Reset Functions

The Minotaur safety relays are designed with either monitored manual reset or automatic/manual reset.

Monitored Manual Reset

A **monitored manual reset** requires a closing and opening of a circuit after the gate is closed or the E-Stop is reset. Figure 43 shows a typical configuration of a reset switch connected in the output monitoring circuit of an MSR6R/T. The mechanically linked normally closed auxiliary contacts of a power switching contactors are connected in series with a momentary push button. After the guard has been opened and closed again, the Minotaur will not allow the machine to be restarted until the reset button has been pressed and released. When this is done the Minotaur checks (i.e., monitors) that both contactors are OFF and that both interlock circuits (and therefore the guard) are closed. If these checks are successful the machine can then be restarted from the normal controls.

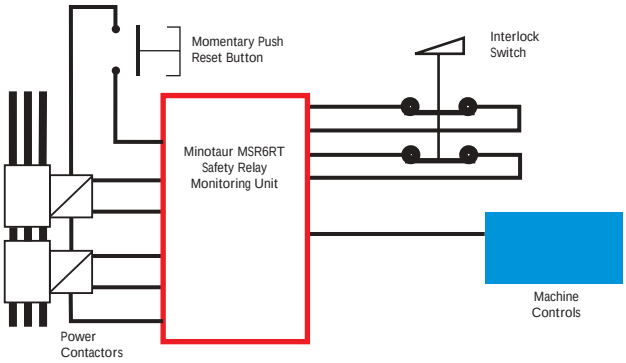

Figure 43

The reset switch should be located in a place that provides a good view of the hazard so that the operator can check that the area is clear before operation.

Auto/Manual Reset

Some Minotaur safety relays have **automatic/manual reset**. In this case, the reset line can be jumpered allowing an automatic reset. The user must then provide another mechanism for preventing machine start-up when the gate closes. Alternatively, the user can use the circuit shown in *Figure 43*, but the Minotaur will not be able to detect a shorted reset switch or a shorted auxiliary contact on the contactor.

An **auto-reset device** does not require a manual switching action but after de-actuation it will always conduct a system integrity check before resetting the system. An auto-reset system should not be confused with a device without reset facilities. In the latter the safety system will be enabled immediately after de-actuation but there will be no system integrity check.

Control Guards

A control guard stops a machine when the guard is opened and directly starts it again when the guard is closed.

The use of control guards is only allowed under certain stringent conditions because any unexpected start-up or failure to stop would be extremely dangerous. The interlocking system must have the highest possible reliability (it is often advisable to use guard locking).

The use of control guards can ONLY be considered on machinery where there is NO POSSIBILITY of an operator or part of his body staying in or reaching into the danger zone while the guard is closed.

The control guard must be the only access to the hazard area.

Other Considerations

Input Impedance

The input impedance of the monitoring safety relays determines how many input devices can be connected to the relay and how far away the input devices can be mounted.
For example, the Minotaur MSR6R/T has a maximum allowable input impedance of 500 ohms (Ω). When the input impedance is greater than 500 Ω, the MSR6R/T will not switch on its outputs. Care must be taken by the user to ensure that the input impedance remains below the maximum specification.

The length, size and type of wire used affects input impedance. Table 2 shows typical resistance of annealed copper wire at 25°C.

ISO cross section mm^2	AWG Size	Ω per 1000m	Ω per 1000ft
0,5	20	33.30	10.15
0,75	18	20.95	6.385
1,5	16	13.18	4.016
2,5	14	8.28	2.525
4	12	5.21	1.588

Table 2