

LOSS CONTROL DATA GUIDE

Robot Safety

A robot is a mechanism, guided by automatic controls, which performs repetitive work such as moving portable tooling into position, moving workpieces from one location to another, and/or assembling one or more workpieces. However, the robot's automatic movement and flexibility present significant hazards to its human operators, maintenance, and programming personnel.

To ensure the safety of operations and support personnel, a systematic program for Robot Safety should be developed and implemented. Such a Robot Safety Program should include all phases of robot operation. Specifically:

Process planning phase

- Determine need for using a robot
- Select appropriate robot for task requirements
- Obtain robot manufacturer's specifications
- Review and evaluate robot design safety features—mechanical, electrical, software
- Review and evaluate robot testing and evaluation—initial start-up, emergency handling, software, sensory devices, static performance, dynamic performance
- Design a safe work process and work organization – operator location, prevention of human errors, malfunction procedures, gripper selection, sensing devices, tool overload, overall robot safety responsibility and accountability

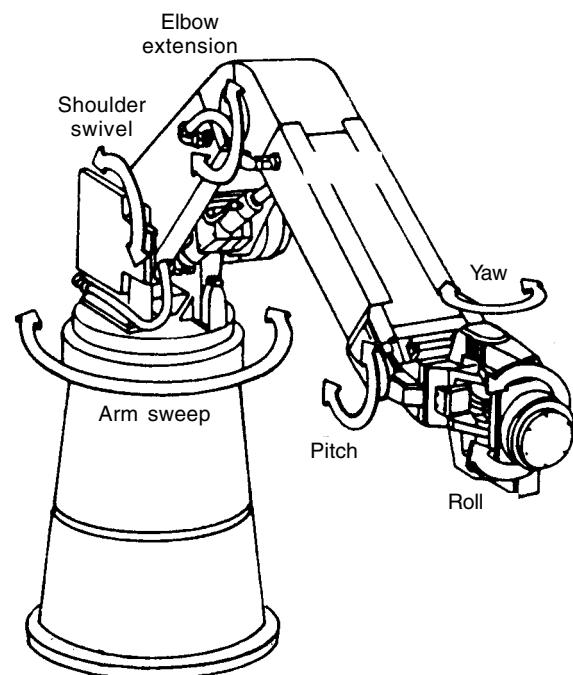
- Provide training – for operators, supervisors, maintenance and programming personnel, and engineers; develop disciplinary action program for safety rule violators; refresher training program once initial training has been completed

Installation phase

- Safe workplace design—physical layout, electrical consideration, warning signs and signals
- Environmental controls—illumination, temperature, noise, vibration, chemicals

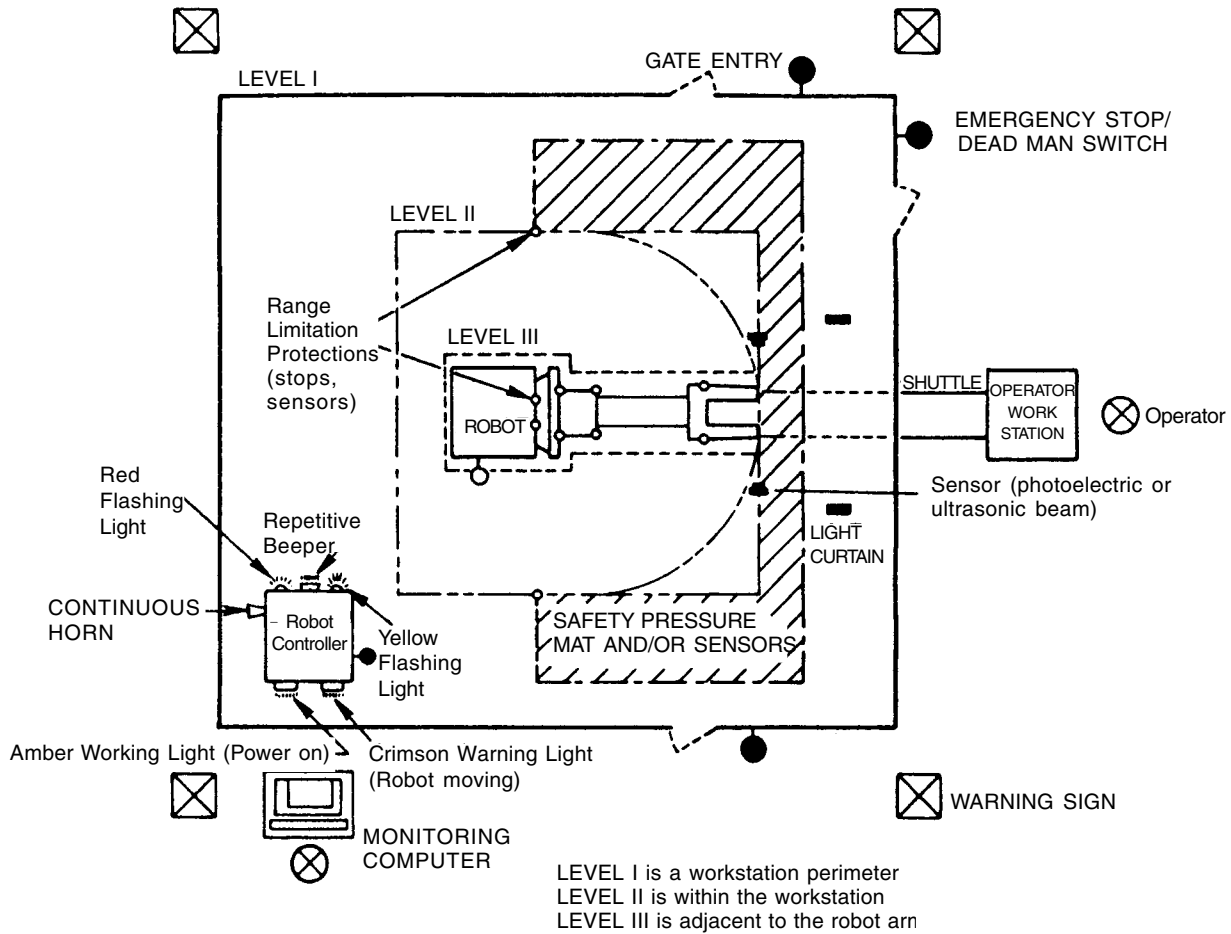
Operation phase

- Operation mode—operator, safety monitoring, teaching mode
- Nonoperational mode—dwell time, maintenance, programming



Safety should be emphasized from the beginning of the planning phase through every minute of robot operation. As many safety measures and hazard control techniques as possible should be implemented in order to eliminate/reduce/control robot-related worker injury exposure.

A suggested robot workplace layout is as follows:



The loss prevention information and advice presented in this brochure are intended only to advise our insureds and their managers of a variety of methods and strategies based on generally accepted safe practices, for controlling potentially loss producing situations commonly occurring in business premises and/or operations. They are not intended to warrant that all potential hazards or conditions have been evaluated or can be controlled. They are not intended as an offer to write insurance coverage for such conditions or exposures, or to imply that Great American Insurance Company will write such coverage. The liability of Great American Insurance Company is limited to the specific terms, limits and conditions of the insurance policies issued.