



Robot Cell Guarding, Interlocks, and Safety Devices Guide

Category: Machine Guarding

Audience: Safety, engineering, operators, maintenance

Badge: Guarding

Planning guide for fixed guarding, access gates, interlocks, scanners, light curtains, E-stops, and controlled access around RAS robotic welding cells.

Important limitation: This document is a general planning aid only. It does not replace OSHA requirements, employer safety programs, equipment manuals, SDS review, qualified risk assessment, training, lockout/tagout procedures, PPE selection, or competent safety review.

Core Guarding Principles

- Do not operate a robotic welding cell with removed, bypassed, defeated, or unverified guarding.
- Guarding design should control access to robot motion, welding arc, pinch/crush points, positioners, rails, fixtures, and service zones.
- Any safety device reset should require the hazard area to be clear before restart.

Access Control

- Define authorized access points, service access points, and visitor/viewing zones.
- Post signage for robot motion, welding arc, electrical hazard, hot work, and PPE requirements.
- Use lockable gates or controlled entry methods for maintenance and setup where required by the employer program.

Safety Device Verification

- Verify E-stops, gate switches, scanners, light curtains, interlocks, and reset devices before production after installation, relocation, repair, or changeover.
- Record verification in the site safety or maintenance log.

Field Checklist

Item	Verified	Notes
Fixed guarding present and secured		
Access gates/interlocks tested		
E-stops tested		
Scanner/light curtain areas clear		
Reset device location allows area view		

Item	Verified	Notes
Warning signage visible		
Cell access policy reviewed		

Reference Basis

- OSHA 29 CFR 1910 Subpart Q - Welding, Cutting and Brazing.
- OSHA 29 CFR 1910.147 - Control of Hazardous Energy (Lockout/Tagout).
- NIOSH welding fume and manganese exposure resources.
- RAS equipment planning information for robotic arc welding systems using 480V / 60Hz / 3-phase power, RAS-500PR power supply, water-cooled torch packages, torch cleaning, and wire cutting stations.

Revision: RAS Safety Knowledge Base expanded safety resource set. Verify against current site-specific rules before use.