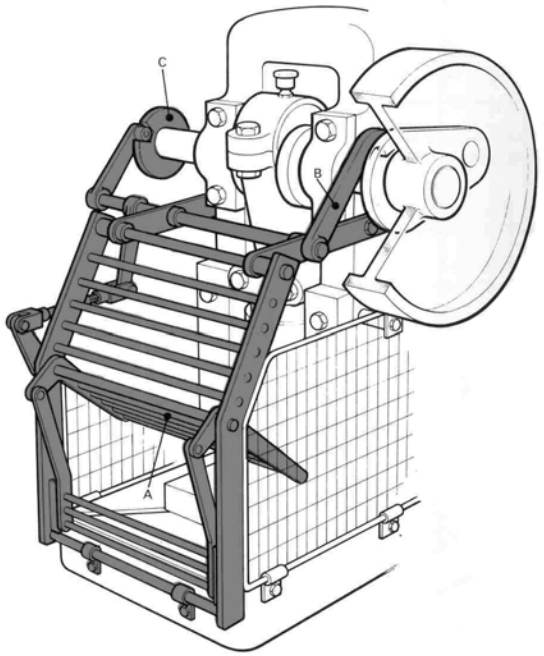

Figure C6-9: Interlocking guard for positive clutch power press.
Source: BS 5304: 1988.

Interlocking media

The four media most commonly encountered in interlocking are electrical, mechanical, hydraulic and pneumatic. Electrical interlocking, particularly in control systems, is the most common and electrical components are often incorporated in hydraulic and pneumatic circuitry, e.g. solenoid operated valves. The principles of interlocking apply equally to all media. Each has advantages and disadvantages, and the choice of interlocking medium will depend on the type of machinery and the method of actuation of its dangerous parts.

Some interlocking systems have more than one control channel, e.g. dual control systems. It is often advantageous to design these systems so that the similar failures in both channels from the same cause (common cause failures) are minimised. One way of achieving this is by using a different control medium for each channel, e.g. one hydraulic and one electrical.

Interlocking methods

Methods of interlocking which ensure that the power medium is interrupted when a guard is open fall into two groups:

- Power interlocking.
- Control interlocking - illustrated by the following schematic diagrams (note: not actual circuit diagrams).

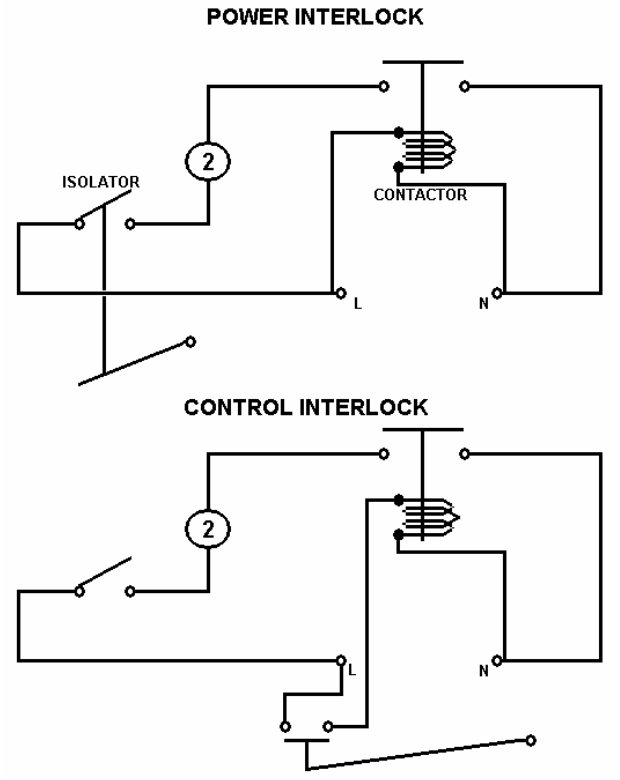

Figure C6-10: Schematic representation of power and control interlocking. *Source: Ambiguous.*