

## ***MAGNETICALLY SHIELDED LIFTS***

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Exceptionally high magnetic field density poses a hazard to modern mobile equipment. These hazardous magnetic fields can cause mobile machinery to malfunction and continue to move or potentially move on their own. Modern systems use Hall-effect sensors, asynchronous communication and large loops of fine wire in their control systems. Each of these control methods is highly susceptible to malfunction under extreme magnetic fields.

Bailey Cranes and Aerial Lifts offers many enhancement and solutions to potentially hazardous.

As a reference, the earth's magnetic field is 0.5 Gauss (50 MicroTeslas). Our systems have been tested and operate in environments where field density is measured from 200-500 Gauss. (0.3-0.5 Tesla). This field density is typically found in areas where enormous amounts of electrical current are being used like Aluminum smelting plants or power generation.

The modifications tailored to your demand additional enhancement may include electrical insulation, thermal/radiant heat insulation, and protection from hot splash.

Our team will evaluate your equipment requirements and make recommendations as to the base unit and the level of enhanced protection recommended. The key to our system is to provide protection level Zero to all control inputs that can potentially cause the machine or any substantial part of the machine to move.

**Protection level Zero: Immune to magnetic fields.** This is accomplished by converting the control inputs from electrical to direct hydraulic operations. This is a time-tested method for controlling mobile that was eliminated as a cost and weight savings.

Functions that are incapable of moving the machine without additional functions actuated are protected at level 1. These functions require the additional enable/"deadman" fully hydraulic function.

**Protection Level One:** Is similar to Level zero except the hydraulic actuation activates an electrical transducer. The transducer and associated electronics are located in a faraday cage partially shield the devices.

**Protection Level Two:** Electronics functions are maintained, they are enhanced by shielded cable and their output is routed through galvanically isolated safety relays. These safety relays require agreement between channels or they will not initiate an output or continue to output. They also act as surge protectors. In the case of an abnormal power surge, they will fail in a safe condition.